

**Using Survey Data to Study
Linkages Among Crime, Drug
Use, and Life Circumstances:
Findings from the Opportunity to
Succeed Program**

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USING SURVEY DATA TO STUDY LINKAGES AMONG CRIME, DRUG USE, AND LIFE CIRCUMSTANCES: FINDINGS FROM THE OPPORTUNITY TO SUCCEED PROGRAM

ABSTRACT

This presentation uses survey data to examine trajectories of criminal behavior. The focus is on the impact of full-time employment, and recent and lifetime drug use on predatory and drug-dealing crimes. Using structural equation modeling and CHAID, we find evidence of strong relationships between drug use and full-time employment on predatory criminal behavior. We also find a relationship between full-time employment and drug-dealing behavior. Following Horney et al. (1995), we use street calendar data in a hierarchical linear model (HLM) to examine both within-individual differences (e.g., changes in individual life circumstances in the year prior to incarceration) and between-individual differences (e.g., age of respondents). Our results from the HLM analysis confirm Horney et al. (1995) findings that changes in life circumstances are strongly related to short-term criminal behaviors. Our findings underscore the importance of the linkage between full-time employment and predatory and drug-dealing crimes.

Eligibility

Offenders returning to targeted neighborhoods are eligible for OPTS participation if they:

- Are required to serve a minimum of one year of probation/parole.
- Have a history of substance abuse.
- Completed a substance abuse treatment program while incarcerated or in a residential facility (in lieu of jail).
- Have felony convictions, excluding violent crimes or sex offenses.
- Are 18 years of age or older.

Participants can receive aftercare services through OPTS for a maximum of two years.

The Sample

As part of the impact evaluation, 406 eligible offenders were randomly assigned to receive either OPTS case-managed services (the treatment group) or routine probation/parole supervision (the control group). The research cohort was recruited between mid-winter, 1995, and September, 1996. Baseline interviews were completed with 307 offenders by December, 1996.

THEORETICAL PERSPECTIVE

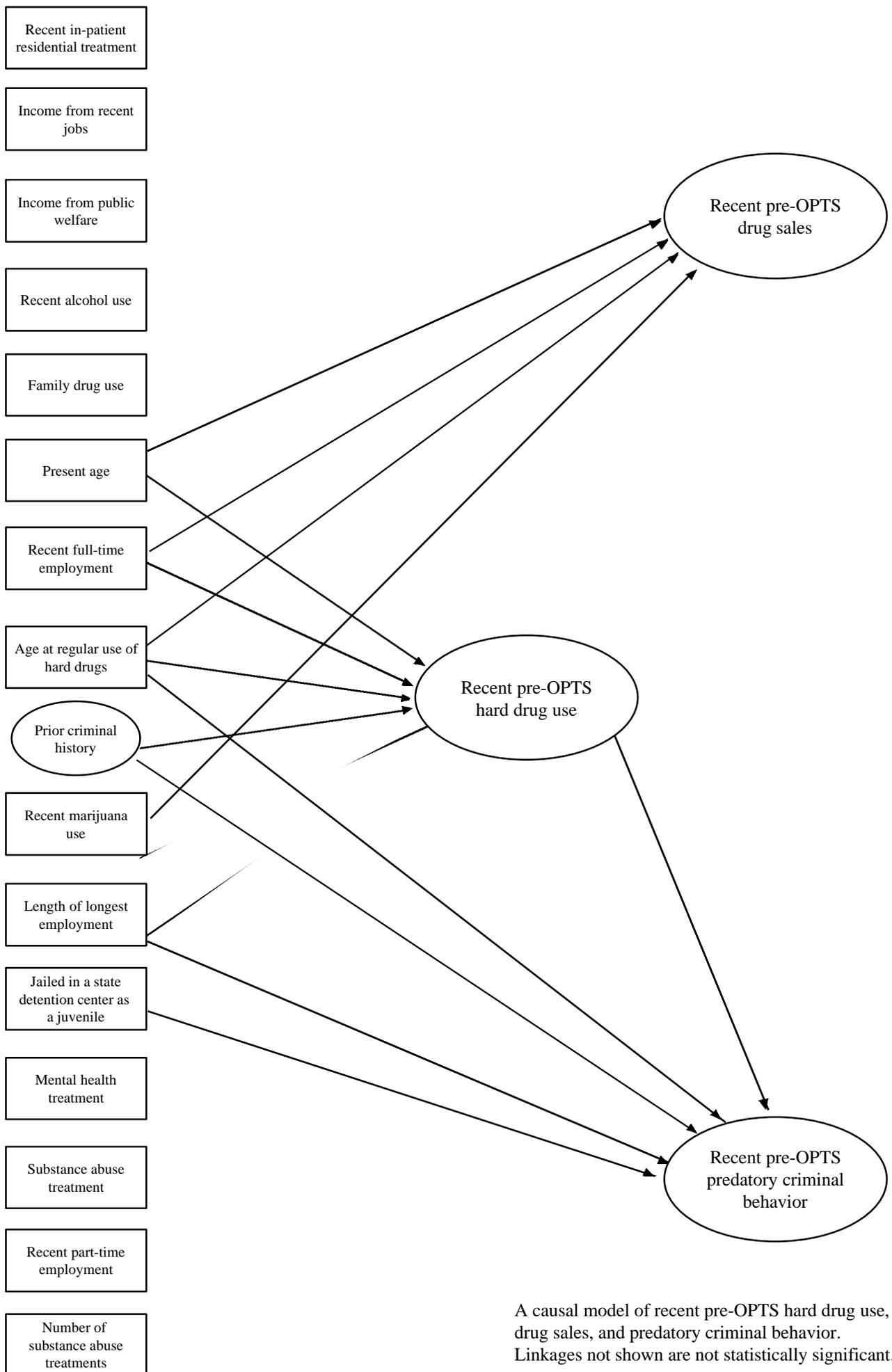
A major premise of some prominent theories of criminal behavior (Gottfredson and Hirschi, 1990; Wilson and Herrnstein, 1985) holds that the propensity to commit crime

