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Associations with substance abuse treatment completion in drug court

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Abstract

Subjects in the study included all participants (N = 573) in drug treatment court in a mid-sized U.S. city from 1996 through 2004. Administrative data from the drug court included measures of demographics and socioeconomic, substance use, and criminal justice history. Stepwise multivariate logistic regression yielded a final model of failure to complete drug treatment. Unemployment, lower educational attainment, and cocaine use disorders were associated with failure to complete treatment. The limitations of administrative data should be considered in the interpretation of results. Funding was provided by the National Institutes of Health, National Institute on Drug Abuse (1 K23 DA017283-01).

Keywords

drug court; criminal justice; drug abuse; unemployment; cocaine

Introduction

The Drug Treatment Court Context

Since the inception of the first U.S. drug treatment court in Dade County, Florida in 1989, the modality has spread rapidly and widely. Drug treatment courts (DTCs) are now present in over 1800 county, tribal, and territorial jurisdictions in the United States, as an alternative to incarceration for offenders with substance use disorders.(ONDCP 2006) Potentially eligible offenders may be referred by counsel for a substance use assessment by either a trained court staff member or clinical staff of a contracted community treatment facility. Traditionally, DTCs exclude high level drug offenders (those involved in manufacture and/or distribution) and violent offenders from participation. If found to have a substance related disorder, the offender may elect to participate in drug treatment court rather than submitting to typical adjudication. Participation in drug treatment court is voluntary, albeit coerced in the sense that successful completion may result in the reduction of sentence or dismissal of charges. While specific program components vary between jurisdictions, treatment contracts with DTC clients typically involve: (1) participation in community-based substance abuse treatment, (2) individual case management, (3) regular urine drug screening, (4) a system of sanctions and rewards to motivate continued drug treatment and drug court program compliance, and (5) regularly scheduled contact with the Drug Court Judge for assessment of progress and program compliance; imposition of sanctions; and determination of eligibility for graduation.

DTCs are similar to the criminal justice intervention programs that have recently been established in the UK. In 1998, Central Government announced schemes whereby drug users arrested for committing a drug related crime could be referred into drug treatment

through an “arrest-referral scheme”.(Ashton 2001) An integral part of the scheme is that drug users have a choice whether to access drug treatment or take a custodial sentence. Integral to the treatment option is a “drug treatment testing order (DTTO)” whereby the user must undergo regular urine testing as part of the order. Failure either to provide a sample, or urine samples showing the presence of illicit drugs, can lead to the order being revoked.

Previous research involving drug treatment courts

Though DTCs as alternatives to incarceration have spread quickly and widely through the U.S., further research is clearly needed to rigorously examine effectiveness as well as to characterize the populations being served and their specific treatment and case management needs. Program evaluations, utilizing aggregate level data on DTC participants and non-participants at the county level in a variety of jurisdictions, indicate that drug court participation is associated with reduced recidivism and drug use among substance-involved offenders.(Goldkamp and Weiland 1993; Johnson and Latessa 1997; Granfield, Eby et al. 1998; Belenko 2001; Brewster 2001; Guydish, Wolfe et al. 2001; Listwan, Shaffer et al. 2001; Fielding, Tye et al. 2002; Carey and Marchand 2005; Marchand, Waller et al. 2006) Though encouraging, such aggregate level data fail to take into account a number of critical factors such as selection bias and potentially confounding or modifying factors (e.g. substance use history, prior treatment contacts, criminal justice history, socioeconomic factors, social support, type of treatment received, and other conditions of supervision in drug treatment court) leading to the reductions in recidivism and substance use for DTC participants. One experimental study overcame these limitations by randomizing 235 drug arrestees to a DTC or to traditional adjudication through the courts (resulting in incarceration and/or probation) and following the subjects prospectively for 24 months. (Gottfredson, Najaka et al. 2003) DTC participants had a lower likelihood of rearrest (66.2% vs. 81.3%, $p < 0.05$) and a lower number of average rearrests (1.6 vs. 2.3, $p < 0.05$). While the authors presented demographic and substance use information in aggregate for each experimental condition, they did not undertake statistical modeling to account for the potential effects of these covariates. Randomization may be assumed to balance these covariates between treatment arms for the purposes of an effectiveness study. However, more detailed examination of these covariates and their associations with treatment adherence could prove quite useful in matching clients to optimal services.

