
Outcomes Among Drug Court Participants: Does Drug of Choice Matter?

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Abstract

The link between drug and alcohol abuse and criminal behavior is clearly illustrated in the literature. The options of how to respond to these offenders, however, has widely fluctuated over time. Currently, many states have reconsidered their “get tough” approach to one that is more rehabilitative in nature. One particular community-based intervention that has gained in popularity is the drug court model. The literature on drug courts is generally supportive; however, there is a need to examine effectiveness by target population. The purpose of this study is to explore recidivism rates of drug court clients by drug of choice. Using a 2-year follow-up period, this study finds that drug of choice does not significantly influence either successful graduation or arrest. Policy implications are discussed.

Keywords

drug courts, drug of choice, recidivism, LSI-R

Introduction

Despite recent attention paid to methamphetamine use (e.g., Castro, Barrington, Walton, & Rawson, 2000; Herz, 2000; Semple, Zians, & Strathdee, 2008; Tyner & Fremouw, 2008; Weisheit & Fuller, 2004; Yeh & Doyle, 2005), the use and abuse of other illicit drugs and alcohol remain a significant social concern. According to the

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National Survey on Drug Use and Health (Substance Abuse and Mental Health Services Administration, 2008), in 2007 there were nearly 20 million active drug users in the United States. The most commonly used illicit drug was marijuana (14.4 million), followed by psychotherapeutics (6.9 million) and cocaine (2.1 million). The survey also found that heavy drinking was reported among 17 million Americans ages 12 and older. In terms of addiction rates during the same time period, nearly 19 million people were identified as abusing or being dependent on alcohol, 3.9 million were dependent on or abused marijuana, and 1.6 million abused or were dependent on cocaine.

The link between drug and alcohol abuse and criminal behavior is clearly illustrated in the literature. Drug users are 3 to 4 times more likely than non-drug users to engage in criminal behavior (see Bennett, Holloway, & Farrington, 2008), and surveys reveal that more than half of local, state, and federal inmates had used drugs at the time of their current offense (Karberg & James, 2005; Mumola & Karberg, 2006). In addition to illicit drug use, a sizable number of offenders also reported using alcohol. Specifically, more than one third of state inmates and one fifth of federal inmates reported using alcohol, not drugs, at the time of their offense (Mumola, 1999).

Concerns over drug use and crime have historically led to punitive responses from the criminal justice system (see Belenko, Fagan, & Chin, 1991). However, more contemporary research suggests that simply incarcerating drug offenders has a limited impact on recidivism and does not adequately address the underlying social conditions or treatment needs faced by drug users (see, e.g., Belenko, Mara-Drita, & McElroy, 1992; Fagan, 1994; also see Andrews & Bonta, 2006). As a result, the criminal justice system has seen a number of policy developments shifting the focus from incarceration as the primary response to substance abuse to one of treatment. Specifically, a number of states¹ have repealed or amended their mandatory minimum sentences for drug offenders (see Listwan, Jonson, Cullen, & Latessa, 2008, for discussion). In fact, 18 states have either passed or are in the process of considering legislation to decrease the length of sentences for drug and/or low-level nonviolent offenders (Greene, 2003). In Arizona, for instance, nonviolent offenders convicted of a drug charge are now required to be placed on probation or in a court-supervised mandatory drug treatment program. Similarly, California requires that all eligible offenders be given up to 1 year of community-based drug treatment followed by 6 months of aftercare (California Department of Alcohol and Drug Programs, 2006; Longshore, Hawken, Urada, & Anglin, 2006).

It can be expected that the number of drug offenders remaining in the community will increase as a result of these shifts in policy and it is vital that communities are equipped to treat and supervise this population. Although new interventions or approaches with drug offenders may be needed, we should also consider whether existing approaches can help shoulder the burden. One community-based alternative for drug offenders that has received consistent support is the drug court model. Although recent studies have examined the efficacy of the model for methamphetamine users (see Listwan, Shaffer, & Hartman, 2009; Shaffer, 2006; Stoops, Tindall, Mateyoke-Scriver, & Leukefeld, 2005), fewer studies have examined its impact for other types of drug users. Using a sample of drug court participants in a midwestern

state, the current study examines the relationship between drug of choice and program outcome. Specifically, the study compares completion and arrest rates across those preferring crack/cocaine, marijuana, or alcohol. In doing so, this study extends previous research by examining whether a participant's drug of choice influences drug court outcomes.