*...is established early in life and persists throughout the life course....*This view implies that life events after childhood are of little, if any, explanatory importance. (Horney et al., 1995: 655)

By contrast, our research is aligned with Sampson and Laub's (1993) age-graded theory of informal social control, which focuses on *change* in criminal behaviors over the life course. In their theory, life events can modify trajectories of crime:

The long-term view embodied by the life-course focus on trajectories implies a strong connection between childhood events and experiences in adulthood. However, the simultaneous shorter-term view also implies that transitions or turning points can modify life trajectories -- they can "redirect paths." Social institutions and triggering life events that may modify trajectories include school, work, the military, marriage, and parenthood [see Elder, 1986; Rutter et al, 1990; Sampson and Laub, 1990]. (Sampson and Laub, 1993: 8-9)

Typically, studies of individual criminal behaviors have focused on behaviors spanning a large amount of time; however, some studies (e.g., Horney and Marshall, 1991; Horney et al., 1995; and Nagin and Land, 1993) have analyzed variations over short periods. While our present study is strongly influenced by Horney et al. (1995), there are some differences. Their focus was exclusively on effects of changes in local life circumstances on short-term criminal behaviors. They were more concerned about *within-individual* changes. Our focus includes both *within-individual* differences and *between-individual* changes. We examine the impact of *between-individual* differences in age, education, lifetime criminal, and drug behaviors on short-time criminal behaviors. We also examine the impact of within-individual changes in part- and full-time employment on short-term criminal behaviors.



A causal model of recent pre-OPTS hard drug use, drug sales, and predatory criminal behavior. Linkages not shown are not statistically significant.

CHAID Model

CHAID analysis (Magidson, 1993) was used to examine between-individual variation, focusing on the relationships among hard drug use, full-time employment, and the percentage of street months that individuals participated in predatory or drug-dealing crimes. CHAID analysis is data driven. CHAID performs segmentation modeling, dividing a population into two or more distinct groups based on categories of the best predictor of a dependent variable. It then splits each of those groups into smaller subgroups based on other predictor variables. This splitting continues until no more statistically significant predictors can be found or until some other stopping rule is met (Magidson, 1993).

Dependent Variables:

Percentage of street months in which respondents participated in predatory crime. This variable creates an index of percentage of street months an individual was engaged in predatory crime if the individual committed any of the following offenses during the reference period: burglaries, robberies of businesses or people, thefts, car thefts, frauds, forgeries, or assaults. The theoretical justification for this predatory crime index is derived from Chaiken and Chaiken (1990). In addition, given the non-violent nature of the sample, we included assaults in our definition of predatory crime behavior. For example, if an individual was in the community 8 of the 12 reference months, and that individual reported criminal activity in all 8 months, then the individual received a score of 100%.

