PREDICTORS OF RETENTION AND ARREST IN DRUG COURTS
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As the drug court movement has grown, so has the body of research on program outcomes and participant characteristics. Attempts to determine which participant characteristics and circumstances might influence drug court outcomes, however, have been limited. Completed in 1998, the Escambia County (Florida) Adult Drug Court evaluation of "predictors of retention and arrest" is among the first to address this important area of research. This article presents the outcomes of the Escambia evaluation.

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ARTICLE SUMMARIES

EARLY PREDICTORS

[8] Early studies identified age, race/ethnicity, education, and marital status as predictors of success in drug courts.

TREATMENT OUTCOMES

[9] Treatment outcomes are predicted by similar demographic factors, regardless of the treatment setting or "drug of choice."

GRADUATE / NON-GRADUATE SIMILARITIES

[10] Escambia graduates reported higher levels of education and more full-time employment.

PREDICTORS OF PROGRAM COMPLETION

[11] Successful completion of drug court can be predicted by type of substance abuse problem, type of criminal charge, living arrangements, and employment.

ARREST DURING FOLLOW-UP

[12] In a 30-month follow-up period, arrest rates for non-graduates were significantly higher for non-graduates than graduates.

PREDICTORS OF REARREST

[13] Drug court participants arrested during follow-up were younger, less likely to have completed high school, more likely to be single, and more likely to report cocaine as their primary substance abuse problem.

USING PREDICTORS

[14] Using the predictors identified in this and other subsequent studies, drug courts could potentially refine their recruitment, admission, and retention strategies.

The initial response to the rise in drug use and crime in the mid-1980s focused on increased law enforcement and incarceration, but had negligible effects in breaking the cycle of drug-related crime (Inciardi, *et al.*, 1996). Subsequent efforts have shifted the focus toward rehabilitative programs, where treatment becomes part of the adjudication process (Cooper & Trotter, 1994; Sherin & Mahoney, 1996; Tauber, 1994). With almost 550 programs in place or being planned (Cooper, 1999), drug courts represent the most prominent example of these judicial initiatives.

With the implementation of drug court programs across the country comes a corresponding need to evaluate the effectiveness and impact of these interventions, particularly with respect to the impact drug courts may have in reducing drug use and criminal behavior among program participants. The work already done in the field only serves to highlight the value of comprehensive evaluations of drug court programs and the importance of continuing this work (Belenko, 1996, 1998; Peters, 1996; U.S. General Accounting Office [GAO], 1997). Comprehensive evaluations are important to drug court practitioners and the communities they serve because they can be used to help shape the focus of programs based on what works, what doesn't work, which individuals are successful, and what resources work with which populations.

Over time a significant body of literature describing the drug court process has been assembled, including a growing number of evaluations examining program outcomes (Belenko, 1998; Deschenes et al., 1996; Finigan, 1998; Goldkamp & Weiland, 1993; Peters & Murrin [in press]; Tauber, 1993). Recent reviews of the emerging literature consistently indicate positive outcomes for drug court programs across studies (Belenko, 1998; U.S. Department of Justice, 1998). For active program participants, employment rates are high, and so are the rates of reductions in both substance abuse and recidivism. In addition, follow-up studies show that reductions in recidivism continue beyond the life of the program, albeit at a somewhat less dramatic rate (Belenko, 1998). Re-

cent research also indicates that retention rates for drug court participants are typically higher than those observed among groups in other treatment programs, including groups of non-offenders in treatment programs (Belenko, 1998).

Despite the breadth of program outcome data available to drug court practitioners today, many questions remain as to which factors influence *outcomes, and what we can do to improve program outcomes across the board. For instance¾*

- ◆ As it exists today, what kind of individual is our drug court program most likely to engage, and keep engaged?

- ◆ What kind of individual is most likely to achieve success (e.g., employment, getting/staying drug-free and crime-free) because of our program?

- ◆ What characteristics can help us predict a person's likelihood of success in our drug court program—age, gender, living arrangements, personal history, criminal history?

- ◆ How can we use predictors of success to narrow the range of services offered to those who are likely to succeed anyway and conserve resources?

- ◆ How can we use predictors of success to modify our program in order to increase the likelihood of success for high-risk candidates? Would provisions for childcare, vocational education, or *other* auxiliary program components increase their chances of success?

