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A Survey and Analysis of the Extant Drug/Crime
Literature: Methodological Issues, Patterns of
Drug Use and Criminal Behavior, Life Cycles,
Economic Issues, and Drug Treatment

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PREFACE

In 1976 Congress mandated the Law Enforcement Assistance Administration's (LEAA) National Institute of Law Enforcement and Criminal Justice (NILECJ) to "make studies and undertake programs of research to determine the relationship between drug abuse and crime..." In response to this mandate, NILECJ's Center for the Study of Crime Correlates and Criminal Behavior undertook a variety of projects, one of which was a project to develop a drug/crime research agenda which would build on the work done by a National Institute on Drug Abuse (NIDA) Drug/Crime Panel in 1976. This literature review is an outgrowth of that agenda development project.

The first step in working toward a drug/crime research agenda was to review the voluminous drug and crime literature for empirical studies that provided information about drug/crime relationships or the drug/crime nexus. While the particular emphasis was on empirical studies, all works that provided insight into drug/crime relationships were considered. However, the dominant focus on empirical research better enabled the project team to identify major areas of concern from past research and to pinpoint past research strengths and, most importantly, weaknesses. This, in turn, helped to prepare the project team for the next phase of the project which was to develop a research agenda which addressed drug/crime issues in the most efficient and effective way. While we feel that this review and bibliography are thorough, some readers may find them more narrow in scope than they prefer. Those readers should bear in mind that our decisions for including material in the review and bibliography were heavily influenced by our particular concerns for developing a research agenda.

The bibliography following the text is intended to be as complete and up-to-date as possible. All relevant reference services were contacted for materials as were the most notable drug/crime researchers. Major English language indexes were surveyed for relevant literature and an effort was made to include Canadian, Australian, and European literature. The result was that the bulk of the literature found was from the United States. This is not inappropriate since, in

this case, the most relevant literature for developing a research agenda for the United States is American research. . Each paper, article, and book cited in the bibliography was reviewed, abstracted, and coded by a member of the project team. Later, based on the major issues covered in the literature, an outline was developed which formed the skeleton of this review.

The original intent of this review was to cover the literature on the relationships between all drugs and crime, not just the opiates. It quickly became apparent to the research team, however, that there was a dearth of information on drugs other than the opiates. Therefore, this review, of necessity, focuses primarily on what was reflected in the literature--that is, the relationship between opiate use and crime.

We hope this literature review will provide policymakers and researchers with a better understanding of the issues raised by previous research, the significant findings of that research, and the major problems encountered in past research efforts. We also hope the work presented here provides a foundation upon which new research can build.

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It is difficult to keep an accurate account of those individuals to whom one is indebted while undertaking a task of this magnitude which extends over such a long period of time. So many have contributed directly and indirectly to the final product, with many not leaving a clear mark, that it is relatively easy to overlook an individual contribution. With this in mind, we acknowledge the help of the following persons. First of all, we would like to thank Dr. Richard Barnes and Dr. Bernard Gropper of the National Institute of Law Enforcement and Criminal Justice's Center for the Study of Crime Correlates and Criminal Behavior for making this project possible and for providing continuous guidance and timely feedback of earlier drafts of this review. In addition, we would like to thank members of the project Advisory Board whose ideas certainly helped shape the direction of the project and of this review. The Board included: Mr. Bruce Bucklin of the Drug Enforcement Administration, Dr. William C. Eckerman of the Research Triangle Institute, Dr. Fred Goldman of Columbia University, Dr. Gila Hayim of Brandeis University, Dr. Dana Hunt of Hood College, Professor Edward Preble of Narcotics and Drugs Research Inc., Dr. Duane McBride of the Center for Social Research on Drug Abuse at the University of Miami, Dr. Louise Richards of the National Institute on Drug Abuse, and Mr. James C. Weissman of the Denver District Attorney's Office.

In addition to members of the Advisory Board, several colleagues at the Research Triangle Institute, whose combined knowledge on drug use and crime is extensive, also contributed significantly to the final result. These individuals include: Arthur Bonito, Dr. Stephanie Greenberg, Dr. Robert Hubbard, and J. Valley Rachal. One name has not been included in this alphabetical listing because his contribution has been so significant: Dr. James J. Collins, Jr., contributed in countless, immeasurable ways to the final product. Others we would like to thank include Carolyn Camp and Lois Melton of the Institute's library for tracking down articles in some of the more obscure research journals. We would also like to express our gratitude to Patricia Kerr for attending to so many details,

to Judy Whatley whose attention to detail is surpassed by few, and to Brenda Young for typing numerous drafts of this review and handling all the other associated tasks with complete confidence.

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EXECUTIVE SUMMARY

The purpose of this literature review is to explore the voluminous, and sometimes complex, literature on the drug/crime problem. The literature is so vast and the methods utilized to confront the drug/crime problem are so varied that it was difficult to identify exactly what is known about drug/crime relationships. Until an accurate assessment is complete, it will be difficult to identify where the gaps in our knowledge lie and to direct research to fill those gaps.

The literature covered in this review is a comprehensive survey of the English language literature on the relationships between drug use and crime. A special effort was made to include the relevant literature from Canadian, Australian, and European sources. This review focuses primarily on the relationships between heroin use and crime although other drugs are also considered.

This literature review is organized around five topical areas which are central to the drug/crime issue. The first area is concerned with methodological issues and problems encountered by previous researchers in the drug/crime area. The second area is concerned with the patterns of drug use and criminal behavior. Included in this discussion are a review of those factors that are thought to predispose one to drug use and crime; a review of polydrug use patterns; and a review of relationships found between heroin and crime, as well as other drugs and crime. The third area contains a discussion of life cycle issues or an examination of how drug use and crime patterns change over the course of an individual's lifetime. The fourth area focuses on economic issues and includes a discussion of the factors that affect and mediate an addict's income-generating activity. The fifth, and final, topical area includes a discussion of treatment intervention strategies and their impact on client criminal behavior.

Methodological Issues

Numerous data sources and research methods have been utilized by drug/crime researchers to examine drug/crime relationships and each data source and method has its own particular set of problems. Self-reported

measures have been found to be reliable and valid measures under certain conditions, as are some official records. Surveys of the general population have been useful for estimating drug abuse trends, but due to the low incidence of drug use and criminal behavior within samples of the general population, their usefulness in the drug/crime area has been limited. Qualitative research has contributed significantly to the state of our knowledge on drug/crime issues, but qualitative approaches are often criticized for the inability to generalize findings to other populations. A significant problem in drug/crime research involves sample representativeness. Most research in the drug/crime area has used samples drawn from detected addict populations; those addicts held "captive" in treatment or prison populations. The problem of sample representativeness may be the greatest obstacle to rigorous research in the drug/crime area. The greater use of control groups and longitudinal research on populations not preselected for drug use or criminal behavior would provide significant advances to our understanding of drug/crime relationships.

Patterns of Drug Use and Criminal Behavior

Before describing the patterns of drug use and criminal behavior among addicts, several socio-demographic and psychological traits of addicts are discussed. In general, addicts tend to reside in urban centers, particularly in the northeast. These urban areas are characterized by poverty, high rates of delinquency, and high concentrations of minority groups. In addition, addict families are apparently disturbed in some way; there are high rates of family disharmony, characterized by a lack of warmth and discipline. However, few comparisons with control groups were made in those studies that focused on the above-mentioned factors. Furthermore, the educational attainment of addicts is quite low; few ever complete high school and many never attend. Finally, many studies have diagnosed addicts as psychologically disturbed. These studies, however, are difficult to interpret for many reasons. Few control groups were used and most studies did not use blind interviews to assure that diagnosticians would not know they were interviewing addicts.

Patterns of addiction were discussed within the context of typologies developed by several researchers. Basically, it was concluded that little homogeneity exists among addicts. At one extreme are the occasional users, the weekend "chippers" who are not dependent upon drugs and for whom drugs do not interfere with other events in their lives. At the other extreme, are the junkies or street addicts who are very dependent upon drugs and are willing, seemingly, to go to great lengths to support their habits. Additionally, it was found, more recently, that many addicts are really polydrug users. That is, in addition to heroin, they are engaged in the simultaneous use of a number of other drugs. These polydrug users, generally, begin committing crimes at an earlier age and have subsequently committed crimes more frequently and of a more serious nature than other drug users.

After reviewing the literature on the criminal behavior patterns of addicts it was difficult to avoid the conclusion that addicts engage in substantial amounts of income-generating crimes. This was found to be true when analyzing the charges against drug-using arrestees, the convictions of addicts in prison, arrest records of treatment populations, or the observations, by ethnographers, of street addicts. However, although addicts commit fewer violent crimes than non-addicted offenders, they are involved in, and will commit, violent offenses.

Concerning the relationships between other drugs and crime, it was found that there has not been enough research to make any definitive statements regarding relationships between other drugs and crime. However, a substantial number of violent crimes have been associated with alcohol use and there is some evidence indicating a relationship between barbiturates and amphetamines and violent offenses.

The literature reflects that women addicts have similar socio-demographic characteristics as men including family background, environment, and education. The age of onset of drug use for women, however, appears to be several years later than for men. In addition, the types of crime committed by women apparently is substantially different than those crimes committed by men. Usually, women addicts engage in prostitution, drug sales, and shoplifting to support their habits; whereas men addicts are more heavily involved in burglary and robbery in addition to drug sales and shoplifting.

Life Cycles

Life cycle issues are concerned with how drug and criminal behavior patterns of addicts change over the course of their lives. Central to the life cycle discussion is the issue of causality; does drug use "cause" criminal behavior or does criminal behavior "cause" drug use? The issue of causality was dismissed as a difficult point to prove empirically. Instead, associations or relationships between drug use and criminal behavior can be established. Based on a review of the literature, there is considerable disagreement whether drug use precedes criminality or the reverse. Numerous studies are cited to support either position. It was concluded, however, that most studies found contemporary addicts have criminal records prior to drug use.

Following the discussion of causality and temporal sequencing, the initiation to drug use was discussed. The onset of drug use was described as a process in which the individual first gains access to drug-using groups, formulates a favorable impression of drug use and drug users, and learns how to use the drug so it has its intended effect. The age this is likely to occur is apparently much younger for contemporary addicts than in previous years.

The post-addiction period is marked by increases in criminality, and numerous periods of abstinence, remission, and relapse. Frequent arrest, incarceration, the influence of significant others, and maturation are suggested factors for the periods of abstinence and eventual maturing out. It was concluded, however, that more research must be done on addict careers before researchers go beyond mere suggestion.

Economic Issues

The purpose of this section is to explore the drug/crime relationship from an economic perspective. Specifically, it has long been believed that the commission of income-generating crimes is necessary to maintain a heroin habit. This section explores the empirical foundations of this belief, and the many factors that may influence and mediate this relationship. In sum, it was found that the price of heroin is likely to effect the consumption patterns of those infrequent users or "chippers."

Infrequent users are more likely to decrease their consumption of heroin in response to increases in price. Compulsive users, on the other hand, are likely to maintain the size of their habits while increasing their expenditures on drugs when the price of heroin rises. The resources needed for their increased expenditures are likely to come from family, friends, increased theft, or, if they deal in drugs, increased drug prices to other consumers. Others may increase their consumption of substitute drugs.

Support for the above was found, on the aggregate level, by researchers at the Public Research Institute, who conducted research in several cities. Analyzing data on the cost of heroin, arrests, and treatment enrollments, the researchers found as the cost of heroin increases, the number of income-generating crimes and the number of admissions to treatment programs also increases. Apparently, in response to higher costs addicts commit more crimes or seek refuge in a treatment program where they may receive free methadone.

One of the two major public policy strategies dealing with drug addiction, supply reduction strategies, is based on the research described above. The other major strategy, demand reduction strategies, is embodied by treatment programs and is discussed in the next section. Demand reduction strategies are, basically, law enforcement efforts designed to reduce the available supply of drugs, thereby increasing the price of drugs and reducing drug consumption. At this time, the only beneficial effects that researchers agree are attributed to supply reduction strategies are that new users are discouraged from trying heroin and higher prices for drugs create an increased demand for treatment.

Drug Treatment

Demand reduction strategies, the other major strategy reflecting U.S. social policy on drug abuse, are primarily embodied by drug treatment programs. Demand reduction strategies are designed to reduce the number of drug users, reduce the quantity of drugs presently used by drug users, and prevent others from ever using illicit drugs. There are five basic treatment types or paradigms: methadone maintenance, therapeutic communities, outpatient drug-free, detoxification, and correctional

programs. Comparisons within and between modality environments are difficult for a variety of reasons, most of which affect the interpretation and validity of evaluation findings. Not only are there structural and client differences between programs, but a number of the evaluations of these programs are fraught with serious methodological flaws that make findings suspect. A number of researchers have pointed out the methodological deficiencies in this evaluation research. Three deficiencies appear most often in treatment studies: proper sampling procedures not followed, ineffective research design, and measurement problems. Treatment cohort entrants, nonenrollees, and splittees are often not systematically sampled. Pretreatment, intreatment, and posttreatment periods differ across studies making comparisons difficult. Measures are often criticized as being unreliable or invalid. Programs are often evaluated on absolute rather than comparative levels of client behavior which would allow reasonable outcome expectations for the target populations. Client preselection may make program effectiveness appear better than it might otherwise appear. It is often difficult to ascertain program characteristics in order to assess what program effectiveness can be attributed to. Detailed descriptions of the actual structure and process of treatment, and ancillary services are usually not included in the evaluation and would permit a more complete and useful categorization of programs.

Despite these shortcomings, evaluation studies have increased the state of our knowledge on drug abuse trends, user characteristics, and treatment effectiveness. Reviews of several selected evaluations of each major treatment paradigm are provided.

I. INTRODUCTION

A relationship between drug use and crime has long been alleged. Often taken as a given, the extensive literature on drug use and crime signifies that the relationship is more complex than might first appear. Past research has focused primarily on the criminal activity of known addicts and, to a lesser extent, on the drug use of known criminals; as well as assessing the impact of drug intervention strategies on criminal behavior. What has not been adequately explored, however, is whether, and to what extent one behavior initiates the other (that is, drug use and criminal behavior), or whether both behaviors are traceable to other factors. While research to date has contributed significantly to the state of our knowledge, differences in research designs as well as other methodological problems have obscured our understanding of the linkages between drug use and crime.

The purpose of this paper is to survey the existing literature on the relationship between drug use and crime. The paper is organized into a broad comprehensive review using the five general categories decided upon as the crucial issues by the advisory board of this project. The five categories are:

1. Methodological issues: Issues concerning the definitions of drug use and criminal behavior, problems in measuring these phenomena, and the difficulties in drawing representative samples of drug-using populations.
2. Patterns of drug use and criminal behavior: Demographic characteristics of addicts, the type and extent of drug use, and criminal behavior patterns are described and provide the basis for typological development.
3. Life cycle characteristics: Distribution of drug use and crime patterns over individual careers. Specific questions such as the sequencing of drug use and crime, age of onset, and "maturing out" are addressed and do contribute to our understanding of the relationships between drug use and crime.

4. Economic issues: Issues concerning price, purity, supply, demand, the nature of income-generating activities of drug users, and the effects of supply reduction strategies on drug consumption and associated criminal behaviors.
5. Treatment effects: Questioning whether there is a net nondrug criminal activity reduction that results from drug treatment programs. A review of selected evaluations of treatment programs is provided and an attempt is made to identify types of programs that appear most successful.

Methodological issues are discussed first (in section II) because they provide a foundation for understanding and interpreting the empirical findings discussed in later sections. Section III, patterns of drug use and criminal behavior, describes who addicts are, where they are likely to come from, and their typical behavior patterns. Section IV, life cycle issues, logically follows the patterns section because it describes the addict career--how changes in these drug and associated patterns may occur with age. Section V, economic issues, provides a discussion of the reasons for addicts participation in income-generating activities. Included in this section is a discussion of one of the two major intervention strategies designed to reduce drug addiction, supply reduction strategies. Section VI, the effects of treatment intervention, focuses on the impact of the second major intervention strategy, demand reduction strategies.

The reader will note that there is a large emphasis in the existing literature placed on the use of opiates and on the behavior of addicts--virtually excluding other types of drugs and drug users. Where information exists (as in section III), drugs other than the opiates (particularly heroin) and the behavior of the users of these drugs are discussed vis-a-vis the drug/crime relationship. This emphasis in the literature on heroin and heroin users is more than likely attributable to two major factors: (1) heroin users are the most easily identifiable drug using population by virtue of being arrested and/or in treatment programs and, therefore, are more readily available to researchers and (2) most experts agree that heroin, of all drugs, inflicts the greatest social harm (see section V on Economic Issues for further discussion).

Numerous literature reviews have summarized large portions of the literature discussed in this report (for other literature reviews on the drug/crime issue see: Austin and Lettieri, 1976; Blum, 1967c, Blum, 1969; Chambers, 1974b, 1974c; Elliot and Ageton, 1976; Greenberg, 1976; Greenberg and Adler, 1974; Inciardi, 1974b; Kavalier, 1968; Meyer, 1952; National Commission on Marihuana and Drug Abuse, 1973b, c, d, e; O'Donnell, 1966; Tinklenberg, 1973b; and Weissman, 1979). However, this present review has attempted to broadly incorporate the focal issues of previous reviews in the context of the five issues outlined above. Despite attempts to be comprehensive the authors hold no illusions about shedding new light on this issue. There have been some valuable contributions to the state-of-our-knowledge over the years on the drug/crime relationships, all of which have been reported and reviewed elsewhere. Hopefully, the organization of this literature review will highlight the most significant research findings around the five crucial areas and thereby further serve to illuminate aspects of the drug/crime relationships that may have been previously overlooked. In this way, areas for research needing clarification or elaboration in future research efforts will be underscored.

Following the review of the literature, a bibliography is provided of all the materials reviewed by the project team for preparing this report. The bibliography should well serve those interested in the drug/crime area.

II. METHODOLOGICAL ISSUES

A discussion of methodological concerns in drug/crime research logically precedes the discussion of research findings because these issues are crucial to an adequate understanding and interpretation of the research results presented in the following pages. Many differences in research findings on the drug/crime problem are a function of variation in definitions of drug use and crime, differences in measurement instruments and measurement sources, and methodological approaches applied in each study. For example, the use of the Uniform Crime Reports (UCR) in one study and the use of self-reported measures of deviance in another study may yield discordant findings. Furthermore, differences of sample selection, the length of observation periods, and variation in how drug use and crime are defined and perceived by subjects as well as researchers, may have similar effects. Our discussion of methodological issues is organized around three central issues: (1) the definition of drug use and crime, (2) measurement problems, and (3) sample representativeness.

A. Definitions of Drug Use and Crime

A basic problem in past research on drug use and crime has been adequately defining the independent and dependent variables. Such definitional problems can result in misinterpretations of research findings, thereby contributing little to our understanding of the issues. The type of drug user and the categories of crime in which he is engaged should be carefully defined so relationships between specific drugs and types of crime can be more clearly ascertained.

As Voss has reported, in much of the literature on drugs, "the term 'drug' is used without precise definition and may refer to different things" (Voss, 1976a). The pharmacological definition of a drug refers to any agent that produces a change in a living organism. However, much of the research on drug/crime relationships has considered only those drugs which are defined as illicit by the legal structure, thus ignoring, for the most part, alcohol and legally prescribed drugs that are abused. Additionally, often there is little attempt to relate the extent of dosage or frequency of use to criminal behavior.

Crime, too, is usually analyzed in terms of how it is defined and measured by the legal structure. However, even legal definitions of crime vary between jurisdictions thereby further confounding the measurement of crime. While definitions of crime are numerous, one that is usually acceptable to most is offered by Sutherland:

The essential characteristic of crime is that it is behavior which is prohibited by the State as an injury to the State and against which the State may react, at least as a last resort, by punishment. The two abstract criteria generally regarded by legal scholars as necessary elements in a definition of crime are legal description of an act as socially harmful and legal provision of a penalty for the act.

(Sutherland, 1949: 31)

One of the major problems in using legally prescribed definitions of crime is that what may be illegal in one jurisdiction may be legal in another. Inciardi and McBride (1976) describe the act of jostling, which is a method used by pickpockets in New York to push and shove victims into a position so that it is easier to steal from them. Jostling statutes in some states, for example, allow the police to arrest pickpockets even though they haven't actually been caught stealing.

The second major problem in using legal definitions of crime is that the way criminal activities are defined and placed into categories varies between jurisdictions. For instance, the crime of robbery is usually defined differently across jurisdictions. Purse snatching is considered robbery but not assault in some areas while in others it may be considered robbery and assault; in many other jurisdictions robbery is considered an assault. So depending on the jurisdiction, robbery may be categorized as "robbery," "assault," or "assault and robbery" (Inciardi and McBride, 1976).

How drug use and crime are defined is particularly problematic when attempting to measuring these phenomena. Depending upon the method used, whether official records are used in the research or self-reported measures, the validity of each is likely to vary. Following is a discussion of the various forms of measurement used in drug/crime research.

Of critical concern in this discussion is the reliability and validity of these measures. That is, how consistent measures are and how close they actually come to measuring what they are intended to.

B. Measurement Problems in Drug/Crime Research

There has been difficulty not only in defining the major variables of interest, but in accurately measuring each, which has resulted in a basic impediment to rigorous research on crime and drugs. It is essential for establishing conclusive statements about drug/crime relationships to have accurate measures of the type and amount of drug use and crimes committed. To date, however, drug/crime research has been unable to do this satisfactorily.

The crucial concern in accurately measuring drug use and crime are the reliability and validity of crime and drug use indicators. In order to establish relationships, develop appropriate measures, and/or describe typologies concerning drug use and crime, the reliability and validity of the measures used in the research instruments must be ascertained. The question of reliability refers to the consistency of an observation over time. Validity focuses on the extent the data collected conform to fact (Gorden, 1975).

Numerous methods are used to insure high rates of reliability and validity. Basically, these methods fall within three broad categories: (1) self-reported methods which usually include personal interviews or surveys, (2) official records such as the Uniform Crime Reports, drug reporting systems or drug registers, and (3) qualitative measures employing ethnographic and participant observer techniques. The merits of each method are discussed below.

1. Self-reported Measures

Much of the drug/crime research has relied on self-report measures as a single data source or in combination with one or more other data sources. Several methods have been employed by researchers to determine the reliability and validity of self-report measures. These methods can be summarized under three categories as suggested by Hubbard, Eckerman, and Rachal (1976): (1) examination of internal

validity or reliability, (2) assessment of construct validity, and (3) determination of the empirical validity of self-reported measures. Within these categories, researchers have employed a variety of unique research techniques, attempting to establish levels of validity and reliability.

The first category, internal validity, has been used synonymously with reliability in most of the literature. As stated, reliability or internal validity is concerned with the consistency of observations over time. Techniques used by researchers to measure internal validity have generally included examination of one or more of the following: response rates, consistency of subject responses over time and within the same instrument, utilizing parallel forms of the same question, and evidence of respondent candidness (Hubbard, Eckerman, and Rachal, 1976). Methods employed by researchers to insure reliability include: use of highly trained interviewers, intraquestionnaire safeguards, and interview-reinterview procedures (Amsel et al., 1976).

The second category, construct validity, is the correlation of self-reports with other variables known to be associated with drug use. These procedures avoid the intrusion by researchers into sensitive areas of subject's lives (Hubbard, Eckerman, and Rachal, 1976). Construct validation procedures have included measuring the relationship between self-reported use and self-reported use of friends (Single, Kandell, and Johnson, 1975), comparison of the proportion of self-reported drug use with estimates of respondent use, or comparisons of the proportion of self-reported drug use from one study with the proportion in other studies (Hubbard, Eckerman, and Rachal, 1976).

The third category, empirical validity, is a check on the accuracy of self-reports with data from other sources. This is the most common method used by researchers for checking the accuracy of an addict's responses. Intuitively, many suspect that addict's self-disclose on items of deviancy simply because of the illegality of their acts. There are indications that criminals, given the opportunity, will attribute their deviant acts to either drugs or alcohol as an excuse for their behavior. In addition, the veracity of addict or criminal responses may not only be affected by deliberate concealment but also by errors in

recall (Bonito et al., 1976). The extent to which these factors affect addict responses must be validated against other data sources.

Several studies have found that addict responses concerning their drug use, criminal behavior, and related information are generally accurate. For example, using multiple data sources, including official records and urinalysis, as a validity check against the response of 59 Puerto Rican addicts released from the U.S. Public Health Hospital at Lexington, Kentucky, Ball (1967) compared five interview items with the other data sources. The five items chosen for comparison were: (1) the age of the subject, (2) the age at drug onset, (3) type and place of first arrest, (4) the total number of arrests, and (5) drug use at the time of arrest. Ball found there was agreement between interview responses and other data sources in 82.8 percent of the cases on the subjects' age; in 65.5 percent of the cases on the subjects age at onset, however, another 27.3 percent were off by only one to three years; in 80.7 percent of the cases the subject accurately reported his first arrest or reported an earlier one; in 70.7 percent the subjects accurately reported their criminal history; and using urinalysis against addict responses regarding current drug use, the author found 92 percent of the subjects' responses were valid. Ball concluded that under appropriate conditions the truthfulness of addict responses is surprisingly accurate. Moreover, Cox and Longwell (1974) found 86 percent of patients in a methadone maintenance program accurately reported the extent of their heroin use. Despite the findings, several studies discussed below have discovered differential rates of validity depending on type of research method, type of behavior described, and type of drug reported.

A study using prescription records for validation of self-reported drug use found validity levels vary according to the types of drug prescribed and the type of research method used (Parry, Balter, and Cisin, 1971). This innovative research compared three experimental groups with three comparison groups. The experimental group was comprised of all those people who had had recent prescriptions filled for sedatives, stimulants, and/or tranquilizers. The comparison groups were comprised of all those people who had had prescriptions filled for

either antibiotics or tranquilizers* and also a group of former users of tranquilizers. Each group contained 150-200 cases. The authors found that self-reported use of stimulants was the least valid, whereas the users of tranquilizers were found to have the most valid response rates. The authors speculate it is more legitimate in our society to turn off than to turn on. Additionally, intensive questioning and visual aids were found to improve validity rates.

In a landmark study in drug/crime research, Eckerman et al., (1971) used several data sources to cross-validate reported drug use and criminal behavior among arrestees in six sites. The authors found that, with the exception of heroin users, there is a low correspondence between interview data and urinalysis results (Eckerman et al., 1976a). Additionally, Eckerman and associates reported differential validity rates which depended on: the data collection technique (urinalysis having the highest validity levels); whether the information sought concerns present or past usage (subjects were more willing to reveal past history); the drug use reported (subjects were more willing to report use of other drugs than those actually discovered through urinalysis); and the seriousness of arrest (those with more serious arrests tended to deny the use of drugs) (Eckerman et al., 1976a).

Amsel et al., (1976) conducted a study on a sample of applicants for treatment under the Narcotic Addict Rehabilitation Act (N.A.R.A.). A check was made to determine the extent to which there were falsifications or omissions in information during the application process. For 78 percent of the respondents, their self-reported criminal history matched UCR data. For 74 percent of the respondents, self-reports of drug use and urinalysis results matched. Despite problems with incomplete urinalysis and the UCR data the authors concluded the addict self-reports were both reliable and valid.