Percentage of street months in which respondents participated in drug-dealing crime. This variable creates an index of percentage of street months an individual dealt in drugs.

Independent Variables:

Hard drug use. This variable includes all substances covered by the DSI, except alcohol and marijuana. Recent daily hard drug use refers to the number of different hard drugs reportedly tried daily in the three months before incarceration. Lifetime hard drug use refers to the number of different hard drugs reportedly tried throughout a respondent's lifetime.

Full-time employment (yes/no). This variable measures if an individual was employed full-time for at least one month in the year before incarceration.

²Furthermore, only a small percentage of the sample committed assaults in any given month (in general about 2% for any given month).

Hierarchical Linear Model (HLM)

HLM is used to address the following research questions:

- What was the relationship between changes in life circumstances (specifically changes in work -- part- and full-time employment, probation/parole) and short-term criminal behaviors?
- What was the relationship between the **mean level** of criminal behavior in the months preceding incarceration and the following measures: age at the time of arrest, education, lifetime "hard" drug use, and number of prior incarcerations?
- Was there a clear time trend in the months preceding incarceration? In other words, did the crime occur uniformly in the year before incarceration, or, were the crimes relatively concentrated over a span of few months?

The advantage of the HLM methodology is that both within- and between-individual changes can be modeled in the same system of equations (Bryk and Raudenbush, 1992).

The model has the following equation specification:

Within-Individual Model:

$$Y_{ij} = \beta_{0i} + \beta_{1i} T_{ij} + \beta_{2i} \cdot X_{1,j} + \beta_{3i} X_{2,j} + \beta_{4i} \cdot X_{3,j} + \beta_{5i} X_{4,j} + r_{ij}$$

"i" is the subscript for the individual and "j" is the subscript for time.

Y_{ij} measures if the "ith" individual committed a crime at the "jth" time.

T is an interval measure of time (months).

X_1 measures *change* in probation/parole status.

X_2 measures *change* in part-time employment status.

X_3 measures *change* in full-time employment status.

X_4 measures if the individual was incarcerated in a given month (due to a prior offense/infracton).

β_{0i} measures the mean level of criminal behavior of individual "i" in any given month, controlling for the time trend, changes in life circumstances, and the months for which the individual was incarcerated.

Between-Individual Model:

In the equations below, γ are level-2 coefficients (see Bryk and Raudenbush, 1992, for greater details on the model).
W measures are level-2 predictor (non-street calendar independent) measures.

u_{0j} and u_{1j} are level-2 random effects.

$$b_{0,i} = g_{0,0} + \sum_{i=1}^8 g_{0,i} W_i + u_{0,j}$$

$$b_{1,i} = g_{1,0} + u_{1,j}$$

$$b_{2,i} = g_{2,0}$$

$$b_{3,i} = g_{3,0}$$

$$b_{4,i} = g_{4,0}$$

$$b_{5,i} = g_{5,0}$$

Following Horney et al. (1995), only the coefficients for the intercept and the time trend are modeled as randomly varying. The coefficients for the changes in life circumstances are modeled as fixed effects (see Bryk and Raudenbush, 1992).

Dependent Variables:

- Predatory crimes (yes/no in a given month). This variable measured if the individual committed any one of the following offenses in the street calendar months: burglaries, robberies of businesses or people, thefts, car thefts, frauds, forgeries, and assaults.
- Drug crimes (yes/no in a given month). This variable measures if an individual dealt in drugs in any given month.

Independent Variables:

Street Calendar Data: Within-Individual Differences

- Changes in probation/parole status. Were there changes in probation/parole status during the street month? Following Horney et al. (1995), this measure is calculated as a deviation from the mean for each individual across the entire period of observations.
- Changes in full-time employment status. Were there changes in full-time employment status during the street month? This measure is calculated as a deviation from the mean for each individual across the entire period of observations.
- Changes in part-time employment status. Were there changes in part-time employment status during the street month? Again, this measure is calculated as a deviation from the mean for each individual across the entire period of observations.
- Individual locked-up during the street calendar. This variable measures if the individual was locked-up during any of the street calendar months (perhaps due to a previous crime/infracton).

Between-Individual Measures:

- Age at time of arrest for offense.
- Did the respondent complete high school? (yes/ no measure)
- Number of prior incarcerations.
- Number of different hard drugs tried over lifetime: As noted above, marijuana and alcohol are not included in our definition of hard drugs.