In 1998, the Louis de la Parte Florida Mental Health Institute, University of South Florida, completed one of the few studies to date designed to identify predictors of retention and rearrest among drug court participants. Included in the study were 95 individuals admitted to the Escambia County (Florida) Adult Drug Court Program between June 1993 and June 1996. The study's purpose was to examine characteristics of drug court graduates and non-graduates, and to determine

whether characteristics of drug court participants can be used to predict program retention or arrest during an extended follow-up.

This article describes the Escambia program, as well as the nature and outcomes of the study. The findings indicate the importance of exploring substance abuse, criminal history, employment, living arrangements, and other areas of psychosocial problems that may influence program outcomes. The study found that individuals who were employed at least part-time and lived with their parents were more likely to complete the drug court program. Successful graduates also had fewer prior arrests than non-graduates and were more likely to use alcohol or marijuana as their primary substance of choice.

These are important findings. Not only do they indicate which participants are likely to succeed, but more importantly, they also indicate which participants are likely not to succeed. Early identification of factors that put a person at risk for dropping out of a program may be helpful to planners and practitioners as they develop treatment and supervision plans. It may also signal a need to get high-risk participants involved in specialized services that may give them the leg up they need to capitalize on the drug court experience.

REVIEW OF RELATED RESEARCH

Of the recent studies examining drug court outcomes, only two have attempted to provide predictive modeling (Deschenes et al., 1996; Goldkamp & Weiland, 1993). Both studied the relationships among several unrelated variables and developed models to predict the probability of success in drug court programs based on combinations of demographic and background variables. These initial attempts at predictive modeling have met with limited success in accurately classifying or predicting the success or failure of drug court participants. One study attempted to develop a model to predict outcomes from the Maricopa County Drug Court in Arizona (Deschenes et al., 1996). Factors such as age at first arrest,

number of prior arrests, drug use history, and risk level were analyzed through [1]logistic regression to generate predictive models for violations of community supervision and rearrest during a 12-month follow-up period. The model used to predict violations of community supervision and rearrest was not highly effective in predicting arrest; the probability of making an accurate prediction was only 59 percent probability. A logistic regression model examining predictors of arrest (specifically ethnicity and frequency of prior arrests) improved the accuracy of predicting arrest to 68 percent, although the model provided relatively poor specificity and sensitivity.

An earlier attempt at predictive modeling examined outcomes from the Dade County Felony Drug Court (Goldkamp & Weiland, 1993). Regression techniques were used to predict outcomes during an 18-month period of drug court involvement based on three independent variables: 1) income; 2) prior drug convictions; and 3) pre-trial release status at the time of arrest for the current offense. Statistical analyses suggested that this model explained only 20 percent of the overall variance in drug court outcomes. Another model was generated to examine predictors of arrest during the 18-month period; and included four variables: 1) college education; 2) age; 3) prior robbery arrests; and 4) prior failures-to-appear in misdemeanor cases. Although statistically significant, this model did not accurately predict rearrest of drug court participants at various risk levels, and further attempts to predict failure-to-appear in court among drug court participants were also unsuccessful.

[8] Several studies describe the relationship between demographic variables and drug court outcomes. Although predictive models were not developed, the variables identified in these studies are useful for the purpose of this research. In

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[1] Logistic regression predicts the maximum likelihood of the probability of a relationship between two variables. (i.e., $\underline{X}$ has an impact on $\underline{Y}$ or in this case, drug use history has an impact on rearrest.)

the Dade County study, several variables were associated with successful program completion (Goldkamp & Weiland, 1993). These included race/ethnicity, education, and marital status. The Dade County study found that drug court partici-pants who were Caucasian, who had more years of educa-tion, and who were currently or previously married had lower rates of recidivism after a one-year follow-up (Gold-kamp & Weiland, 1993). An evaluation of the FIRST Diver-sion Project (Tauber, 1993) indicated that age may also be an important predictor of drug court recidivism, with younger offenders having fewer arrests, fewer days in custody, and higher rates of successful charge dismissal during a two-year follow-up period. This finding is interesting, but questionable, based on a small statistical base, given the elevated risk for rearrest typically associated with younger offenders (Ville-neuve & Quinsey, 1995). In a study of the Multnomah County STOP program (Finigan, 1998), decreased rates of recidi-vism were associated with graduation from the drug court program, and graduates were found to have 49 percent fewer arrests than non-graduates during a two-year follow-up pe-riod.