Ball (1967) identified several factors tied to levels of validity in interviews: (1) the interviewer's prior institutional contact, (2) the interviewer's knowledge of addict subculture, (3) the interviewer's

* A short form of the questionnaire was administered to users of tranquilizers in the comparison group and the long form to users of tranquilizers in the experimental group to determine differential rates of validity that could be attributed to the data collection instruments.

previous field experience, (4) a perceived interviewer-police connection, and (5) the use of a structured, probing interview. Furthermore, Maddux and Desmond report "certain features of the interview itself seem to affect reliability of information. These include the place of the interview, the legal status of the subject, the feelings of the subject about giving information to the interviewer, the skill of the interviewer, and the procedure" (Maddux and Desmond, 1975:93-94).

In brief, many innovative attempts have been made to insure and ascertain the reliability and validity of self-reports. Many factors have been found to offset and mediate the reliability and validity of these data, including: choice of interviewers, intraquestionnaire safeguards, interquestionnaire reliability, and the quality of official data. Many studies have validated the more equivocal self-reports against official records which may also be suspect.

2. Official Records in the Measurement of Crime and Drug Abuse

Attempts to measure the incidence of crime and drug abuse have often involved the use of official records such as the Uniform Crime Reports and/or drug abuse information systems. Researcher bias, time, and financial constraints generally account for the choice of one data source over the other. Each of these methods may underestimate or overestimate levels of addict crime and drug abuse so the particular problems with each data source merit further review.

a. Uniform Crime Reports. UCR provides periodic national assessment of crime incidence based on the submission of data by 15,000 law enforcement agencies (Federal Bureau of Investigation, 1977). These law enforcement agencies have jurisdiction over 98 percent of the U.S. population. These data are used regularly by criminal justice administrators, legislators, and other policymakers to assist in decisionmaking processes. Researchers also use UCR data to assess crime trends and evaluate social programs. Despite widespread use of UCR, these data have been criticized for a variety of reasons. Descriptions and criticisms of the FBI's Uniform Crime Reports (UCR) have been well documented (Amsel et al., 1976; Beattie, 1955; Biderman, 1967; Black, 1970; Chambliss and Nagasawa, 1969; Cressey, 1957; Hindelang, 1974; Inciardi, 1976; Kituse and Cicourel, 1963; Seidman and Couzens, 1974; Silberman, 1978;

Skogan, 1975; and Wolfgang, 1963). Critics of the UCR have focused their arguments on one of the following:

1. Regional variation on crime definitions, organization of law enforcement personnel and activities, and data collection methods make comparisons within and between jurisdictions difficult (Beattie, 1955).
2. UCR data do not reflect the real incidence of crime. UCR figures only reflect crimes known to the police. Victimization surveys show less than three of every 10 crimes committed are reported to the police (Law Enforcement Assistance Administration, 1976).
3. The production of an official crime report is influenced by a number of factors: the seriousness of the complaint; the complainant's observed preference for police intervention; the relationship between the suspect and victim; the complainant's social class status; and the complainant's degree of deference toward the police all have been found to affect the production of official crime rates (Black, 1970; DeFleur, 1975; Chambliss and Nagasawa, 1969). In addition, Wolfgang (1963) attributed significant increases in reported crime in Chicago and New York almost completely to changes in recording practices. Amsel et al., (1976) report recent arrests are often not listed.
4. In addition to those crimes known to victims that are never reported and crimes known to the police that are never recorded, there are also crimes that are never discovered (Hindelang, 1974).
5. Methods for recording multiple offenses and victims are too simplistic (Hindelang, 1974).
6. Population bases used in computing crime rates are usually inappropriate. Use of decennial census in computing crime rates may underestimate crime rates in the latter half of the 10-year interval (Wolfgang, 1963).

The problems endemic in current official statistics have led some researchers to state, "official statistics are so misleading that they are virtually useless as indicators of deviance in the population" (Chambliss and Nagasawa, 1969:71). Amsel et al., report, based on their drug use validation study, "the greatest limitation to the validity study was the incomplete and unreliable police records and urinalysis reports" (Amsel et al., 1976: 326). Despite the problems cited and the reluctance of some researchers to consider UCR data valid indicators of

crime rates, these data continue to be essential indicators of crime trends.

A great deal of the drug/crime research has utilized UCR data to estimate rates of addict crime. Use of UCR data in drug/crime research has included: (1) attempts to associate crime levels with treatment enrollments by using aggregated community-wide crime rates (DuPont, 1972; Levine, Stoloff, and Spruill, 1976; Stoloff, Levine, and Spruill, 1975); (2) attempts to associate aggregate crime rates with the market value of heroin (Brown and Silverman, 1974; Silverman and Spruill, 1977; Silverman, Spruill, and Levine, 1975); (3) examination of criminal records of drug users in an arrestee population (Anslinger and Thompkins, 1953; Bass, Brock, and DuPont, 1976; Bass, Brown, and DuPont, 1972; Eckerman et al., 1971; Petersen and Stern, 1974; Petersilia, Greenwood, and Lavin, 1978; Platt et al., 1973; Platt et al., 1976; and Weissman et al., 1974); and (4) analysis of criminal records of drug users in treatment (DeFleur et al., 1969; Pescor, 1938; Plair and Jackson, 1970; Stephens and Ellis, 1975; and Voss and Stephens, 1973. For others, see section VI on treatment).

b. Aggregate Drug Indicator Measures. Numerous reporting systems have been established for estimating the incidence of drug abuse. These systems were implemented primarily because a need existed for determining drug abuse trends and, therefore, the appropriateness of these data sources for drug/crime research is limited. For example, the purpose of the Client Oriented Data Acquisition Process (CODAP) is to provide data for planning, management, and evaluation of treatment programs through a monitoring system of clients and programs. The Drug Abuse Warning Network (DAWN) provides data on drug abuse trends through reporting of drug abuse contacts by selected hospitals and medical examiners. The System to Retrieve Information from Drug Evidence (STRIDE) is primarily an information system for law enforcement personnel that includes drug intelligence, statistics, and management information. Other systems include the National Institute on Drug Abuse (NIDA) sponsored hepatitis reporting system and the Addict/Abuser Reporting System sponsored by the Drug Enforcement Administration. The former is a reporting system of the three types of hepatitis by health authorities

and the latter is a reporting system of known addicts by law enforcement personnel (Kurke and Cavanaugh, 1976). Since most of these data bases were designed primarily for periodic assessment of drug use trends and are utilized primarily so that more informed decisions can be made regarding drug enforcement and treatment policy, their use in drug/crime research has been minimal.

c. Other Data Sources in Drug/Crime Research

(1) Survey Research. Survey research methods also have assisted in determining the extent of drug use rates in both general and special populations. Survey data more accurately reflect, for general populations, the true incidence and prevalence of drug use and are more representative than are data based on relatively small, biased numbers of drug users that come to the attention of authorities. In fact, research has shown that institutionalized drug users are systematically different from non-institutionalized users (Rittenhouse, 1978). Concern about the drug problem in the 1960's led to a proliferation of drug use surveys that have contributed to our knowledge of drug use patterns and characteristics of drug users. Rittenhouse (1978) cites studies (see Berg, 1970 and Glenn and Richards, 1974) showing virtually no drug use surveys of the general population prior to 1965, whereas one source lists 98 of these surveys conducted between 1971 and 1973. Unfortunately, most of these are not general population surveys and their generalizability is highly limited.

We not only have more surveys but surveys are also more extensive. Surveys attempt to determine more information on a greater number of psychoactive drugs, patterns of drug use including frequency, intensity, and drug substitutes, drug use histories, and, more recently, the consequences of use (Rittenhouse, 1978). Despite the contributions national and special population surveys have made to state of knowledge on drug use patterns, their usefulness in drug/crime research is minimal at best either due to the low incidence of drug use (specifically the opiates) and crime in the general population or the lack of attention given, by these surveys, to the criminal behavior of the respondents. For example, the national survey by O'Donnell et al., (1976) of young males (20 to 30 years old) found that abuse of illicit drugs is low. Other surveys have

produced similar results (Abelson, Fishburne, and Cisin, 1977). Other studies on selected populations such as Robin's (1973) research on military personnel in Vietnam and a survey of high school students by Johnston (1973) have also contributed to our knowledge about drug use patterns, but not necessarily our knowledge of drug/crime relationships due to the little attention paid to measuring and analyzing criminal behavior.

(2) Longitudinal Design. The ideal strategy (barring considerations of budget, time, staffing, and other such resources) for answering the basic causal and developmental questions about the relationships between criminal behavior and drug use is through a longitudinal (prospective) research design. The longitudinal design, while a superior approach for ferreting out information on developmental issues and temporal sequencing of behavioral patterns, is difficult to execute properly and is highly expensive. Typical problems encountered in such a design lie with maintaining the sample intact over time. Various forms of attrition may drop jeopardize the representativeness of the sample (for example, those that drop out may share special characteristics of interest to the research). Following a cohort or panel for a period of 10 years, for example, may also serve to sensitize the respondents to certain issues (such as drug use and criminal behavior) which in turn may result in altered behavior (that is, the respondents might have behaved differently had they not been included in the study--the sensitizing impact of social research has never been adequately measured but some believe it can have significant effects on respondents or study participants). These and many other problems with longitudinal designs have been discussed in greater detail in the edited work by Kandel (1978b).

Johnston et al. (1978) report a recent prospective longitudinal study, which unlike past studies, approaches the ideal for addressing the temporal sequencing patterns which are critical for understanding drug/crime relationships. Unfortunately, the study is limited by a low percentage of respondents who experimented with narcotic drugs. Johnston et al. conducted a nationwide longitudinal study of a panel of young men in high school. The final cross-time sample of 1,260 young men were interviewed at five points in time, the first being the beginning of

10th grade and the remaining four interviews being conducted over a period of eight years. Based on these data, the authors concluded about the relationships between delinquency and drug use: "By tracing the delinquency rates of the eventual drug-user groups back in time, we were able to show that the preponderance of the delinquency differences among the nonusers and various eventual drug-user groups existed before drug usage even began and thus could hardly be attributed to drug use" (Johnston et al., 1978:155).

The expense and difficulties in carrying out a prospective longitudinal study has led several researchers to seek alternative approaches. Nurco (1979) and Nurco and DuPont (1977) used a retrospective longitudinal design with a communitywide population of addicts in an attempt to determine changes in criminality and drug use over the course of their lives. Similarly, McGlothlin et al., (1978) interviewed 690 male admissions to the California Civil Addict Program employing a retrospective longitudinal design to determine whether crime covaries with drug use. The authors concluded, "with few exceptions, the percent of time involved in criminal behavior, the number of property crimes reported, and the total income from crime decreases in a consistent manner as a function of decreasing narcotic use" (McGlothlin et al., 1978:305). In addition to these studies, Petersilia et al., (1978) used a similar design in a study of 49 criminal careers of habitual felons.

(3) Drug Registers. Narcotics registers are systems for collecting information on opiate users from various agencies that are likely to come into contact with addicts. These agencies include law enforcement agencies, hospitals, drug treatment programs, private medical clinics, and other social and health programs. The information provided by these agencies usually includes a variety of demographic data about the addict such as name, address, age, ethnicity, birth date, occupation, amount and type of drugs used, and marital status (Amstel et al., 1971). Narcotics registers are maintained at the federal, state, and local levels.

One purpose of these registers is to identify variables that may be related to drug addiction. Another major purpose of registers is to monitor heroin use trends. However, there are several basic problems

with the use of narcotics registers. One is that registers draw their information from a known, "visible" population (Amsel et al., 1971). Although some investigators have maintained it is virtually impossible to avoid detection by the authorities for more than two years, and, therefore, registers are truly representative of the addict population (Winick, 1962), registers may still be inaccurate due to reporting problems. Some agencies may never report (Amsel et al., 1971) while others may misinterpret what and to whom they should report (Eldridge, 1967; Winick, 1965). Other non-law enforcement agencies may be reluctant to report users who come to their attention for fear the addict may be arrested (Winick, 1965). Additionally, it has been suggested by Amsel et al., (1971) that reported information may be misfiled, and therefore lost, by registry personnel.

Despite these problems, researchers have used drug registers in the past. Winick (1962, 1964) used the Federal Bureau of Narcotics (now the Drug Enforcement Administration) register to test the maturation hypothesis (see section IV on life cycles). Eckerman et al., (1971) used the same data source as one of the criteria to determine present drug use in a study of arrestees. Amsel et al., (1971) used the New York State Drug Registry as an evaluation tool for examining treatment effects. Following a group of 247 heroin addicts first admitted to Riverside Hospital in 1955 the authors attempted to determine the number of addicts that abstained from drugs. By 1967, 13 years later, only 65 members of the original cohort were listed by the registry. While 22 members of the original cohort were known to have died and were subsequently dropped from the registry, the whereabouts and information on present drug use of the other members of the original cohort remained unknown. While the authors speculate this may be due to maturing out of addiction, that it is just as likely to be the result of poor reporting is also suggested by the authors. Despite this, the authors conclude: "the Narcotics Register has been shown to be a useful tool for the follow-up of a group of addicts. Over 53 percent of the 247 patients studied were known to the registry" (Amsel et al., 1971: 238).

(4) Chemical Analysis of Urine Specimens. Several studies have utilized urine specimens to determine the presence of drugs

in individual subjects (Amsel, 1976; Ball, 1967; DeFleur et al., 1969; Eckerman et al., 1971; Richardson et al., 1978a among others). Urine samples are usually tested through a thin-layer chromatography process for the presence of five drug substances: morphine, cocaine, methadone, amphetamines, and barbiturates. Thin-layer chromatography is often used as the initial screen while both thin-layer and gas chromatography are used to confirm all positives with the exception of opiates. Opiates are usually confirmed by radio-immunoassay.

There are several problems with urinalysis procedures. The major problem is concerned with logistics - the gathering, the labeling, transporting, and analyzing urine specimens. While on-site laboratories minimize logistics problems, the cost is usually prohibitive. Using commercial laboratories for analysis has proved more accurate, but the problems of obtaining, storing, and transporting urine specimens makes routine analysis by drug treatment programs, correctional facilities, or researchers expensive and time consuming. Another problem with this approach is that all substances cannot be detected with equal ease (see Eckerman et al., 1971: Appendix B-12), thereby resulting in varying levels of confidence with which one can identify various drugs. Many drugs can be detected by urinalysis for only a brief period after their use.

3. Qualitative Studies

Information on drug addicts and their related behaviors can also be obtained from those methods which are classified under the rubric of qualitative studies; including research strategies such as participant observation, ethnography, intensive interviewing and field work. These methods allow "the researcher to 'get close to the data', thereby developing the analytical, conceptual, and categorical components of explanation from the data itself--rather than from the preconceived, rigidly structured, and highly quantified techniques that pigeonhole the empirical social world into the operational definitions that the researcher has constructed" (Filstead, 1971: 6).

Some researchers in the drug/crime area believe that conventional research techniques such as survey research and secondary data analysis have been unable to provide answers to many of the complex questions

surrounding the issue of drug use and criminal behavior. Furthermore, they believe qualitative methods, particularly ethnography--the direct observation of addict behavior in a natural setting--provides an enlightening alternative or at least, a supplement to the more traditional quantitative methods (Weppner, 1977).

The following points summarize some criticisms of qualitative methods: (1) the necessity of studying small groups of addicts due to time and financial constraints severely limits the generalizability of the research findings, (2) the introduction of researcher bias in perceiving and interpreting observations seems, on the surface, to be more problematic in qualitative research, (3) the insurance of the reliability of observations is more difficult in qualitative studies, and (4) the influence of the observer's presence on the research setting may disrupt the natural workings of the setting being observed. Qualitative researchers have adequate responses for most of these criticisms; however, is beyond the scope of this paper to contribute to the continuing debate between quantitative and qualitative researchers. Suffice it to say, qualitative research methods have contributed significantly to our understanding of the complex issues surrounding drug/crime relationships.

In a study of Chicago street addicts, Hughes et al., (1971) described a heroin copping community, outlining the social structure, user-dealer relationships, and roles of users, dealers and others in a natural setting. Sutter (1966) described what it is like to be a heroin addict, differentiating status and identifying roles among addicts while focusing on the "righteous dope fiend." In a classic study of heroin addicts in their urban environment, Preble and Casey (1969) focused on the stereotypic image of addicts in the popular and scientific literature. The widely accepted view of heroin addicts "that heroin use provides an escape from the worries and problems of life and has its greatest appeal for passive, dependent, generally inadequate persons" (Preble and Miller, 1977: 230) was not confirmed by Preble and Casey. In fact, it was found:

Their behavior is anything but an escape from life. They are actively engaged in meaningful activities and relationships seven days a week. The brief moments of euphoria after each administration of a small amount of heroin constitute a small fraction of their daily lives. The rest of the time they are aggressively pursuing a career that is exacting, challenging, adventurous, and rewarding. They are always on the move and must be alert, flexible,

and resourceful. The surest way to identify heroin users in a slum neighborhood is to observe the way people walk. The heroin user walks with a fast, purposeful stride, as if he is late for an important appointment--indeed he is. He is hustling (robbing or stealing), trying to sell stolen goods, avoiding the police, looking for a heroin dealer with a good bag (the street retail unit of heroin), coming back from copping (buying heroin), looking for a safe place to take the drug, or looking for someone who beat (cheated) him--among other things.

(Preble and Casey, 1969: 2)

In another study employing qualitative methods, Feldman (1977) provided the social history of a community of Italian-Americans who showed that progression from the use of one drug to another is a complex interaction between the availability of the drug and the status a particular drug has within the social structure. The status of the drug is determined by the legal proscription ascribed to the drug and the public response to its use. Other studies have led to more significant insights. Preble and Miller (1977) discovered addicts making use of free methadone, cheap wine, and welfare benefits to maintain their high while minimizing their "hustling" time. James, (1971, 1976, 1977) compared addicted and nonaddicted prostitutes in Seattle using qualitative methods including intensive interviewing and observation methods. Agar (1973) wrote a major book-length ethnography describing in detail the addict's day-to-day existence; including hustling, copping heroin, getting off, getting burned, and getting busted.

C. Sample Representativeness

Using unrepresentative samples in drug/crime research has been a major limitation on the generalizability of research findings to other populations. Representative samples or random samples are characteristically similar to the population from which the sample was drawn. Samples are considered representative if each member of the population has an equal chance of being selected into the sample (Babbie, 1973). The importance of using representative samples lies in the researcher's ability to generalize research findings from a small sample to a much larger population. There are, however, two basic problems in achieving representative samples. First, is the difficulty in clearly defining

the universe from which the sample will be drawn, and second, is manipulating the defined universe in such a way that a representative sample is achieved (Goode and Hatt, 1952). The difficulty in defining the universe from which a sample is to be drawn is particularly acute in drug/crime research. The sub rosa aspect of drug use precludes easy detection by authorities or researchers and, therefore, the universe of drug users may remain largely unknown. Clearly, then, if the universe is unknown it cannot be manipulated to achieve random samples.

Most of the past drug/crime research has not involved the use of random samples or even close approximations. A great deal of the drug/crime research to date has been conducted on captive populations; those populations or samples drawn from treatment or correctional facilities. These captive populations may represent the most dysfunctional of all drug users, those most likely to be detected by official agencies. The captive sample characteristics therefore probably do not correspond to the characteristics of the unknown population of drug users. The samples drawn from captive addict populations may be representative of addicts in specific treatment or correctional programs, but may not be characteristically similar to other undetected addicts or, for example, addicts from different regions of the country. Samples taken from these populations make wider generalization or application of research results in other settings problematic. How well these captive populations represent the total addict population is unknown.

One major problem with using captive populations, particularly jail or prison populations, is that the probability of arrest for these subjects may be substantially different than for other undetected drug users. Therefore, arrest histories of these unrepresentative subjects may significantly over or underestimate drug/crime relationships. For example, the crimes that addicts are most often associated with, crimes of robbery, burglary, larceny-theft, and motor vehicle theft, also have the lowest clearance rates of all index offenses (Federal Bureau of Investigations, 1977). Therefore, addicts may be disproportionately represented among prison populations due to the types of crimes they commit. Petersilia et al., (1978) in their research on the criminal careers of habitual felons report, however, that involvement with drugs

or alcohol does not "decisively affect the likelihood of arrest, conviction, and incarceration" (Petersilia et al., 1978: 85; for further discussion on the probability of arrest among addicts, see section V on economic issues). However, more research needs to be done to determine whether differential arrest probabilities exist and if so, how they affect our understanding of drug/crime relationships.

One study, conducted by Nurco and DuPont (1977), attempted to overcome the problem of representativeness; whereas most studies overlook the problem entirely. The authors used a sample of addicts identified by police in Baltimore over a 20-year period. Although this sample population may be more representative than populations taken from individual treatment programs or correctional facilities and is, in fact, called a community-wide sample, Nurco's sample is still drawn from a list of known narcotics users. Robins and Murphy (1967), in their study of 235 young Negro men, provided a representative sample of individuals from the community in which the sample was drawn. Using a retrospective longitudinal design, the authors selected a sample from elementary school records in St. Louis. Based on certain criteria of eligibility for inclusion into the sample, a total of 930 subjects were drawn. The sample was then stratified along several dimensions that were believed to be related to adult outcome. A total of 240 subjects were included in the final analysis. This final sample, although not necessarily representative of the St. Louis community, differs from other samples used in drug/crime research in that the subjects were not preselected for narcotics use.

Recently, Inciardi (1979) drew a sample of addicts from the "free community" in Miami. Employing a sociometrically-oriented model or "snowball technique," Inciardi interviewed 356 active addicts in the Miami community who were not affiliated with any treatment or jail facility. Data were gathered on addict's drug use patterns, criminal histories, drug use support patterns, and current criminal activity. This sample is certainly more representative than samples drawn from treatment or jail populations and is likely to increase our knowledge about the diversity among addicts.

D. Summary and Conclusion

Numerous data sources and research approaches have been employed in drug/crime research and each has its own particular set of problems. Self-reported measures were found to be reliable and valid measures under certain conditions, as are some official records. Surveys of the general population may be useful for estimating drug abuse trends, but due to the low incidence of drug use and criminal behavior among the general population, their usefulness in this research area has been minimal. Use of multiple data sources and methods, including qualitative research methods, seems to be the best way to overcome the deficiencies of each individual data source. The problem of sample representativeness may be the greatest obstacle to rigorous research in the drug/crime area. Greater use of control groups and longitudinal research on populations not preselected for drug use or criminal behavior may overcome some of these problems.

III. PATTERNS OF DRUG USE AND CRIMINAL BEHAVIOR

In order to better understand the etiology and process of addiction researchers have attempted to describe the demographic characteristics and the cultural milieu of addicts. By fully understanding who addicts are and where they are likely to come from, it is believed we can prevent future addictions by targeting preventive programs at high risk populations. Our current knowledge of addicts stems from information gained from those addicts admitted to treatment programs or among prison populations. How do we know how close these populations resemble the total nationwide addict population? The answer is we simply do not know. It is nearly impossible to estimate the number of addicts who go undetected and even more difficult to determine their characteristics. Furthermore, the medical and criminal justice data systems, from which our knowledge of addiction depends, have not systematically collected data on addicts who come under their scrutiny. Consequently, our knowledge of drug addicts, although improving in recent years, is dependent upon numerous fragmentary sources.

To further elaborate on what was stated above, the purpose of understanding the process of addiction, identifying who is likely to become addicted, and their subsequent behavioral patterns is that this information will contribute to more complete theories of both the causes and effects of addiction, thus improving policy decisions regarding drug abuse. Once theories are developed and confirmed by empirical investigation, more effective social policy regarding the prevention and the handling of addiction can be implemented. Effective policy designed to prevent drug addiction and its undesirable concomitants is dependent upon the identification of the correlates and the determinant factors in addiction. This does not presuppose addicts are a homogenous lot, but it does assume that there are similarities among addicts and common elements that lead to addiction onset. Increasing our knowledge about those similarities and common elements will lead to improvements in the effectiveness of policy and programmatic decisions.

The purpose of this section is to describe what we know about today's drug user, which in the literature largely focuses on heroin

addicts because researchers believe they do the greatest social damage. Within this cohort some of the following questions are raised. Who is likely to become addicted? Where are they likely to come from? Once addicted, what is the extent of addiction? What criminal behavior patterns emerge? These are the questions that must be answered in order to effectively guide future policy decisions. In the first section some basic characteristics of addicts are described including: where they are likely to reside, family backgrounds, education, personality, and race and ethnicity. Following this, the patterns of drug use and criminal behavior will be discussed. A final section will briefly discuss patterns of female drug use and criminality.

A. Addict Characteristics

1. Where are addicts likely to reside?

Proponents of an epidemiological theory of drug abuse view the use of heroin as a form of epidemic social pathology. The necessary conditions for the spread of pathology, in this case heroin addiction, include the existence of a high risk population and close proximity to the infectious agent, heroin (Schlenger and Greenberg, 1978). Following this line of reasoning, we can surmise, if the pathology spreads evenly throughout all strata of society we have no reason to suspect that other factors of social stratification are related to the spread of the pathology. If, on the other hand, the pathology does not spread evenly throughout all sectors of society, then we have reason to suspect other factors in accounting for the differential incidence of addiction (Chein et al., 1964). Therefore, the primary purpose in attempts to identify areas in which heroin addiction is likely to spread is to isolate those environmental factors that may be causally linked to addiction.

Numerous investigators have described the social milieu in which addicts reside. Nearly all studies found heroin addicts to be residents of areas where there are high rates of crime, impoverished families, and high concentrations of minorities, particularly blacks. Again, we must cautiously interpret these findings. These data are based on samples of addicts who have been identified by official agencies and, therefore, may not be representative of the actual addict population.

Probably the most comprehensive analysis of addicts and their demographic characteristics was conducted by Chein et al., (1964) on youths from three boroughs in New York City. The authors analyzed data on nearly 3,000 male drug users aged 16 to 20, identified through various agencies in New York City. Chein et al. found that 15 percent of the census tracts in these boroughs contained over 80 percent of the drug cases in the sample despite the fact that these tracts contained only 29 percent of the 16- to 20-year old boys in the total three borough population. Furthermore, Chein et al. found, "... areas of high incidence of drug use are characterized by the high incidence of impoverished families, great concentration of the most discriminated against and least urbanized ethnic groups, and high incidence of disrupted families and other forms of human misery" (Chein et al., 1964:10). The three variables accounting for most of the variance of addiction rates were the percentage of blacks, the percentage of low income housing units, and the percentage of males in "lower" occupations.

Other studies had similar findings. Using records of 833 persons classified as narcotic addicts by the Baltimore City Police Department, Nurco and Lerner (1972) compared rates of addiction by census tract to similar rates computed for financial dependency, adult arrests, and juvenile delinquency. The purpose was to determine whether narcotic addiction was related to other forms of social pathology. This ecological analysis revealed that narcotic addiction in Baltimore is more likely to be found in areas where there is extreme deprivation, crime, and juvenile delinquency. However, further analysis revealed that these three forms of social pathology were more highly correlated with each other than narcotic addiction. Nurco concluded addicts are not likely to be found in the same census tracts as persons associated with other pathologies, but the overlap of different forms of pathology in these neighborhoods is considerable.

