REEXAMINING THE EFFECTS OF PROBATION AND PAROLE ON NARCOTICS ADDICTION AND PROPERTY CRIME

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INTRODUCTION

The personal, public health, and social costs of drug addiction in the United States are substantial (Deschenes and Anglin, 1990; Harwood et al., 1988). The close relationship that exists between drug use and criminal behavior, especially income-generating crimes, contributes a significant proportion of these costs in terms of enforcement, adjudication, and legal sanctions. Because drug abuse has been shown to be an indicator of serious and persistent criminal careers, the cumulative costs for chronic drug-using offenders and the impact of drug-related crime on the criminal justice system (CJS) have been severe. Studies of arrestees, probationers, and parolees have found evidence of high rates of personal drug involvement and concurrent positive urine tests for heroin, cocaine, PCP, and other illicit drugs (Toborg, 1984; Wish, Brady, Cuadrado, and Sears, 1984; Wish, Cuadrado, and Martorana, 1986). The problem of controlling the criminal behavior of the drug-abusing offender--particularly if the offender is addicted to heroin--has become a major concern of the criminal justice system, and effective means of reducing drug use and related crime must be found.

While drug use in general has been linked to criminal behavior, the strongest evidence for a causal relationship exists for the use of narcotics. Property crime levels have been shown to be particularly high for heroin users, especially during periods of addicted use (Anglin and Speckart, 1988; Nurco et al., 1981). Although cocaine use, especially when used as "crack," has been suggested as having a similar causal influence on property crime (Johnson et al., 1986), until recently most research has focused on property crime committed by heroin addicts and on the intervention strategies that have been utilized to reduce property crime rates in this group.

The idea that certain interventions can interrupt the narcotics use-property crime "syndrome" is supported by data showing that property crime among addicts is reduced by (1) well-designed CJS interventions with rigorous urine testing (McGlothlin, Anglin, and Wilson, 1977; Muthen and Speckart, 1983, 1985; Stitzer and McCaul, 1985); (2) combinations of treatment and legal supervision, such as probation or parole (Anglin, McGlothlin, and Speckart, 1981); or (3) legal coercion into treatment (Collins and Allison, 1983; Collins, Rachal, Hubbard, Cavanaugh, Craddock, and Kristiansen, 1982; Salmon and Salmon, 1983). Several alternate strategies to control the drug-using offender are being tested. For example, one recent study has shown that mandatory drug testing of arrestees released before trial reduced pre-trial arrest rates (Yezer et al., 1987; Carver, 1986). Currently, the effectiveness of intensive probation supervision for drug offenders is being evaluated in six sites nationwide (Petersilia, 1989). However, research comparing the extent of rehabilitative or deterrent effects of conventional probation and parole, with and without urine monitoring, remains relatively rare.

The present research was designed to answer questions such as: Is legal supervision as conventionally utilized simply a surveillance technique to monitor the addict and temporarily control his drug use and criminal behavior, or can legal supervision also have rehabilitative effects? Does conventional legal supervision actually reduce drug use and property crime and to what extent? If so, does it have this effect only during the period of supervision, or does the effect last after the supervision is over? Furthermore, the research was intended to ascertain whether different models of supervision (e.g., with or without urine monitoring) produce different results. Until recently, little research has been available that could resolve these questions.

RESEARCH FINDINGS FROM THE CALIFORNIA CIVIL ADDICT PROGRAM

One well-researched example of a specially-designed legal supervision intervention is the California Civil Addict Program (CAP), which was implemented during the early 1960s. This innovative program took the traditional criminal justice system (CJS) approach of incarceration followed by parole and combined it with rehabilitation approaches such as inpatient treatment and aftercare counseling. The inpatient program included both psychotherapeutic and vocational counseling. The long-term intensive parole supervision was conducted by parole officers with relatively small caseloads and included frequent urine testing. The analyses of follow-up data collected from program participants approximately 12 years after their release found that the intervention had several beneficial effects. Specifically, the experimental group showed significant declines in addiction and narcotic-related criminal behavior (McGlothlin, Anglin, and Wilson, 1977; Muthen and Speckart, 1983, 1985).

The CAP study provided an empirical demonstration that CJS interventions can have rehabilitative effects, in contrast to reports by other researchers who have suggested that rehabilitation through CJS efforts was unrealistic or impractical (Marsden and Orsagh, 1983; Murray and Cox, 1979; Murray, Thompson, and Israel, 1978; Orsagh and Marsden, 1985; Sechrest, White, and Brown, 1979).

A STUDY OF LEGAL SUPERVISION EFFECTS ON METHADONE MAINTENANCE PATIENTS

To further examine the possible benefits of legal supervision, we gathered data on the addiction careers of a sample of methadone maintenance patients. The intent of the research was to disentangle the rehabilitative from the deterrent effects of CJS interventions on narcotics use and criminal behavior by heroin addicts. For purposes of this study we defined legal

supervision as both probation and parole supervision, with and without urine monitoring.

The first study objective was to determine whether probation and parole were effective in reducing antisocial behavior. We also wanted to determine whether the addition of urine monitoring increased effectiveness significantly over supervision alone. Another objective was to examine the duration of effects of legal supervision. Did probation or parole deter addicts from narcotics use and criminal behavior only while the supervision was in effect, or were there long-term deterrent effects from a period of legal supervision?