In addition to the research conducted in drug courts, several studies have examined predictors of treatment outcome and retention among offenders. These studies identify a range of demographic factors associated with outcome, including age, criminal history, employment status, gender, marital status, and race/ethnicity (Hepburn & Albonetti, 1994; Land et al., 1990; Rhodes, 1986; Visher et al., 1991). Offenders at great-est risk for poor outcomes in substance abuse treatment are generally younger, non-Caucasian, male, less educated, sin-gle, and have more extensive criminal histories. Other studies have examined psychological and therapeutic factors affect-ing offender treatment outcomes. For example, Broome and Associates report that in addition to demographic variables (ethnicity, gender, and employment status), higher rates of self-esteem, counselor competence, and peer support are as-sociated with favorable treatment outcomes and lower recidi-

vism among substance-involved offenders (Broome et al., 1996).

Other research indicates that completion of substance abuse treatment is associated with lower recidivism during follow-up. Reductions in recidivism are directly proportional to the duration of offender treatment (Van Stelle et al., 1994). Although the authors found no difference in the number of felony arrests between treatment graduates and non-graduates during follow-up, they did find that compliance with treatment was associated with lower recidivism.

[9] Treatment retention and outcomes have been widely examined in non-offender samples. In general, treatment outcomes are predicted by similar demographic factors, regardless of the treatment setting or "drug of choice" (McLellan et al., 1994). The predictors identified in these studies are quite similar to those found in criminal justice settings. They include employment (Stephens & Cottrell, 1972; Westermeyer, 1989), occupational status (Gillis & Keet, 1969), and marital status (McCance & McCance, 1969; Rudfield, 1958). Individuals with the poorest treatment outcomes are typically single, unemployed, and have low occupational or socioeconomic status. Studies have also found higher rates of substance abuse relapse among individuals with more chronic and severe substance abuse histories (McLellan et al., 1994).

THE ESCAMBIA COUNTY ADULT DRUG COURT PROGRAM

The Escambia County Adult Drug Court program began in June 1993 as a collaborative initiative involving the court, the prosecutor, the public defender/defense bar, community supervision and pre-trial services agencies, treatment agencies, and state correctional and social service agencies. The drug court program is designed to treat nonviolent offenders who have a history of drug use and a limited history of criminal justice involvement. Eligible participants must agree to enroll in the program and enter a no-contest plea to the in-

stant charges. Persons with more lengthy criminal records must enter a plea of no contest and agree to community supervision as a condition of release to the community.

The Escambia program provides a comprehensive range of services, delivered in three phases of treatment over a period of approximately one year. Services include initial screening by the pretrial services agency, assessment, individual and group counseling, regular drug testing, peer support groups, involvement in community support and aftercare groups, referral to ancillary services, educational programming, and vocational training. A range of short and long-term residential treatment is also available. As in many drug courts, treatment services are of graduated intensity, with more intensive services provided during the first two phases of the program.

All drug court participants are required to attend periodic status hearings in front of the drug court judge to monitor abstinence, progress in treatment, and other progress toward recovery goals. Detailed status reports for each participant are available from the drug court treatment agency for review prior to court hearings. Community supervision officers monitor abstinence and compliance with program activities, and provide case management services, with a focus on vocational, employment, and educational activities. Upon successful completion of the drug court program, participants may have their pleas withdrawn, with charges dismissed by the State Attorney's Office.

RESEARCH DESIGN

This study of the Escambia County Adult Drug Court Program focuses on predictors of two major outcomes: 1) completion of a drug court program; and 2) criminal recidivism. The study examines characteristics of drug court participants associated with these outcomes, including gender, ethnicity, age, marital status, education, living arrangements, employment, income, prior criminal justice involvement, current

charge, prior history of drug abuse, primary substance abuse problem, and mental health problems. Also explored are differences between drug court graduates and non-graduates. This latter group includes individuals terminated by the court prior to program completion due to rearrest, probation violations, absconding, or other infractions.

Criminal justice outcomes in the study were examined during a 30-month follow-up period that included at least 12 months of involvement in the drug court program. At least 19 months of follow-up criminal justice information was available for all drug court participants, a minimum of 24 months of information was available for 95 percent of the sample, and the full 30 months of follow-up information was available for 82 percent of the sample. Statistical procedures were used to control for differing "time at risk" among drug court participants during the 30-month follow-up period.

[2]Research analyses were used to identify factors that predicted program completion and arrest during follow-up. Evaluators employ this type of analysis to examine individual differences in "survival" due to treatment and prognostic factors, while holding the time of the intervention constant (Marumbini & Valsecchi, 1995). In these analyses, "survival" is defined as remaining in the drug court until completion, or remaining "arrest free" during the follow-up period. Hypotheses for the study were that characteristics found to predict retention in treatment and follow-up arrest in previous studies of treatment outcomes among offenders would also be relevant in predicting drug court outcomes.