Grouping a random sample of 1,500 addict-clients from the Washington, D.C. Narcotics Treatment Administration into census tracts, Brown et al., (1973) determined that addiction is accompanied by high rates of crime and social disorder. Despite this finding, the authors believe their results show heroin addiction is spreading well beyond the traditional

inner city boundaries. Interviewing an accidental sample of 225 inmates at the Washington, D.C. Jail, Kozel et al., (1972) found one of the differences between addicts and nonaddict inmates was that nonaddicts came from smaller cities.

Analysis of medical records of 3,301 addicts discharged from the U.S. Public Health Service Hospitals at Lexington, Kentucky and Fort Worth, Texas revealed two distinct patterns of opiate addiction (Ball, 1965). One pattern consisted of addicted minority metropolitan youth while the other pattern consisted primarily of middle-aged southern whites addicted to opiates other than heroin or synthetic analgesics.

Conclusion

Despite the findings by Ball and by Brown et al., revealing that addiction patterns emerge in non-urban areas, addiction is primarily an urban problem. As stated by Finestone in his study of "cats" in Chicago: "One of the distinctive properties of the distribution of drug use as a social problem, at least in Chicago, is its high degree of both spatial and racial concentration. In fact, it is a problem which in this city can be pinpointed with great accuracy as having its incidence preponderantly among the young male colored persons in comparatively few local community areas" (Finestone, 1957:3). Apparently, these findings can be generalized as well to other areas outside Chicago.

Up until this point we have only considered the regions in which there is a high incidence of drug use. However, within these regions, some individuals become involved in delinquent activities, including drug abuse, while others do not. The more micro-level factors will be examined and these may help explain why some individuals in comparable neighborhoods abuse drugs and others do not.

2. Family Background of Addicts

The family unit is the principal agent for transmitting social values and norms from generation to generation. All societies depend primarily on the family to provide the socialization of children so they become functioning and contributing adults of that society. Thus, the family, since it is the child's first primary group, lays the groundwork for the developing personality. The incipient personality is nurtured and supported by the parents who provide role models for the child. It

has long been believed by early social philosophers, as well as by present day social scientists, that disruptions in parent-child relationships, particularly in the child's formative years, will have an effect on the child's subsequent behavior.

This has led a number of researchers to try to uncover evidence of familial disruption or pathology as a contributing factor in the etiology of addiction. Most studies of this kind have focused on family size, evidence of disharmony between parents, criminal behavior among parents or siblings, psychological state of parents, and indications of other forms of pathology such as excessive use of drugs or alcohol by either or both parents. Most of these studies, however, have failed to use control groups so it cannot be determined to what extent addict families are unlike families of normal children. In addition, few studies describe other social networks that may serve as substitutes for the family. In an ethnographic work focusing on poor, urban, black families, Stack described the family as "the smallest, organized, durable network of kin and non-kin who interact daily, providing domestic needs of children and assuring their survival" (Stack, 1975:31). Merely providing data on the percentage of family break-ups or the size of the family may be meaningless without comparisons to control groups or by providing more evidence on possible family substitutes. In any case, a number of studies have addressed the issue of familial pathology in an attempt to determine the effect of the family on drug addiction.

Based on a retrospective survey of 67 London boys in a remand home, Noble (1970) was able to divide the boys into two categories, one being a soft user group (non-narcotic, N = 47) and the other, a hard user group (narcotic, N = 20). Based on reviews of past psychological, psychiatric, and teacher reports, the boys were rated on variables that were thought to be related to drug use. Variables included intelligence, personality, psychiatric morbidity, family stability, and so forth. In relation to family stability, which was determined by evidence of illegitimacy, parental separation, long standing marital disharmony, and poor family discipline, hard drug users had significantly greater evidence of disturbed family relationships than did soft users. Furthermore, 65 percent of the hard drug user's mothers were rated as having an abnormal

personality; 25 percent having had a previous mental illness; and 10 percent having attempted suicide. Of the hard group fathers, 75 percent were rated as having an abnormal personality; 20 percent having had a previous mental illness; and 15 percent having attempted suicide. Moreover, a higher proportion of hard group siblings had juvenile court convictions than did soft group siblings. Although comparisons were not made with the families of nondrug users, the families of hard drug users had a greater degree of instability than did families of soft drug users (Noble, 1970).

In a study designed to gain factual information on the social backgrounds of London drug addicts, Bean (1971) interviewed 100 consecutive drug offenders found guilty by two London courts. Forty-two came from broken homes, 40 had been runaways or had been rejected by parents, and another 25 left home after they had taken their first drug. Stimson (1973) studied 128 addicts from 11 London drug clinics and found 47 percent of his sample were separated from their parents prior to the age of 16. Chambers et al., (1968) found 67.5 percent of the 155 black addicts he studied who were admitted to the U.S. Public Health Hospital at Lexington in 1965, had experienced broken home situations. Vaillant (1966a) in his 12-year follow-up of addicts released from that same hospital found 52 percent came from broken homes. Smith et al., (1966) interviewed 100 other addicts admitted to Lexington and found that 41 percent came from broken homes.

In a study comparing 50 black addicts with 350 black nondrug users in the District of Columbia Reformatory, Julian Roebuck (1962) found family, school, and community backgrounds were more favorable for drug users than nondrug users. There were no comparisons made with nonaddict, nonoffenders to see whether the addict and the nonaddict offender groups diverged from the norm. Roebuck found that the single most important factor in the background of addicts was the tendency of addicts to be reared by dominant mothers who sheltered and overindulged them. Kozel et al., (1972) interviewed 225 inmates in the D.C. Jail to determine the differences between addicts and nonaddicts. The authors found nonaddicts tend to come from larger families and are more likely to attend religious services than are nonaddicts.

Friedman et al., (1973) analyzed data on 388 lower class court adjudicated boys and found drug users, compared to nonusers, were characterized by: a greater number of household moves, more frequent use of alcohol by fathers, more court appearances by fathers, and families who were rated as less cohesive prior to the age of six by the boys themselves.

Probably the most detailed study of addicts and their relationships with their families comes from Chein et al., (1964), a massive study of New York City youth addicts. In one phase of their research the investigators interviewed four groups of individuals. Group one was comprised of 59 institutionalized drug users who were not otherwise delinquent before they started using drugs (referred to as nondelinquent users). Group two included 41 institutionalized users who were otherwise delinquent prior to the onset of drug use (referred to as delinquent users). Group three included 50 institutionalized delinquents who were not heroin users (referred to as delinquent nonusers). And group four included 52 controls from comparable neighborhoods (referred to as nondelinquent nonusers). The authors concluded:

With respect to most of the factors that might be expected to help generate a family climate that would instill in the young respect for societal standards of behavior or that might be expected to have the opposite effect, the controls come out in the most advantaged position and the delinquents in the most disadvantaged position. In other words, most of these factors are, at best, relevant to deviancy in general or to delinquency in particular; they do not suggest any specific clues to factors in drug use. Contrary to our expectations, for instance, the experience of a relatively prolonged deprivation of contact with the father and the choice of the mother as the person whose opinion of oneself one values most are factors most closely associated with delinquency, rather than with drug use.

The one factor we have found to be distinctly related to drug use and apparently unrelated to delinquency per se is the experience of living with a relatively cohesive family. The users have, on the average, been more deprived, in this respect, than the nonusers. We have interpreted the value of living with a cohesive family as a contribution to a sense of mutuality.

(Chein et al., 1964:124-125)

In another phase of this extensive study, Chein and associates attempted to determine how early familial experiences are related to later psychological maladjustment. Indepth interviews were conducted with 30

addict families and 29 control families. Based on these interviews, the authors concluded:

In almost all the addict families (97 percent), there was a disturbed relationship between the parents, as evidenced by separation, divorce, open hostility, or lack of warmth and mutual interest. In these conditions, the mother usually became the most important parent figure in the life of the youngster. But, whatever the vicissitudes of the relationship between the boy and his mother, one theme was almost invariably the same--the absence of a warm relationship with a father figure with whom the boy could identify.

The families of the addicts did not provide a setting which would facilitate the acceptance of discipline or the development of personal behavioral controls. The standards of conduct offered by the parents were usually vague or inconsistent; the addicts had characteristically (more than 70 percent) been overindulged, overfrustrated, or experienced vacillation between overindulgence and overfrustration. For about one-fourth of the addicts, though for none of the controls, there was evidence of the absence of a clear pattern of parental roles in the formulation or execution of disciplinary policy.

(Chein et al., 1964:273-274)

3. Education

A few studies show the educational level of addicts is not markedly different from the population from which they came. DeFleur et al., (1969) in their follow-up of Puerto Rican addicts treated at the Lexington Public Health Hospital found that the educational level of these subjects was higher than that of the relevant base population of Puerto Rico. The median educational level for these subjects was 9.5 years compared to 8.3 years for San Juan males in 1960. The authors also stated that these subjects appeared to be average or above average in intelligence. Pescor's earlier study of the Lexington population revealed the educational level of early admissions was not much different from the rest of the population except for the high proportion of graduates from professional schools* (Clausen, 1957).

However, most studies of addict populations have generally found that addicts have poor levels of educational attainment. In an examination

* This reflects the number of patients admitted to Lexington from the medical field. For a discussion of physician addicts, see Winick (1961).

of 699 identified drug users in the Maryland Department of Corrections, Nurco and Lerner (1972) found the educational attainment quite low. Over 85 percent of the subjects had not completed high school while nearly 40 percent had not even attended high school. Only 3 percent of the subjects had any college. Of the drug users, however, users of opiates other than heroin and users of synthetic opiates were among the higher educated. Nearly one-quarter of these subjects completed high school compared to only 12 percent of the heroin users and 14 percent of the users of other drugs.

In an examination of black opiate addiction, Chambers et al., (1968) found 30.8 percent of the 806 blacks admitted to the U.S. Public Health Hospitals in Lexington and Fort Worth had a high school education or more; 53.5 percent had started but failed to complete high school; and 8.4 percent had some formal education but had not entered high school. Glaser et al., (1971) compared 37 pairs of addicts and non-addict siblings to determine differences in the two groups. Regarding education, it was found that 22 addicts left school at a earlier age than their non-addicted siblings, nine left the same year, and in only six of the pairs did the non-addict sibling leave school first. Twenty-three of the non-addicts graduated from high school while only 12 of the addicts did.

In their study of 235 black men selected from a normal population, Robins and Murphy (1967) found nearly twice as many high school dropouts as high school graduates used drugs. Both heroin use and heroin addiction were found to be higher among the high school dropouts. In a study of 100 consecutive drug offenders convicted in two London Courts, Bean (1971) found educational levels among these subjects to be low. At the time of their arrest, four were still attending school and four others were attending college. Of the 80 subjects educated in England only 10 had left school with any national qualification. However, one-quarter of the 80 subjects educated in Great Britain received some form of higher education. It was found that most had left within three months; however, two were university graduates.

4. Personality Studies

There are several reasons why studies of addict personalities have not been easy to interpret. First, it is difficult to determine whether the present personality was the cause or the result of addiction. Second, few studies have employed the use of blind interviews to assure that diagnoses are not influenced by presupposed knowledge of addict personalities. Third, the lack of control groups in this research has not allowed researchers to distinguish differences between users and nonusers that are similar in age, sex, socioeconomic class, and so forth. Fourth, there is apparently an underlying assumption among researchers and practitioners that there is, in fact, an addict personality. "No one picture can be drawn which is typical of all of the persons who make up the addict population," says Lawrence Kolb. Furthermore, "just as symptoms vary greatly with the type and amount of drug that is taken, so do the personalities of addicts" (Kolb, 1962:5). Kolb goes on to say addict personalities generally fall within three categories, although few addicts fit any clear-cut category: (1) character disorders, (2) inadequate personalities, and (3) psychoneuroses.

Probably the most carefully controlled study of addict personalities was conducted by Gerard and Kornetsky (1955). A sample of hospitalized adolescent opiate users was compared with a control group of similar addicts with respect to age, ethnic background, and exposure to illicit drugs. Blind interviews were utilized so none of the diagnosticians were aware of the drug status of the subjects. Addicts were found to have more severe personality disturbances than the control group subjects. None of the addict groups were considered "normal" although nearly one-half of the controls were. Furthermore, Gerard and Kornetsky classified almost one-half of the addicts and one-fifth of the controls as suffering from overt or incipient schizophrenia; two-fifths of the addict group and none of the controls were classified as having "delinquent-dominated character disorders," but one-fourth of the controls were suffering from "serious neurotic disturbances" (Clausen, 1957; Gerard and Kornetsky, 1955). Not all of the tests, however, clearly differentiated the two groups. "Test responses which are generally regarded as evidences of pathology were given by a higher proportion of the addicts than of the

controls, but for any given index, a substantial minority of the control subjects gave such responses and a substantial minority of the addicts gave what would be considered acceptable or normal responses" (Clausen, 1957:44).

Gerald and Kornetsky concluded:

These findings support the hypothesis that youths living in urban areas where illicit opiate use is widespread do not become addicted independently of psychiatric pathology. The data also indicate that the converse need not be true; as youths who exhibit personality malfunction similar to that of the addicts need not become addicted. As the writers pointed out previously, becoming an opiate addict is a highly individualized process which can be understood only in the context of the individual's personality structure, past life situations and present interactions with the significant figures of his familial and peer groups.

(Gerard and Kornetsky, 1955:484)

Foggitt et al., (1976) conducted a study of 74 delinquents in an English borstal. The boys were classified as either non-drug users, casual drug users, or heavy drug users. It was found that the casual drug users were the most free from psychiatric disturbances, whereas the heavy drug users were more disturbed than the non-drug users. Gossop and Kristjansson (1977) investigated the personality differences of convicted and nonconvicted male drug-dependent patients based on Eysenck's three-factor Personality Questionnaire. Those subjects convicted of non-drug related offenses scored higher on the extroversion scale than subjects not convicted of these offenses. Rosenberg (1969) compared 50 addicts and 50 alcoholics and found addicts to be less anxious, but more neurotic, intelligent, and passive than the alcoholic group. Pescor's early work at Lexington classified patients as having "psychopathic diathesis," "inebriate personality," or "psychopathic personality" (Clausen, 1957).

Kandel (1978a), in her review of the longitudinal research on drug abuse, identified personality variables that have been found to be predictive of marijuana use revolved around the following themes: rebelliousness, stress on independence, low sense of psychological well-being, low self-esteem, and low academic aspirations and motivation.

In sum, to quote Blum (1967c:52):

One can say that among persons currently identified and studied as opiate dependent in the United States today that the probability of their having personality disorder is high, that their personality defects seem linked to their becoming dependent on drugs - and to their later inabilities to becoming abstinent - and that personality plays a causal role in association with other important factors. Personality disorder, no more than any other single factor could, does not "cause" addiction. For most identified addicts it is part of the constellation of misery which pervades the socioeconomic deprivation in the big cities.

5. Race or Ethnicity

The overwhelming majority of studies on drug use and crime, particularly heroin use and crime, have found that a greater proportion of subjects are minority group members. In an analysis of drug users in prison populations, Nurco and Lerner (1972) found most subjects were black; Petersen and Stern (1974) found 41 percent of 291 addicts admitted to the Federal Bureau of Prisons were black; and Robinson (1961) interviewed female addicts in the Illinois State Reformatory for Women and found over 89 percent were black. Analyzing admission records to Lexington Public Health Hospital between 1935 and 1966, Chambers and Moffett (1970) report the large increases in drug addiction among blacks occurred simultaneously with the large influx of blacks to urban centers during this period. Negro admissions to Lexington during this period grew from 10 percent in 1935 to 31 percent in 1966.

Additionally, Chambers et al., (1970a) found Mexican-American admissions for drug addiction to the Public Health Hospitals at Lexington and Fort Worth doubled between 1961 and 1967. Ball and Lau (1970) found Chinese-Americans to be substantially overrepresented in admissions to Lexington Hospital.

While black addicts appear to be the most overrepresented minority in identified addict populations, other minority groups are substantially overrepresented as well. More research must be conducted to determine whether this is a result of bias selection of law enforcement agencies and treatment programs or whether, in fact, drug addiction among minorities is as disproportional as these figures indicate.

Summary and Conclusion

In general, addicts tend to reside in urban centers, particularly in the northeast. These urban areas are characterized by poverty, high

rates of delinquency, and high concentration of minority groups. In addition, addict families are typically disturbed in some way; there are high rates of family disharmony along with a lack of warmth and discipline, however, few comparisons with controls were made. Furthermore, the educational attainment of addicts is quite low. Few ever complete high school and many never attend. Finally, many studies have diagnosed addicts as psychologically disturbed. These studies, however, are difficult to interpret for many reasons. Few control groups were used in these studies and most studies did not use blind interviews to assure that diagnosticians would not know they were interviewing addicts.

Since addicts are reported to come from poor socioeconomic backgrounds, with little education, and an unhealthy environment in which to develop, many researchers see these traits as predispositional factors in addiction. Others maintain there are significant numbers of individuals who grow up under similar conditions and do not become involved with drugs or crime so that there must be additional factors that account for addiction. Several of these additional factors are discussed in section IV on life cycle issues. Following, now, is a discussion of drug use and criminal behavior patterns.

B. Patterns of Drug Use

Once an individual tries heroin, what are the subsequent patterns of drug use that emerge? In other words, what are the stages of addiction? What types of drug users are there? Do drug users become exclusive users of one drug or are there multiple patterns of use? In this section the patterns and the extent of drug use among addicts will be reviewed. This description of drug use patterns will be enhanced by the use of various typologies based on the empirical observations of several researchers.

In order to more clearly understand the stages and patterns of drug use, investigators have often employed the use of typologies. McKinney defines a constructed type as a "purposive, planned selection, abstraction, combination and (sometimes) accentuation of a set of criteria with empirical referents that serves as a basis for comparison of empirical cases" (McKinney, 1966:203). In selecting criteria for typological construction, primary consideration should be given to the purpose of

the typology. Pragmatic application of drug/crime types will facilitate our understanding of drug/crime relationships.

Indeed, the purpose of the typology must be the primary consideration in the formulation of that typology. Past research on the drug/crime issue has included a variety of typologies used for different purposes. There have been typologies developed on the stages of addiction (Chambers, 1974d; Chein et al., 1964), categories of criminal offenses (Shellow, 1976), and types of drug users (Ball, 1965; Inciardi, 1974b; and Stimson, 1973). A review of several typologies describing the stages of addiction and the types of drug users follows.

1. Stages of Addiction

Most individuals who use heroin have previously used other drugs.* Once individuals try heroin most continue to use the drug, but the extent to which they use it varies considerably. Contrary to what most people think, many heroin users are only occasional users, referred to as "chippers." They tend to use heroin on weekends, at parties, or special occasions and are able to regulate their intake of heroin much the same way social drinkers can regulate their intake of alcohol (Silberman, 1978; see also section V on economic issues for further discussion).

Evidence of this self-regulation comes from several sources, but one particularly revealing study was conducted by Robins on men stationed in Vietnam between 1970 and 1972. Robins found 40 percent of these men had used either opium or heroin and, of these, 14 to 20 percent were considered addicted. Faced with the prospect of being released from the Army with less than honorable discharges, 93 percent of the addicts and nearly all of the "chippers" were able to stop using heroin for the rest of their military careers. In a follow-up a year after their discharge, virtually none of the addicted addicts became readdicted, yet many continued using heroin occasionally. Robins concludes, "the ability of men formerly dependent on narcotics to use them occasionally without readdiction challenges the common view of narcotic addiction as a chronic and intractable position" (see Silberman, 1978:179). This ability to control the habit may be, in part, a function of the increasing prevalence of polydrug use. Heroin users may be able to minimize the effect of

* A more detailed review on initial drug use can be found in section IV on Life Cycles.

heroin withdrawal through the use of other drugs. The extent of polydrug use among addicts will be discussed below in greater detail.

For other addicts, their intake of heroin may be substantially more controlled by physiological and psychological cravings for the drug, but their habits are far from being inelastic (see section V on economic issues). Although these addicts may not be the craving, maniacal figures we have come to know through the popular literature they are in the strict sense, addicted. Schur offers a definition of addiction, which includes the criteria of addiction accepted by most researchers:

Drug addiction is a state of periodic or chronic intoxication produced by the repeated consumption of a drug (natural or synthetic). Its characteristics include: (1) an overpowering desire or need (compulsion) to continue taking the drug and to obtain it by any means; (2) a tendency to increase the dose; (3) a psychic (psychological) and generally a physical dependence on the effects of the drug; (4) an effect detrimental to the individual and to society.

(Schur, 1965: 122)

Similarly, Maurer and Vogel (1967) describe five essential characteristics of addiction as: (1) loss of control, (2) injury to self or others, (3) tolerance, (4) physical dependence, and (5) habituation or emotional dependence. Many individuals who try heroin, however, may never reach this stage of dependence.

Several researchers have attempted to describe the stages of addiction. Chein et al., (1964) describe four stages of use: experimentation, occasional use, regular use, and habitual use. An individual drug user may go through all four stages; others may experiment and go no further; some may use heroin occasionally but don't become regular users; some become regular users but are capable of breaking the habit; and still others become habitual users.

Individuals are most susceptible to experimentation with drugs between the ages of 16 and 17 according to Chein and his associates. At this age, the individual is aware of what heroin is and may have even seen others use it. He is drawn into experimentation in a casual way, often through subtle pressure from peers. Chein et al. distinguish occasional use from regular use on several points. Occasional users do not have to establish contact with the network of drug users and dealers in order to procure the drug. Occasional users use heroin only in a supportive way, and are not dependent. The drug is used for pleasure

with few negative side effects. Regular users are of two basic types, according to the authors. One type of regular user is known to voluntarily abstain from using heroin for relatively long periods of time, but is extremely vulnerable to relapsing under conditions of stress. The other type of regular user, far more common, is never truly addicted, but may go through periods of more severe physiological and psychological dependence and may even experience withdrawal, often considered the acid test of addiction status. Habitual users, like regular users, use heroin daily but are more psychologically and physiologically dependent upon the drug. They experience greater changes in mood attributed to the drug; they are more likely to alter their daily activities, moving toward less responsibility and more leisure activities; and they are also likely to become increasingly engaged in friendships with other addicts. In fact, Becker (1963) reports that a drug addict told him the moment she realized she was "hooked" was when she realized she no longer had any friends who were not addicts.

Chambers (1974d) delineates two major types of drug users in a similar typology to the one offered by Chein and associates. The first type, the self-medicators, use legally manufactured and distributed prescription drugs to relieve boredom, frustration, or stress. The second type, the pleasure-seekers, may also use legally manufactured and distributed prescription drugs in addition to illicit drugs. But the pleasure-seeking user is more likely to become socially and personally dysfunctional than the self-medicator. Chambers describes four types of pleasure-seeking users who can be seen as, in addition to being types, the equivalent of Chein et al.'s stages. The first type is the drug experimenter. For these individuals, drugs do not play a significant role in their lives, and in order for them to use drugs, the psychological and social setting must be conducive for use. The second type of drug user, the social/recreational user, differs from the experimenter primarily in the frequency and continuity of consumption. This user is always willing to use drugs and only needs an appropriate place to do so. Like the experimenter, however, drugs do not play a major role in his life. The third type, the committed user, spends considerable time and energy on drug-related activity. Although he is still capable of functioning in society, this user's proficiency in other areas of life has declined

markedly as increased drug use becomes a significant part of his life. The fourth type of user, the dysfunctional user, no longer has any control over his drug taking behavior. This individual has become personally and socially dysfunctional and devotes nearly all of his time to drug seeking and drug taking. In addition, this user is likely to have been identified by one or more community social agencies.

2. Drug-Using Types

Based on interviews with male heroin addicts at several London clinics, Stimson (1973) described four addict types: stable addicts, loners, two-worlders, and junkies. Stable addicts tend to be employed; have little involvement with the drug subculture; have not engaged in significant criminal activity; do not use black market heroin; and have a conventional appearance. Loners are addicts who are not employed but rely on others such as, relatives, friends, or welfare for support rather than engaging in criminal activity. Despite the fact that loners use black market heroin, they are as isolated from the drug subculture as they are from the more conventional world. Two-worlders are seemingly capable of interacting in both the conventional world and the drug culture. They are usually employed, but also have extensive criminal records. They have contact with the drug underworld, rely heavily on black market heroin, but, nonetheless, maintain a conventional appearance. Junkies, the least common group in this sample, but as Stimson pointed out, probably the most common in the U.S. (due to differences in drug policies between the two countries), are unemployed, heavily involved in criminality, primarily use black market heroin, and are significantly involved with other addicts.

In an analysis of the medical records of over 3,000 patients at the U.S. Public Health Hospitals at Lexington, Kentucky and Fort Worth, Texas, Ball (1965) delineated two patterns of drug addicts. One pattern includes mostly metropolitan minority youths addicted to heroin. The other pattern consists of southern, middle-aged whites addicted to opiates other than heroin or synthetic analgesics.

Inciardi (1974b) suggested five patterns of drug use: (1) narcotics addiction among professional criminals, which has been on the decline since the 1940's, (2) medically induced addiction and addiction among

health professionals, (3) addiction among delinquent youth, particularly gang members, (4) poly-drug use, and (5) heroin/street addiction. Patterns 4 and 5 appear to be the most relevant to this discussion or, at least, are given the most attention in the literature.

The poly-drug user has come about largely as a result of the increases in legally manufactured psychotropic drugs and the increases in availability of illicit hallucinogenic drugs. Compared to the typical heroin/street addict, the poly-drug user began taking drugs at an earlier age, has used a wider variety of drugs, usually has become criminally involved earlier in life, and has engaged in more diverse criminal behavior.

A study conducted by Inciardi and Chambers (1972) of 38 males and 52 females certified to the New York State Narcotic Addiction Control Commission for treatment, provides empirical evidence of the extent of criminality and drug use among polydrug users. These subjects were young, mostly members of minority groups, and evidenced considerable drug and criminal involvement. Among the 38 males, some 6,766 offenses were self-reported and 60 percent of the subjects had been involved in violent personal crimes. Of the 52 females, some 6,415 offenses were self-reported and almost one-half had been involved in violent personal crimes. In addition, initial drug experience for these subjects occurred at the median age of 13 for males and 15 for females with subsequent involvement with many drugs including the simultaneous use of at least nine varieties of narcotic and non-narcotic drugs. Evidence from other studies further confirms the diversity of drug use among a substantial number of addicts.

Based on interviews and urinalysis results of 150 new admissions of the Washington, D.C. jail, Bass et al., (1971, 1972) identified 133 (68 percent) heroin using subjects. Of these, 47 percent were daily users, referred to as addicts, and 21 percent were using heroin but not daily, referred to as "chippers." Over one-half of the addict offenders and two-thirds of the chippers reported still using marijuana at least once a week. Indeed, 27 percent of the addicts and 23 percent of the chippers had smoked a joint within 48 hours of their arrest. About two-thirds of the addicts and one-half of the chippers were found to use cocaine at least once a week. In fact, 32 percent of the addicts had used it within 48 hours of their arrest and nearly one-fourth had used it within 24 hours of arrest. Other drugs were used as well.