Optimal treatment and supervisory conditions remain understudied. Findings from community-based, treatment-seeking populations may not apply to DTC participants, and, in fact, there are indications that the population of DTC clients presents characteristics and treatment needs distinct from the more general population of treatment-seeking adults. For example, in comparison to individuals in non-coerced treatment in the community, drug court participants tend to have greater psychiatric comorbidity,(Marquart, Merianos et al. 1997) and tend to remain in treatment for longer periods of time.(Belenko 2001) The latter is likely due in part to the unique coercive nature of DTCs.

In a study examining case management effects upon drug court outcomes, Marlowe et al.(Marlowe, Festinger et al. 2003) randomized 197 drug court participants to different frequencies of judicial contact during drug court: bi-weekly or as needed in response to poor performance. This DTC supervisory condition did not affect rates of illegal activity or substance use frequency. However, subgroups with specific mental health diagnoses (antisocial personality disorder) did appear to benefit from increased supervision, providing the first indication from a rigorously conducted study of the potential importance of matching clients to supervisory conditions.

Findings in the existing literature conflict as to how DTC participants may differ in terms of their treatment and supervisory needs. A limited number of studies examining gender as a

predictor of treatment completion have found that women and men are likely to face different issues upon entry to treatment. Women tend to exhibit more employment problems, lower income, greater desire for treatment, and more frequently report cocaine as their primary drug. (Schiff and Terry 1997; Peters, Haas et al. 1999; Butzin, Saum et al. 2002; Webster, Rosen et al. 2006) Gender, however, has not consistently been associated with treatment retention or outcome in these studies. Older age tends to predict successful completion of treatment among drug court participants. (Peters, Haas et al. 1999; Saum, Scarpitti et al. 2001; Butzin, Martin et al. 2002)

Studies examining ethnicity vary widely in their findings with some finding lower rates of DTC completion for non-whites, (Schiff and Terry 1997; Brewster 2001; Sechrest and Schicor 2001; Butzin, Martin et al. 2002; Dannerbeck, Harris et al. 2006) and others finding no significant difference. (Logan, Williams et al. 2000; Saum, Scarpitti et al. 2001) The nature of these associations are unclear due to the fact that many studies fail to address potential confounding factors (e.g. employment status, educational attainment).

A drug court participant's substance of abuse, early findings indicate, may be an important modifier of retention in and response to treatment. Having a primary problem with cannabis, as opposed to harder drugs such as cocaine, other stimulants, or opioids, was predictive of a greater likelihood of treatment completion in one study. (Sechrest and Schicor 2001) The same study found a greater likelihood of expulsion from drug court for individuals charged with drug distribution as opposed to possession charges. Cocaine use has been implicated in drug court samples as a substance of greater risk in terms of predicted a lower likelihood of successful program completion. (Miller and Shutt 2001)

Though early indications in the literature are that individual historical factors predict service needs during drug court participation, results are conflicting and relatively sparse. Further study is clearly needed. Given potentially critical differences between the general adult treatment-seeking population and DTC participants, and given gaps in previous literature regarding DTC participants, research characterizing this specific target population is warranted for purposes of attaining a clear understanding of service needs and DTC outcomes.

Through examination of a complete and relatively large DTC population (all participants in a single drug court from years 1996-2004, N = 573), the current study seeks to contribute to the scientific literature regarding substance abuse treatment completion and associated factors among drug court participants. We hypothesize that specific historical factors will relate to failure to complete substance abuse treatment during drug court participation:

1. Unemployed status
2. Lower educational attainment
3. Divorced/separated marital status
4. Legal history (number of prior arrests, incarcerations)

Such historical factors may need to be taken into account when assigning potential drug court participants to supervisory and treatment conditions.

Materials and Methods

The current study was approved by the University of Wisconsin's Health Sciences Institutional Review Board (IRB). Since de-identified data were used and the study would not be feasible otherwise, the IRB deemed that a waiver of informed consent was warranted.