Data and Methods

The data analyzed came from 279 males admitted to methadone treatment clinics in Southern California during the late 1970s for heroin addiction. Data were collected from interviews conducted about six years after treatment admission[1]. Official police records, FBI rap sheets, DMV records, and methadone maintenance admission records, as well as urine samples collected at the time of the interview, were used to corroborate the addicts' reports. Information from these record sources was obtained prior to the interview and

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[1] The retrospective longitudinal interview procedure involved the pre-interview preparation of a schematic time line showing all known arrests and intervals of incarceration, legal supervision, and methadone treatment. This information was used by the interviewer as a memory aid to facilitate recall of past events. In initial discussion with the subject, the interviewer established the date of the first narcotics use on the time chart and then proceeded chronologically to the point when narcotics use changed from less than daily use to daily use (or vice versa), or to when the respondent's legal or treatment status changed. Data were then collected on narcotics use, employment, criminal behavior, and certain other variables for that interval. The interviewer repeated this process for the next and following intervals, each recorded interval being initiated by a change in status or use, up to the date of the interview. Each interval recorded was homogeneous in terms of narcotics use, legal status, and drug treatment enrollment. Each point in the addiction career of the subject was thus measured in terms of these and other variables.

was used to enhance the subject's recall of past events and behavior. The validity of addict self-report is generally considered by researchers to be sufficiently high to support research results (O'Malley et al., 1984; Magura et al., 1987). Our own work over the past 15 years contributes to this view (Anglin and McGlothlin, 1985).

Although the period covered by the research study encompasses the 1970s and the data represent persons addicted in that era, the findings are relevant for current policy decisions for several reasons. First, the nature of the narcotic addict offender has not changed demonstrably. Characteristics of more recently addicted samples indicate that background characteristics and drug and criminal histories have varied in only a few areas, and these differences simply reflect changing social circumstances (Johnson et al., 1985). For example, the type of drugs used have increased in variety, especially for cocaine. Furthermore, the accessibility of community treatment has increased, as has the variety of treatments available (Anglin and Hser, 1990a). Second, the addiction dynamic has been essentially stable. Addicts of the 1960s, 1970s, and 1980s show similar patterns of addicted use, criminal justice system involvement, and drug trafficking and property crime activities (Anglin and Speckart, 1988; Johnson et al., 1985). Finally, criminal justice system interventions still primarily involve incarceration, probation, and parole as strategies to control addict behavior. The characteristics of the research sample (reported below) indicate their comparability to more recent addict groups.

SAMPLE CHARACTERISTICS

The sample was 43 percent white and 57 percent Chicano. Background information (Table 1) shows that the majority of Chicano addicts (69%) were from poor or working class families, whereas over 65% of the white addicts

studied were from the middle or upper classes. The majority of the addicts had completed 10 or 11 years of school, and were working in semi-skilled or unskilled jobs.

Drug and criminal histories for these addicts were extensive. The majority of Chicanos (68%) and a high percentage of whites (36%) had been gang members. Proceeding chronologically, the mean age at first self-reported arrest was 14.6 years for Chicanos and 15.7 years for whites, indicating an early record of delinquency. Both Chicanos and whites reported, on the average, initial narcotics use at about age 18. Addiction occurred, on an average, about two years later. By age 23, both Chicano and White addicts had entered a first period of legal supervision (either probation or parole), which lasted an average of five years[2]. Admission into methadone maintenance occurred at about age 32 for Chicanos and at about age 30 for whites. The reported age of last daily use was 34.5 years for Chicanos and 32.5 for Whites. The addiction careers of this sample span a period of about 13-14 years for Chicanos and 11-12 years for whites. Follow-up interviews occurred at age 38.1 for Chicanos and 36.6 for Whites.

Insert Table 1 about here

The "lifetime" criminality up to the time of the interview (average age of 37 years) was both extensive and chronic among these addict offenders. The first officially recorded adult arrest for both Chicanos and whites was at age 18 and the age at last recorded arrest before interview was 35 for Chicanos and 33 for whites. For Chicanos, the average number of arrests was 24 over a

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[2]Legal supervision periods are measured as a single episode, regardless of type, if they are contiguous. A period of no legal supervision or incarceration would separate two episodes of legal supervision.

typical criminal career of 203 months (17 years), resulting in 11 convictions. Whites, on average, had fewer arrests and convictions, 21 and 10, over an average criminal career of 176 months (15 years). Arrests were most frequent for drug sales or drug possession, followed by other minor crimes for Chicanos and property crimes for whites. Over half all Chicanos and whites had more than one continuous period of legal supervision, with an average of 1.8 and 1.7 such interventions respectively.

Although this study focused on heroin addicts in methadone maintenance treatment in California in the 1970s, for reasons defined earlier, the results should be applicable to the lifestyle and behavior of heroin addicts today. However, the sample is limited both geographically and chronologically, and the generalizability of the findings must be considered in view of these constraints.

RESULTS

Results of the study are presented in three sections. The "lifetime" costs associated with criminal justice system processing and intervention and drug treatment for narcotic addicts are discussed in the first section. The second section describes the changes in average levels of addiction and criminality (property crime and drug dealing) as a function of legal supervision with and without urine testing. The third section presents findings from statistical analyses that estimate the effects of one variable upon another, controlling for a range of other influences on drug use and property crime. The analyses in this last section illustrate the causal effects of legal supervision on narcotics use and property crime over the course of the addiction career.