Amphetamines were used by 23 percent of the addicts and 16 percent of the chippers. Of the addicts using amphetamines, 40 percent were using them on a daily basis. Some of the heroin-using subjects were also found to use barbiturates, hallucinogens, and illegal methadone although to a lesser extent. In addition, 24 percent of the addicts and 46 percent of the chippers consumed alcohol with other drugs within 24 hours of arrest.

In a study of drug offenders convicted by two London courts, Bean (1971) interviewed 100 convicted offenders to ascertain background information, drug use, and criminal history. Regarding drugs taken, subjects were asked whether they had taken any of seven different types of drugs. One-half of the subjects had taken five or more and one-quarter had taken all seven. Only five subjects reported taking only one drug and another five reported taking none. In addition, 99 percent had taken alcohol. To examine the current use of these drugs, subjects were asked how many drugs they had taken within 36 hours of arrest. Twenty subjects admitted taking four or more, 41 took three or more, and 65 consumed two or more within 36 hours of their arrest. Bean also found that those subjects that had consumed all seven drugs at some time in their lives tended to be the same individuals that consumed the largest number of drugs within 36 hours of arrest. Bean concludes: "This would suggest that current drug taking is related to the total experience of drugs. By this I mean that these drug takers do not necessarily move from one drug to another and give up the old one when a new drug is tried. Rather they tend to retain the use of old drugs, and so the larger the number of drugs that have been tried, the larger the number retained" (Bean, 1971:81).

In a study of 235 black men in St. Louis, Robins and Murphy (1967) found few "specialists" among their sample. Nearly one-half (109) of the subjects had tried at least one of the four drugs inquired about (marijuana, amphetamines, barbiturates, and heroin). Of these, nearly all reported using marijuana; 13 percent had tried heroin, 10 percent reported becoming addicted; 17 percent had taken amphetamines and; 14 percent had taken barbiturates.

Of those using marijuana, one-half reported using no other drug. Moving from the soft to the harder drugs, fewer subjects used one drug exclusively. Only four percent of those that had taken heroin, five percent of those that had taken amphetamines and six percent of those that had taken barbiturates had not used another drug. Nearly two-thirds of the amphetamine and barbiturate users had used either three or four types of drugs. Four-fifths of those that had tried heroin had also tried three or four other drugs, two-thirds having used amphetamines and over one-half used barbiturates. On the other hand, one-half of the amphetamine and barbiturate users had tried heroin as well.

The heroin/street addiction pattern, the fifth pattern offered by Inciardi, represents the stereotypic addict. This individual typically began experimenting with marijuana in adolescence either to conform to peer pressure, for thrills or excitement, or to strike back at opposing authority structures. For these addicts, heroin is usually purchased with illegally obtained funds, as the addicts are often heavily involved in income-generating crimes.

Within the street addict subculture, as it has been referred to by some, other types and roles of addicts emerge. Finestone (1957) provides an excellent description of "cats" in Chicago. Based on interviews with 50 black addicts between 1951 and 1953, Finestone describes the "cat" and provides a basis for a theory of why young Negro men are attracted to this lifestyle. Armed with a gift of charm and an ingratiating manner, each "cat" sees himself as an operator with his own hustle in order to avoid the conventional work which he disdains. For the cat, the sole purpose in life is to experience the "kick." That is, "...any act tabooed by 'squares' that heightens and intensifies the present moment of experience and differentiates it as much as possible from the humdrum routine of daily life" (Finestone, 1969:5). We can see how heroin appears to be so attractive to the cat, for heroin is the ultimate kick. As Finestone put it "no substance was more profoundly tabooed by conventional middle-class society. Regular heroin use provides a sense of maximal social differentiation from the 'square'" (Finestone, 1969:6). Furthermore, the two main themes of the cat, the "hustle" and the "kick", can be seen as the "...direct antithesis to two of the central values of the dominant

culture, the 'hustle' versus the paramount importance of the occupation for the male in our society, and the 'kick' versus the importance of regulating conduct in terms of its future consequences" (Finestone, 1969:6).

Sutter (1966), in another classic article, describes the "righteous dope fiend" and delineates addict subculture types. Sutter claims researchers have distorted the reality of the street scene and addict subculture by viewing these addicts as a relatively homogenous group of frustrated lower class youth who have adopted a retreatist role to their double failure. Sutter points out that this view does not represent the "players" who see heroin as a deliberate achievement and as a symbol of luxury. Nor does this view reflect the "righteous dope fiend," one who has mastered the act of hustling and whose world is "fused with the same success symbols prevalent in conventional society." Within this subculture, Sutter identified a prestige hierarchy of drug use types with dope fiends at the top, followed by crystal freaks, weedheads, pill freaks, acid freaks, then garbage junkies, and winos.

In a year-long study of a heroin copping community or heroin distribution site, Hughes et al., (1971) observed over 100 different users and dealers who they were able to classify into seven functional roles. The big dealers were the local wholesalers who supplied the street and part-time dealers with drugs; street dealers who sold directly to users; part-time dealers who supplemented their income by hustling; bag followers who attached themselves to dealers to support their habits; touts who carried out liaisons between dealers and customers, steering customers to certain dealers, and purchasing drugs for those who have no contacts; hustlers who engaged in various illegal activities other than dealing to support their habits; and, workers who maintained at least a part-time job in addition to hustling. Preble and Casey (1969) provide a similar hierarchy of roles in addition to providing more information on dealers above the street level.

Conclusion

We could offer no better conclusion than the one presented by Inciardi:

The five general patterns of narcotic addiction briefly described would suggest that little homogeneity has existed with respect to the users of addicting drugs, and discussions of personal and social characteristics and behavioral orientations cannot be undertaken within a single, or even double frame of reference since a number of these patterns have existed simultaneously. Furthermore, members of all the pattern groups have appeared in institutional populations, and some degree of criminal behavior has been manifested by each.

This would also suggest, then, that the previous attempts to examine the relationship between addiction and crime, having neglected to hold patterns of addiction constant, represented little more than meaningless comparisons structured around what was consequently a worthless dichotomy.

(Inciardi, 1974b: 254)

C. Criminal Behavior Patterns of Drug Users

Research on the criminal behavior patterns of the drug-using populations (specifically addict populations) has been extensive. This research has attempted to determine whether addict crime is specialized or comprised of certain activities that can be considered patterns rather than random criminal acts. Once an individual begins to use drugs regularly, what types of crime is he likely to engage in? Are there differential crime patterns depending on the predominant drug of choice? These are the questions that will be reviewed in this section. First, several points about this research will be discussed and, again, several caveats will be reviewed.

Some researchers have attempted to determine whether there is a relationship between various types of crime and the pharmacological effect of a specific drug. Most research, however, is not quite so ambitious. Research on criminal behavior patterns usually shows only an association between the use of a particular type of drug and criminal offense, for it is an extremely difficult position to defend that a specific drug compelled certain behavior. As stated by Blum, the predictability of behavior after consumption of drugs is difficult because "...the drugs' specific effects are compounded by other strong influences

such as the motive and personality of the user, the behavior of others, the kind of situation, the expectations the user has of the drug and so forth. It is also the case that drug effects vary with the dosage, manner and frequency of administration, presence of potentiating or antagonizing agents, concurrent health and nutritional status, and so on" (Blum, 1969: 1466-67). Therefore, all of the research reviewed in this section merely describes associations; there are no causal inferences intended.

Another point that is central to the drug/crime issue is the question of temporal sequencing. Is criminality an antecedent to drug addiction? Or is criminality a result of addiction? What is the impact of drug use on an individual's criminal behavior patterns? Although the answers to these questions are concerned with criminal behavior patterns both before and after drug onset, it was decided to delay answering these questions so they can be more appropriately addressed in section IV on the life cycles issue.

The third point we would like to make concerns several methodological issues. First, most of the research discussed below, with the exception of the ethnographic research, utilizes populations of drug users that have been identified by the authorities and who may not portray a representative picture of addict criminality. In fact, these addicts may be the most dysfunctional of all addicts (Greenberg and Adler, 1974; Rittenhouse, 1978). Second, most of these studies do not account for polydrug use, thereby making it difficult to determine whether crimes are related to an identified drug, some other unidentified drug, or a combination of several drugs. Third, many studies fail to distinguish between drug law violations and non-drug violations when analyzing addict crime. By definition, addicts are criminals. Since the possession of narcotics is a crime, and addicts must possess narcotics in order to be addicts, they are, ipso facto, criminals. Most people are not concerned with possession or even the sale of drugs, but are primarily concerned with the impact of drug addiction on crimes of robbery, burglary, larceny, assault, and other street crimes (Gould, 1974).

Researchers have employed a variety of methodological approaches in addressing the issue of criminal behavior patterns of addicts. The methodological approaches include: (1) interviews and analysis of urine specimens among arrestees (Bass et al., 1971, 1972; Eckerman et al., 1971; and Kozel and DuPont, 1977), (2) interviews or surveys of prison or other criminal justice agency populations (Barton, 1976; Bean, 1971; Friedman et al., 1973; Nurco and Lerner, 1972; Petersilia et al., 1978; Peterson and Stern, 1974; Plair and Jackson, 1970; Robinson, 1961; Roebuck, 1962; Stanton, 1969, 1970; and Tinklenberg et al., 1974), (3) interviews with patients in treatment (Chambers et al., 1970a, 1970b, 1970c, 1970d; DeFleur et al., 1969; Ellinwood et al., 1966; Gordon, 1973; Lukoff, 1974; O'Donnell, 1966, 1969a; Rosenthal et al., 1973; Smith et al., 1966; Stephens and Ellis, 1975; Stephens and McBride, 1976; and Voss and Stephens, 1973), (4) attempts to associate aggregate crime rates with the market value of heroin^{*} (Brown and Silverman, 1974; Silverman and Spruill, 1977; and Silverman et al., 1975), and (5) ethnographic methods (Agar, 1973; Hughes et al., 1971; James, 1971, 1976; and Preble and Casey, 1969).

This review of criminal behavior patterns is organized by the crime patterns associated with a particular drug. Obviously, most of the literature has been concerned with narcotics and crime and, therefore, deserves the most attention. Following this review is a brief review of the literature on crime and other classes of drugs.

1. Narcotics and Crime

Most of the research on drugs and crime has focused on the relationship between heroin and crime. It is believed the need to obtain funds to purchase heroin, by necessity, forces addicts to commit income-generating crimes. As stated by Lindesmith, "while it is true that some addicts are criminals prior to addiction, many, perhaps most of them, turn to crime only when the high price of the drug and the danger and inconvenience of maintaining a supply force them to do so. The vast proportion of all the crimes committed by addicts are either violations of the drug laws or theft in order to obtain money to buy the drug" (Lindesmith, 1968:221).

* To be discussed in section V, Economic Issues.

The large number of studies focusing on the criminal behavior of addicts has required us to organize this section by the type of study conducted. We will first discuss studies of arrestees, then surveys of prison populations, followed by studies of treatment populations, and finally, qualitative studies.

a. Studies of Arrestees. Studies of arrestees have usually involved interviews, record checks, and urinalysis of a sample of arrestees. In this way, the percentage of crimes of a particular type, for instance burglary, can be associated with a particular drug, for example heroin, found through urinalysis. In addition, arrest records of drug users and nondrug users are often compared to determine differential crime patterns that might be attributed to drug usage.

Probably the most comprehensive study of drug usage among a population of arrestees was conducted by Eckerman et al., (1971). The study analyzed data collected on approximately 1,800 arrestees from six metropolitan areas in the United States. The purpose of the study was to determine the relationship, if any, between different classes of drugs and crimes the individual was presently arrested for. The study utilized personal interviews, urinalysis, Uniform Crime Report data, and other information sources for validation. Based on urinalysis and personal interviews, arrestees were classified into two broad categories of "Drug User" and "Nondrug User." Further analyses were conducted to determine the current status of a user and they were subsequently classified as "Current User," "Past User," or "Ever Used." This classification was conducted for 11 different drug substances including marihuana, hashish, heroin, morphine, cocaine, psychedelics, amphetamines, barbiturates, tranquilizers, methadone, and other substances such as ether or glue.

Among those 461 subjects classified as "Current Heroin Users," three property crimes: robbery, burglary, and larceny-theft accounted for 61.3 percent of their arrests while criminal homicide, forcible rape, and aggravated assault accounted for only 6.1 percent of their arrests. A similar pattern appears for "Past Users" with 54.7 percent of their arrests being for property offenses and 9.9 percent for violent personal offenses. Comparatively speaking, "Nondrug User" arrest charges were also distributed toward property offenses but the distinction was

not so great (35.7 percent property and 23.6 percent serious). Similar findings were found for morphine, cocaine, and methadone users. In their conclusion, the authors concurred with the conclusion reached by Preble and Casey (1969), it, "...is not that heroin users avoid crimes of violence as compared to non-addicts, but that they avoid crimes not involving financial gain..." (Preble and Casey (1969:18) as cited in Eckerman et al., 1971:388).

Another study of arrestees was conducted by Kozel and DuPont in Washington, D.C. Since 1971, the D.C. Superior Court, in cooperation with the D.C. Narcotics Treatment Administration, has maintained a urinalysis testing unit to monitor drug abuse patterns among arrestees. Kozel and DuPont (1977) analyzed urinalysis and interview data on 44,223 consecutive admissions to the Superior Court from 1971 to 1975. Those individuals who were processed through the Testing Unit represent virtually all of the arrestees in the Capital District.*

Urinalysis data were available for 84.5 percent (N=37,379) of the subjects analyzed. Based on the urinalysis data, the investigators found 24.4 percent, or over 9,000 admissions, had drug positive urines. Of these, 65.6 percent tested positive for heroin, 27.8 percent tested positive for illegal methadone, and 7 percent for legal methadone.** In order to analyze the relationships between drug positives and arrests, offenses were separated into the FBI Uniform Crime Report Part I and Part II offense classifications. Part I offenses were further divided into violent crimes (murder, rape, aggravated assault), property crimes (robbery, burglary, and larceny/theft), and motor vehicle theft. Part II offenses were divided into crimes of acquisition, narcotics violations, and other crimes. Approximately 42 percent of the arrests for the

* Actually, these individuals represent 90 percent of the total lock-up admissions. Excluded from testing are those individuals charged with traffic law violations and persons over age 35 who were not charged with narcotic law violations.

** Throughout this report, mention will be made of the Kozel and DuPont study. Careful readers will note that the total percentage of drug types found among these arrestees is greater than 100 percent. This figure is obtained because of the presence of multiple drugs.

heroin-using arrestees were income-generating crimes while only 7 percent were charged with violent crimes. Compared to drug-negative admissions, drug-positive (all-drugs) admissions committed fewer violent crimes. Among heroin-using arrestees, as stated, only 7 percent were charged with violent offenses compared to 17 percent of the nonusers charged with violent offenses. The authors are quick to point out, however, that while those who tested positive for heroin are more likely to be arrested for income-generating crimes or narcotics law violations, 9.7 percent of all homicides, 7.6 percent of aggravated assaults and 15 percent of all robberies were committed by persons who tested positive for heroin. Thus, the authors conclude, "... while identified drug users do, in fact, commit violent crimes, they commit them at a significantly lower frequency than those not identified as drug users at admission to the lock-up" (Kozel and DuPont, 1977:18).

In another study of arrestees at the D.C. Jail, Bass et al., (1971) analyzed arrest charges for 150 subjects. Interviews were conducted with all subjects but urine samples were obtained from only 133 subjects. Based on these data, 47 percent were considered addicted to heroin (daily use) and 21 percent were considered to be "chippers" (non-daily use). Based on their present charges, addicts and chippers were charged with more crimes against property than nonaddict offenders. Heroin-using offenders were charged more frequently with violations of narcotics laws, possession of implements of a crime, and larceny. Offenders not using heroin were more frequently charged with robbery, assault, and violations of the National Firearms Act.

b. Interviews or Surveys of Prison Population. In 1974, LEAA was assisted by the U.S. Bureau of the Census in a survey of 10,400 inmates of state correctional facilities (Barton, 1976). Thirty percent of these subjects had a history of heroin use. Compared to inmates with no history of heroin use, 25 percent of the inmates with a history of heroin use were presently incarcerated for robbery, whereas, only 20 percent of the inmates with no heroin history were presently incarcerated for robbery. Only 14 percent of the inmates with a history of heroin were presently convicted of a violent crime compared to 35 percent of the other inmates. Nineteen percent of inmates with a heroin history

were presently convicted of burglary as compared to 17 percent without such a history.

Only 14 percent of the inmates surveyed were using heroin daily at the time they committed the offense they are presently incarcerated for. For those using heroin daily at the time of present offense, robbery was the crime committed by most (18 percent).

c. Interviews with Patients in Treatment. Amsel et al., (1971) analyzed arrest rates for a sample of 247 young adults admitted for treatment in New York City in 1955. In a followup some 13 years later, using the New York State Narcotics Registry, 68 percent had been arrested from crimes against property and 32 percent for crimes against persons. In addition, 85 percent of the females had been arrested for prostitution.

In a sample of narcotics addicts from the U.S. Public Health Hospital at Lexington, Kentucky, Vaillant (1966) reported 96 percent of the sample was involved in delinquent activity. Twenty-four percent of the population had been involved in crimes against the person, whereas 68 percent had convictions for crime against property.

Plair and Jackson (1970) interviewed 50 addicts (25 adult and 25 youth) at halfway houses operated by the Narcotics Treatment Administration (NTA) in Washington, D.C. These addicts were referred to NTA by various criminal justice agencies.

The investigators were able to tabulate the number of self-reported crimes, which exceed the number of officially recorded offenses. The 25 adults committed over 6,000 deviant acts and were apprehended for only 207 (3.4 percent). The 25 youths committed over 3,200 deviant acts and were apprehended for only 121 (3.7 percent). Of the crimes where there was an adult arrest, 44.9 percent of the total arrests were for non-person-property offenses, 23.7 percent for person-property related offenses, and 17.4 percent were for morals charges. For juveniles, the dispersion of crimes was not so widespread. Over half (52.1 percent) the offenses which resulted in arrest were for nonperson-property offenses while 21.5 percent of arrests were for person-property offenses. In general, the authors conclude, "theft of goods for resale on the illegal market was, by far, the offense most often committed by both youth and

adults. The youth, however, appeared more prone to armed robbery, purse-snatching, and yoke robberies" (manhandling the victim to steal from him) (Plair and Jackson, 1970:93).

d. Qualitative Studies. In their ethnographic study of street addicts, Preble and Casey describe the addict as one continuously engaged in criminal activities in an active way, as a "quest for a meaningful life" (1969:3). As stated by the authors, "he is hustling (robbing or stealing), trying to sell stolen goods, avoiding the police, looking for a heroin dealer with a good bag (the street retail unit of heroin), coming back from copping (buying heroin), looking for a safe place to take the drug, or looking for someone who beat (cheated) him - among other things" (1969:2). The addict, usually a minority person, unskilled and uneducated by conventional standards, must engage in criminal activity to finance his habit. Based on data from informants during this study, Preble and Casey found the principal criminal occupations for addicts are burglary (22.7 percent), flat-footed hustling (con games, pickpocketing, and so forth) (12.2 percent), shoplifting (12.1 percent), and robbery (9 percent). Preble and Casey note that addicts tend to be involved in crimes that are reflective of their skill, personalities, and experience. They point out, however, that, "one of the myths derived from the passivity stereotype of the heroin user is that the heroin user avoids crimes of violence, such as robbery, which involves personal confrontation. This no longer seems to be the case" (Preble and Casey, 1969:17). Indeed, the addict may, in fact, find greater advantage to crimes against the person than property crimes. "The main advantage of crimes against the person," state Preble and Casey, "is that the yield is usually money, which does not have to be sold at a discount, as does stolen property. It is easily concealed and can be exchanged directly for heroin" (Preble and Casey, 1969:18).

Summary

Based on a selective review of the research on the criminal behavior patterns of addicts, using a wide variety of research methods and sample populations, it is difficult to avoid concluding that addicts engage in substantial amounts of income-generating crimes. This is true when analyzing the charges against drug-using arrestees, convictions of

addicts in prison, arrest records of treatment populations, or the observations of street addicts. It should be clear, however, that although addicts commit fewer violent crimes than nonaddict offenders, they are involved in, and will commit, violent offenses. Some researchers have also noted that contemporary addicts are much more likely to commit crimes of violence than are addicts of previous periods (Chambers, 1974c; Stephens and Ellis, 1975). In addition, burglary, a crime often committed by addicts, often involves substantial risks of violence if the addict-burglar is confronted by the victim. So, although there is some basis for the image of the stereotypic, passive addict we should not lose sight of the fact that they will resort to violence if there is an opportunity for financial gain. A brief review of the relationship between other drugs and crime will follow.

2. Alcohol and Crime

While alcohol is typically excluded from the category "drugs" in an examination of the relationship between drugs and crime, there is a substantial literature on alcohol and crime and a growing renewed concern with the subject. Tinklenberg (1973b:249) cautions us that generalization made from available studies are "limited because of the large number of important non-pharmacological variables involved in both the drinking situations and crime process." In spite of this restriction, considerable evidence exists showing the presence of alcohol at the scene of a substantial percentage of violent crimes. For example, Wolfgang's (1958) study of criminal homicide in Philadelphia reported that 60 percent of the offenders were drinking prior to committing homicide and the alcohol related homicides were typically the most violent. In a replication of Wolfgang's study of Philadelphia homicides, Voss and Hepburn (1968) analyzed homicides in Chicago and found alcohol was involved in 53 percent of the 370 cases examined. Bloch and Geis (1970) note throughout their book the relationship of alcohol to such crimes as aggravated assault, homicides, property offenses, sexual offenses, and bad check writing.

Thus far, much of the research on the alcohol and crime relationships has suffered from the lack of control groups. That is, offenders who have been found to be drinking at the time of the offense are usually

presented as evidence for the alcohol-crime link, yet we do not know what percentage of the population was similarly drinking but did not commit crimes. Despite these uncertainties, the research findings to date clearly indicate that alcohol increases the probability of violent crime in some individuals (Blum, 1969; Tinklenberg, 1973b).

3. Amphetamines and Crime

The evidence linking the use of amphetamines with criminal behavior has been contradictory largely because of the diverse populations who use the drug. Greenberg's review of the literature on amphetamine abuse and crime (1976) found two major populations of amphetamine users who may become criminally involved. One group of users has had substantial criminal involvement prior to amphetamine use. Another group consists of mostly white, middle-class college students. The diversity in these user groups accounts for some of the discrepancies in the research findings regarding criminality of these users.

Greenberg (1976) stated that the paucity of data does not permit any definitive statements about to the types of crime amphetamine users are most likely to commit. However, Eckerman et al., (1971) found that "amphetamine users were more likely than any other group--including nondrug users--to be arrested for criminal homicide and forcible rape." Yet, Eckerman et al. caution readers from making too much of these findings since too few amphetamine users were detected in their study of arrestees to make any definitive statements about its relationship to crime. Furthermore, Tinklenberg (1973b:261) cites several clinical reports "strongly suggest that assaultive behavior can directly result from the pharmacological properties of the amphetamines, particularly when they are used repetitively in high doses." It appears, then, for certain groups of amphetamine users the probability of committing violent criminal acts may be increased.

4. Barbiturates and Crime

In his review of the literature on drugs and violence Blum (1969) found that barbiturates and tranquilizers inhibit violent behavior. Other studies cited by Blum show that the use of barbiturates often led to a reduction of anxiety, hostility, and aggressiveness. Blum did say, however, that some individuals may respond to barbiturates with agitation

and aggression, but in general there is little evidence linking barbiturate use to crimes of violence. In a more recent review of the literature, Tinklenberg (1973b) cites several studies since Blum's report linking barbiturates to assaultive behavior. In fact, Tinklenberg's own study of youthful California offenders found the use of barbiturates prior to an offense "was clearly associated with criminal behavior, especially assaultive behavior" (Tinklenberg, 1973b:257).

Despite the fact that only a few studies assess barbiturate use and crime, Tinklenberg (1973b:254) states, a "striking similarity exists between the behavioral effects of the barbiturates and alcohol." He further states that there is an increasing amount of data linking the use of barbiturates with criminal activity, particularly crimes of assault, and property crimes.

5. Hallucinogens and Crime

With the exception of several case studies, the available evidence suggests that the use of psychedelic drugs may actually reduce criminal propensities rather than enhance them (Tinklenberg, 1973b).

6. Marijuana and Crime

"While opium can be a blessing or a curse, depending on its use, marihuana is only and always a scourge which undermines its victims and degrades them mentally, morally, and physically" (Anslinger and Thompkins, 1953:20-21).

"A small dose taken by one subject may bring about intense intoxication, raving fits, criminal assaults" (Anslinger and Thompkins, 1953: 21).

In spite of the Anslinger polemic, there is little evidence showing a relationship between marijuana use and criminal activity. Tinklenberg concluded, "some subgroups of marijuana users do commit crimes against property, but nonpharmacological variables are probably more important influences on such behavior than drug effects per se." Tinklenberg, consistent with the conclusion reached by Blum (1969), stated further, "the available data on physiological and psychological effects of marijuana strongly suggests marijuana does not usually induce violence, aggressive or sexually aggressive behavior" (1973b: 254). Additionally, based on a household survey, Goode concludes "...almost without qualification, that marijuana use does not cause criminal behavior" (1972:453).

7. Cocaine and Crime

There is a paucity of data relating cocaine use to crime. However, recent figures show more and more young people have tried cocaine than in the past and a relationship between cocaine and crime may yet be established.*

8. Other Psychoactive Substances

Psychoactive substances not covered in the above discussion, such as glues and gasoline, are used so infrequently that the associations between these substances and crime have been found only in rare circumstances and therefore cannot be established with any certainty (Tinklenberg, 1973b).

9. Poly Drug Use

Few studies have been conducted analyzing the combinations of drugs used let alone the relationships between poly-drug use and criminal behavior. In their study of arrestees, Eckerman et al. (1971), analyzed interview and urinalysis data to determine the combinations in which drugs were most often used. The most frequent combinations found were heroin and methadone and heroin and barbiturates. The authors were unable to establish relationships between poly-drug use and crime, but called for more research on the issue. Inciardi (1974b), however, reports that poly-drug users, compared to street addicts, began taking drugs at an earlier age, have used a wider variety of drugs, usually have become criminally involved earlier in life, and have engaged in more diverse criminal behavior (see section III, part B).