The data for this study is derived from administrative information collected by a single DTC in a Midwestern U.S. state from 1996-2004. The DTC for the current study was established in 1996. A single drug court judge presided over all cases during the years in question (1996-2004). Though abstinence from illicit substances is a goal and contracting community treatment facilities are abstinence-based in philosophy, participants may not receive sanctioning due to a single positive urine drug screen, if making progress in other areas, such as attendance to treatment visits, education, or employment. In this sense, the DTC could be considered more closely affiliated with harm reduction than abstinence-based philosophies.

Clinical and other data are collected by staff of the county's mental health center with graduate-level education in counseling and/or social work. On the basis of this assessment, the participant is then referred to the appropriate level of care for substance abuse treatment based upon the Patient Placement Criteria of the American Society of Addiction Medicine. Stand-alone, community-based treatment facilities providing the appropriate respective levels of care contract with the Court to provide treatment to drug court participants. The contract for treatment and DTC participation is with the individual offender, thus, significant others and other close personal contacts do not explicitly participate in treatment, though appearances before the Drug Court Judge are public and family and friends frequently attend.

The baseline interview collects demographic information, socioeconomic information, data on household structure, criminal history and drug use history. Data from the DTC program database tracks the progress of participants through drug court. Interview items and the structure of their responses parallel items included in the Addiction Severity Index. (McLellan, Kushner et al. 1992) Available variables are as follows:

Independent Variables (Participant Characteristics)—

Source: Screening Questionnaire — self report

- Gender: Male/Female
- Age: in years
- Race: self-identified as Caucasian, African American, Hispanic, Asian and Native American
- Marital status: self- identified
- Living situation: spouse, spouse and children, parents, other family, alone, friends/roommates, unstable housing
- Employment Status: as described by participant — full time, part time, student, unemployed
- Educational attainment: in years
- Criminal history: prior misdemeanors/felonies, jail/prison sentences, probation, parole
- Presence/absence of mental health diagnosis. (Participants with complicated psychiatric co-morbidity, such as psychoses or uncontrolled bipolar spectrum disorder, do not participate in DTC and are referred to more regimented specialist mental health care).

Source: Open-ended interview with Program Staff

- Diagnosis of drug use disorder based on DSM IV (APA, 1994) criteria applied by program staff to information provided by participant
- Drug use history: onset of drug use, substance used, frequency and amount of use, prior treatment contacts (inpatient, outpatient, group self-help)

Source: DTC Program Database

- Criminal charges: for which participant referred to the DTC: Possession of -Controlled Substance — Drug Paraphernalia Prescription fraud — Drug related theft- Drug related burglary Possession with intent to deliver — Manufacturing THC Disorderly Conduct — Delivery — Bail Jumping - OMVWOC

Intermediary Variables (Treatment/Case Management Factors)

Source — DTC Program Database

- Incentive to complete program: 1) Dismissal of charges, 2) Reduction of severity of charges, 3) Reduction of severity of penalty for charges
- Type of charges to be dismissed as a result of (plea bargain) (see charges list above)
- Maximum possible jail penalty
- Number of sanctions administered during participation
- Treatment program: categorical variable representing the community-based substance abuse treatment program to which the participant was referred.
 1. Weekly outpatient drug counseling
 2. Intensive outpatient program treating substance use disorders (3 hours per day of group therapy on 4 days of each week)
 3. Residential program providing substance abuse treatment
- Year entered the treatment program

Dummy variables were created for categorical variables for purposes of logistic regression analysis. Continuous variables were examined for distributional characteristics and, if severely non-normal, transformed as appropriate to approximate normal distribution for purposes of initial bivariate associations and for regression modeling. Definitions of substance use variables were coded such that 0 = the substance was not a primary substance of abuse/dependence for the participant, 1 = the substance was a primary substance of abuse/dependence. The primary dependent variable was coded such that 1 = failure to complete treatment and 0 = successful completion of treatment, neutral termination, or transition to less restrictive case management and treatment plan. Failure to complete treatment, rather than success, is chosen for reasons related to pertinent policy issues and to the way in which outcomes are generally framed in this and in similar populations in the U.S.:

1. Firstly, and most importantly, those failing to complete DTC programming are of particular policy interest to key stakeholders. Determining which subgroups may be most vulnerable to treatment failure may assist in identifying additional resources which might be brought to bear. Examples pending investigation at the current drug treatment court include culturally sensitive case management for African-American participants, specific job retraining programs, and opioid substitution treatment during DTC participation for appropriate offenders.