RESULTS OF THE HLM ANALYSIS

Independent Measures		Predatory Crimes		Drug Crimes	
		γ	Odds Ratio	γ	Odds Ratio
Month :	γ_{20}	0.14**	1.15	0.00	1.00
Change in probation status:	γ_{30}	0.60*	1.82	0.98**	2.66
Change in part-time employment:	γ_{40}	0.14	1.15	0.26	1.30
Change in full-time employment:	γ_{50}	-0.62**	0.54	-1.06**	0.35
Locked up during a calendar month		-3.44**	0.03	-5.21**	0.01

* $p < 0.10$

** $p < 0.05$

Within-Individual Differences

- Perhaps most interesting, individuals who were employed full time were less likely to participate in predatory and drug crimes. Being fully employed decreased the odds of committing a predatory crime by 46%, and the odds of committing a drug crime by 65%. This result is especially interesting because Horney et al. (1995) did not find a consistent relationship between work and criminal behavior. As they themselves suggest, their measure did not distinguish between full-time and part-time work. We did not find a statistically significant relationship between part-time work and criminal behavior. This result is consistent with Sampson and Laub's theory of informal social control: having a full-time job can exert an influence on predatory and drug crimes through "informal social control" mechanisms. Such mechanisms might not be as strong for part-time jobs.
- A statistically significant time trend is observed for predatory crimes, but not for drug crimes: every additional month increased the odds of committing a crime by 15%. This seems to suggest that drug-dealing activity was fairly sustained throughout the entire year before incarceration. It also suggests that predatory criminal behavior was more concentrated in the months preceding the incarceration.
- Individuals who were on probation are associated with higher levels of predatory and drug crimes. During months of probation, the odds of committing a predatory offense increased by 82%, while the odds of committing a drug crime increased by more than 100%. This, of course provides us information for the type of offense that this individual was incarcerated for: a number of these offenders would have selected themselves into the sample because of violating the terms of parole/probation. Thus, more than anything else, this result is an artifact of the process of selection of the sample.
- Finally, as could be expected, individuals who were locked up months of the street calendar (for other crimes) were highly unlikely to commit either a drug or a predatory crime for that month.

Independent Measures		Predatory Crimes		Drug Crimes	
		γ	Odds Ratio	γ	Odds Ratio
Intercept	γ_{00}	-3.12**	0.04	-1.85**	0.16
Age	γ_{01}	-0.03	0.97	-0.10**	0.90
High school graduate	γ_{02}	0.12	1.13	-0.23	0.79
Lifetime Hard Drug Use	γ_{03}	0.26**	1.30	0.03	1.02
Recent Daily hard drug use	γ_{04}	0.12**	1.13	0.08	1.08
Number of prior incarcerations	γ_{05}	0.01	1.01	0.08	1.08
Mean number of months of full-time employment	γ_{06}	-1.31**	0.27	-2.36**	0.09
Mean number of months of part-time employment	γ_{07}	-2.35**	0.10	0.27	1.31
Mean number of months on probation	γ_{08}	-0.55	0.58	0.26	1.30

* p < 0.10

** p < 0.05

Between-Individual Differences

- Older individuals are associated with lower mean levels of drug crime activity over the street calendar months. Although not statistically significant, an increase in age is also associated with lower levels of predatory crimes.
- We did not find a statistically significant relationship between completing high school and participating in predatory or drug crimes.
- Lifetime hard drug use is positively related to predatory crime: an increase in hard drug use is associated with an increase in predatory crime. Every additional drug increased the odds of participating in predatory crimes in any month by 30%. However, a statistically significant relationship is not obtained between lifetime drug use and drug crimes.
- We found a statistically significant relationship between prior incarcerations and mean level of drug-dealing activity. Every additional prior incarceration increased the odds of involvement in drug crimes by 8%. A much weaker relationship is observed between prior incarceration and predatory crimes.

THE BIGGER PICTURE

- Type of employment does matter. Horney et al. (1995) did not find a relationship between employment activity and crime. We did: we differentiated between full- and part-time employment. This has policy implications, particularly for aftercare programs that include employment services.
- Segmenting the population is useful. We segmented into the population of hardcore users and that of drug dealers. The findings suggest that these populations might need different kinds of intervention.
- This analysis has implications for the follow-up study, which will address such research questions as: 1) did the treatment work differently for different sub-populations? And 2) what types of treatment/services worked?