D. Research on Women Addicts

The most striking difference between addiction among men and women is the numbers. Known male addicts outnumber known female addicts five to one. This was not always the case. During the period from 1850 to 1921 (the latter date being the time when the effects of the Harrison Act had been established) female drug addicts outnumbered males two to one. How much this change is related to the change in the legal status of opiates is not known. There is some belief that women tend to be more law abiding. It also appears that the law enforcement and criminal

* A recent survey in New York State found 14.5 percent of the seventh to twelfth graders surveyed experimenting with cocaine as opposed to 2.7 percent who have tried heroin (Churcher, 1978).

justice systems treat women differently (Cuskey et al., 1972). Not much research has addressed the change in the prevalence of opiate use among women. Until the 1960's and 1970's there has been very little in the literature which compares men and women drug addicts. Pescor (1944) did a comparative statistical study of the clinical records of men and women addicts at the U.S. Public Health Service Hospital at Lexington, Kentucky. However, this study did little more than describe the statistically typical male and female addict. Only recently have any researchers become involved in examining the patterns and trends which describe today's women addicts who, on the whole, are quite different from their pre-World War I counterparts.

1. Female Addict Characteristics

a. Where are women addicts likely to reside? Women addicts, like men, are much more likely to come from urban areas rather than small towns. During the last two decades just over 80 percent of women addicts came from urban or metropolitan areas (Ellinwood et al., 1966; Petersen and Stern, 1974). This is in marked contrast to the pre-World War I female addict who was likely to have come from a nonurban area, usually the South. Today, however, only 17 percent of female addicts are from the South. Those from the South and the Southwest are not like the stereotypical "street heroin addict" of the large metropolitan areas in other parts of the country. Very few black women addicts are from the South, while in other areas of the country both blacks and whites are represented. These southern women, primarily white, probably started using drugs at a later age and generally use prescription narcotics acquired legally or semi-legally. They are more likely to support themselves by legal means and many are likely to be employed. Some of these women are health professionals or wives of health professionals (Chambers et al., 1970d; Cuskey et al., 1972). This is not the picture of the typical urban female addict who is most likely to come from the North Central states. Most of the following description is about women from the latter group.

b. Family Background of Women Addicts. The family history of female addicts is best summed up by Cuskey et al., (1972:25), "There is

a great deal of evidence that female addicts, like males, come from 'malignant familial environments'." Pescor gives the following descriptive for the familial situation of the statistically typical female drug addict representative of the first 100 women admitted to the U.S. Public Health Service Hospital in Lexington:

Her family history would be positive for alcoholism. Her parents, like herself as an adult, would be in marginal economic circumstances. The chances are that the continuity of her early home life would be disrupted by the death of one or both parents, or by the separation of her parents. She would be the oldest of four children and would show normal familial attachments. As a child she would make a satisfactory social adjustment; but as an adult she would not, neither before nor after addiction.

(Pescor, 1944:773)

The familial situation for women addicts does not appear to have changed significantly since Pescor's work. Chein et al., (1964) say that like the male addicts, the families of the females were of types which are "productive of serious difficulties in living." They point to discordant relationships between parents. Ellinwood et al., studied 81 male and 30 female patients at Lexington during 1964-65 and noted that while the family backgrounds of the men and women addicts were basically similar, some differences appear.

More women had professional fathers, but also, paradoxically, more criminal and sporadically employed fathers. ...Mothers of the women were noted to be frequently antisocial, criminal and alcoholic. Women's parents infrequently had psychiatric histories, but siblings, especially brothers, had histories of psychiatric treatment. Mothers, rather than siblings, of males addicts tended to have positive psychiatric histories. The brothers of males were more frequently criminal and alcoholic, while sisters of females were more often criminal and addicted.

(Ellinwood et al., 1966:36)

This study also found that one-fourth of all fathers were alcoholics.

It is not uncommon to find women addicts coming from broken homes. Ellinwood et al. note this pattern for 40 percent of their addict sample, both male and female. They add, however, that "in the case of women there was an earlier separation of parents, both from each other and from the child" (1966:36). Chambers et al., (1970c) studied 168 women in treatment at Lexington during 1965. Their study examined race as an

independent variable. They found that 55 percent of the female addicts were reared in homes which were broken prior to age 16, and this was far more likely among black women. The blacks in their sample were much more likely to have mothers who worked outside the home. Yet the authors note that regardless of the intactness of the family, black mothers more likely worked outside the home. d'Orban's (1970) study of 66 female heroin addicts in a London prison showed an even greater increase of broken homes. In that sample 63 percent came from a home which was broken before age 15.

Although there is not much in the literature about marriage and divorce among women addicts, Cuskey et al. note that both are increasing and that addicts "tend to marry addicted men, or at least men with severe problems" (1972:30).

c. Education and Occupation. Regarding education, both the studies by Ellinwood et al., (1966) and Chambers et al., (1970d) found that over half of their sample were high school drop-outs. Although there has been little research on the intelligence of female addicts, it is noted that:

Some views of the personalities of addicts conflict. Most agree, however, that the majority of addicts are of average intelligence, and many are higher (Cuskey et al., 1972:23)

Women addicts are not likely to hold legal jobs. The large majority are either financially dependent (on family or welfare programs) or are engaged in illegal activities. Whereas white addicts are more likely to be in a financially dependent position, black addicts are more likely to be engaged in illegal activities for primary support (Chambers et al., 1970d). When these women are employed in legal, more conventional occupations, they are employed for shorter and less frequent periods than are the men (Cuskey et al., 1972 and Ellinwood et al., 1966).

2. Drug Use

a. Initiation to Drug Use. While there is some variation in the literature regarding the onset of first narcotic use, most studies that address this issue found the age of onset to be between the late teens and early twenties. However, since some studies only examined

onset of any drug use and others specified narcotic use it is difficult to make comparative statements. The study by Ellinwood et al., (1966) found that the most frequent age range for the first experimentation with any drugs was 16 to 20 (for both men and women). The average age of that patient sample was 31. While the authors found that these men and women stated they began to use drugs at about the same age, they note that women became addicted more quickly after starting. About two-thirds of both sexes used "subcultural motivations" for starting drugs, with women most often citing "curiosity" and men citing, "kicks, pleasure."

In the study by Chambers et al., (1970d) where two-thirds of the women were white, the mean age of onset of narcotic use for both races was 25.9 years with the blacks tending to initiate drug use at an earlier age (21.3) than whites (27.4). The whites most frequently used a medical or quasi-medical rationale to explain their first use of narcotics; the black's most prevalent onset situation involved peers within a social context (Chambers et al., 1970d:263-264).

Petersen and Stern's (1974) study of 291 male and female patients from the U.S. Bureau of Prisons addict population found the average age of onset for narcotic use to be 20 (mean sample age = 28). There was practically no difference between the men (20.2) and women (19.4) of age of onset.

A study of 268 female offenders conducted by James et al., (1979) with a mean age of 25 (adult segment of sample) shows a mean of 19 for the first narcotic use and a mean of 16 for the first use of any drug. The sample in this study, however, was not entirely of addicts.

There are two studies from New York whose median sample ages and age of onset were both somewhat younger. Inciardi and Chambers (1972) studied 90 male and female patients in a New York State treatment facility. Their purpose was to uncover unreported criminal involvement. The median sample age in that study was 18.5 and the median age of onset of the patient's initial drug experience was 13 for the males and 15 for the females. In a study of 20 women patients (median age = 18.5) in treatment in a New York City hospital Chein et al., (1964) found the median age of onset for drugs to be 16 (ranging from 14 to 19) with a majority using heroin.

One study whose findings seem markedly different from the others was conducted by Robinson (1961) on 56 female addict offenders in an Illinois State Reformatory. In that study there was a disproportionately large number of blacks (89 percent) in the study sample for that state. Their average age was 27 and, yet, the average age of onset for narcotics use was 25 with less than 2 percent under 18 at onset.

On the whole, Cuskey et al., (1972) say, there is evidence to indicate that female addicts are getting slightly younger. In addition they note that the black women addicts have consistently been younger than whites from the same populations. Other studies show that the number of minorities is increasing.

Whereas there is a common stereotype showing that a woman is introduced to narcotics by someone older, probably a man, there is little evidence to support this. Apparently, most women are initiated into narcotic use by a friend their own age; and the women explain their use as "curiosity" or "for kicks" (Chambers et al., 1970d; Chein et al., 1964). In this respect, the post World War I female addict has become more like her male counterpart. The earlier female addict was more likely to have become involved in narcotics for the relief of pain (Pescor, 1944), whereas the current female addict is likely to begin use out of curiosity or for kicks (Ellinwood et al., 1966).

b. Drug Use Patterns. Not surprisingly heroin is the preferred drug among women as it is for men (Ellinwood et al., 1966; Chambers et al., 1970d; and Inciardi and Chambers, 1972). There are some subgroups of women addicts, as noted earlier, who use prescription narcotics (Chambers et al., 1970d). The literature on women heroin addicts does not make it clear to what extent these women are polydrug users. Both studies by Ellinwood et al., (1966) and Petersen and Stern (1974) indicate that women are less likely than men to have experimented with drugs other than opiates. Yet this is contradicted by the Chambers et al., (1970d) study of women in treatment, which shows that two-thirds of these patients used sedative-hypnotics, usually barbiturates, in addition to opiates. In addition, marijuana was often reported as being used in conjunction with and/or preceding the use of narcotics. Studies vary as to whether almost half (49 percent) of the subjects reported marijuana

use or most (95 percent) reported marijuana use (Petersen and Stern, 1974; Inciardi and Chambers, 1972; and Chambers et al., 1970d).

Petersen and Stern (1974) report the average length of narcotic use is similar for men and women (a mean of 7.0 and 6.2 years respectively). This is not unlike the finding by Chambers et al., (1970d), which was that the average duration of drug use among the women in their treatment sample was nine years. They also found that the majority (60 percent) had previously received formal treatment or been in detoxification programs (including jail). In addition, these patients were more likely to be volunteers, with whites volunteering for treatment significantly more than blacks. Ellinwood et al., (1966) found that while men tended to have short abstinences (one year or less), women more often had either no abstinences from drugs or, when they did, they were usually longer abstinences than the men experienced. The literature does not address the issue of women as occasional users. It is possible that such women are not likely to be in most study populations.

3. Criminal Behavior Patterns

There has been far less research on the relationship between drug use and crime (other than prostitution) for the female population than for males. Yet several aspects of women's involvement in crime and the criminal justice system have been established. Women addicts are less likely to be arrested than men; they are convicted and incarcerated less often and for shorter periods; and they commit fewer violent crimes (Ellinwood et al., 1966; Chambers et al., 1970d; Inciardi and Chambers, 1972; Cuskey et al., 1972; and File et al., 1974). Interestingly, the rate of increase of crimes committed in the past 12 years has been twice as fast for women as for men; and is even greater for female juveniles (James et al., 1979). Research on female drug use and criminality varies depending on the sample population. Some studies use patients in treatment who are not necessarily criminals, others draw from an offender or prison population. It is difficult, therefore, to make general statements regarding the type of crime a female addict is most likely to engage in for support.

In spite of the difficulty in making generalizations about the female addict, the most common means of support for the woman addict

appears to be prostitution and/or drug sales. Several studies show that about 40 percent of the women addicts rely on prostitution as their main support (Ellinwood et al., 1966; Chambers et al., 1970d; File et al., 1974; and Winick, 1971). It should be noted that while Chambers et al., (1970d) report 47 percent of their sample were prostitutes, this refers to those with "any history of prostitution"; 79 percent of these addicts used prostitution as a primary means of support. Drug sales appear to be another common means of support for the addict, but reports vary as to the percentage of addicts who rely on this means.

Inciardi and Chamber's (1972) paper highlights the difference between arrests versus unreported criminal involvement among addicts. They found that nearly two-thirds of their addict sample had no arrest record. Using both arrest records and self-reports, their research shows shoplifting, prostitution, burglary, and forgery to be the most frequent offenses among female addicts. However, this study did not break down the category of drug law violations to show the extent of drug sales among these addicts. There is some evidence that prostitutes known to law enforcers are often arrested for drug violations and not prostitution (Weissman et al., 1974). This possibility of bias in enforcement obviously clouds the issue of criminal support systems when studies are based on arrest records.

There are recent studies using typologies that have focused on patterns of criminal activity. This approach leads to the conclusion that there are several identifiable hustling patterns among female addicts and not progressive stages through which a woman is apt to pass. The study by File et al., (1974) uses the four-fold typology of (1) Prostitute/ Criminal, (2) Prostitute, (3) Criminal, and (4) "Bag Follower" (not arrested for either prostitution or serious crimes). They found the largest group to be the Criminals who "support their habits at least in part through crimes against property and less frequently against persons but do not engage in prostitution" (File et al., 1974:187). The smallest group was the Prostitutes. While they found that the arrested prostitutes were far more likely to be drug addicts than nonprostitutes (40 percent versus 15 percent), only 7 percent of those who were using narcotics were Prostitutes (and not arrested for serious crimes). Yet

since this study did not account for undetected crimes it would be misleading to make conclusions about support systems when it is generally acknowledged that many crimes go undetected.

Probably the most illuminating study in this area was done by James et al., (1976 and 1979) and examines both addict support systems and nonaddict support systems, using an offender population of 268 women. In their view, there is not sufficient evidence to associate specific drug categories to specific types of crime. Instead, they maintain, "the main determinants in choice of crime for these subjects were skill and opportunity" (James et al., 1979:216). According to another study by James (1976) entitled "Prostitution and Addiction," there is no conclusive evidence to show that either prostitution or addiction is likely to occur first. Rather, each is a separate style of life with its own subcultural norms; a woman may enter either area for different reasons. James (1976:616) states that "the addict in need of economic support will quickly turn to prostitution as the most available source of fast money." She further notes that prostitutes, especially older ones, are not likely to become addicts. They consider themselves "professionals" and look down on addicts.

In the study by James et al., (1979) the statement is made, "whichever the choice of support [drug sales or prostitution], the criminally involved female addict appears to be more successful than her male counterpart" (James et al., 1979:217). This study used the following four-fold typology: (1) Addict, (2) Addict-prostitute, (3) Prostitute, and (4) Female Offender. In regard to importance of various activities in their illegal support systems, they found the following applies to their adult sample:

Predictably, prostitutes and addict-prostitutes depended primarily on prostitution. Nonprostitute addicts depended heavily on drug sales as their major illegal support, the next most important sources being shoplifting and larceny. Female offenders used a wide range of sources of illegal support including drug sales, shoplifting and forgery.

(James et al., 1979:223)

By comparing juvenile and adult samples they conclude that a women's juvenile drug and criminal experience do not account for the type of drug use, support system or lifestyle engaged in. Moreover, they find, "the type of crime committed seems to be determined more by opportunity and skill than by the specific drug used" (1979:227). In addition, the speed of cash return is seen as crucial, which explains the popularity of drug sales and prostitution followed by shoplifting and larceny. James et al., conclude that women, like men involved in criminal activities, use a particular support system and continue to use it whether or not drug use is involved:

Like male offenders, female offenders gravitate to those activities which are easily available, provide a satisfactory return, are within their skills and opportunities, and carry the lowest risk of arrest. Drug use becomes involved in their life-style and is supported by it; however, drug use does not dictate specific criminal activities beyond the obvious need for a reliable cash income.

(James et al., 1979:229)

This brings up the issue of causality between criminal behavior and drug use. Although there is not a great deal in the literature on women's addiction, which addresses this subject, there does not seem to be any evidence that addiction causes involvement in criminal behavior, beyond the need for money to purchase drugs (Robinson, 1961; d'Orban, 1970; James et al., 1979). A more detailed discussion of the issue of causality follows in section IV on life cycles.

IV. LIFE CYCLES

Life cycle issues are concerned with the changes in an individual's behavior patterns over time. The age of initial drug use and the process of drug use onset, the relationship between drug use and criminality, periods of remission and relapse, and the process of maturing out of addiction and crime are all discussed here. The concept of career is useful for analyzing criminal behavior and drug use patterns over time. Career refers to the transition of an individual worker from one position to another within an occupational framework. Closely allied to the concept of career is the notion of "career contingencies." Career contingencies refer to those structured or personal factors upon which "mobility from one position to another depends" (Becker, 1963:24). Clearly, since the stages of addiction and the factors which affect an individual's movement from one stage to the next are of interest, the concept of career can be used. Within the total universe of drug users a number of different career patterns can emerge, several of which have already been identified (see section III on patterns of drug use and criminal behavior).

Before the life cycles of most addicts are described the reader must again be cautioned. Using aggregate statistics to describe a process that changes over time may tend to distort what actually takes place. The reviewer must constantly be aware of the many factors at work at each stage of an addict's career, for they cannot all be discussed here. At each stage, interactions with other addicts, relatives, friends, criminal justice agencies, welfare, and so forth, all have an important effect on the direction of that addict's career. Furthermore, changes in the availability of drugs and hustling opportunities are also likely to affect career paths. These factors all effect addicts differently. What is presented here is what tends to happen to most addicts in the process of their careers. But addicts, like any other group with common characteristics (use of drugs) should not be viewed as a homogeneous group that follow the same career paths. There are many divergencies in these career lines that may not be apparent in much of the research presented here.

Analyzing the careers of addicts basically involves a discussion of four major issues. The first major issue concerns the sequential relationship between drug use and crime. Is criminality an antecedent to drug addiction? Or is criminality a result of addiction? Or are there common "causes" that tend to generate both criminal behavior and drug use? The issue of causality will be included in this discussion. The second major issue that will be addressed in this section is the process by which an individual becomes a drug user. How does one become a drug user? What is the likely age of onset? This discussion includes a brief summary of drug escalation theories. The third issue to be covered in this section is concerned with the covariation of drug use and criminal behavior over time. What is the impact of drug use on an individual's criminal behavior? The fourth and final issue that will be covered involves the issues of remission, relapse, and maturation. Do individuals enter periods of remission? For what reasons? Why do they relapse? Do individuals "mature out" of addiction? The discussion now turns to the temporal relationship between drug use and crime.

A. Temporal Sequencing of Drug Use and Crime

Much of the debate over the relationships between drug use and criminality has concerned the temporal sequence between the two. Underlying this concern has been the issue of causality. Three basic questions concerning causality can be drawn from this debate:

- (1) To what extent, and under what conditions, does drug use contribute to or "cause" criminal behavior?
- (2) To what extent, and under what conditions, does criminal behavior contribute to or "cause" drug use?
- (3) Are there common "causes" which tend to generate both criminal behavior and drug use?

The notion of cause has been troublesome for crime/drug researchers and policymakers in the past, hence the use of quotation marks around the word. Philosophically and scientifically there is general agreement (but not total agreement) that one cannot show an empirical, material,

or ontological relationship between a cause and an effect. "One reason why it is impossible to make an air-tight case for an ontological causal relationship is that the possibility of a third factor always exists, and that possibility cannot be dismissed logically" (Simon, 1978:475). However, policymakers do not hew to such rigorous scientific and philosophical standards. They use the term loosely and in the way that the general public would commonly use and understand the term. Policymakers want to know what "causes" what, in order to make decisions about policy strategies that will most effectively impact on the problem they are concerned with. The translation of conservative and cautious scientific findings into public policy and action programs has been, for the most part, a perilous journey for scientific data (from the perspective of the scientist) and often a disappointment for the policymaker.

Proving causality is not an easy matter, according to Simon and there are several considerations that must be met before causality can be inferred:

First, it is an association that is strong enough so that the observer believes it to have a predictive (explanatory) power great enough to be scientifically useful or interesting.

Second, the side conditions must be sufficiently few and sufficiently observable so that the relationship will apply under a wide enough range of conditions to be considered useful or interesting. In other words, the relationship must not require too many "if's," "and's," and "but's" in order to hold.

Third, for a relationship to be called "causal," there should be good reason to believe that, even if the control variable were not the "real" cause (and it never is), other relevant "hidden" and "real" cause variables must also change consistently with changes in the control variables. That is, a variable being manipulated may reasonably be called "causal" if the real variable for which it is believed to be a proxy must always be tied intimately to it....

Fourth, the more tightly a relationship is bound into (that is, deduced from, compatible with, and logically connected to) a general framework of theory, the stronger is its claim to be called "causal."

Simon goes on to say -

In brief, one can never decide with perfect surety whether in any given situation one variable "causes" a particular change in another variable. At best, given your particular purposes in investigating a phenomenon, you may be safe in judging that very likely there is causal influence. It is correct to say (as it is so often said) that correlation does not prove causation --if we add the word "completely" to make it "correlation does not completely prove causation." On the other hand, causation can never be "proven" completely by correlation or any other tool or set of tools, including experimentation. The best we can do is make informed judgments about whether to call a relationship causal.

(Simon, 1978:497-498)

The research reviewed here has not dealt with the issue of causality in a scientifically rigorous way. Since causality is a difficult point to prove empirically, researchers have focused on hypotheses regarding the relationships or associations between drug use and crime. These hypotheses can be explained by three sets of questions. The first question, which is the prime concern of most crime/drug research, is, to what extent, and under what conditions, does drug use contribute to or "cause" criminal behavior? American social scientists have long been intrigued with discovering the causes, correlates, and determinants of criminal behavior. One underlying motivation for discovering the causes of crime lies with the implications such a discovery would have for crime control strategies. To understand crime/drug relationships (particularly in the case where drug use stimulates criminal activity) would contribute to the general fund of knowledge on the causes of crime as well as set the stage for the development of a variety of policy strategies designed to ultimately reduce those drug related crimes.

The second question reverses the direction of causality and asks about the extent and conditions under which criminal behavior might lead to drug use. In terms of public policy decisions, this is a less interesting question than the first. However, this question is implicitly tied to the first question by virtue of the possibility that criminal behavior may lead to drug use which in turn may lead to increased criminal behavior. From a criminal justice point of view this is the more interesting connection that might result from an exploration of this question.

The third question is posed to account for the possibility of spuriousness in the relationships which might be found after answering the first two questions. This question raises the possibility of common causes or sets of circumstances from which both criminal behavior and drug use emerge.

These questions do not exhaust the possibilities for exploring crime/drug relationships. For example, something may be the cause of crime (for example, a criminogenic environment) and in turn that particular criminal behavior may lead to drug use which in turn increases criminal behavior. These are some related hypotheses about the many possible relationships that may be discovered between crime and drugs. More than likely no one relationship will be found to predominate but rather a variety of temporal-sequential relationships will be found to exist as suggested below (see also Chambers, 1974b).

1. Preaddiction Criminality

At the outset, it should be made clear that there is considerable disagreement on the issue of whether drug use precedes criminality or criminality precedes drug use. Research can be found that shows drug use precedes criminality. Other studies show the reverse. And, still, others show criminality and drug use are largely unrelated and may be the product of a third variable. Each one of these positions probably has some validity (Chambers, 1974b). The temporal sequence of drug use and crime varies considerably from addict to addict and one should not expect an inevitable temporal relationship that applies in each case. Furthermore, there is a lack of adequate data on which to address these questions. To properly answer these questions requires a longitudinally-designed study. The one prospective longitudinal study that does address the temporal sequencing question was conducted by Johnston et al., (1978) as a part of the Youth in Transition project. In regard to the question of whether drug use causes or precedes delinquency or vice-versa, the authors conclude the following:

...nonaddictive use of illicit drugs does not seem to play much of a role in leading users to become the more delinquent people we know them to be on the average. The reverse kind of causation seems considerably more plausible, that is, that delinquency leads to drug use. For example, we think it quite possible that delinquents who, because of their delinquency, become part of a deviant peer

group are more likely to become drug users because drug use is likely to be an approved behavior in such a peer group. We also suspect that the correlation between delinquency and drug use stems not only from such environmental factors but also from individual differences in personality. Both delinquency and drug use are deviant behaviors, and therefore, both are more likely to be adopted by individuals who are deviance prone. The fact that other forms of delinquency tended to precede drug use (at least in this cohort) may simply reflect the fact that proneness toward deviance is expressed through different behaviors at different ages.

(Johnston et al., 1978:155-156)

There are a number of other studies using a variety of research designs that have provided further insights into the temporal relationships question.

In their review of the literature on drug use and crime between 1920 and 1974, Greenberg and Adler (1974) found an apparent change in the sequence of the relationship of drug use and criminality over the years. In the 1920's and 1930's addicts tended not to have criminal records prior to addiction. In contrast, today's addict is more likely to have a criminal record before onset of addiction. Indeed, Dai (1937) found four out of five addicts in his sample had no criminal record prior to addiction. In his study of addicts at Lexington in the 1930's, Pescor (1938) found three-quarters of the patients had no criminal record prior to addiction. Furthermore, in his study of morphinism in Boston in 1920, Sandoz (1922) found two-thirds of the cases had no criminal record prior to addiction. Kolb (1925), however, found the opposite was true. In his review of studies on the issue Kolb reports: "these studies brought out so forcibly the fact that a criminal addict was, in the vast majority of cases, a criminal before he became addicted..." (Kolb, 1925:74). This has certainly been the case in the literature more recently.

Plair and Jackson (1970) interviewed 50 narcotic addicts from two halfway houses in Washington, D.C. to determine patterns of narcotics use and their relationship to crime. Twenty-five of the subjects were older (median age = 30.2) and 25 were younger (median age = 17.3). Most of the subjects were already engaged in criminal activities prior to addiction onset. After addiction onset the number of offenses in the

income-generating categories increased considerably. "Criminal activity," state Plair and Jackson, "appeared to be a part of the lifestyle of the addicts at the onset of addiction. However, onset was accompanied by a sharp increase in criminal behavior. Decreases occurred in those types of offenses which were time consuming, involved greater risk of apprehension and lacked quick monetary return" (Plair and Jackson, 1970:ii).

In their analysis of the demographic factors of black opiate addicts, Chambers et al., (1968) found, for most subjects their first arrest preceded the first use of opiates. In another study conducted by Chambers on Mexican-American addicts, he found 61 percent of the subjects had an arrest prior to opiate use (Chambers, Cuskey, and Moffett, 1970a). In their retrospective longitudinal study of 235 black men in St. Louis, Rovins and Murphy (1967) found delinquents were more likely than non-delinquents to begin using drugs and once they began to use drugs they were more likely to use heroin. In a survey of 150 male parolees with a history of drug dependence, Stanton (1969) found 108 had a history of arrest prior to drug use, 27 began drug use before their first arrest, and 15 became involved in both simultaneously.

An important study on the life cycles of addicts conducted by McGlothlin et al., (1978), revealed 80 percent of the subjects interviewed were arrested prior to addiction.* A sample of 690 admissions of the California Addict Program was drawn from two admissions periods, 1962-64 and 1970. Using both interviews with subjects and official records, the authors reconstructed the careers of the sample. Pre- and post-addiction periods were compared to determine differences in criminality during the two periods. "During the addiction career," state the authors, "both arrests for property crimes and self-reported criminality are much higher for periods of addiction than for periods of less-than-daily-use."

Despite these findings, numerous studies report the majority of subjects had no criminal involvement prior to drug addiction. Based on interviews with 990 addicts at Lexington, Voss and Stephens (1973)

*This percentage seems particularly high due to the type of sample selected. Addicts sentenced to the California Civil Addict Program usually have extensive and serious criminal records.

report 67 percent of their subjects had no criminal involvement prior to the use of drugs. In his study of 266 white addicts admitted to Lexington between 1935 and 1959, O'Donnell (1966, 1969a) found 63 percent had no arrests prior to addiction.* A communitywide study of narcotics addicts revealed that black addicts committed more crimes and more serious crimes than white addicts both before and after addiction (Nurco and DuPont, 1977). In general, the authors revealed, "...there was little, if any, involvement with serious crime before narcotic use. After addiction, however, the involvement generally increased for both ethnic groups" (Nurco and DuPont, 1977:115). Interviews with 53 Puerto Rican heroin addicts released from Lexington revealed only 30 percent had arrests prior to opiate use (DeFleur et al., 1969).