The Costs of CJS Intervention and Treatment in Controlling Narcotics Use and Property Crime

The first analyses examined narcotics use and criminal behavior during various stages of the addiction career. Three stages were identified. Stage I, the "pre-addiction" or baseline period, was measured as the time before first use of narcotics on a daily basis for 30 consecutive days or more (First Daily Use). Stage II, which represents "addiction," covered the time from First Daily Use to Last Daily Use. Finally, Stage III, the "post-addiction" period, was measured from the time of Last Daily Use to the time of the interview. It should be noted that these time intervals were of different lengths for each addict, and Stage III did not occur for those who continued addiction to the time of interview.

Table 2 shows the average levels of drug and crime behavior and the estimated social costs per addict year during the pre-addiction, addiction, and post-addiction stages. There was a clear and marked elevation of

criminality during the addiction period. For instance, the number of property crime days per year rose from an average of 29 in the pre-addiction stage to 92 in the addiction stage, but was only 6 in the post-addiction stage. The percentage of time spent dealing drugs increased from an average of 33 percent of nonincarcerated time during the pre-addiction stage to 48 during the addiction stage, and dropped to 12 during the post-addiction stage.

The levels of drug use and property crime were particularly low in the post-addiction phase, and were undoubtedly influenced by the high proportion of time spent on methadone maintenance and in legal supervision with urine testing (see Table 2(b)). During Stage III, the post-addiction phase, addicts were on methadone maintenance 52 percent of the time, a rate which is more than four times greater than during addiction. Also during Stage III, addicts were under legal supervision with testing 36 percent of the time, as compared with slightly more than 28 percent of the time during addiction.

Finally, as seen in the results of Table 2(c), the average social cost per addict year suggests that substantial savings are realized in the post-addiction period; thus the costs of treatment and supervision are dramatically offset by the decreased costs of property crime. Although legal supervision and treatment costs were $491 and $503, respectively, during the addiction period and increased to $636 and $1,924, respectively, in the post-addiction period, the costs of property crime decreased from $20,006 during addiction to $558 in the post-addiction phase[3].

Insert Table 2 About Here

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[3] Deschenes, Anglin, and Speckart (1988a) discuss these results in greater detail, and show how the social costs were estimated.

The Effects of Probation and Parole on Narcotics Use and Property Crime

The next set of analyses examined several questions related to the effects of legal supervision during Stage II, the addiction period. What was the immediate effect of legal supervision on narcotics use and property crime? Did such an effect deteriorate over time? What was the overall effect of legal supervision in reducing narcotics use and criminal behavior when compared to periods of no supervision? Did the addition of urine testing substantially increase the impact of legal supervision?

Table 3 shows the effect of the first period of legal supervision after addiction on narcotics use and criminal behavior. There was a 43-percent decrease in daily narcotics use (from 88% to 56%), and the percentage of time abstinent increased from 4 percent to 21 percent. In addition, the percent of time spent committing crime dropped from 43 percent to 36 percent for property crime and from 58 percent to 40 percent for drug dealing.

In the 12 months after discharge from first legal supervision, levels of narcotics use and criminal behavior remained about the same as during legal supervision, showing persistence in the behavioral changes. However, when we considered individuals whose behaviors resulted in second and third periods of legal supervision, a pattern of suppression of behavior during legal supervision and significant rebound toward pre-supervision levels following discharge was found (see Anglin, Deschenes, and Speckart, 1988).

Insert Table 3 About Here

The effects of legal supervision on drug use and criminal behavior are shown by another analysis method in Table 4. For this comparison, the addiction career (from first daily use to last daily use) was classified into

two conditions: periods of no legal supervision and periods of any legal supervision. The average behavior under these two conditions was then compared. The results clearly indicate the overall imposition of legal supervision produced an increase in the percentage of time abstinent from narcotics use, and a decrease in daily narcotics use, drug dealing, and property crime. Further analyses contrasting behavior only under the conditions of legal supervision with and without urine testing (see Table 5) revealed that the addition of urine monitoring produced more effective results than legal supervision alone in decreasing daily narcotics use, drug dealing, and property crime[4].

Insert Tables 4 and 5 About Here

Although probation and parole clearly reduced narcotics use and criminal behavior, with urine testing being a critical element, the effects were not as dramatic as might be expected or desired. Several circumstances create biases that minimize the differences. Some aspects of operational CJS programs acted to ensure that the observed differences between the testing and no-testing conditions were smaller than the actual direct suppressive effects due to testing.

For example, if the subject absconded while under urine testing, the subject was nonetheless retained in the "supervision with testing" category

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[4] The apparent lack of difference for the conditions of any legal supervision (Table 4) and supervision with urine testing (Table 5) is due to (1) the low overall rate of periods of legal supervision without testing and (2) to differences in the subsamples used in the analysis. Only two conditions were compared simultaneously (e.g., no-supervision versus supervision, and no-testing versus testing) for those subjects who experienced both conditions during their addiction career.

until formally discharged[5]. We know from our interviewing and data analysis experience that subjects who abscond from legal supervision are strongly active in addiction and criminality, probably because they expect reincarceration once they are apprehended. The high levels of crime and drug use among this group tend to minimize analysis results showing the degree to which supervision--when contact with the offender is maintained--is effective.

Second, the condition of "no testing" may be permitted by a parole or probation officer as a reward for behavioral improvement when the subject responds to supervision. Conversely, testing conditions may be imposed as an attempt to improve the behavior of recalcitrant addicts.

These operational aspects as represented in the present data tend to bias the results toward higher addiction and criminality in the "testing" conditions and toward lower addiction and criminality in the "no testing" conditions. Therefore, the results represent conservative, or minimum, estimates of the amount of improvement to be expected from the imposition of legal supervision with testing.