The study set out to examine all participants admitted to the drug court program after June 1993, and who graduated or were terminated from the program by July 1996. This sampling strategy was employed to provide a minimum of one year's follow-up for each participant after discharge from the drug court program. This strategy also ensured that the "lag" time of approximately six months in entering local arrest data

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[2] Cox regression analysis

into the NCIC (National Crime Information Center) and the FCIC (Florida Crime Information Center) criminal justice databases would not affect the accuracy of outcome data obtained. Of the 168 participants admitted to the Escambia County Adult Drug Court Program after June 1993 and discharged by July 1996, complete information on each of the variables examined in this study was available for only 95 individuals. The resulting subsample of 95 individuals used for this study included 43 participants who had graduated from the program and 52 non-graduates.

PROCEDURE

Information for the study was obtained from NCIC/ FCIC records compiled by the Escambia County Pre-trial Release office, as well as from treatment records, probation records, and the records from the Clerk of the Court's office. A research assistant was trained in data collection and entry procedures, and individually compiled data from the various different databases. Criminal history information was manually coded from printed NCIC/FCIC records. These records provided information regarding arrest dates, primary charges, disposition of charges, and sentences received. Evaluators had intended to use the Clerk of the Court's records to identify arrests that had occurred in the county of residence. However, a comparison of NCIC/FCIC and Clerk of the Court's records for a sample of drug court participants indicated that the Clerk of the Court's database did not include a comprehensive record of county arrests. For this reason, all information regarding arrests, offense types, and sentencing came from NCIC/FCIC records.

Probation records included information regarding participant demographics and background, education and employment, monthly wages and supplemental income, military history, current living arrangements, and arrests or violations. Records from the Clerk of the Court's Office described the date of admission to the drug court program, the criminal

charges leading to drug court admission, sentence status, length of supervision, dates that bench warrants were issued or revoked, dates and types of sanctions imposed, dates of attendance at drug court status hearings, and date and type of discharge from the drug court program. The intake assessment included a range of demographic and background information, substance abuse history and treatment history, and other psychosocial information. Treatment records included a comprehensive intake assessment and a substance abuse reporting form required by a state social service agency. Status reports provided information regarding completion dates for the three phases of the program, status hearing dates, and the record of attendance in treatment. The Transfer/Discharge Summary forms described program admission and discharge dates, type of discharge, discharge diagnoses, and judicial disposition for persons who were discharged from the drug court/treatment programs.

Evaluation project staff followed rigorous procedures to protect the confidentiality of the drug court participants involved in the evaluation. They carefully adhered to federal confidentiality laws and regulations and to all other applicable laws and regulations governing the confidentiality of information obtained from research subjects (42 C.F.R. Part 2). Existing informed consent procedures were modified to address participation in the evaluation study. Whenever possible, program participants were identified through numeric or alphanumeric codes.

VALIDITY OF DATA

The consistency and comprehensiveness of drug court data varied according to the source file examined. For example, one drug court file obtained from the records of the Escambia Clerk of the Court was sealed, and six additional files from the Clerk's office could not be located. The same was true of 10 treatment record files, and 52 files from the probation re-

cords had been dispersed to field officers and were unavailable for review.

To assess the reliability of data collected for the evaluation study, a systematic review of coded outcome evaluation data was completed for a 10 percent random sampling of drug court participant records. This sampling included a review of each different source of evaluation information for selected drug court participants. An error rate of less than 1 percent was detected for each type of record reviewed (treatment, probation, and Clerk of the Court's office), indicating that information had been coded accurately.

FINDINGS OF THE STUDY
PROGRAM RETENTION

Of the 95 individuals included in the sample, 43 (i.e., 45 percent) graduated from the drug court program. The average duration of drug court involvement for all participants was 288 days; graduates averaged 392 days in the program, compared to 202 days for non-graduates.

[10] As described in Tables 1 and 2, program graduates and non-graduates did not differ significantly on several demographic variables, including age at entry into the program, gender composition, marital status, average monthly family income, rates of self-reported mental health problems and history of abuse (e.g., sexual, physical, or emotional). However, the two groups did differ in several important respects. A significantly higher proportion of graduates (70 percent) completed high school or received a GED than non-graduates (42 percent), and a higher proportion of drug court graduates also reported full-time employment compared to non-graduates (15 percent). Current living arrangements reported by drug court graduates and their non-graduating counterparts differed as well. A higher proportion of graduates (58 percent) lived with their parents (compared to 35 percent of non-graduates), whereas more non-graduates (58 percent) resided with their partners and/or

alone with their children (compared to 16 percent of graduates).