Much of the variation in these studies can be accounted for in the way criminality and narcotics addiction is operationally defined. Self-reported measures of criminality will have higher frequencies and will be found to occur earlier than official arrests or convictions. In addition, some studies present their data on criminality as pre- and post-narcotics use, whereas other studies present data on criminality as pre- and post-narcotics addiction. There is likely to be a considerable range of time between use and actual addiction. Furthermore, to reiterate what was stated in the introduction to this section, it should not be surprising to find that for some, drug use precedes criminality, while for others criminality precedes drug use. And, for still others the two may occur almost simultaneously. At the present time, however, it must be concluded, based on current evidence, that most addicts are criminally involved prior to addiction and that after addiction criminal activity for certain types of crime (income-generating) increases significantly** (for others who have reached a similar conclusion see Blum, 1967c; Greenberg and Adler, 1974; and Weissman, 1979, among others). Now that the sequencing issue has been presented, a discussion follows of the process by which an individual becomes involved in drug use.

* These addicts would not be considered contemporary however.

** An expanded discussion of changes in criminality after addiction can be found in this section, page 81.

B. Initiation to Drug Use

In this section the concern is with the circumstances under which most addicts become initiated to drug use. Research attempts to understand the process of addiction are founded in the belief that once the stages are clearly understood, then appropriate intervention strategies can be implemented. In reviewing this literature one must be careful not to misinterpret these findings. It cannot be emphasized enough that the process by which one becomes addicted is a complex constellation of factors that differs from addict to addict. The focus here will be on the common elements of this process.

The initiation to drug use can be seen as a process, beginning with a sequence of experiences through which an individual acquires a meaningful conception of drug use behavior and its situational contexts. These experiences and the individual's changing conception make the use of drugs both possible and desirable (Becker, 1953). Many researchers see several predisposing traits such as those outlined in section III as the determining factors in whether an individual uses drugs or not. Other researchers have criticized predispositional theories of drug use on several grounds.

First, predispositional theories are unable to account for those individuals who may use drugs, but do not exhibit the trait or traits that are thought to predispose one to drug use. Second, these theories cannot account for the variation in an individual's drug use behavior over time. At various points in their careers, individuals are able to use drugs for pleasure, whereas at other points they are not. Predispositional theories are unable to explain these changes in conception about drug use (Becker, 1953). As an alternative theory of drug use, some researchers see initiation to drug use as a part of a natural progression based on an individual's previous experience. This sequential model has been described by Becker (1953, 1963) and Blumer et al., (1967).

Before describing the sequential model, one must first recognize the process by which juveniles place constraints on the number of individuals who will be introduced to drugs. Not only is accessibility to drug users important, but willing drug users must also be able to meet several requirements imposed by the drug-using groups. Willing users

are, in effect, tested by drug users. The newly arrived individual must prove he is "good people," that he can be trusted, that he is cool (Blumer et al., 1967). As one of the subjects interviewed by Blumer and associates states:

"...Say you come along with a dude and I don't trust him. Yeah man, this is Joe, what's going on. Well, later on I start talking to him. Are you alright, man? What's happening? Like that. And he tells me the happening, and I watch him to see what he does, what his act is, see. Now, if I don't respect the dude, I keep an eye on him. When we're out cruising in a car and I see that he's lame, man, the hell with him. Make it, man, you're a lame sucker, I tell him. Then too, I'll look out for his partners, see. The dude'll see one of his partners and he won't just nod. When he's lame, he goes, Hey guys! You know, hollering out of the window. That there is a bust. Cop sees that shit. Well, you know, the dude is lame. You know, he gets all panicked. If a bust goes down (being stopped and questioned by a police officer), this guy will go, What are we arrested for, sir? I didn't do nothing. Hey man, lighten up on that shit. So later on we get cut loose. I already swallowed the joint (ate the cigarette), you know, and I shine the dude. Man, don't let me see you around no more, man. Just keep away from my face. Then you mark him. A guy that's alright, see, he'll know what's happening, keeps an eye out for the police, sit down real cool like. What's goin' on, man? You know. Got anything, man? He's mellow, and you give him a joint..."

(Blumer et al., 1967:51-52)

Even though an individual may be cool and trustworthy, he still may not become a regular drug user. The incipient drug user must first develop a favorable image of drugs and drug users. Many individuals have formulated favorable impressions about drug use at an early age, primarily because drug use may be an acceptable practice either in the home, the neighborhood or both (Blumer et al., 1967). Other individuals seek out drug use to be accepted by a group the individual would like to identify with. Often this group is somewhat older than the inexperienced subjects. Again, we refer to one of the subjects interviewed by Blumer and associates:

"...That's what I did, and before I got turned on I wanted to be accepted by the older crowd. You know. I had everything going for me, lot of these chicks dug me, and I had lots of friends that looked up to me and respected me. I knew this because whatever I said was ace. But to these older people, I was just a young kid, I didn't know what was happening, and it was more like a desire to be like them. If they was getting

loaded and the opportunity knocks, you're gonna step in. I stumbled on a guy getting loaded by himself, and then he sounded on me (asked if he wanted to get high), and I wasn't gonna say I didn't get loaded. He'd think I was a chump, and I wanted to be accepted by him and his group. So once I got loaded with him, I could hang around him and be seen with him by his friends and then they would accept me...This is just what happened..."

(Blumer et al., 1967:54-55)

The above description as well as other studies provide evidence that the image of the dark, mysterious pusher hanging around school playgrounds, forcing drugs on young school children is largely a myth. Most addicts' initial narcotics experiences are with a friend. Chambers et al., (1968) using a sample of 155 black addicts at Lexington Hospital, found that 89 percent of the subjects were introduced to heroin by a peer. Chein et al., (1964), using a sample drawn from youths aged 16 to 20 who appeared in municipal courts or hospitals on drug-related incidents, found that one-third were first offered heroin by a friend. For another one-third the opportunity to first use heroin was developed and initiated by a group. Stephens and McBride (1976) discovered that in three-quarters of the cases in their sample, initial heroin use occurred with friends. The initiation to drug use by friends or groups the individual wishes to become identified with enhances the individual's favorable impression of drug use.

Once an individual formulates a favorable impression of drug use and is accepted by other drug users, he is ready for experimentation. Before becoming a regular user, the individual must first learn the technique of using drugs. As Becker (1953, 1963) describes, the individual must learn the proper technique of using the drug so that the drug can have its intended effect. In essence, the individual must learn how to get high. Once drug taking has its intended effect, the individual's conception of the drug will change. The drug can then be seen as an object of pleasure. This change of conception, of course, is a function of the individual's interaction with other drug users as well as his own use of the drug. As stated by Becker, "in the course of this process he develops a disposition or motivation to use marihuana [other drugs as well] which was not and could not have been present when he began use,

for it involves and depends on the conceptions of the drug which could only grow out of the kind of actual experience detailed above. On completion of this process he is willing and able to use marihuana for pleasure" (Becker, 1953:242).

1. Age of Onset

The age at which deviant behavior patterns emerge is important information for policymakers. The belief is that social programs targeted at age-specific populations will be more effective in reducing later delinquent activities than those programs that intervene after delinquent patterns have been well established. There is substantial evidence that shows early onset of deviant behavior is related to the level and severity of later deviant activities. For example, Petersilia et al., (1978), in a study of the criminal careers of habitual felons, report that a larger percentage of intensive criminals (those who have sustained criminal activities for long periods of time) than intermittents (irregular, opportunistic criminals) reported committing a serious crime before age 13. Wolfgang, et al., (1972) in a study of delinquency in a 1945 birth cohort, reported that the earlier the age of onset of delinquency, the greater the number of total offenses before age 17. Similarly, one might hypothesize the age of onset of drug use is related to other forms of social maladjustment later in life. If an individual becomes addicted early in life, there is less chance to learn the conventional values and skills necessary to cope in mainstream society. Therefore, skills learned on the street become necessary for survival. Based on the following studies there seems to be some support for this hypothesis.

In fact, several researchers have established relationships between the age of addiction and later behavior. Winick (1964) analyzed data supplied by the Federal Bureau of Narcotics on the greater than 7,000 addicts for which there was no record of drug involvement for five years or more. Of these subjects, Winick found those individuals who began using heroin before the age of 18 had an average duration of heroin use of 10 years or more while those who began heroin use after age 18 had an average duration of less than 10 years. An indepth study of 53 Puerto Rican males discharged from the U.S. Public Health Hospital in Lexington, Kentucky, revealed that the age of addiction onset is inversely related

to the stability and conventionality of income sources (DeFleur, et al., 1969). That is, the earlier the age of addiction onset, the more likely the criminal lifestyle and, conversely, the later the age of addiction onset the more likely the individual will utilize more conventional income sources. Similarly, Sardell (1972) found that the later the age of addiction onset the greater the employment stability. In his 12-year follow-up of New York addicts released for Lexington, Vaillant (1966) found the later the age of addiction onset, the longer the period of abstinence from heroin later in life. Furthermore, in a normal sample of young men, Robins and Murphy (1967) found early drug use was related to later use of heroin, amphetamines, and the total number of illicit drugs used by an individual.

This phenomena can be explained, at least in part, by socialization theories about drug addiction. Intuitively, we would expect the process of becoming addicted and becoming involved in an addict, criminal lifestyle would preclude any significant involvement in a more conventional lifestyle. Unable to survive in mainstream society, the addict becomes totally involved in the addict subculture, adopting its argot, skills, norms, and ideology. As put succinctly by Rubington, "This rapid social redefinition, however, cuts them off from other possible roles and involves them more deeply in the dangerous social game of drug addict" (Rubington, 1967:17).

At what age are individuals most likely to begin using drugs?^{*} Analyzing data from a sample of 90 addicts certified for treatment by the New York State Narcotics Addiction Control Commission (NACC), Inciardi and Chambers (1972) found that the median age of initial drug use was 13 for males and 15 for females. For most, marijuana was the onset drug. Friedman et al., (1973) using a survey of nearly 500 lower class court adjudicated boys found the mean age of initial drug use was 13 for those who used inhalants and alcohol. This makes sense when one considers the availability of glue and alcohol to teenagers. The mean age of initial drug use for alcohol and seven other classes of drugs analyzed by the authors is presented below:

^{*}We are concerned here with those individuals who are likely to continue using heroin on to become significantly involved in the drug subculture.

<u>Drugs</u>	<u>Mean Age</u>
Inhalants	13.32
Alcohol	13.45
Amphetamines	14.47
Barbiturates	14.51
Marijuana	14.54
Hallucinogens	14.54
Heroin	14.95
Cocaine	15.19

Using a sample of 128 addicts from 11 drug treatment programs in London, Stimson (1973) found the mean age of onset for any drug was 16.8 years. Ninety-three percent of the sample began using drugs before the age of 21 and the mean age of initial heroin use was 19.4 years. In his study of New York City delinquents, Chein et al., (1964) found 16-year olds were the most vulnerable to drug experimentation. Boys who had their first opportunity to use drugs at 16 or older were most likely to try heroin, whereas boys who had their first opportunity to experiment with drugs when they were under 16 were least likely to try it.

Individuals today appear to begin using heroin at a younger age than addicts in the past. Pescor (1938), reporting on a sample of slightly more than 1,000 addicts at the U.S. Public Health Hospital in Lexington, found the average age of addiction onset was 27. Around the same time, Dai (1937) analyzed the characteristics of 2,439 addicts in Chicago who were either arrested or treated for narcotics addiction between 1928-1934. Only 8 percent of these addicts were under 25 years of age. A study some 20 years later of 5,000 known addicts in Chicago revealed that nearly one-half were under 25 (Clausen, 1957). Finestone (1957) reports that coinciding with an increase in the absolute number of narcotics arrests both nationally and specifically in Chicago is the "gradually increasing proportionate number of such arrests in the younger age groups." Using UCR data, Finestone found the proportion of narcotic arrests for the 24 and under category was 15 percent in 1932; 29 percent in 1941; and 46 percent in 1951. Using admissions data for the U.S. Public Health Service Hospital in Lexington, for two different time

periods, Finestone finds further evidence of the increasing proportion of young addicts. For the period 1937-41, the 16 to 20 age group constituted five out of a total 282 admissions or 1.4 percent of first admissions. For the period 1947-51, this age group constituted 354 out of 1,476 or 24 percent of the first admissions.

More recently, Petersen and Stern (1974) found that the average age of onset among 291 addicts admitted to the Federal Bureau of Prisons from 1968 to 1969 was age 20. Cushman (1974), using a sample drawn from a methadone maintenance clinic, also found the age of onset was around 20. Chambers et al., (1970a) found opiate use among a sample of Mexican-Americans being treated for drug addiction in U.S. Public Health Hospitals to be even younger. Most began using heroin in their "adolescent years." In a sample of 50 black street addicts drawn from the U.S. Public Health Hospital at Lexington, Stephens and McBride (1976) found the median age of first narcotic use was 18. Glaser et al., (1971) using a volunteer sample of addicted and nonaddicted siblings in a slum area, found that the mean age of first marijuana use was 14.8 years of age and the mean age of first heroin use was 17.8 years of age.

These data confirm, at least, that addiction onset seems to occur at a much earlier age today than in previous periods. Although it is difficult to determine the precise age individuals are at the greatest risk, for this differs from population to population, there is some evidence to support the claim that addiction appears to occur much earlier in life for the contemporary addict than in previous periods. There may, of course, be alternative explanations for these findings. The proliferation of drug use programs has most certainly had an impact on the way drug addiction is perceived by the general public and certainly the addict himself. This change in perception and the accessibility of drug treatment centers may increase the willingness of addicts to seek treatment at an earlier age than in previous periods. Whether this willingness is motivated out of a sincere desire to become drug-free or whether the addict is trying to reduce his level of tolerance is not of concern here.

2. Stepping-stone Hypothesis

Once an individual begins to use drugs, according to popular theory, it is only natural that they will begin to use more and more potent drugs. Proponents of these drug escalation theories believe the less potent drugs, such as marijuana, will lose their appeal to users of these drugs after prolonged use. Once an individual reaches this stage, it becomes inevitable, some believe, that he will begin to use more potent drugs. While it is true most addicts have used other drugs prior to heroin, this, by no means, causally links use of less potent drugs with later, hard drug use.

Many, in fact most, users of less potent drugs, like marijuana, experiment with only a few drugs and progress no further (Blumer et al., 1967). In their study of court adjudicated boys, Friedman et al., state: "there was no evidence to support the impression that any one drug leads to use of any other drug or drugs. Especially for marijuana, the majority of users were exclusive users of marijuana" (Friedman et al., 1973:442). Feldman's (1977) study of an Italian-American community showed that progression from the use of one drug to another is the result of a complex interaction between the availability of the drug and the status a particular drug has within the social structure. While there is agreement that there may be some internal motivations which guide an individual's use of drugs, it can also be seen how external pressures, as well, guide drug use.

Summary

In the previous discussion the issue of causality was dismissed as a difficult point to prove empirically. Instead, associations or relationships between drug use and criminal behavior can be established. Based on a review of the literature, there seems to be considerable disagreement about whether drug use precedes criminality or the reverse. Numerous studies are cited to support either position. It was concluded, however, that most studies found contemporary addicts have criminal records prior to drug use.

The initiation to drug use was discussed. The onset of drug use should be seen as a sequence in which the individual first gains access to drug-using groups, formulates a favorable impression of drug use and

drug users, and learns how to use the drug so the intended effect is achieved. The age this is likely to occur is apparently much younger for contemporary addicts than for addicts in previous years.

C. Changes in Criminality After Addiction

In this section the primary interest is with how drug use and criminal behavior change over the length of the addict career. The dearth of information on the life histories of addicts makes it difficult to reach any definitive conclusions regarding changes in addict criminality. Most studies divide criminal careers into pre- and post-addiction periods for comparison. Those studies that examine pre- and post-addiction criminality are useful in showing changes in criminality that, some say, can be attributed to addiction. While these studies are useful for showing gross changes in criminal behavior, they tell us nothing about incremental changes over the addiction career. Do criminal behavior patterns change after several years of addiction? Do crimes become more or less serious? More frequent? These are questions we know very little about. There are several studies that have reconstructed addict careers and these have provided some insight into the addiction process. A review of the changes in criminality after addiction onset follows.

1. Post-addiction Criminality

Regardless of an individual's preaddiction criminality, numerous studies report addicts become increasingly involved in crime, particularly income-generating crimes, after addiction onset. While this may be so, few studies examine changes in criminality while controlling for age. For some time criminologists have believed criminal behavior becomes more serious, specialized, and more frequent with age. Most of the research on criminal careers reports the frequency of criminal offenses increases with age up to a certain age, then levels off. No study in the drug/crime area, thus far, has been adequately designed to address this issue. Additionally, few studies examine changes in criminality in relation to changes in the amount and frequency of drug use. If drug use and crime are related, one would expect that changes in one would effect changes in the other. Furthermore, few studies distinguish crimes involving drug law violations from other offenses. We would

expect increases in drug law violations after addiction. We are more concerned, however, with increases in nondrug related offenses. We will now examine what little information there is that addresses this issue.

Numerous studies have found post-addiction criminality to be significantly greater than pre-addiction criminality. In a follow-up of 53 Puerto Rican addicts discharged from Lexington, De Fleur et al., (1969) found that only 30 percent of these subjects had pre-addiction arrests. After addiction all subjects had between one and ten arrests and the mean number of arrests following onset was 3.3. These arrests occurred while subjects were both on and off heroin, but DeFleur et al. found "the influence of opiate use on arrests was to increase their frequency by 5.4 times" (DeFleur et al., 1969: 229). In other words, during periods of opiate use their arrests increased substantially. Plair and Jackson (1970) studied the patterns of criminality and drug use among 50 addicts in treatment. The authors found that criminality was a part of these subject's lifestyles prior to addiction, but found sharp increases in criminality after addiction. However, 72 percent of these subjects reportedly ceased criminal activity during periods of abstinence from drugs.

Other studies have found similar trends. Stephens and Ellis (1975) analyzed arrest records of four male addict cohorts registered with the New York State Narcotics Registry to determine changes in addict criminality. The authors found increases in arrests after addiction, particularly for property crimes, but the authors note that crimes against the person were also rising. Stephens and McBride (1976) interviewed 50 black addicts from Lexington and found 60 percent had been involved in crime before onset, but 96 percent had been involved after onset. Weissmann et al., (1976) interviewed 200 addicts in the Denver City Jail and found addiction had a dramatic effect on an individual's criminal behavior. Property crimes as well as assaults increased in the post onset period. The authors report those subjects in the 13-17 age group had the most dramatic post onset arrest rates.

In his study of addicts treated at Lexington, O'Donnell (1969a) also found crime, particularly income-generating crimes, among his

subjects increased after addiction. In addition, O'Donnell found these subjects committed more crimes than would have been expected by persons in their age group. The author found most of his subjects (63 percent) had no criminal involvement prior to addiction. The mean age of onset for this group was 31.3. The author then determined the probability that a person with no criminal record could reach the age of 31 and then become criminally involved. Based on the Uniform Crime Reports, which show most individuals arrested for income-generating crimes are between the ages of 17 and 21, O'Donnell found criminality should decrease by the age of 30. The statistical expectation for his sample would have been a decrease in criminality, when, in fact, in O'Donnell's sample, there had been an increase.

While most studies report increases in crime after addiction onset, particularly for income-generating crimes, there are several notable exceptions. In their extensive survey of addict youths in New York City, Chein et al., (1964) found no increase in the incidence of crime among his subjects after addiction onset. Although he, too, found an increase in utilitarian or income-generating crimes with addiction onset, this increase was accompanied by a decrease in violent offenses. So, while addiction may affect the type of delinquency committed, according to Chein, it does not affect the overall amount of delinquent activity. Rosenthal et al., (1973) surveyed 216 addicts in drug treatment programs and reported a similar finding. The authors report no absolute increases in crime with respect to frequency or seriousness. Rosenthal et al. found criminality after addiction was a continuation of an established criminal lifestyle particularly for crimes of robbery, prostitution, and shoplifting.

These studies are useful in indicating gross changes in criminality between two major periods, pre- and post-addiction. However, more information is needed to determine the variation in criminality with fluctuations in drug use. For example, to answer the question, does criminality decrease when drug use decreases? In his retrospective study of addicts in the California Civil Addict Program, McGlothlin et al., (1978) found, "with few exceptions, the percent of time involved in criminal behavior, the number of property crimes reported, and the total

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income from crime decrease in a consistent manner as a function of decreasing narcotics use" (McGlothlin et al., 1978:305). McGlothlin aptly notes that both these behaviors may be responding to a third variable. The explanation for this decrease may not be that these two behaviors are related. "However, this possibility becomes largely academic," according to McGlothlin, "in those instances where one behavior logically requires the other. When the individual spends large amounts of money for heroin, does not deal, and has no source of legitimate income, then criminality is a necessary condition for addiction to exist" (McGlothlin et al., 1978:311).

Nurco (1976) interviewed 252 addicts known to the Baltimore City Police Department between the years of 1952 and 1971. Records and interview data were analyzed by Nurco to determine differences in criminality prior to and after addiction onset as well as periods on and off narcotics. Nurco analyzed differences between blacks and whites as well as differences in early drug users (those who began using narcotics before age 19) and late drug users (those who began using narcotics after age 19).

There was an increase in criminality for black late starters between the pre- and post-narcotics use stages but there was little change in the white addict's criminality. The same trend appeared for early starters, but the unreliability of juvenile records probably underestimates criminality in younger years. Nurco found both races were more likely to be arrested for crimes, particularly property crimes during the "on" narcotics periods, than during the "off" periods.*

It appears, then, that individuals are likely to increase their overall criminality following addiction. Addicts are most likely to engage in property crimes, but there is also an increase in violent crimes. Some research has indicated that violent offenses among addicts are rising (see section III on patterns of drug use and criminal behavior), while other studies report that after addiction onset violent crimes are likely to decrease (Chein et al., 1964). The bulk of the literature reports that, once addicted, criminality seems to decrease when drug use

* These "off" periods are likely to be considerably affected by periods of incarceration in which the individual is incapable of committing crimes. At the time this paper was written, Nurco had not satisfactorily adjusted jail time to use in his computations.

decreases. This finding has important policy implications. If it is true--and there is controversy in the literature--that even slight changes in drug intake affect the rate of criminality, this would effectively put to rest the belief that criminality continues as a learned behavior despite drug cessation. More studies need to be conducted on changes in criminality over the course of the addict career. As shown, very little is known about how these criminal careers change with age or duration of addiction.

D. Remission, Relapse, and Maturing Out

The addiction career is reportedly marked by numerous episodes of remission and relapse from drugs. This process is not fully understood for, as has been indicated, few studies have been concerned with the changes in the addict career over time. In this section what little information there is on this subject will be pieced together, and it is hoped that future research will provide more insight.

Throughout the addiction process, as the addict becomes increasingly involved in the drug subculture and related behaviors, he simultaneously becomes committed to a status and an identity that has complex secondary characteristics. These secondary characteristics are developed as the addict defines himself through his interactions with both addicts and nonaddicts and the institutions which he is likely to come into contact with (law enforcement agencies; treatment programs, welfare, and so forth). From these experiences, the addict is able to develop a perspective about addict and nonaddict values. He clearly knows the differences between the two groups. Quite often, it is this awareness of the differences between the two groups that will bring on attempts at a "cure" for addiction (Ray, 1961).

Ray (1961) reports on a number of socially disjunctive experiences which may bring on an episode of abstinence. Interactions with important others such as relatives or other nonaddict friends may initiate a "private self-debate in which he juxtaposes the values and social relationships which have become immediate and concrete through his addiction with those who are sometimes only half remembered or only imperfectly perceived" (Ray, 1961:134). Or forced withdrawal through incarceration may place the addict in a situation where he can observe older, more

severely debilitated addicts. These older addicts may provide concrete models, enabling for the addict to assess and question his present and future lifestyle. Interactions with addicts in his own subculture may also make the addict reevaluate his present situation. Getting "ripped off" once too often will frequently motivate the addict to abstain. Through these interactions "the world of addiction" may be brought into question. These are only a few examples of why an addict may abstain from drugs and question the values of the addict lifestyle. The length and frequency of these episodes is not very well known.

DeFleur et al., (1969) in her follow-up of 53 Puerto Rican addicts released from Lexington attempted to determine how many addicts had tried to voluntarily abstain from drug use. Nearly half of the subjects had been voluntarily off heroin for six months or more prior to treatment. The authors estimated addicts spend three-fourths of their time actively addicted, one-fifth voluntarily abstinent, and another fifth abstinent because they were incarcerated. Nurco et al., (1975) and Ball and Snarr (1969) report the greatest percentage of their subjects who were abstinent were so because of incarceration.

The length of these periods of abstention, whether brought on by treatment or otherwise, is difficult to determine. Robins (1979) discusses two studies in which it was found that most relapses after treatment occurred within six months and that of 200 addicts followed after release from Lexington 87 percent began using heroin again within six months. While little is known about addicts released from treatment, even less is known about the length of voluntary abstinence.

Both prior to and during periods of abstention, the addict formulates certain expectations for himself in such areas of employment, family relationships, and so forth. The addict attempts to "enact a new social reality which coincides with his desired self-image as an abstainer, and he seeks ratification of his new identity from others in the situations he faces" (Ray, 1961:140). This is an extremely difficult period for the addict. Many friends and family doubt his sincerity in wanting to kick the habit. People continually question whether he is really off drugs. Employment may be difficult to find because the addict frequently

lacks skills, education, and experience. Although McGlothlin et al., (1978) report more addicts hold jobs during periods of abstinence than periods of use, the prior work history of addicts makes employment a difficult prospect for most.

Little information is available regarding addict employment prior to addiction. As we have noted, educational attainment among addicts is low, they are likely to reside in poverty stricken neighborhoods, and they are likely to be minorities; all of which indicate that chances for employment are not very good. Indeed, both O'Donnell (1969) and Nurco and Lerner (1972) found that pre-addiction employment rates were under 50 percent. In the post-addiction period few studies address this question, but it appears that most addicts are not employed or are only marginally employed, while relying on crime or other hustles for support. In her follow-up of 53 Puerto Rican addicts, DeFleur et al., (1969) found nearly half of these subjects were pursuing permanent criminal careers. Eighteen subjects (34 percent) were engaged in legitimate employment off and on since leaving school, but this amounted to about half the time since school. Only nine subjects (17 percent) were legitimately employed for most of their adult lives and three others were dependent upon their parents for support. As can be seen, finding adequate employment is a difficult task for many addicts or ex-addicts. For abstainers, employment expectations, as well as other expectations, are frequently not gratified. Robins (1979) reports the best predictor of relapse is the lack of a job.