Causal Effects of Legal Supervision on Narcotics Use and Crime

The next analysis used a longitudinal model to assess the immediate as opposed to the lasting (or concurrent versus longitudinal) effects of legal supervision. This type of statistical analysis, structural equation modeling, may help disentangle surveillance, specific deterrence, and rehabilitation effects[6]. If only concurrent effects of legal supervision on the suppression

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[5] We retained these periods because abscondence is a "failure" of the CJS to maintain control over the offender.

[6] General deterrence is the impact of legal sanctions on potential offenders who, contemplating the risk of imprisonment, decide whether or not to commit a crime. Specific deterrence refers to the extent to which a prison

of crime and narcotics use are demonstrable, it can be concluded that the main effects of legal supervision are surveillance effects. If longitudinal effects are present, some degree of rehabilitation or specific deterrence may be occurring.

Figure 1 illustrates a typical structural equation model that we have tested and reported elsewhere (Speckart, Anglin, and Deschenes, 1988)[7]. The overall addiction period (termed Stage II in our earlier analyses) started at the time when narcotics were first used daily for 30 consecutive days and ended when narcotics were last used daily for 30 days[8]. During each quarter of the addiction period[9], we analyzed the three constructs of narcotics use[10], legal supervision status[11], and property crime[12]. The left portion of the diagram (under Time I) indicates measures taken from the first quarter of the

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or jail experience deters individual CJS clients from recidivism due to the threat of reincarceration.

[7] The actual statistical computation of the model is derived from a LISREL program. The reader may wish to consult Jöreskog (1979) or Kessler and Greenberg (1981) for technical details. Briefly, levels on each of the three theoretical constructs at each time are inferred from multiple observed indicators recorded during data collection.

[8] Quartiles of the addiction career were used as a means to maximize variation in the variables in the model within each time period. The fourth quarter was not used for the model shown because its inclusion would have greatly complicated the analyses. A second model, using the second, third, and fourth quarters, was tested and yielded essentially identical parameters.

[9] This model examines the first three quarters of the addiction period. A second model involving the fourth quarter data was also tested. Because the results replicated those discussed here, they are not reported.

[10] "Narcotics use" includes indicators of the percentage of time spent using narcotics daily and the average number of "fixes" per month.

[11] The level of the "legal supervision" construct was derived from the frequency with which an individual provided urine samples and the frequency with which he visited his parole or probation officer.

[12] "Property crime activity" includes manifest indicators of the percentage of time involved in property crime and income from such crime.

addiction career; the second column of variables (under Time II) were derived from the second quarter of the addiction career; and the third column of variables (under Time III) were derived from the third quarter[13].

Insert Figure 1 About Here

Looking at the significant parameters in the model (see Figure 1), a number of observations can be drawn. First, the stabilities of the variables--that is, the longitudinal influence of each variable upon itself over time--are generally the strongest in the system. The influence of Time I Narcotics Use on Time II Narcotics Use is .52, while the influence of Time II Narcotics Use on Time III Narcotics Use is .49. Similarly, the influence of Time I Property Crime on Time II Property Crime is .65, while the influence of Time II Property Crime on Time III Property Crime is .55. For legal supervision, the stabilities are .48 from Time I to Time II, and .36 from Time II to Time III.

Second, the effects of legal supervision are only concurrent and not longitudinal. For example, the longitudinal impact of legal supervision at

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[13] In the derivation of the model, specific parameters (the "arrows" with numerical values in Figure 1) were estimated by special computational methods that allow investigators to assess the effect of each variable upon others in the system taken as a whole. Conceptually, such statistical estimation permits us to determine whether one variable exerts a causal influence on another. In the system shown, arrows traveling in a vertical direction (that is, within a time period), signify concurrent influences, and arrows traveling horizontally (that is, across time periods) signify longitudinal influences. Arrows that could have been drawn between illustrated variables, but that do not appear, have been statistically estimated and tested but were not statistically significant. In other words, only significant effects are portrayed in Figure 1. Single-headed arrows denote directional causal influences within the system, and double-headed arrows denote covariation (correlation)--that is, causal relationships for which directionality cannot be determined.

Time I on narcotics use and crime at Time II is statistically unimportant. (Similar tests were conducted for the relationships between variables at Time I and Time III, and these tests were also found to be nonsignificant.) Consequently, the model appears to demonstrate that legal supervision provided surveillance effects rather than rehabilitative or specific deterrence effects. At all three times, legal supervision had an immediate negative effect upon property crime and narcotics use; that is, legal supervision suppressed or deterred these illicit behaviors.

Other aspects of the model are informative and also appear to corroborate previous research. For example, the suppressive effects of legal supervision seem to have increased over time, as evidenced by the fact that the estimates of the effects of legal supervision on narcotics use (-.35, -.40, -.42) and property crime (-.20, -.27, -.31) become greater in successive time intervals. Other data have indicated that the decline in narcotics use and property crime levels becomes more pronounced in subsequent legal supervision periods relative to the amount of decline in a first legal supervision episode (Anglin, Deschenes, and Speckart, 1988). In addition, property crime appears to be more resistant to suppression than does narcotics use: it has higher stability parameters and is less affected by the periods of legal supervision. Since drug use may be directly detected by the legal supervision agent by means of urine monitoring, whereas crime can more easily escape detection, these findings are reasonable. Also, "subsistence-level" instrumental crime, which is not related to narcotics use, is probably unresponsive to interventions designed to curtail drug use.