Table 1. Characteristics of Drug Court Program Graduates and Non-Graduates ¾ Demographic Variables.

Variable	Graduates ($\underline{n}$ = 43)	Non-graduates ($\underline{n}$ = 52)	sig.
Demographics			
Gender (% men)	76.7	69.2	.316
Ethnicity (% Caucasian)	44.2	28.8	.061
Age[a] M (SD)	31.24 (7.33)	30.22 (7.65)	.311
Current Marital Status			.451
Married (%)	11.6	11.5	
Previously married (%)	39.5	28.8	
Never married or single (%)	48.8	59.6	
Education			.009
Completed high school/GED (%)	69.8	42.3	
Current Living Arrang.			.030
Living with partner (%)	11.6	23.1	
Living with children alone (%)	4.7	25.0	
Living with parents (%)	58.1	34.6	
Other (%)	25.6	17.3	
Current Employment Status			.003
Full-time (%)	34.9	15.4	
Part-time (%)	41.9	38.5	
Unemployed/other (%)	23.3	46.2	
Monthly Family Income ($)	619.84 (533.19)	463.88 (677.10)	.188

[a] Age refers to age of offender at time of entry into drug court program.
M = mean   SD = standard deviation   sig. = significance level

The groups also differed with regard to criminal justice involvement and substance use problems (see Table 2). Drug court graduates had significantly fewer prior arrests (an average of 2.5) than the non-graduates (an average of 6.7). Program graduates were also slightly, but not significantly older at their first arrest than non-graduates (31.24 compared to 30.22), and slightly more likely to enter drug court following a drug possession arrest than non-graduates (71

percent compared to 58 percent). With regard to substance use, program graduates were more likely to report alcohol or marijuana as their primary substance abuse problem (71 percent compared to 27 percent), whereas non-graduates were more likely to report problems with cocaine use (about 28 percent). Histories of prostitution and diagnoses of substance "dependence" (versus "abuse") were also found to be associated with drug court retention and graduation. However, due to the small number of drug court participants reporting a history of prostitution and to the lack of precision in comparing diagnoses from several different diagnostic systems, these factors were not included in the prediction model used in this study.

PREDICTORS OF PROGRAM COMPLETION

As noted earlier, regression analysis was used to identify factors that predicted program completion. Demographic, criminal justice, substance abuse, and mental health variables were entered into the Cox regression model using a forward step-wise conditional likelihood ratio method.
[11] As shown in Table 3, results from the regression analysis indicate that successful completion of drug court can be predicted by participants' primary substance abuse problem, type of criminal charges, living arrangements, and employment status, $c^2(9) = 32.14$, $p < .001$. Those who reported cocaine as their primary substance abuse problem graduated from drug court at a significantly lower rate than individuals who reported problems with alcohol or marijuana. Participants who were referred to drug court on the basis of drug possession charges had significantly higher rates of graduation in comparison to other individuals. Current living arrangements and employment status also influenced the probability of drug court graduation; individuals who lived with their children alone (without another adult in the home) were slightly less likely to graduate from drug court than those

who resided with family or friends or those who lived alone. Individuals who were employed full-time were also slightly more likely to graduate from the drug court program.

Table 2. Characteristics of Drug Court Program Graduates and Non-Graduates ¾ Criminal Justice Involvement and Substance Abuse/Mental Health Problems.

Variable	Graduates ($\underline{n}$ = 43)	Non-graduates ($\underline{n}$ = 52)	sig.
Criminal Justice Involvement			
Months spent in drug court program $\underline{M}$ ($\underline{SD}$)	12.88 (1.37)	6.63 (4.90)	.013
Age at first arrest M (SD)	26.10 (6.52)	23.28 (6.45)	.085
Number of prior arrests $\underline{M}$ ($\underline{SD}$)	2.53 (3.68)	6.73 (10.32)	.030
Current charge – drug possession (%)	71.2	57.7	.091
Substance Abuse/Mental Health Issues			
Primary substance abuse problem			.013
Alcohol (% reporting)	18.6	1.9	
Cocaine (% reporting)	27.9	71.2	
Marijuana (% reporting)	45.6	25.0	
Other (% reporting)	7.7	1.8	
Prior history of abuse (% reporting)[a]	23.3	19.2	.586
Mental health problems (% reporting)	5.8	7.0	.801

Notes:
[a] History of abuse includes self reports of physical, sexual, or emotional abuse in the past.
M = mean   SD = standard deviation   sig. = significance level

Table 3. Results From Cox Regression Analysis Predicting Graduation Status.