Again, socially disjunctive experiences force the addict to reevaluate his present lifestyle. Unable to live up to his own expectations the addict questions his abstainer identity. This reassessment forces the addict to compare his addict and nonaddict identities. "The abstainer's realignment of his values with those of the world of addiction," states Marsh Ray, "results in the redefinition of self as an addict and has as a consequence the actions necessary to relapse. But it should be noted that the seeds of a new attempt at abstinence are sown, once addiction has been reestablished, in the self-recriminations engaged in upon remembrance of a successful period of abstinence" (Ray, 1961:140).

As has been noted, little is known about the frequency or length of these periods of abstinence. However, researchers have hypothesized that these periods may become more frequent or get longer the older the addict becomes (Brill, 1972). If one believes the strains and stresses of adulthood are precipitating factors in addiction, so the argument goes, then addiction should be easier to control once these stresses and strains become more stabilized (Winick, 1962). This forms the basis for the "maturing-out hypothesis" which was probably first developed by the Gluecks in their early delinquency studies.

Sheldon and Eleanor Glueck's longitudinal studies on the etiology of delinquency address the effect of aging and career length on criminality. In their 15-year follow-up of 1,000 juvenile delinquents brought before the Boston Juvenile Court between 1917 and 1922, the Gluecks (1940) found their subjects were likely to settle down, become less aggressive, and commit fewer crimes, but this was not attributable to the arrival of any particular age-span. What the Gluecks hypothesized was that it was not age that was crucial, but it was the "achievement of adequate maturation" which accounted for their decreasing involvement in criminal activity.

Another study found support of the maturation hypothesis. In a retrospective longitudinal study of 524 children referred to a child guidance clinic, Lee Robins (1969) examined the adult status of these subjects. The purpose of the study was to investigate through a longitudinal design, the natural history of the psychiatric syndrome variously called sociopathic personality, antisocial reaction, and psychopathic personality. In a test of the Glueck's maturation theory, Robins examined 105 males who were arrested at least three times including at least one major crime. The most recent arrest for greater than 50 percent of these subjects was a minor or traffic offense which Robins took as confirmation, at least partly, of the maturation hypothesis.

In the drug/crime literature, several studies have also found evidence for this phenomenon. Winick (1962) analyzed data from the Federal Bureau of Narcotics Registry to determine the number of subjects maturing out. The registry (see section II on methodological issues) maintains records of the number of addicts uncovered by law enforcement

agencies and medical facilities throughout the country. Those subjects who have not been reported for more than five years are placed in an inactive file and, according to Winick, have matured out. Winick maintains that no one can remain addicted for more than two years without coming to the attention of the authorities and, therefore, the registry is a reliable source of information (for a criticism of these data see section II on methodological issues and Chein et al., 1964:20-22).

Winick found nearly two-thirds of all addicts mature out of addiction and, of these, three-fourths do so by the age of 36. The age range when addicts become inactive was 18 to 76. Winick also considered that it might not be age per se that causes addicts to drop out of addiction, but, like the Gluecks, found maturation due to career length. Among these subjects, the average length of addiction was 8.6 years, but the range was from five to 56 years.

In her follow-up of 53 Puerto Rican addicts, DeFleur et al., (1969) defined maturing out as having no record of drug use in three or more years. The authors found 22 percent of these subjects had matured out and most of these were steadily employed. Ball and Snarr (1969) used the same definition of maturing out for their larger study of Puerto Rican addicts from Lexington and found 19 percent had matured out. The authors suggested, however, that one-third of the subjects are likely to mature out by age 40. Nurco et al., (1975) in his follow-up of addicts known to the Baltimore police found only 7 percent of the subjects were using heroin daily at the time of the interview. There was little difference in this percent from cohort to cohort.

Very little is known about this phenomenon. If, in fact, maturing out actually does occur, even less is known about the factors that might account for its occurrence. Some have speculated improvements in family relationships, employment, and so forth may account for maturing out. These factors, however, may not "cause" maturing out but may be the result of maturing out. If individuals do mature out of drugs, we do not know whether they also mature out of crime, although the McGlothlin et al., (1978) and Nurco (1975) studies indicate that they might.

Beyond the fact that little is known about the percentages of and ages that addicts cease using drugs, it is known that addicts quit drugs. What becomes of these addicts? The few studies that address the issue show that the duration of the addict career is a little over eight years (Robins, 1979 and Winick, 1962). Little is known about the physical effects of eight years of addiction, but apparently there are no serious physical disabilities resulting from addiction, despite the fact life expectancy for addicts is quite low (Robins, 1979). Difficulties in employment are expected for ex-addicts given what is known of their educational attainment and previous work experience. Nurco and Lerner (1972), however, found only one in five ex-addicts were chronically unemployed. Beyond this, very little is known about former addicts. Are they capable of assimilating into mainstream society? Or do they move in and out of drugs throughout their lives? As of this time, drug/crime research has been unable to answer these questions.

V. ECONOMIC ISSUES

Ever since the passage of the Harrison Act in 1914, estimates of the societal costs resulting from drug abuse have been high. The total economic cost of drug abuse was estimated at 10.3 billion dollars for 1975. Of this total, about 3.3 billion dollars was associated with law enforcement, drug traffic control, the judicial system, corrections, and the value of addict's time in nondrug-related crimes necessary to finance their drug habits. In addition to these costs, it has been estimated that 30 percent of all property crime can be attributed to addicts financing their habits. The Uniform Crime Reports reported almost 3 billion dollars worth of property was stolen in 1975. If addiction accounts for 30 percent of that figure, addict property crimes accounted for over 900 million dollars worth of reported property crimes (Rufener et al., 1976).

Other economic studies have attributed an estimated 1.1 billion to 6.3 billion dollars of property crimes to finance addiction each year (Gillespie, 1978). These estimates are usually arrived at by multiplying the assessed number of heroin addicts in the nation by the approximate daily cost of a heroin habit. This figure, according to some, provides an approximation of the total dollars worth of property crime (adjusted for a fencing discount) needed to support addict habits.

A strawman expressing the drug/crime relationship has received a great deal of attention: many known drug users have records of income-generating as well as drug-related crime; many criminals have also used a number of drugs; addiction is expensive. The conclusion is reached that, because a great deal of crime is committed by drug abusers, a great deal of crime is attributable to the need of those drug abusers to maintain their expensive habits.

There is an overwhelming conviction that heroin addicts are responsible for much of the property crime in the U.S. Property crime committed by addicts has been estimated to be anywhere from 25 to 50 percent of all property offenses (Baridon, 1975). However, much of this research is subject to speculation and without employing proper techniques these

calculations are nothing more than guesswork. In any case, several studies have estimated that the economic costs of drug abuse are quite high (Gillespie, 1978 and Rufener et al., 1976). This unilateral transfer of society's resources is perhaps the greatest single reason heroin addiction has received so much attention from law enforcement.

The objective of economic research on drug use and crime has been to test these estimates for accuracy. Is the value of addict property crime closer to \$6 billion or \$1 billion? Are both of these figures too high? Would the heroin addicts commit property crime even if they weren't addicted? If so, how much? These are some of the relevant questions of this field of research.

Economic analyses of drug/crime relationships have been primarily concerned with two facets of consumer behavior: consumer demand and the supply of labor. Consumer demand focuses on the demand for drugs as part of the entire consumption possibilities. These consumption patterns for addicts are influenced and mediated by a number of factors such as cost of other necessities, the price of heroin, drug substitution patterns, law enforcement practices, and the accessibility and ease of drug purchases.

The second element of the drug/crime relationship is the supply of labor by a drug abuser, and how he uses his available time to generate income. Income constitutes the long term constraint on total consumption, saving and dissaving being possible in the short run to allow consumption to exceed income. If income can be increased, then consumption possibilities increase. When income falls, so do consumption possibilities. Sources of income include employment, crime, welfare, friends, and family. Income can be obtained from any and all of these sources at one time.

A rigorous examination of the drug/crime relationship will have to simultaneously study the demand for drugs and the supply of labor. These facets of economic behavior influence each other immediately and intimately. It is too simple to assume that the demand for drugs determine the supply of labor for crime, just as it is simplistic to assume that consumers will adjust their consumption to a steady level of income. Consumption is always influenced by income and the supply of labor (generating income) is always influenced by the demand for goods. An

appropriate drug/crime synthesis would recognize these interactions (for further discussion of the above points see Goldman, 1976b and Silverman, 1976).

The purpose of this section is to explore some of those issues described above. In order to do so, this section has been organized the following way. First, a review of the major elements of the demand for heroin will be discussed. This includes the price of heroin and the extent of the habit, drug substitution patterns, the probability of arrest, and the amount of time and effort devoted to procuring heroin. Second, a brief discussion is provided of the supply of labor by drug abusers. Third, a review is provided of the major econometric drug/crime studies. Finally, there is a brief discussion regarding social policy based on the economic concepts of supply and demand.

A. Demand for Heroin

The "opportunity cost" of heroin consumption is the primary determinant of the demand for drugs. The opportunity cost includes any goods and services that must be sacrificed in order to obtain and consume the drug. This includes the market "street" price of the drug, the time it takes to obtain the drug and consume it as well as an allowance for the potential of arrest, conviction and incarceration (legal sanctions imposed for possession, sale, and/or use).

Any cost, real or potential, of using drugs must be considered part of the opportunity cost. The rational consumer will weigh his consumption possibilities, the price of goods and services, and risks involved in consumption (if the good is illicit or dangerous) and make a decision about consumption. There is no reason to believe that heroin users view their demand for heroin in any other way.

Preble and Casey (1969) found that the heroin abusing population was very dynamic in their activities. Their ethnographic research demonstrated that heroin addicts had a very active lifestyle. They were on the hustle daily, copping drugs, and using drugs. They found their drug career challenging and exciting. The risks in their hustle and drug use were generally calculated, and not simply irrational. Their objectives in life were to be successful in their chosen career, analogous

to the consumer of economic demand theory (see also section II on methodological issues, as well as section III on patterns of drug use and criminal behavior).

1. Price of Heroin

The nature of the demand for drugs is the primary reason that the drug/crime hypothesis has credibility. Drugs, opiates in particular, have addictive properties. The economic implication of addiction is that drug addicts are highly motivated to maintain a constant level of consumption of the drug, and will be responsive to increases in the price of heroin. There are, however, several factors that mediate this demand and are worthy of further review.

First of all, as we have already pointed out in section III on the patterns of drug use and criminal behavior, not all heroin abusers are addicted. The National Commission on Marihuana and Drug Abuse (1973a) has categorized drug abusers by frequency and quantity of drug consumption into four classes (for other classifications, see section III):

- (1) infrequent recreational users,
- (2) frequent recreational users,
- (3) intensive users, and
- (4) compulsive users.

These categories are indicative of various levels of sensitivity to changes in the price of heroin.

The consumption patterns of compulsive users are relatively insensitive to changes in the price of heroin. Their immediate consumption response to a price increase may be negligible, maintaining their habit size. That is, if the price of heroin rises, they may employ several means to maintain their habits at the same or comparable level. They may accomplish this by trying to increase income from sources such as work, welfare, family-friends or crime; they may reduce consumption of other goods and services to buy heroin; they may choose to substitute other drugs for some or all of the heroin habit; or they may seek drug treatment to aid in reducing their habit.

Non-compulsive user's consumption patterns are likely to be more sensitive to changes in the price of heroin. Their patterns of use are more occasional or episodic. They rely on ready availability of the

drug, or convenience in making the buy. Besides price, these users are likely to be responsive to other elements of the opportunity cost of heroin. Because these users have no physiological dependence on the drug, their level of use can vary widely to suit their income and convenience.

Most heroin users probably have episodic patterns of use. O'Donnell et al., (1976) found that for the 20-30-year old men in a nationwide survey who had ever used heroin, 32 percent had used heroin "almost everyday" at their period of highest consumption; fifty-six percent had used it less than once a month. This 32 percent advancing to "almost daily" use would not normally be considered addicted (see also Robins, 1973 and Silberman, 1978).

Research conducted by Zinberg (1979) has also focused on nonaddictive opiate use. He reports on patterns of drug use by 90 individuals who had controlled patterns of opiate use. These subjects have used opiates at least 10 times a year for two years with no more than one "spree" (intensive, compulsive use of short duration). He found these subjects exhibited stable patterns of drug use and lifestyles. Based on this research, Zinberg concluded that there apparently are a number of drug abusers who are marginal users. These users tread a thin line between controlled and compulsive use. Other studies have reached similar conclusions.

Recent research by Abt Associates (1975) and Hunt and Chambers (1976) estimate that from 1.39 to 2 percent, respectively, of their samples have used heroin. Extrapolating these figures to obtain a national estimate of persons who have ever used heroin, it is estimated that 2.5 to 4 million persons have used heroin. Of these, the authors estimate only 10 percent were addicted.

Mark Moore (1977) studied the heroin market in New York City. Based on his analysis, a typology of heroin use was developed. Use of two bags of heroin daily constituted a "small" habit. Over six bags of heroin a day was considered a "large" habit. There is a considerable difference both quantitatively and qualitatively in these drug use patterns. Moore estimated 30 percent of the addicts had small habits, 40 percent moderate habits, and 30 percent large habits. While there

may be a number of addicts whose habits may not be affected by heroin price changes, and, in fact, if price rises too high their habits might decrease, there also appears to be a substantial number of addicts with extensive drug habits.

If addiction does indicate that an individual's use of heroin is unresponsive to heroin price changes, it may be important for policy purposes to understand the advancement to addiction from first use or first continuing use of heroin. The following studies provide some insight into this phenomenon (see also section IV on life cycles).

Inciardi (1979), in an ethnographic study of drug abusers in Miami, Florida, has collected data on the pattern of his sample's drug use. Using a sociometrically oriented model or "snowballing" technique to obtain his sample, Inciardi interviewed 356 active addicts from the "free community" in Miami. In other words, these addicts were not affiliated with any treatment center nor were they in jail. They were active addicts residing in the community. For males, on the average (median), first drug abuse preceded first heroin abuse by 3.5 years, and first heroin abuse preceded first continuous heroin use by 6 months. This indicates that for this sample, heroin use was relatively late in the pattern of drug abuse. There was at least a 6-month period between first use and continuous use, and then an undetermined period of time before addiction could be established.

Another factor influencing criminal behavior is that many heavy users may also be pushers. If this is true, then consumers with supposedly less elastic demands for heroin will not be greatly affected by higher heroin prices; they will pass on increased heroin prices to their lower tier users who may have small demands/habits for heroin and would not be as greatly affected by a price increase, as a smaller percent of their income is devoted to heroin abuse.

There is some support for this from Hughes et al., (1971) in their study of a Chicago "heroin copping community" where 34 percent of the users were dealers. Holahan (1972) notes that "dealer" habits were 180 milligrams per day, while small and moderate habits were 20-50 milligrams per day of pure heroin. Goldman (1976b) suggests that heavy users may select themselves into drug dealing as a means of financing their habits.

This type of evidence is important to the study of the price responsiveness of the demand for heroin. Indications are that there is a large body of users who are not addicts. There are many addicts with relatively small habits and there is some finite period within which a heroin abuser can be discouraged from advancing to continuous use and from there to addiction.

2. Drug Substitution Patterns

A major factor affecting the demand for heroin is the availability, quality, and price of drug substitutes. Based on consumer demand theory, the better the quality and availability of heroin substitutes, and the lower the price of these substitutes, the more elastic the demand for heroin. Elasticity means that a user's consumption of heroin is more responsive to changes in the price of heroin. If heroin prices go up beyond a user's means, he is likely to decrease his consumption of the drug. If a habit is inelastic, however, the addict will try to maintain his habit size regardless of changes in the price of heroin. There appear to be a number of substitution patterns for heroin.

Drug substitution patterns include the use of methadone (legal and illegal) and such drugs as Talwin, Dilaudid, Darvon, and alcohol. One of the major thrusts of public policy has been to reduce demand for heroin by providing legal substitutes. The methadone maintenance and withdrawal programs are designed to provide legal substitutes for heroin. The programs are designed to provide long-term alternatives to heroin abuse, by enrolling clients in continuing treatment programs. Ideally, methadone treatment not only substitutes for heroin abuse, but also blocks the demand for it as well by reducing the "high" and the withdrawal symptoms (see also section VI on treatment effects).

However, as will be seen in section VI, Preble and Miller (1977) have noted several unanticipated consequences of methadone maintenance. The active lifestyle of addicts, described in an earlier study by Preble and Casey (1969), had given way to a more passive life of methadone maintenance supplemented by extensive use of alcohol, financed by welfare, panhandling or some work. Other addicts became involved in the sale of part of their methadone dosage and purchased hypnotics or tranquilizers (pills). Another pattern observed by Preble and Miller (1977) involved

the use of methadone, wine and pills, and some cocaine or heroin. These mixed patterns included over 80 percent of the drug abusers in the area studied. Only small groups used heroin (16 percent) or methadone only (4 percent).

Other researchers have also found indications that methadone is being used illegally. Stoloff, Levine, and Spruill (1975) report that as much as 30 percent of the urinalysis results of methadone treatment clients were methadone clean. These clients were believed to be diverting methadone to the illegal methadone street market. This study also showed about 16 percent of urinalysis of methadone clients to be heroin dirty, and 24 percent to be quinine dirty (a heroin diluent).

The extent of methadone substitution is an important factor for estimating the elasticity of demand for heroin. The more readily available methadone is, in treatment or illegal markets, the more elastic the demand will be for heroin, and the more responsive the heroin abuser's consumption of heroin to changes in its price.

3. Law Enforcement Deterrence

Arrest and conviction are possible consequences of a drug/crime lifestyle. This should be considered a deterrent to crime and drug activity if the consequences are great enough. But the probability of arrest and conviction for a drug user is quite low and the deterrent effect minimal.

Inciardi (1979) reports on the ratio of offenses to arrests for his ethnographic study of addicts in Miami, Florida. Ignoring simple drug use, drug sales were reported to result in one arrest for every 450 sales. For males, property crime lead to one arrest for every 273 offenses, forgery/counterfeiting to one arrest for every 285 offenses, and for all types of crime, one arrest for every 427 crimes.

Silverman, Spruill, and Levine (1975) estimated the clearance rate for reported property crime in Detroit was about 12 percent from 1970 to 1973. But this misses a substantial number of unreported crimes, which may be as much as three times the number reported, thereby lowering the clearance rate to 4 to 5 percent. This is one arrest for every 20 to 25 crimes, much higher than Inciardi's reported above, but still quite low.

The low probability of arrest for property crime or for drug sales may not encourage many people to begin using drugs and/or to commit crime, but it is also unlikely to discourage drug abusers from their drug use or criminal behavior. Theoretically, deterrence has a role in affecting criminal behavior, if the criminal is rational enough to balance risks. Since the probability of arrest for drug offenses or property crime is low, there is probably no deterrence effect.

Beside the probability of arrest, the severity of the expected penalty has been hypothesized to lead to reduced drug demand. A much publicized change in the New York State drug laws increased, in 1973, the sentences for drug related offenses. Winick (1975) examined the effect of the change in drug laws. The statistics indicate no immediately evident changes: property crimes actually increased about 3.5 percent from 1973 to 1974; college students reported no changes in consumption before and after the law; heroin users had no additional problems in obtaining the drug of their choice; and heroin pushers reported business as usual after an initial period of increased caution. Official statistics show increases in the percentage of drug cases coming to trial (from 7 to 17 percent); about the same percentage of convictions as before (70 percent); and generally more severe charges brought, though about the same number of drug charges. Weisman (1975) also notes that predicted effects of the stiffer drug laws did not occur in New York.

4. Time Spent Copping Drugs

A final cost of heroin use considered here is the time involved in heroin copping and use. The more time it requires to cop (acquire) and use drugs, the greater the cost to the user in terms of time taken from other activities. This may be broken into two separate components: information about the market for heroin, and the intensity of use.

The time involved in copping is considered a significant policy avenue by Moore (1977). Moore's research on the New York City heroin market suggests to him that new users are very sensitive to the convenience of a supply of heroin. He reports that an experienced user uses as much as 3 to 4 hours daily to cop; and the time required is much greater for new users. New users don't have established connections to purchase heroin; they don't know of copping areas or dealers. Lacking ready

information on the availability of heroin, new users are easily discouraged from investigating the heroin market and locating new sources. The "effective" price of heroin, therefore, is greater for new, inexperienced users. They would need to invest some time in "market" research in order to maintain a supply of heroin.

This effect can be achieved by law enforcement officers acting to disrupt local markets. By some program of surveillance and interruption of copping areas and suspected dealers the authorities could make dealers wary of unfamiliar customers, and thus restrict their activity to selling to the "safe" market, possibly reducing the number of new users and eventual addicts.

In sum, there are many factors that influence and mediate an individual's demand for heroin. The price is likely to affect the consumption patterns of infrequent users. Compulsive users are likely to maintain the size of their habits while increasing their expenditures on drugs. The resources needed for their increased expenditures are likely to come from family, friends, welfare, increased theft, or, if they deal in drugs, increased drug prices to other consumers. An individual's drug substitution patterns are also likely to effect his need for heroin. And, finally, the deterrent effect of law enforcement practices may have the potential to minimize the number of heroin users by increasing the probability of their arrest, but this effect, thus far, apparently has not been realized. The other major facet of consumer behavior, the supply of labor will now be examined.

B. Supply of Labor by Drug Abusers

Drug abusers must live within their budgets like any other "consumer." Their expenditures on drugs, essentials, and luxuries can be no greater than their income. Periods of excess consumption are possible for most consumers by dissaving, borrowing, or selling accumulated wealth, but this is not generally feasible for drug abusers, who generally have limited wealth and assets.

Income can be from many sources. It can be the result of time invested into an income-generating activity, or it can be obtained from an outside source. An addict's time can be put "productively" into employment, crime, drug sales, or household work. Outside sources of

income include welfare, family and friends. These sources together total the value of real goods and services which can be commanded with income.

It has long been alleged that heroin use may be so intense that it interferes with a user holding a job and therefore addicts must finance their habit primarily through income-generating crimes. While addicts may engage in substantial amounts of income-generating crimes, it has not been established, convincingly, that heroin use per se interferes with employment. There is some evidence that shows addicts have substantial employment histories as well as criminal records during addiction periods.

Evidence indicating employment and the employability of addicts has been reviewed by Hubbard et al., (1977) (see also section IV on life cycles). The studies reviewed by Hubbard et al. showed that about 30 percent of heroin abusers seeking treatment were employed at admission. In studies of more general populations cited by Hubbard et al., up to 70 percent of those who had ever used heroin had employment. After correction for the poor age and educational characteristics of drug abusers (which are unfavorable for employment) these employment rates are higher than would be expected. A study conducted by McGlothlin and Tabbush (1974) had comparable figures: 30 percent of the addicts admitted to treatment were employed full-time, and about 25 percent of the nonenrolled addicts were employed full-time. General purpose studies conducted by O'Donnell et al., (1976) and Chambers (1971) estimated that 78 and 58 percent, respectively, of persons who "ever used" heroin were employed.

The evidence on the employment status of addicts can only be considered suggestive. Addicts can and do work. They work at full-time jobs over extended periods of time while addicted (Caplovitz, 1976) as well as working intermittently. This should not be ignored as an important actual and potential source of addict income. Despite this evidence, however, given what is known about the educational level of addicts and indications of other forms of social pathology among addicts, we can only expect addicts to be employed in marginal jobs, if at all.

The ability of addicts to obtain funds from other sources outside of work has not been well documented. Moore (1977) describes the ethnographic work of Heather Ruth in New York City which sheds some light on this issue. Ruth found legitimate jobs accounted for only 6 percent of the income sources for her sample, welfare only 1 percent, and borrowing accounted for 6 percent. Now that these issues have been briefly summarized, the few studies that have employed econometric modeling and hypothesis testing will be reviewed.

C. Econometric Drug/Crime Studies

There are three categories of economic literature on crime/drug relationships. The first category is considered theoretical and policy oriented. The drug abuse-crime field abounds with theories and policy implications, all based upon hypothesized behavior of drug abusers and criminals. The second category consists of descriptive studies, many of which have been noted throughout this review. Descriptive studies provide the socioeconomic and demographic characteristics of the population and analyze their degree of involvement with drugs and crime. The third category of studies involves econometric model building and hypothesis testing. This third category of research is the ultimate test of the first two categories, but has been attempted in very few studies.

There have been few studies related to the crime/drug problem which have used econometric models, estimating either multivariate regressions or simultaneous equations systems. The studies that have used these techniques all suffer from the same weakness: inadequate data. One of the earliest quantitative studies of the retail market for heroin was published by Brown and Silverman (1974). Their study developed a model of the retail market for heroin, and analyzed the Bureau of Narcotics and Dangerous Drugs (BNDD) data on heroin purchases by law enforcement officers. They were able to estimate a time series for the retail price of heroin which they used to analyze the relationship of crime to the retail price of heroin in several urban areas.

Their estimation of the retail price of heroin was a significant advance in the use of econometric models to study the crime/drug relationship. Crude price data on law enforcement buys can be adjusted for several systematic factors related to the marketing of heroin. These

are the size and purity of the purchase as well as the time trend. By defining a standard size and quantity retail purchase, the retail street value can be imputed from the price per gram and a price per pure gram of heroin, purchased at various levels of the distribution network. This type of price data adjustment is important for any studies making use of heroin price data.

Brown and Silverman, in the same study, went on to use their retail heroin price series to analyze the relationship between the price of heroin and crime for New York City. Their study found a positive relationship between variations in the price of heroin and the crime rate for income-generating crime. A 10 percent increase in the retail price of heroin led to between .6 and 3.6 percent increases in various income producing crime categories. The model demonstrated a positive crime/drug relationship, but the authors note that it is probably inappropriately specified. The model would be improved by using a simultaneous equation model, and including data for law enforcement activities, treatment availability, and the availability of other substitute drugs.

Silverman and Spruill (1977) improved on the Brown and Silverman study. They analyzed the impact of changes in the price of heroin on the crime rate in Detroit between November 1970 and July 1973. Crime rates for income-generating crime were collected for census tracts in the Detroit area and the crime rate in each tract was analyzed.

The study used multiple regression analysis in relating crime rates to a set of variables. The independent variables in the regression included the price of heroin, the average monthly temperature, a seasonal variable, a time trend, and a law enforcement variable. The specification of the regression allowed estimation of the elasticity of crime with respect to changes in the price of heroin and the price elasticity of demand for heroin. The estimation of this elasticity, disaggregation to the census tract level, and introduction of a law enforcement variable were the major improvements over the New York study. This model once again used a price series in estimating retail heroin prices which adjusted the price and purity of heroin purchases by law enforcement officers.

The authors concluded that changes in the price of heroin did affect the crime rate in Detroit. They estimated a .28 elasticity of crime with respect to changes in the price of heroin and a price elasticity of demand for heroin of .27. The authors noted that this implies about 30 percent of income-generating crime in Detroit was used to purchase heroin. The study indicated that improved law enforcement has some lagged effect on the crime rate. Changes in the price of heroin has effects of different strengths on the crime rates in different neighborhoods, having the largest impact on lower income neighborhoods.