CONCLUSIONS

It is difficult to disentangle the rehabilitative effects caused by CJS interventions from specific deterrence effects, since both represent individual behavioral change in response to CJS interventions. Because of this difficulty, reliable studies of specific deterrence are rare (Phillips, McCleary, and Dinitz, 1983). In addition, while studies investigating the phenomenon of specific deterrence have frequently been hampered by problematic conceptual and methodological issues, general deterrence effects have been particularly difficult to document in criminological research (Grasmick and Green, 1980). In general, instrumental crime is considered to be more inherently "deterrable" than expressive crime[14] (Chambliss, 1967). However, even some instrumental crime may be resistant to intervention. Our research shows that while much drug-related instrumental property crime is suppressed by CJS interventions and treatment, a lower-frequency component of instrumental property crime may provide "subsistence level" income during periods of little or no drug use. This type of instrumental crime is less responsive to interventions.

In the present study, we have found that legal supervision alone only moderately reduces antisocial behavior, and much addiction and crime is still present even under conditions of legal supervision with testing. Furthermore, no long-term effects were observed when supervision was removed. The original CAP research had previously shown that addicts involved in instrumental crime were susceptible to rehabilitative and deterrent intervention if legal

[14] Expressive crime is crime committed for the intrinsic satisfaction of the perpetrator. Instrumental crime is goal-oriented and pragmatic, with its purpose being the acquisition of resources to enable the perpetrator to reach some other goal. For the narcotics addict, instrumental crime--that is, crime committed to acquire funds with which to purchase narcotics--is much more common.

sanctions and treatment interventions were administered contiguously for lengthy periods and if narcotics use was directly monitored through urine testing. However, the results of the current investigation show that even when legal supervision with urine testing is not accompanied by treatment, the probation or parole with urine monitoring can impact the crime-generating mechanism for a population of heroin addicts. Although addiction and property crime are "deterred" or suppressed by contiguous legal supervision, the suppression does not typically last beyond the duration of the legal supervision period. Thus, the demonstrable effects of legal supervision illustrated below may be more properly termed "surveillance effects." This study is among the first to show that there are significant surveillance effects of CJS intervention upon narcotics use and property crime rates among heroin addicts.

The accumulation of evidence on both legal supervision and treatment effects (Anglin and Hser, 1990a, 1990b) points to the conclusion that the efficacy of legal supervision could be appreciably enhanced by requiring successful performance in drug treatment programs as a condition of probation or parole. It has long been known, for example, that prolonged retention in treatment programs is associated with favorable outcomes and that retention could perhaps be increased by legal supervision requirements. Additionally, the statistical analysis suggests that prolonged retention under legal supervision with testing is related to favorable outcomes. To the extent that both treatment and legal supervision improve retention of clients in a complimentary fashion, the simultaneous use of both interventions should improve client outcomes.

Coordination Between the Criminal Justice System and Drug Treatment

In the current style of interaction between the criminal justice system and community treatment systems, parole and probation officers encourage, or even coerce, a criminal offender with drug problems into some form of community treatment. The interaction between legal supervision and community treatment, while shown to be beneficial, is often haphazard and coincidental. The present study suggests that several improvements are needed:

- o policy should be developed for the early detection of drug use;
- o assessment should be made at the individual level for an integrated system intervention involving both supervision and treatment;
- o such interventions should be made available or even imposed; and
- o individuals should be monitored for compliance.

Although criminal justice system agents and community treatment personnel may already be aware of the benefits of integrated system interventions, the systems may need to be adjusted to support the necessary integration. Other limiting factors against realizing improved behavioral outcomes include problems in treatment availability, lack of funding for treatment facilities and practitioner training, and inadequate scientific knowledge of addict typologies that could be used to predict favorable or unfavorable reactions to such interventions.

Better intersystem communication may help to route individual clients toward appropriate interventions; policy makers must make such options available to criminal justice system agents and encourage their use. Our analysis results, as well as the research accumulated by the California Civil Addict Program study, suggest that synergistic effects can be obtained by combining traditional supervision and monitoring with community-based treatment. The combination of the two approaches can be expected to improve

our ability to rehabilitate addicts and reduce the damage of addiction to society.

REFERENCES

Anglin, M. D. (1988). The efficacy of civil commitment in treating narcotics addiction. In C. Leukefeld and F. Tims (Eds.), NIDA Monograph Series.

Anglin, M. D. and Hser, Y. (1990a). The efficacy of drug abuse treatment. In M. Tonry and J. Q. Wilson (Eds.), Crime and Justice, vol. 13. Chicago: University of Chicago Press.

Anglin, M. D. and Hser, Y. (1990b). Legal coercion and drug abuse treatment: Research findings and social policy implications. In J. Inciardi (ed.), The Handbook of Drug Control in the United States. Greenwood Press.

Anglin, M. D. and McGlothlin, W. H. (1985). Methadone maintenance in California: A decade's experience. In L. Brill and C. Winick (Eds.), The Yearbook of Substance Use and Abuse, 3, 219-280.

Anglin, M. D. and Speckart, G. (1988). Narcotics use and crime: A multisample, multimethod approach. Criminology, 26, 197-233.

Anglin, M. D., Brecht, M. L. and Maddahian, E. (in press). Pretreatment characteristics and treatment performance of legally coerced versus voluntary methadone maintenance admissions. Criminology.

Anglin, M. D., Deschenes, E. P. and Speckart, G. (1988). The effects of legal supervision on narcotics use and criminal behavior over the addiction career. Unpublished manuscript, UCLA.

Anglin, M. D., McGlothlin, W. H. and Speckart, G. (1981). The effect of parole on methadone patient behavior. American Journal of Drug and Alcohol Abuse, 8, 153-170.