VARIABLE	b	SE	WALD	df	sig.
Primary Substance Abuse Problem			9.08	3	.028
Alcohol versus cocaine	-2.30	1.03	4.97	1	.026
Marijuana versus cocaine	-0.81	0.36	5.06	1	.025
Other versus cocaine	-0.76	1.07	.50	1	.479
Drug Possession as Current Charge	-0.67	0.32	4.43	1	.035
Current Living Arrangements			8.23	3	.042
Living with partner versus other living arrangements	0.00	0.50	0.00	1	.999
Living with children alone versus other living arrangements	0.88	0.47	3.42	1	.064
Living with parents versus other living arrangements	-0.14	0.46	0.09	1	.867
Current Employment Status			7.41	2	.091
Full-time versus other[a]	-1.32	0.48	7.41	1	.007
Part-time versus other[a]	-0.30	0.32	0.87	1	.350

Notes:

[a] Other employment defined as less than part-time employment or unemployment.

β = beta coefficient   SE = standard error   df = degrees of freedom sig. = significance level based on the Wald Statistic

ARREST OF PROGRAM PARTICIPANTS

[12] An examination of arrest rates during the 30-month follow-up period revealed that 67 percent of all participants were arrested at least once during the follow-up period. Significantly fewer graduates were arrested than non-graduates, $c^2(1) = 28.24$, $p \leq .001$, with differences between groups reflected across several offense categories (felony, drug, violent, property crime, and probation/parole). Individuals who were not arrested during follow-up remained in the drug

court program for an average of two and one-half months longer than other participants. This is a highly significant difference.

[13] Participants who were arrested during follow-up had several distinctive characteristics. As shown in Table 4, those arrested during follow-up were younger than other drug court participants (the average age of those arrested was 29.5 compared to 33.6 for others) and less likely to have completed high school or to have received a GED degree (48 percent compared to 70 percent). They were also more likely to be single (65 percent and 37 percent respectively). With respect to patterns of substance use (see Table 5), those who were arrested were significantly more likely to report cocaine as their primary substance abuse problem than were other participants (58 percent compared to 40 percent). Those arrested during follow-up also had slightly more frequent prior arrests (an average of 5.3 compared to 4.07 for participants not arrested), and were slightly less likely to have become involved in drug court as a result of a drug possession charge.

PREDICTORS OF ARREST DURING FOLLOW-UP

A second Cox regression analysis was used to identify factors that predicted rearrest during the follow-up period. Demographic, criminal justice, substance abuse, and mental health variables were entered into the Cox regression model using a forward step-wise conditional likelihood ratio method, with arrest during the follow-up period defined as the terminal event. A model was then developed to identify factors that predicted arrest following enrollment in the drug court. As shown in Table 6, results indicate that arrest during the follow-up period is predicted by participants' primary substance abuse problem and age at time of entry into the drug court program, $c^2(4) = 19.78$, $\underline{p} < .001$. Participants who reported cocaine as their primary substance abuse problem had sig-

*nificantly higher rates of arrest than individuals who re-
ported problems with alcohol or marijuana. Younger offend-
ers were also significantly more likely to be arrested during
the follow-up period than their older peers.*

**Table 4. Characteristics of Program Participants as a Function of
Arrest During 30-Month Follow-Up ¾ Demographic Variables.[1]**

Variable	Arrested (n = 60)	Not Arrested (n = 30)	sig.
Demographics			
Gender (% men)	66.7	83.3	.132
Ethnicity (% Caucasian)	35.0	36.7	.574
Age[a] M (SD)	29.46 (6.98)	33.64 (6.63)	.054
Current Marital Status			.044
Married (%)	11.7	10.0	
Previously married (%)	23.3	53.3	
Never married or single (%)	65.0	36.7	
Education			.020
Completed high school/GED (%)	48.3	70.0	
Current Living Arrangements			.138
Living with partner (%)	20.0	13.3	
Living with children alone (%)	45.0	46.7	
Living with parents (%)	18.3	10.0	
Other (%)	16.7	30.0	
Current Employment Status			.287
Full-time (%)	21.7	33.3	
Part-time (%)	38.3	40.0	
Unemployed/other (%)	40.0	26.7	
Monthly Family Income (in Dollars) M (SD)	509.37 (622.44)	627.77 (650.43)	.186