2. “Not failing” is not necessarily equivalent to “succeeding.” While the “not failing” group contains individuals who successfully complete substance abuse treatment, it also contains individuals who are “neutrally terminated.” This most commonly means that the individual has decided of their own accord to cease participation in the DTC and complete sentencing through the more traditional court system. A second common pathway for individuals “not failing” is transition to a different track in the corrections system where supervisory and treatment conditions are less restrictive, due to progress indicating that the more regimented management of DTC may not be warranted. Thus, treatment failure constitutes a less ambiguous outcome in the setting of this drug treatment court.

Statistical and theoretical considerations guided multivariate logistic regression modeling of significant associations between client characteristics and the binary outcome variable of treatment completion/failure. Univariate associations achieving statistical significance were first added to the model in stepwise fashion for indicators of participant historical characteristics. After achieving a final model for the associations between participant factors and treatment completion, intermediary variables (treatment/case management factors) achieving significance were then added to achieve a final overall regression model. The theoretical model guiding the addition of variables for stepwise logistic regression is depicted graphically in Figure 1.

Results

Tables 1 and 2 include descriptive characteristics of the study population at the time of entry to drug court. The current sample is more predominantly Caucasian (79 percent) than some drug court samples, (Gottfredson and Exum 2002; Banks and Gottfredson 2003; Gottfredson, Najaka et al. 2003; Listwan, Sundt et al. 2003; Banks and Gottfredson 2004) though predominantly Caucasian samples are common in the literature. (Deschenes, Turner et al. 1995; Brewster 2001; Cresswell and Deschenes 2001; Sechrest and Schicor 2001; Festinger, Marlowe et al. 2002; Carey and Marchand 2005; Carey and Marchand 2005; Marlowe, Festinger et al. 2005; Marchand, Waller et al. 2006) The percentage of clients who are male and the mean age of the sample aligns with the majority of study samples.

Table 3 includes information on current (at time of drug court entry) criminal charge and substance abuse treatment setting assignment. The criminal justice history and current charges for the current sample are comparable to other study samples, with drug-related crime present in the majority of offenders.

Assignment to a drug court treatment program took the place of maximum jail penalties ranging from <1 – 285 days (mean =31.2, SD=42.8). The majority of the study population was assigned to an outpatient treatment program (84.9%). A majority of the sample successfully completed the program (N = 322, 56.3%). This graduation rate was similar to those in other study samples [Belenko, 2001 36%-60%, mean =47%; GAO, 2005 27-66% where mean =45%]. Among those who dropped out before completion, number of days to drop-out varied widely (mean =140.3, SD=99.9). Eleven percent of drop-outs occurred less than one month into treatment.

Several indicators achieved or approached statistically significant association with failure to complete treatment on initial bivariate analyses. These factors are described in Table 4. Covariates not attaining or approaching significance included: program year, gender, age at the time of referral, marital status, presence/absence of mental illness, number of prior misdemeanors, frequency of use of primary substance, number of years of use, number of prior treatment contacts, presence/absence of children in the home, or a history of injecting drugs.

Failure to complete treatment was positively correlated with unemployment, lower educational attainment, history of prior offenses, and the presence of a cocaine use disorder (vs. other substance use disorders). Non-white ethnicity attained marginal significance on bivariate correlations.

Measures of addiction severity included: (1) frequency of use, (2) duration of regular use, (3) number of prior contacts for substance abuse treatment, and (4) setting of prior treatment (number residential, number outpatient). None of these markers bore a statistically significant relationship to treatment failure. Willingness to inject drugs might also be perceived as an indication of greater addiction severity and, hence, a potential predictor of a greater likelihood to fail to complete treatment. The current study failed to demonstrate such a relationship between injection use (yes/no) and treatment completion ($p = 0.206$). The limited number of injection users in this study ($n = 25$) may limit power to detect such a relationship, however. Of interest, other markers of addiction severity bore relationship to injection use history. Bivariate analyses demonstrated significant positive correlations between injection drug use and (1) frequency of use, (2) duration of regular use, and (3) number of prior contacts for AODA treatment. White participants were more likely than non-white to inject drugs.