A logical extension of the Silverman work was performed by Stoloff, Levine and Spruill (1975). Building on the earlier work, they tested more sophisticated hypotheses and used more powerful analytical techniques. This study focused on the crime rate in Wayne County, Michigan. Hypothesized determinants of the rate of income-generating crime were the price and purity of heroin, enrollment in treatment, offense clearance rate, the rate of unemployment, average temperature, a seasonal adjustment, and a time trend.

This study tested the effect of public policy strategies on the demand for heroin and crime rates. The authors tested the hypothesis that enrollment in treatment (as a measure of the reduction of demand for heroin) results in a lessening of income-generating crime by lowering the drug abuser's demand for heroin. They found that increased treatment enrollment was associated with a reduction in crime. A 10 percent increase in the former generated a 2.1 percent reduction in the latter. The second public policy variable was an offense clearance rate, which is a supply reduction variable. A significant reduction in crime was correlated with a lagged increase of offense clearances. As in the three prior studies by the Public Research Institute (Brown and Silverman, 1974; Silverman and Spruill, 1977; and Stoloff, Levine, and Spruill, 1975), the retail price of heroin, temperature, seasonal adjustment, and time trend had significant impacts on the crime rate. The unemployment rate was not a significant factor in determining crime rates.

This study found, once again, that an increase in the price of heroin was related to an increase in the income-generating crime rate, with an elasticity of .11; a 10 percent increase in the price of heroin

was associated with a 1.1 percent increase in the crime rate. This elasticity was significantly below those found by Brown and Silverman (1974) and Silverman, Spruill and Levine (1975). The study advanced to more sophisticated simultaneous equation analysis. The authors reported that there was little support for the "reverse" drug/crime hypothesis: that increased revenues from crime lead to greater demand for heroin and to increases in the market price of heroin.

In sum, using aggregate data on the price of heroin and crime rates, the Public Research Institute has demonstrated that the crime rate increases as the price of heroin increases. Drug enforcement strategies or regulatory policies, one of the two major strategic policies (the other in treatment, discussed in section VI) are designed to reduce the availability of drugs, thereby increasing price and reducing consumption, are based on these economic concepts. A brief discussion of the enforcement philosophy follows.

D. Enforcement Philosophy^{*}

In addressing these questions, economic theory has had some role in directing research and public policy on the drug/crime relationship. This has focused primarily on the nature of the demand for heroin. Economic theory predicts that the demand for goods and services will be responsive to changes in the prices. Higher prices should lead to lower consumption and lower prices to higher consumption. Public policy has used the theory of consumer demand to design its attacks on heroin abuse. The twin approaches have been supply reduction and demand reduction. The first policy is designed to discourage heroin abuse by reducing its availability and increasing its effective price. This is meant to drive heroin consumers away from the heroin market, and reduce heroin demand. Demand reduction is meant to lower the demand for heroin by encouraging treatment or discouraging heroin use onset by education-prevention efforts.

Demand reduction strategies will be discussed in section VI on treatment effects. The purpose of this section is to briefly discuss supply reduction strategies.

* For a detailed review of enforcement philosophy and effectiveness see Williams et al., 1978.

The greatest percentage of dollars used to combat drug abuse has been devoted to law enforcement or supply reduction efforts. The basis for this effort lies in the belief that drug consumption will diminish in response to higher prices for drugs brought about by diminished supply (Williams et al., 1978). As noted in the preceding sections, heroin consumption may be elastic for most users, therefore, their consumption of heroin could be effected by price changes. Those who maintain that heroin consumption is inelastic, which it may be for some addicts, claim supply reduction strategies may be counterproductive (Silverman et al., 1975).

Reducing the supply of drugs through law enforcement efforts increases the cost of the drug to the individual consumer. If it is true that addicts support their habits mainly through theft, then these price increases will result in greater amounts of theft. However, we have already noted in earlier sections that this relationship appears to be much more complex. In addition, Goldman (1976b) notes that curing an individual's addiction problem may have little impact on crime because ex-addicts may continue their criminal involvement despite cessation of drugs. However, McGothlin et al., (1978) and Nurco and DuPont (1975) suggest that addicts do not maintain levels of criminal involvement during periods of abstinence (see section IV on life cycles).

There do appear to be two beneficial effects of supply reduction strategies, which most researchers agree on: new users are discouraged from trying heroin (Goldman, 1976a; Moore, 1977; Silverman et al., 1975; and Williams et al., 1978) and higher prices for drugs create an increased demand for treatment (Goldman, 1976a; and Williams et al., 1978).

VI. DRUG TREATMENT

Demand reduction strategies, the other major strategy reflecting U.S. social policy on drug abuse, are designed to reduce the number of drug users, reduce the quantity of drugs presently used by drug users, and prevent others from ever using illicit drugs. Following Congressional legislation establishing a Federal civil commitment for treatment of opiate users and support for community based voluntary treatment programs, there has been a substantial proliferation of treatment programs in the U.S. Largely a response to the increasing number of heroin users in the urban core, coinciding with a seemingly parallel increase in crime, treatment was viewed as a means to reduce substance abuse and associated criminal behaviors in our cities.

These appropriations have resulted in a wide range of program types, most of which can be summarized into five modality environments. The first type of program and the program type that has received the most attention, is methadone maintenance. Methadone maintenance programs usually operate on an outpatient basis and provide compensating medication (usually methadone) for heroin to achieve stabilization. The second type of drug treatment program falls under the rubric of therapeutic communities. Usually residential, full-time and drug-free, these programs emphasize client-government and group pressures to "persuade the individual of the childishness and ineptness of his previous behavior and of the inability of drugs to solve problems" (Sells, 1979: 108). The third type of treatment modality, outpatient drug-free, is designed primarily for nonopiate users. Outpatient drug-free programs vary considerably in treatment philosophy, ranging from demanding socialization type programs to relaxed rap sessions. The fourth treatment modality, called detoxification, is short-term drug-free. Usually lasting no more than 21 days, these programs utilize medications to relieve discomfort during the withdrawal process, but, generally, offer only limited counseling (Sells, 1979). The fifth category includes those programs that operate under the auspices of departments of correction. This would include the California Civil Addict Program, and the U.S. Public Health Service Hospitals, which could constitute a sixth category; however, they will be discussed as part of this category.

Although programs differ considerably within and between treatment modalities, there is general agreement within and between modalities, concerning what the goals of treatment should be. The effectiveness of treatment programs is usually determined by measuring changes in several behavioral aspects of the client both during and after treatment. Measures used repeatedly in the assessment of treatment effectiveness include the reduction, and in some programs the elimination, of the use of illicit drugs and criminality, as well as, improvement in other related areas such as: employment, school enrollment, and so forth (Sells, 1979). The measure that primarily concerns us here is the change in criminality that can be attributed to treatment.

The explicit assumption underlying program attempts to reduce criminal behavior among drug treatment clients is that there is a relationship between drug use and criminal behavior. That is, treatment reduces drug use and there is a concomitant decrease in criminal activity. This not only presupposes a relationship between drug use and crime, but also assumes clients will discontinue criminal activities if drug use ceases. Several studies do show that the reduction of illicit drug use through treatment does reduce criminal activities. As mentioned in section IV, a recent study by McGlothlin et al., (1978) using a retrospective case history approach, indicates criminality is sharply reduced when subjects are not addicted. However, other studies have shown that criminal activity among addicts using methadone may not decrease, indicating that the relationship between drug use and criminal behavior may be more complex (Hayim, 1973).

However, the reduction of criminality among those enrolled in treatment programs should not be interpreted as confirmation of a drug causes crime theory or even as an indication of the success of the program. It has been shown that criminality declines with age (see section IV) and that treatment success is closely related to the age of the client (Kleinman and Lukoff, 1975), discussed below. So what may be an occurrence in the "natural history of addiction" should not be misinterpreted as a successful treatment or confirmation of a "drugs causes crime theory." Age effects should be controlled, but often are not, in this research.

What may also affect the interpretation of evaluation results are the intervals at which data are collected. Typically, measures of the evaluation criteria are taken at a pretreatment period, which provides baseline data, periodic intervals throughout treatment, and at several points in the posttreatment period. Researchers have noted that drug usage and criminal behavior are abnormally high immediately preceding admission to treatment which, in those programs that utilize short pretreatment baseline periods, may artificially insure success of the program due to significant reductions in substance abuse and client criminality (McGlothlin et al., 1977 and Sells, 1979).

In spite of similarities in program goals, there is still the problem of determining which treatment modality or program is most effective and whether some programs are more effective for certain types of users. The magnitude of the variation between programs makes outcome comparisons extremely problematic. Programs differ widely not only regarding philosophy and goals, but also staff-client ratios, facilities, length of treatment, and client characteristics, each of which makes comparisons of treatment effects difficult. The extent of variation on the types of addicts drawn to the different treatment modalities is considerable and this makes comparisons difficult. For example, table 1 (taken from Simpson et al., 1976) shows significant differences in the client populations for each modality. Not only would differences be expected in outcome due to differences in treatment philosophy, but it is clear that client differences are also likely to effect outcome. One would expect, for example, differences in outcome for the methadone maintenance sample, which is predominantly male, older, black and includes 94 percent daily opioid users at the time of admission, as opposed to the drug-free program which has significantly more females, is younger, predominantly white and has only 35 percent daily opioid users (Sells, 1979). Changes in opioid use would be expected to be more important and significantly more difficult for the methadone maintenance patients than for the drug-free patients.

In brief, then, comparisons within and between modality environments are difficult for a variety of reasons, most of which affect the interpretation and validity of evaluation findings. Not only are there

Table 1. Comparison of Patient Samples in Four Treatment Modalities on Demographic and Baseline Characteristics.
 Based on DARP research sample, Simpson et al. (1976)
 (taken from Sells, 1979:106)

Variable	Measure	Treatment Sample			
		Methadone maintenance (MM)	Therapeutic community (TC)	Outpatient drug-free (DF)	Detoxification (DT)
No. in Sample	N	11,023	4,505	5,785	6,147
Sex	Percent male	78%	74%	69%	76%
Age	Median age at admission	26.7 yrs.	22.0 yrs.	20.0 yrs.	24.7 yrs.
	Percent under 18	1%	15%	37%	4%
	Percent over 30	30%	12%	9%	22%
Ethnic Group	Black	58%	34%	26%	50%
	White	16%	51%	63%	31%
	Puerto Rican	15%	11%	5%	6%
	Mexican-American	10%	3%	5%	12%
Baseline Drug	Percent daily opioid use	94%	63%	35%	88%
	Percent nonopioid only	1%	17%	48%	7%
Baseline Alcohol Use	Percent over 8 oz. daily	14%	19%	15%	15%
Baseline Employment	Percent employment over 30 days per 2-month period	25%	16%	27%	28%
Baseline Productive Activities (Empl., School, or Home-making)	Percent engaged in productive activities	38%	35%	62%	30%
Criminality	Percent supported by legal activities	47%	54%	23%	64%

structural and client differences between programs, but a number of the evaluations of these programs are fraught with serious methodological flaws that make findings suspect. A number of researchers have pointed out the methodological deficiencies in this evaluation research. Lukoff (1974), Nash (1976), Maddux and Bowden (1972), and Greenberg and Adler (1974) all point out major weaknesses in past evaluation efforts. Three deficiencies appear most often in treatment studies: proper sampling procedures are not followed, research design, and measurement problems. Treatment cohort entrants, nonenrollees, and splittees are often not systematically sampled. Pretreatment, intreatment, and posttreatment periods differ across studies making comparisons difficult. Measures are often criticized as being unreliable or invalid. Programs are often evaluated on absolute rather than comparative levels of client behavior which would allow reasonable outcome expectations for the target populations. Client preselection may make program effectiveness appear better than it might otherwise be. It is often difficult to ascertain program characteristics in order to assess what program effectiveness can be attributed to. Detailed descriptions of the actual structure and process of treatment and ancillary services are usually not included in the evaluation, but would permit a more complete and useful categorization of programs.

Despite these shortcomings, evaluation studies have increased the state of our knowledge on drug abuse trends, user characteristics, and treatment effectiveness, and are worthy of further review. Before doing so, we should draw a distinction between what is meant by program evaluation and treatment evaluation (for a more detailed discussion of this distinction see Sells, 1979: 107). Program evaluation, those evaluations that are referred to most, are concerned with a single program, and pay little attention to the treatment paradigm involved. Because these evaluations are specific to individual programs and client populations, their generalizability to other programs or treatment paradigms is limited. Treatment evaluation, on the other hand, "implies the analysis of data from multiple programs practicing comparable treatment paradigms, as essential for generalization of results" (Sells, 1979: 107). For the above reasons, program evaluations are discussed in this paper rather than treatment modalities or paradigms.

This review of the treatment literature will be organized under four subheadings: evaluations of methadone maintenance programs, therapeutic communities, multi-modality programs, and correctional programs.

A. Evaluative Research on Methadone Maintenance Programs

Methadone maintenance has become the most prevalent and, some believe, the most effective treatment modality for treating drug addiction. Presently, over 75,000 former heroin addicts are receiving daily doses of methadone from approved methadone clinics across the U.S. (Lowinson and Millman, 1979). Believed to be a relatively benign addictive drug, methadone minimizes the discomfort involved in the withdrawal from heroin. Methadone maintenance is considered both an inducement to keep addicts in treatment as well as a stabilizing drug allowing the addict the opportunity to become re-socialized into the community. By supplying the addict with a less potent drug, it is assumed he will then be able to utilize time, previously spent securing drugs, more constructively. Additionally, the addict will no longer need to commit income-generating crimes to support his heroin habit.

One of the earliest empirical studies on the effect of methadone maintenance was conducted at the Dole-Nyswander methadone programs at New York City's Beth Israel Hospital. The reports from this program all show a significant decline in criminal behavior as a result of treatment (Gearing, 1970b, 1972). Greenberg and Adler (1974) report that Dole found 91 percent of the pretreatment population had been incarcerated, whereas 88 percent were arrest-free in the posttreatment period. Furthermore, Gearing (1970b), evaluating the same program, compared pre- and posttreatment arrests of methadone patients with a sample from a detoxification unit. The pretreatment arrest and conviction rates for both groups were comparable, but after treatment the detoxification group's arrest and conviction rate increased slightly, whereas the methadone group's rates decreased significantly. These studies and others that came out of the Beth Israel group show a definite reduction in criminal activity in the posttreatment methadone group.

Other researchers, however, have questioned the generalizability and validity of Gearing's work because of methodological weaknesses and the uniqueness of the program (Lukoff, 1974; Maddux and Bowden, 1972;

and Nash, 1976). First, the program staff and clients were carefully selected to insure success (Nash, 1976). To enhance motivation, clients were required to wait at least six months before beginning treatment. Lukoff (1974) observed that client characteristics were related to program retention and ultimately to program effectiveness. For example, those clients in the Beth Israel program who were generally law-abiding prior to admission and had no alcohol problems were retained at a 95.8 percent rate. Those clients with extensive criminal records were retained at a rate of 55.6 percent. Lukoff concludes the client selection was in the direction that insured success. Furthermore, employment was stressed and a motivated staff provided the ancillary services needed, which was considered by some an anomaly in treatment programs (Nash, 1976).

In addition, Gearing used self-reports and the New York City Narcotics Registry to obtain arrest data. For most of the clients, arrest data were reported to counselors and were, therefore, subject to memory lapses and deliberate underreporting by both counselors and clients (Nash, 1976). Furthermore, distinctions between drug arrests and other arrests were not clear. For some of the clients, arrest data were obtained from the New York City Narcotics Registry which is fairly valid for narcotics, but does not report non-narcotics related arrests (Nash, 1976).

Another significant evaluation study on methadone maintenance was the one conducted by the Addiction Research Corporation Team (ARCT) (a joint effort by Harvard, Yale, and Columbia researchers and sponsored by the Vera Institute of Criminal Justice located in New York City) of a methadone maintenance program in Brooklyn. Kleinman and Lukoff, (1975) found a higher arrest-charge rate for clients after they entered the treatment program than in the period between addiction onset and entry into treatment. Only those clients who stayed in treatment for three years or more showed a slight reduction in arrest rates. This long-term evaluation showed that changes in criminal behavior were closely tied to the addict's age. Among those addicts who were under 30 years of age, there was a decline in their criminality due to a drop in arrests for forgery, prostitution, and drug offenses, whereas arrests for robbery, burglary and other street crimes actually increased. Some have suggested

that providing methadone and freeing young addicts from the time they need to cop heroin, "apparently gave them more time and energy to commit predatory crimes" (Silberman, 1978). This carefully conducted study was also one of the first major evaluations which found methadone maintenance had no effect on posttreatment criminality. Although critics of this evaluation could not find much to criticize on methodological grounds, they did find fault with the program itself (Nash, 1976). For example, reports found that the treatment philosophy of the program administrators encouraged detoxification, therefore, methadone dosage was low. In addition, the program was administratively weak, the facility was not conducive to counseling, and the rate of missed medication was extremely high. All of these factors could have contributed to the program's inability to have an impact on posttreatment criminality.

Nash headed an evaluation of 30 treatment programs in New Jersey that included both methadone and drug-free residential programs (Nash, 1973a, 1973b, 1975). Both program modalities had an impact on criminality with the drug-free programs having a greater impact but lower patient retention rates (Nash, 1976). Cushman (1971) conducted an evaluation of a methadone maintenance program at St. Luke's Hospital in New York City and found dramatic reductions in criminality in posttreatment periods over pretreatment periods. However, these posttreatment arrest figures may have been artificially depressed because addicts may have left the two precinct areas in which arrest data were being obtained (Nash, 1976).

Recently, several unanticipated consequences of methadone maintenance have become known to observers of the drug scene in several urban centers. It has already been shown in the preceding sections how addicts are capable of regulating their habits. Although the elasticity of the addict habit has been shown repeatedly, it has also been shown that the size of the habit usually expands and contracts as a result of an outside influence, such as the availability of heroin or an arrest, and is not the decision or will power of the addict himself (Nurco, 1976 and Waldorf, 1973). The regulation of the heroin habit has become much easier with the use of methadone. Addicts have been able to decrease their consumption of heroin by taking methadone with wine and pills. The wine and pills

reduce the ability of the methadone to block the effects of the heroin (Preble and Miller, 1977). Addicts in methadone programs have become quite adept at concealing the use of these other drugs and avoiding detection for violations in the program. Preble and Miller (1977) describe how addicts pay for "clean" urines to substitute for their own "dirty" urines to avoid detection for drug use. Others sell the pills or methadone they are prescribed in order to buy wine or other more potent drugs.

The principle rationale for methadone, that is, to decrease the size of the addict's heroin habit so he can lead a more stable and productive life has also allowed the addict more time to himself and has supplied the addict with another drug, methadone, to maintain his high. It has been suggested above that this increased time may have freed the addict to commit more predatory crimes. Although methadone may be a viable treatment alternative in some cases, further studies, similar to the one conducted by Preble and Miller, need to be conducted to explore these unanticipated consequences.

B. Therapeutic Communities

Nash (1976) reported on an evaluation conducted by System Sciences Incorporated of eight residential communities in New York City. The results of this evaluation were overwhelmingly positive--the therapeutic communities had a positive impact on criminality--but the results were never released. Nash writes that the decision not to release the findings was based on political motivation more than anything else. The decision had already been made to increase methadone maintenance opportunities and the positive results from evaluations of methadone programs were being used to justify these funding decisions. However, other practical considerations may have entered into the decision not to release these findings. For example, the high cost of residential programs, the high attrition rate which tends to obscure evaluation results, and the long follow-up period required for adequate evaluation may have also influenced the decision.

De Leon's (1972) evaluation of Phoenix House compared a sample of dropouts with a sample who was nearing completion of the program after nearly two years. The sample who had spent a longer time in treatment had a greater reduction in arrests after they left treatment.

C. Multi-modality Evaluations

A recently completed comparative analysis of two multi-modality drug treatment programs, one in New York City, the other in Washington, D.C., found posttreatment opiate levels, employment, and arrests were all much improved over pretreatment levels (Burt and Glynn, 1976). Burt's retrospective evaluation of the Addiction Services Agency (ASA) of New York City which included a sample of 782 admitted to methadone maintenance, outpatient therapeutic programs, and residential therapeutic communities at 14 agencies was compared with the Narcotics Treatment Administration (NTA) of Washington which included 360 subjects admitted to methadone maintenance and drug-free programs. It compared clients remaining in treatment with those enrolled in the program less than five days. Groups were compared for three points in time: two months prior to treatment, two months after treatment, and two months prior to interviews. For each program, comparisons were also made across the treatment modalities. Similar results were found for both programs although there were low response rates and significant differences between respondents and non-respondents. Treatment modality did not generally affect treatment outcome. However, in NTA, the detoxification modality showed greater increases in employment than did the comparison group, whereas in ASA the therapeutic community mode showed greater improvement in employment than did the comparison group.

In his critique of twelve multi-modality drug treatment programs, Nash (1976) makes the following points:

1. Residential drug-free programs have a greater impact on client criminality than does methadone maintenance. However, considerably more addicts are treated in methadone maintenance programs than residential drug-free programs. There are several reasons for this: (1) it requires greater motivation on the part of the addict to enter and remain in drug-free programs than methadone programs and (2) drug-free programs are more expensive to maintain therefore fewer are available.
2. In most of the methadone programs examined, pretreatment criminality was greater than posttreatment criminality. Methodological differences and varying pre- and posttreatment intervals affected the significance of client crime rates.

3. Some programs are ineffective for some clients. Nash's study of New Jersey treatment programs found that drug-free programs were very effective with older clients. On the other hand, successful methadone clients are former drug-free program failures.
4. Program characteristics could not be linked to impact on client's criminal behavior.
5. The effects of treatment can only be conclusively demonstrated if clients are matched and randomly assigned to treatment and control groups. Nash points out that a number of evaluations utilize comparison groups but more should use matched random assignments.*
6. The three most important predictors of the probability of posttreatment arrest are sex, age, and pretreatment criminality.

Drug Abuse Reporting Program (DARP)

Under the direction of Dr. Saul B. Sells, the Institute for Behavioral Research of Texas Christian University undertook the most comprehensive drug treatment evaluation ever. The evaluation program, known as the Drug Abuse Reporting Program (DARP) collected over 44,000 admission records from 52 agencies supported by the National Institute for Drug Abuse. Four treatment modalities were included in this evaluation: methadone maintenance, therapeutic communities, drug-free outpatient, and detoxification; a fifth comparison group was composed of those who enrolled but never received treatment. Follow-up interviews were conducted with 3,831 DARP clients in 1975 and 4,107 DARP clients in 1976. Both samples were obtained from the first DARP cohorts entering 25 DARP programs between 1969 and 1972.

In the evaluation prior to follow-up, methadone maintenance programs were reported to improve all outcome measures, but criminal behavior was not entirely eliminated (Sells et al., 1977). Sells concluded that treatment does produce beneficial results, particularly the first two months after treatment begins. Furthermore, the benefits of treatment outweigh the costs. This finding was substantiated in a recent update of the cost-benefit of treatment programs (Rufener, Rachal, and Cruze, 1976).

* A study by Bale and others (1978) at the Veterans Hospital in Palo Alto, California is one of the few that uses an experimental study with random assignment to treatment programs.

Follow-up data for the DARP program indicate that changes in treatment outcome measures were maintained after treatment. When pre- and post-treatment periods were compared for all programs, including the comparison group, significant decreases in opiate use were found for all groups (Simpson et al., 1978). However, only those clients in methadone maintenance programs had significantly lower posttreatment arrest rates, but the proportions of those arrested and jailed were lower in the posttreatment period for all groups.

D. Correctional Programs

California Civil Addict Program

Begun in 1961, the program is designed for those addicts convicted of felonies or misdemeanors. The program duration for these addicts lasts seven years. Voluntary commitment lasts two and one-half years. All the committed addicts are first sent to the California Rehabilitation Center for therapy, schooling, and occupational training and then, after seven months, are transferred to outpatient status under close parole supervision. McGlothlin et al., (1977) interviewed 756 male subjects five to twelve years after admission to determine the impact of the program (see also Sells, 1979).

The results showed that subjects who remained in the program improved on measures of drug use, employment, and criminality more so than a comparably matched group who were discharged from the program on a technicality shortly after admission. So, at least during the commitment period, and less so during the posttreatment period, the group remaining in the program significantly reduced their substance abuse and related criminal behavior.

U.S. Public Health Service Hospitals

The U.S. Public Health Service Hospital in Lexington, Kentucky began treating narcotic addicts in 1935 and the Public Health Service Hospital in Fort Worth, Texas opened its doors three years later. Most of the patients admitted over the years were voluntary patients but many were federal prisoners and probationers. The treatment program included medical assistance, psychotherapy, vocational training, and a drug-free environment (O'Donnell, 1969).

Numerous studies have been conducted over the years on the addicts admitted to these programs and these studies have significantly increased our understanding of drug abuse particularly the demographic characteristics of addicts. For example, Chambers, Cuskey, and Moffett (1970a) analyzed addict characteristics focusing particularly on Mexican-Americans, blacks, and females. This research found Mexican-Americans are significantly overrepresented among the addicts at Lexington; they tend to be unmarried; are high school dropouts who usually began drug use during adolescence; and usually had an arrest history prior to opiate use (Chambers, Cuskey, and Moffett, 1970a). Females were mostly white, had been arrested prior to admission, and nearly one-half were prostitutes (Chambers, Hinesley, and Moldestad, 1970d). A substantial majority of black addicts had arrest histories and had been incarcerated prior to admission and most had been criminally involved prior to opiate use (Chambers, Moffett, and Jones, 1968 and Chambers and Moffett, 1970).

Other studies have focused on the effect these programs have had on patient population. The earliest evaluation of patients at Lexington was conducted by Pescor (1944), who analyzed data on 4,766 male patients discharged between 1936 and 1940. Data were obtained from numerous sources six months to six years after patients were released. Pescor reported that 7 percent of the former patients were dead, 14 percent abstinent, 40 percent relapsed, and 40 percent were unknown (see also O'Donnell, 1969a).

Vaillant (1966) conducted a 12-year follow-up of 100 New York City patients released from Lexington who were first admitted in 1952. While 79 percent of the patients relapsed and 92 percent had been imprisoned after discharge, Vaillant found nearly one-half (46 percent) were drug-free after 12 years.

Summary and Conclusion

Coinciding with the proliferation of treatment programs, a number of evaluations of different treatment modalities have been conducted. There has been a great deal of criticism of these evaluations, mostly on methodological grounds. These methodological criticisms focus on problems having to do with sampling, research design, and the measurement of drug use and related behaviors. Selected evaluations of major programs

representing several modality types were reviewed. The complexity of the issues involved with this research makes it extremely difficult and hazardous to make any definitive statements about the effectiveness of these research efforts. Hopefully, the Treatment Outcome Prospective Study (TOPS) presently being conducted by the Research Triangle Institute will clarify this issue.

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The following bibliography is comprised of selected English-speaking literature references on the drugs/crime issue. We hope this bibliography will be a useful adjunct for individuals seeking more information in the drug/crime area and provide a useful basis for future research efforts. Throughout the preceding text we have used a number of supportive materials. These supportive materials were useful in bringing to bear literature from other areas to the complex issues in drug/crime research. To assist the reader who is only interested in the drugs/crime materials, those supportive documents are marked with a star (★).

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