Notes:
[a] Age refers to age of offender at time of entry into drug court program.
[b] History of abuse includes self reports of physical, sexual, or emotional abuse
in the past.
M = mean   SD = standard deviation   sig. = significance level

*[1]Five individuals were excluded from this analysis due to missing in-
formation on one or more key variables, yielding a total of 90 drug court
participants examined in this analysis.*

Table 5. Characteristics of Program Participants as a Function of Arrest During 30-Month Follow-Up ¾ Criminal Justice Involvement and Substance Abuse Problems.[1]

Variable	Arrested (n = 60)	Not Arrested (n = 30)	sig.
Criminal Justice Involvement			
Months spent in drug court program M	9.07	11.59	.001
Age at first arrest M (SD)	23.85 (6.37)	25.72 (6.57)	.164
Number of prior arrests M (SD)	5.30 (9.59)	4.07 (6.35)	.243
Current charge – drug possession (%)	61.7	73.3	.246
Substance Abuse/Mental Health Issues			
Primary substance abuse problem			.019
Alcohol (% reporting)	5.0	16.7	
Cocaine (% reporting)	58.3	40.0	
Marijuana (% reporting)	35.0	36.7	
Other (% reporting)	1.7	6.7	
Prior history of abuse (% reporting)[a]	21.7	20.0	.937
Mental health problems (% reporting)	3.3	13.3	.132

Notes:
[a] History of abuse includes self reports of physical, sexual, or emotional abuse in the past.
M = mean   SD = standard deviation   sig. = significance level

[1]Five individuals were excluded from this analysis due to missing information on one or more key variables, yielding a total of 90 drug court participants examined in this analysis.

Table 6. Results From Cox Regression Analysis Predicting Arrest During 30-Month Follow-Up.

Variable	*b*	*SE*	Wald	*df*	sig.
Age[a]	-0.07	0.02	10.13	1	.002
Primary Substance Abuse Problem			15.70	3	.001
Alcohol versus cocaine	-1.81	0.62	8.53	1	.003
Marijuana versus cocaine	-0.98	0.31	9.98	1	.002
Other versus cocaine	-1.25	1.02	1.49	1	.222

Note:

[a] Age refers to age of participant at time of entry into Drug Court program.

b = beta coefficient   *SE* = standard error   *df* = degrees of freedom
sig. = significance level based on the Wald statistic

CONCLUSIONS

IMPORTANCE OF MAJOR FINDINGS

Retention and graduation from the Escambia program were successfully predicted by a combination of factors, including the following (listed in order of importance)¾

1. *Primary substance abuse problem (alcohol or marijuana versus cocaine).*
2. *Current charges (drug possession versus other charges).*
3. *3) Living arrangements (with children alone versus with family, friends, or alone)*
4. *Full-time employment.*

Although previous drug court studies have not extensively considered factors associated with retention and graduation, employment status and the primary substance abuse problem have predicted treatment outcomes in other studies involving various different substance abusing populations (McLellan et al., 1994; Stephens & Cottrell, 1972; Westermeyer, 1989).

The findings of this study appear to indicate that retention in and graduation from drug court may hinge on two key factors: 1) the severity of an individual's substance abuse problem and his or her drug of choice; and 2) stability and support provided at work and at home. With respect to the first factor, drug court participants who report cocaine as their primary substance abuse problem may be more likely to drop out of drug court due to their higher rates of relapse. The primary substance abuse problem and the type of criminal charges may also reflect different levels of substance abuse severity. Given this scenario, drug court participants who reported marijuana or alcohol as their primary substance abuse problem and who were charged with drug possession may have had less severe substance abuse problems, thus reducing the likelihood of relapse and increasing their chances of recovery and successful involvement in the program.

As found in other studies (Finigan, 1998), drug court program graduates were less likely to be arrested than non-graduates. In order of importance, the primary substance abuse problem (cocaine, versus alcohol or marijuana), and younger age at entry to the drug court successfully predicted arrest during the 30-month follow-up period. These factors are consistent with predictors identified in other studies examining treatment outcomes among substance abusing populations. The importance of cocaine as the primary substance abuse problem in predicting both retention and arrest among drug court participants appears to reflect a strong association between a participant's drug of choice, severity of addiction, and criminal recidivism. As already noted, prior experience with cocaine may be associated with higher rates of relapse, and lead to participant's return to criminal behavior. Finally, the findings of this study make clear the importance of continuing drug court assessment activities that explore substance abuse and criminal history, employment, living arrangements, and other areas of psychosocial problems of drug court participants and potential participants. Early

identification of factors for program dropout may be helpful in developing treatment and supervision plans, and signal the need for involvement in specialized services. For example, drug court participants who have more serious charges or a history of cocaine use may require more intensive activities focused on orientation, engagement, and case management. Similarly, participants who live alone with their children or who do not have full-time employment may need greater support and supervision to complete drug court requirements, as well as assistance in providing for childcare, vocational training, and job placement. Consideration of risk factors for dropout or arrest is consistent with individualized treatment approaches endorsed by most drug courts.