Beyleveld, D. (1980). A Bibliography of General Deterrence. Hampshire, England: Saxon House.

Brier, S. S. and Feinberg, S. E. (1980). Recent econometric modeling of crime and punishment: Support for the deterrence hypothesis? Evaluation Review, 4, 147-191.

Carver, J. A. (1986). Drugs and Crime: Controlling use and reducing risk through testing. National Institute of Justice Research in Action, September/October.

Chambliss, W. J. (1967). Types of deviance and the effectiveness of legal sanctions. Wisconsin Law Review, Summer, 703- 719.

Collins, J. J. and Allison, M. (1983). Legal coercion and retention in drug abuse treatment. Hospital and Community Psychiatry, 34, 1145-1149.

Collins, J. J., Rachal, J. V., Hubbard, R. L., Cavanaugh, E. R., Craddock, S. G. and Kristiansen, P. L. (1982). Criminality in a Drug Treatment Sample: Measurement Issues and Initial Findings. Research Triangle Park, N.C.: Research Triangle Institute.

Deschenes, E. P., Anglin, M. D. and Speckart, G. (1988a). Criminal careers of narcotics addict offenders and related social economic costs. Unpublished manuscript, UCLA.

Deschenes, E. P., Anglin, M. D. and Speckart, G. (1988b). Differential effectiveness of legal supervision on narcotic addict behavior. Unpublished manuscript, UCLA.

Fattah, E. A. (1977). Deterrence: A review of the literature. Canadian Journal of Criminology and Corrections, 19, 1-119.

Graham, M. G. (1987). Controlling drug abuse and crime: A research update. NIJ Reports, SNI 202, March/April. Washington, D.C.: U.S. Department of Justice.

Grasmick, H. G. and Green, D. E. (1980). Legal punishment, social disapproval and internalization as inhibitors of illegal behavior. Journal of Criminal Law and Criminology, 71, 325-335.

Gropper, B. A. (1985). Probing the Links Between Drugs and Crime. National Institute of Justice Research in Brief. Washington, D.C.: U.S. Department of Justice.

Harwood, H. J., Hubbard, R. L., Collins, J. J. and Rachal, J. V. (1988). The costs of crime and the benefits of drug abuse treatment: A cost-benefit analysis using TOPS data. NIDA Research Monograph 86, pp. 209-235.

Johnson, B. D., Goldstein, P. J., Preble, E., Schmeidler, J., Lipton, D. S., Spunt, B. and Miller, T. (1985). Taking Care of Business. The Economics of Crime by Heroin Abusers. Lexington, MA: D.C. Heath and Company.

Johnson, B. D., Lipton, D. S., and Wish, E. D. (1986). Facts about the Criminality of Heroin and Cocaine Abusers and Some New Alternatives to Incarceration. New York: Narcotic and Drug Research, Inc.

Jöreskog, K. G. (1979). Statistical estimation of longitudinal models in developmental investigations. In J. R. Nesselroade and P. B. Baltes (Eds.), Longitudinal Research in the Study of Behavior and Development. New York: Academic Press.

Kessler, R. C. and Greenberg, D. F. (1981). Linear Panel Analysis: Models of Quantitative Change. New York: Academic Press.

Magura, S. (1987). The validity of methadone clients' self-reported drug use. The International Journal of the Addictions, 22(8), 727-749

Marsden, M. E. and Orsagh, T. (1983). Prison effectiveness measurement. In G. P. Whitaker and C. D. Phillips (Eds.), Evaluating the Performance of Criminal Justice Agencies. Beverly Hills, CA: Sage Publications, 221-235.

McGlothlin, W. H., Anglin, M.D. and Wilson, B. (1977). An Evaluation of the California Civil Addict Program (NIDA Services Research Monograph Series), [DHEW Publ. No. 78-558] U. S. Government Printing Office, Washington D. C.

Murray, C. A. and Cox, L. (1979). Beyond Probation: Juvenile Corrections and the Chronic Delinquent. Beverly Hills, CA: Sage Publications.

Murray, C. A., Thompson, D. and Israel, C. B. (1978). UDIS: Deinstitutionalizing the Chronic Juvenile Offender. Prepared for the Illinois Law Enforcement Commission. American Institutes of Research in the Behavioral Sciences, Washington D. C.

Muthen, B. and Speckart, G. (1983). Categorizing skewed, limited, dependent variables: Using multivariate probit regression to evaluate the California Civil Addict Program. Evaluation Review, 7, 257-269.

Muthen, B. and Speckart, G. (1985). Latent variable probit ANCOVA: Treatment effects in the California Civil Addict Programme. British Journal of Mathematical and Statistical Psychology, 38, 161-170.

Nurco, D. N., Cisin, I. H., and Balter, M. B. (1981). Addict careers. II. The first ten years. The International Journal of the Addictions, 16(8), 1327-1356.

O'Malley, P., Bachman, J. and Johnston, L. (1984). Reliability and consistency in self-reports of drug use. International Journal of the Addictions, 18, 805-824.

Orsagh, T. and Marsden, M. E. (1985). What works when: Rational-choice theory and offender rehabilitation. Journal of Criminal Justice, 13, 269-277.

Petersilia (1989). Implementing randomized experiments: Lessons learned from BJA intensive supervision project. Evaluation Review, 13(5), 435-458.

Phillips, C. D., McCleary, B. W. and Dinitz, S. (1983). The special deterrent effect of incarceration. In G. P. Whitaker and C. D. Phillips (Eds.), Evaluating the Performance of Criminal Justice System Agencies. Beverly Hills, CA: Sage Publications.