Table 5 provides information regarding the overall final logistic regression model. Age, gender, ethnicity, and treatment modality were retained as control variables.

Discussion

The main findings of the current study in a population of all prior participants in a single drug court were associations between failure to complete court-mandated substance abuse treatment and (1) unemployed status, (2) lower educational attainment, and (3) the presence of a cocaine use disorder.

Associations for unemployed status and lower educational attainment were hypothesized by the current study and not unanticipated given similar such findings in the literature.(Sechrest and Schicor 2001) Additionally, unemployed status has been predictive of recidivism after graduation from drug court.(Sung, Belenko et al. 2004; Sung and Belenko 2005) In one prospective study, a specific employment intervention was found to positively affect legitimate income among drug court participants followed over a 12-month course. (Leukefeld, Webster et al. 2007) Specific employment interventions are an area in need of further research in the drug offending population.

Previous findings of an association between cocaine use disorders and impulsivity provide a potential explanation for greater likelihood of treatment failure among cocaine using correctional clients. Neuroanatomically, cocaine acts upon mesolimbic and mesocortical areas important in the regulation of impulsive and/or violent behaviors.(Goeders and Smith 1983; Yudofsky and Silver 1993) Imaging studies conducted in non-dependent individuals after administration of cocaine and in cocaine-dependent individuals provides some evidence for this possibility. Imaging studies in non-dependent individuals after administration of cocaine have demonstrated metabolic alterations in cortical areas, such as the lateral orbitofrontal gyrus, responsible for behavioral regulation and impulse control. (Volkow, Fowler et al. 1993) Increased metabolism in cortical areas associated with motivation and emotional reactivity have also been associated with intense desire to obtain cocaine in cocaine-dependent subjects.(Volkow, Wang et al. 2005; Volkow, Wang et al. 2006) Increased uptake of dopamine in the dorsal striatum in cocaine-dependent individuals has also been associated with more severe withdrawal symptoms and addiction severity, known, in turn, to predict treatment outcomes.(Volkow, Wang et al. 2006)

Cocaine use disorders have been associated with impulsive behavior, which would logically predispose to difficulty with treatment adherence and recidivism.(Moeller, Dougherty et al. 2001) Association between high degrees of impulsivity and compulsive cocaine administration have been demonstrated in rat models.(Perry, Larson et al. 2005; Dalley, Fryer et al. 2007; Belin, Mar et al. 2008) Though early impulsivity has been associated with subsequent substance dependence generally, in dependent individuals, where specific substances have been investigated, cocaine as a drug of preference is more often associated with impulsive behaviors than other substances of abuse, such as heroin(Bornovalova, Daughters et al. 2005; Lejuez, Bornovalova et al. 2005; Hayaki, Anderson et al. 2006; Verdejo-Garcia, Bechara et al. 2007), MDMA,(Hoshi, Cohen et al. 2007; Hanson, Luciana et al. 2008) or alcohol,(Velez-Blasini 2008) though alcohol dependence has been associated with impulsive behavior in some study populations.(Carballo, Oquendo et al. 2006; Chen, Porjesz et al. 2007; Noel, Van der Linden et al. 2007; Verdejo-Garcia, Bechara et al. 2007; Baltieri and de Andrade 2008) While impulsive behaviors may be cocaine-induced, (Yudofsky and Silver 1993) there is also a high prevalence of inherent impulsivity and anti-social personality traits among cocaine dependent individuals.(Cacciola, Alterman et al. 1995; Falck, Wang et al. 2004) Task-attention-based study, however, has indicated that cocaine dependence has an effect upon impulse control which is independent of the effect of anti-social personality traits.(Moeller, Dougherty et al. 2002) Additionally, more frequent use of larger amounts of cocaine has been associated with more severe withdrawal, less likelihood of treatment retention, and greater degrees of impulsivity.(Moeller, Dougherty et al. 2001) These finding appear to generalize to individuals dependent upon methamphetamine, another stimulant of dependence.(Hoffman, Moore et al. 2006; Semple, Zians et al. 2006) Thus, plausible mechanisms to explain the finding in the current study of a greater likelihood of failure to complete treatment for cocaine-dependent individuals is provided by previous studies involving (1) cocaine administration to the cocaine naïve, (2) imaging of cortical areas known to be associated with behavioral regulation in cocaine-dependent individuals, (3) associations between impulsive behaviors and amounts of stimulant use, and (4) associations between impulsivity and treatment non-adherence.