METHODOLOGICAL CONSIDERATIONS

When interpreting the results of this study, it is important to remember that the Escambia study examined participants who entered drug court during the initial stages of program implementation. At that time, important substantive and procedural changes were under way which affected the target population, treatment services provided, court hearings, supervision approaches, and personnel decisions. The range of problems, barriers, and rapid changes that occurred during early stages of program implementation (Mahoney et al., 1998; Peters, 1996) are likely to have influenced the outcomes experienced by drug court participants. For example, it is likely that subsequent enhancements to the drug court program may have favorably affected rates of retention and follow-up arrest among participants.

It is also important to remember that the study involved a relatively small sample of drug court participants. The sample size was limited by the small number of persons admitted to the program during the first two years of drug court implementation, and by the need for a sufficiently long follow-up period to examine criminal recidivism after program dis-

charge. In light of the small sample size, research is needed in other jurisdictions to assess the validity of the predictors identified in this study, and to identify other relevant factors that may contribute to drug court outcomes.

THE NEED FOR FURTHER RESEARCH

The Escambia study found that a participant's history of criminal justice involvement was strongly associated with program retention and arrest outcomes, but the association was not nearly as powerful as other psychosocial factors in predicting these outcomes. It is also interesting that criminal history measures were more strongly associated with retention in drug courts rather than with arrest during follow-up. Additional research is needed to explore the relationship between criminal history measures and drug court outcomes during extended follow-up periods. Predictors of other relevant drug court outcomes should also be examined, e.g., substance abuse relapse and completion of aftercare programs.
There is also a need for further research exploring the predictive value of certain factors associated with drug court retention/graduation and arrest (e.g., history of prostitution, diagnosis of substance "dependence" versus "abuse") but not fully examined in this study due to the small number of participant responses or to other methodological concerns. Other promising areas that might be examined as potential predictors of drug court outcomes include motivation and readiness for treatment, mental health problems, self-esteem, and level of peer support.
[14] Drug courts have the potential to use the predictors identified in this and other subsequent studies in a number of ways. For instance, recruitment, admission, and retention strategies could be refined in order to promote successful community reintegration of program participants. Drug courts in the early stages of program implementation might choose to select a higher proportion of individuals with "low

risk" characteristics for program admission, and expand the participant base later, as treatment and supervision plans are enhanced and procedures to strengthen program retention and graduation are put in place.

A more important benefit for applying these predictors may be to alert drug courts to the need to intensify treatment and supervision for individuals who are characterized by multiple "risk" factors. Given that the most substantial treatment-related reductions in criminal recidivism are achieved with offenders who have moderate to high "risk" levels (Andrews et al.*, 1990), it is likely that the application of risk identification and management will ultimately be more beneficial than risk avoidance. Additional work is needed to identify risk prediction models that would allow development of specialized reentry, aftercare, and supervision plans for offenders of differing risk levels who are discharged from drug courts.*

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PERCEPTIONS OF DRUG COURT:
HOW OFFENDERS VIEW EASE OF PROGRAM COMPLETION, STRENGTHS AND WEAKNESSES, AND THE IMPACT ON THEIR LIVES
By Susan Turner, Ph.D., Peter Greenwood, Ph.D., Terry Fain, M.A., and Elizabeth Deschenes, Ph.D.

In 1992, Maricopa County, Arizona Probation began an experiment that included a post-sentence drug court for first-time felony probationers convicted of drug possession or use. Modeled after the FIRST drug court in Alameda County, California, the Maricopa program combined specialized drug treatments with court supervision and utilized behavioral contracts, including status hearings before the judge, a system of rewards and sanctions, a phased outpatient treatment regimen, and urine monitoring. In interviews conducted three years after initial placement in the program, 29 Maricopa drug court participants offered their perceptions of the difficulty of completing program requirements. They also assessed the program's strengths and weaknesses, as well as its helpfulness in attaining their goals. This article presents the results of those interviews.