Salmon, R. W. and Salmon, R. J. (1983). The role of coercion in the rehabilitation of drug users. The International Journal of the Addictions, 18, 9-21.

Sechrest, L., White, S.O. and Brown, E. D. (Eds.) (1979). The Rehabilitation of Criminal Offenders: Problems and Prospects. Panel on Research on Rehabilitative Techniques, National Research Council. Washington DC: National Academy of Sciences.

Speckart, G., Anglin, M. D. and Deschenes, E. P. (1988). Modeling the longitudinal impact of legal supervision on narcotics use and criminality. Journal of Quantitative Criminology, in press.

Stitzer, M. L. and McCaul, M. E. (1985). Criminal justice interventions with drug and alcohol abusers: The role of compulsory treatment. In E. K. Morris and C. J. Braukmann (Eds.), Behavioral Approaches to Crime and Delinquency. New York: Plenum Press.

Toborg, M. (1984). Preliminary Findings on the D.C. Urine Testing Experiment. Paper presented at a Meeting of the American Society of Criminology.

Wish, E. D., Cuadrado, M. and Martorana, J. (1986). Estimates of Drug Use in Intensive Supervision Probationers: Results from a Pilot Study. Federal Probation, 51(4):4-16.

Wish, E. D., Brady, E., Cuadrado, M. and Sears, A. (1984). "Preliminary Findings from the Drug Use as a Predictor of Pretrial Behavior in Arrestees" Project. Paper presented at the annual meeting of the American Society of Criminology.

Yezer, A., Trost, R. P., Toborg, M.A., Bellassai, J. P. and Quintos, C. (1987). Periodic Urine Testing as a Signalling Device for Pretrial Release Risk. Washington, D. C.: Toborg Associates, Inc.

Table 1. Sample Characteristics: Demographics, Narcotics Use History, and Criminal History.

	Chicano (N=160)	White (N=119)
Family Social-economic Status		
Poor	51.3%	32.8%
Working class	18.1%	1.7%
Middle	29.4%	54.6%
Upper	1.3%	10.9%
Mean school grade completed	9.9	11.1
Occupation		
Professional	0.0%	4.2%
Sales/Services	6.3%	10.1%
Skilled	7.5%	26.9%
Semi-skilled	60.0%	48.7%
Unskilled, Never worked	25.6%	9.1%
Mean age at interview	38.1	36.6
Drug Use History		
Mean age at first narcotics use	18.0	18.6
Mean age at addiction	19.8	20.5
Mean age at MM admission	31.5	29.8
Mean age at last daily narcotics use[a]	34.5	32.5
Mean career* length (in months)[a]	121.0	98.0
Criminal History		
Gang member	67.5%	36.1%
Mean age at first self-reported arrest	14.6	15.7
Mean age at first official arrest	17.6	18.2
Mean age at last arrest[a]	34.9	32.9
Mean career** length (in months)[a]	203.0	176.0
Mean number of arrests	23.9	20.4
Mean number of convictions	11.0	9.5
Mean number of legal supervisions[b]	1.8	1.7

* first daily narcotics use to last daily narcotics use
** first recorded arrest as adult to last recorded arrest

[a] prior to the interview date
[b] defined as continuous periods under legal supervision even if resulting from different convictions.

Table 2. Addiction-related Behavior Before, During and After the Addiction Career

	TIME INTERVAL			
	Stage I Pre-addiction	Stage II Addiction	Stage III Post-addiction	Statistical Significance
N	277	279	223	
Mean Number of Months	29	115	46	
(a) Drug and Criminal Behaviors				
Percent Time Narcotics Use:				
Daily	0	64	0	-
Abstinent	65	15	54	**
Number of Property Crimes[1] (days per year)	29	92	6	**
Percent Time Committing Property Crime	25	39	4	**
Property Crime Income (dollars per month)	91	744	30	**
Percent Time Drug Dealing	33	48	12	**
(b) Participation in Therapies and CJS Interventions (percent time)				
Therapeutic Community	0	0	2	(NS)
Methadone Maintenance	0	15	52	**
Incarceration	8	27	20	**
Legal Supervision with Testing	1	28	36	**
Legal Supervision without Testing	5	8	4	(NS)
(c) Estimated Social Costs per Addict per Year				
Crime Income	$2,314	$20,006	$ 558	-
Arrests	1,584	3,948	1,059	-
Incarceration	669	4,112	2,287	-
Legal supervision	67	491	636	-
Treatment	10	503	1,924	-
TOTAL	$4,644	$29,096	$6,464	-

-- Statistical tests not performed
* $p \leq .05$
** $p \leq .01$
** $p \leq .0001$
(NS) = not significant

[1] As reported by the addict to the interviewer. Property crime includes robbery, burglary, theft, receiving stolen property and fraud.

Table 3. Effects of the First Legal Supervision Period after Addiction on Narcotics Use and Property Crime (N = 279)

	TIME INTERVAL				
Legal Supervision Period	Before[a]	During	After[b]	p(F)	Contrasts[c]
Percent Time Narcotics Use:					
Daily	88	56	50	***	B,D B,A
Abstinent	4	21	23	***	B,D B,A
Number of Property Crimes (days per year)	102	88	83	*	B,D
Percent Time Committing Property Crime	43	36	31	**	B,D B,A
Crime Income (dollars per month)	556	602	519	(NS)	
Percent Time Drug Dealing	58	40	37	***	B,D

a) from first addiction to first period of legal supervision
b) the 12-month period after legal supervision discharge
c) Contrasts test for significant differences between pairs of time periods, where B=before, D=during, and A=after.