Cortical dysfunction and impulsivity might also influence motivation to change. Desire to change has also been found to affect treatment completion rates; and cocaine users have also previously demonstrated lesser motivation to maintain complete abstinence.(Patkar, Thornton et al. 2004) Cocaine-related CNS damage leading to greater degrees of impulsivity, as well as associations with anti-social personality disorder and impulsive/aggressive personality, may lower or circumvent motivation to change. This potentially underlying mechanism of cocaine use leading to treatment failure is particularly important to consider in the correctional population in light of findings indicating that anti-social personality disorder is associated with greater levels of illegal activity following treatment. (Cacciola, Alterman et al. 1995) Additionally, cocaine-abusing individuals are more likely to report violent behavior occurring immediately following use (particularly in its crack form), including spousal and child abuse.(Giannini, Miller et al. 1993) Other studies have found that cocaine use is often associated with other risk factors for criminality, including less education and social support, higher unemployment rates, concurrent alcohol consumption, and use of other illicit drugs.(Braun, Murray et al. 1996) The current study controlled for the presence of unemployed status and for educational attainment, implying an effect for problem cocaine use which is independent of employment or education.

In any case, the interaction between cocaine use and impulsivity in the correctional population has implications for assessment and service provision in the setting of community supervision and warrants further investigation regarding the roots of this interaction and effective interventions to promote well-being and function in individuals suffering from this constellation of disordered neurobiology and behavior.

An important consideration as regards potential confounders among cocaine abusing or dependent individuals is mental illness presence and severity. While the presence/absence of previously diagnosed mental illness was assessed via interview with these subjects, a formal diagnostic interview was not undertaken. This lack of a detailed mental health assessment is the status quo in most correctional settings. This is likely an area of service need, as studies indicate that the prevalence of mental illness in substance abusing urban samples may be as high as 84%.(Lehman, Myers et al. 1994) In drug court samples specifically, rates of mental illness have reached 20-40%.(Belenko 2001)

Limitations to the current results should be kept in mind. Since comparisons were internal (completers versus non-completers), the current study does not specifically address the effectiveness of drug treatment court. Internal comparison, however, may be used to examine factors potentially warranting examination when assigning participants to treatment and case management conditions within a program. The use of administrative data is a potential concern for the study results. Interview for obtaining measure of several of the study covariates, however, has been widely used and validated in previous studies. Measures in the current study of demographic and socioeconomic indicators are less likely to be open to such concerns. The lack of a specific validated measure of substance dependence severity, such as the Addiction Severity Index(McLellan, Kushner et al. 1992) or the Substance Dependence Severity Scale(Miele, Carpenter et al. 2001) may be a concern. The presence of multiple potential measures and the parallel nature of the assessments in the current study to validated measures may allay this concern to some degree. Measures on the ASI which are replicated by the interview conducted by drug court staff include employment status, marital status, ethnicity, educational attainment, lifetime substance use, primary problematic substance, route of use, prior treatment contacts, and previous legal charges. The structure of data in the current study parallels the structure of these items on the ASI. Items not present in the current data which would be assessed by an instrument such as the ASI include withdrawal symptoms, consequences (medical, occupational, legal, social) of substance use and their severity, and rater confidence in the client's representation of information.

While treatment failure provides indirect information regarding engagement in treatment by the participant (failure to attend counseling visit, repeated continued substance use), specific process information regarding participant and therapist engagement was not collected as a part of the current study. This, in great part, is due to the fact that the organizations providing substance abuse treatment to participants are stand-alone organizations. This fact presents confidentiality issues separate from those addressed by ethics review for the methods in the current study, which used de-identified data provided by the court. Degree of participation and engagement in treatment, among other numerous indicators of treatment quality and engagement, are certainly potentially important determinants of success and should be kept in mind when interpreting current results and for purposes of future study.