* $p \leq .05$
** $p \leq .01$
** $p \leq .0001$
(NS) = not significant

Table 4 : The Effects of Legal Supervision on Narcotics Use and Property Crime (N = 252)

	LEGAL STATUS		
	No Supervision	Any Supervision	Statistical Significance
Mean Number of Months	61	56	
Percent Time Narcotics Use:			
Daily	73	56	***
Abstinent	11	20	***
Number of Property Crimes (days per year)	107	91	**
Percent Time Committing Property Crime	43	38	*
Crime Income (dollars per month)	798	680	(NS)
Percent Time Dealing Drugs	53	43	***

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* $p \leq .05$
** $p \leq .01$
** $p \leq .0001$
(NS) = not significant

Table 5: The Effects of Urine Testing During Legal Supervision on Narcotics Use and Property Crime (N = 131)

LEGAL STATUS

	Supervision without Urine Testing	Supervision with Urine Testing	Statistical Significance
Mean Number of Months	25	44	
Percent Time Narcotics Use:			
Daily	74	51	**
Abstinent	12	22	**
Number of Property Crimes (days per year)	122	88	**
Percent Time Committing Property Crime	47	36	**
Crime Income (dollars per month)	827	676	**
Percent Time Dealing Drugs	50	44	(NS)

* p <.05
** p <.01
(NS) = not significant

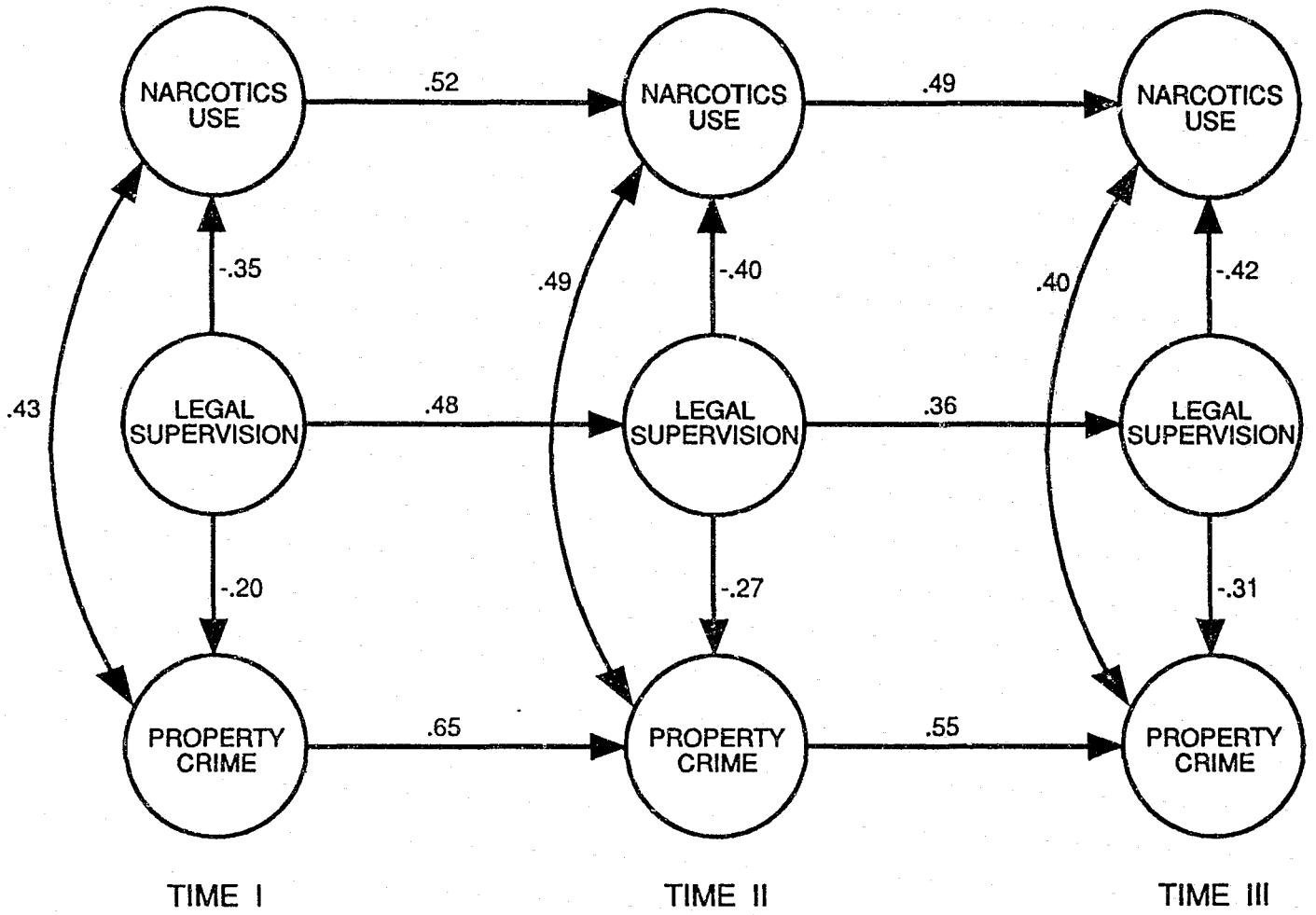

FIGURE 3. A longitudinal model illustrating the relationship between narcotics use, legal supervision and property crime.