In summary, the current findings provide further support for the importance of unemployment, lower educational attainment, and cocaine dependence as factors likely complicating the treatment adherence of drug court clients. Given previous findings that treatment adherence tends to reduce recidivism and drug use among correctional populations with substance use disorders, addressing these issues is of critical importance to reducing the individual and societal harms attributable to substance misuse.(Lurigio 2000; Banks and Gottfredson 2003; Banks and Gottfredson 2004) The case management of community-supervised drug court clients should likely include educational interventions, vocational training and job placement assistance. The current results also imply that cocaine-related disorders or associated factors may constitute important determinants of treatment adherence among correctional clients. However, as opposed to the findings for unemployment and educational attainment, these findings have yet to be replicated in other DTC settings with

more diverse populations. Correctional clients with cocaine use disorders may comprise a subpopulation in need of more targeted assessment and specific services during participation in community-based supervision.

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Table 1

Participant characteristics at program entry (N = 573). Demographics.

	N (%)
Age	
18-20	162 (28.3)
21-25	102 (17.8)
26-30	82 (14.3)
31-35	73 (12.8)
— ($\bar{x}$ = 29.27, sd = 9.85)	
36-40	63 (11.0)
41-45	52 (9.1)
Over 45	38 (6.6)
Ethnicity	
Caucasian	454 (79.4)
African-American	97 (17.0)
Latino	17 (3.0)
Asian/Pacific Islander	4 (0.7)
Gender	
Male	383 (67.0)
Female	189 (33.0)
Marital Status	
Never married	378 (66.1)
Married	140 (24.5)
Separated/Divorced	54 (9.4)
Educational Attainment	
< 12 years	155 (27.1)
High School Grad	288 (50.3)
GED	63 (11.0)
Associate's Degree	33 (5.8)
At Least Some College	33 (5.8)
Employment Status	N (%)
Unemployed	205 (35.8)
Part-Time	94 (16.4)
Full-Time	264 (46.2)
Student	9 (1.6)
Mental illness	
Yes	38 (6.6)
No	535 (93.4)

Table 2

Participant characteristics (N = 573). Legal and substance use history.

	Mean (SD)	Min/Max
Misdemeanor Conviction #	1.35 (2.20)	0/26
Felony Conviction #	.28 (0.79)	0/6
Sentences Jail	.40 (1.93)	0/30
Sentences Prison #	.04 (0.24)	0/3
Duration of substance use in years	10.35 (8.43)	< 1/36
Prior Treatment #	.97 (1.49)	0/12

Table 3

Criminal charge, treatment assignment at entry to drug court

	N (%)
Initial Charge (N=355)	
Possession of a controlled substance	240 (67.6)
Possession with intent to deliver	35 (9.9)
Possession of drug paraphernalia	17 (4.8)
Fraud/Prescription	38 (10.7)
Acquisitive crime	10 (2.8)
Other	15 (4.2)
Treatment Program, type	
Outpatient treatment	486 (84.9)
Day treatment	30 (5.2)
Residential treatment	55 (9.6)
Missing	1 (0.2)

Table 4

Statistically significant bivariate correlations with treatment completion (0 = successful completion, 1 = failure to complete). UDS = urine drug screens. SUD = substance use disorder

Covariate	Spearman's rho	p-value
Highest grade completed	-0.125	= 0.003
1 st offense (y = 1, n = 0)	-0.079	= 0.025
Prior felony? (y = 1, n = 0)	0.087	= 0.037
# negative UDS	-0.644	<0.0001
White (0)/non-white (1) race	0.082	= 0.05
Cocaine use disorder vs. other SUD	0.156	<0.0001
Employed (0) unemployed (1)	0.172	<0.0001

Table 5

Final multivariate logistic regression model. Age, gender, and treatment setting (residential vs. outpatient) retained for purposes of statistical control. AOR = adjusted odds ratio. Treatment settings included weekly outpatient, intensive outpatient (3 hours 4 times per week), or residential treatment.

Predictor	Exp • = AOR	95% CI
Age	0.992	0.973, 1.01
Gender	1.16	0.784, 1.72
White (0) v nonwhite (1)	1.35	0.881, 2.06
Employed (0) v unemployed (1)	1.88	1.29, 2.74
Highest grade attained in school	0.908	0.833, 0.990
Treatment setting	1.01	0.452, 2.23
Cocaine use disorder	2.17	1.36, 3.48