Literature Review

A need to minimize burdens placed on the criminal justice system, along with the growing recognition that drug offenders can be successfully treated within the community, led to the development of the community-based drug court model (see Listwan, Sundt, Holsinger, & Latessa, 2003). Today, there are more than 2,000 drug courts in operation (Office of Justice Programs Drug Court Clearinghouse and Technical Assistance Project, 2009). Although the drug court model may vary across jurisdictions, the basic approach calls for the provision of substance abuse treatment in combination with collaborative case management and supervision (Marlowe, Festinger, Lee, Dugosh, & Benasutti, 2006; National Association of Drug Court Professionals [NADCP], 1997). In contrast to traditional probation, the model relies on a nonadversarial approach to supervision through the use of a drug court team, often consisting of representatives from probation, treatment providers, and the judiciary. Together, this team promotes program compliance and participation through the use of drug testing, supervision hearings, and a graduated system of sanctions and reinforcers (see NADCP, 1997).

Research on the effectiveness of drug courts has largely been positive. Drug court participants have generally been found to have lower rates of recidivism than probationers (Brewster, 2001; Dynia & Sung, 2000; Gottfredson, Najaka, & Kearley, 2003; Peters & Murrin, 2000; Rempel et al., 2003; Shaffer, Listwan, Latessa, & Lowenkamp, 2008). Although some studies have found null or negative effects (Belenko, Fagan, & Dumanovsky, 1994; Deschenes & Greenwood, 1994; Granfield, Eby, & Brewster, 1998; Miethel, Lu, & Reese, 2000), meta-analytic reviews have concluded that overall, drug courts are effective (Lowenkamp, Holsinger, & Latessa, 2005; Wilson, Mitchell, & MacKenzie, 2006).

Although the overall empirical evidence is supportive of the model, there has been a growing emphasis on assessing whether drug courts work equally well with different types of offenders (Goldkamp, 1999; Longshore et al., 2001). As a result, recent research has examined the impact of offender characteristics such as offender motivation (Cosden et al., 2006), violence (Saum, Scarpitti, & Robbins, 2001), and gender (Shaffer, Hartman, & Listwan, 2009). Others have also explored the impact of drug courts by risk level (Marlowe et al., 2006) and offense type (Shaffer et al., 2008).

Building on the need to get inside the "black box" of drug courts (see Goldkamp, White, & Robinson, 2001), recent research has focused on the role of drug of choice, with a particular emphasis on methamphetamine (meth) users. Stoops et al. (2005) examined differences between drug court participants who had used meth at least once

and participants who had never used meth. They found significant differences in terms of drug use and self-reported criminal behavior. Specifically, they found that meth users were more likely to be daily polysubstance users and reported trying more illicit substances than nonmeth users. Meth users were also more likely to self-report theft, selling drugs other than marijuana, and breaking and entering into someone's home or vehicle. In comparison, nonmeth users were more likely to have probation violations, weapons charges, nonsupport, and other criminal charges. Listwan et al. (2009) extended Stoops et al.'s (2005) line of inquiry by comparing recidivism rates among meth and nonmeth users. Using drug of choice to differentiate meth users from other drug users, they found that a preference for meth failed to be a significant predictor of program completion or arrest and concluded that the drug court had a similar impact on both groups of drug users. Similar results were reported by Bouffard and Richardson (2007), who compared recidivism rates among drug court graduates. In contrast to the previous studies, Bouffard and Richardson used criminal charges to distinguish between meth and nonmeth cases. Using survival analysis, they concluded that drug court graduation was significantly related to reductions in recidivism for both groups and that type of case (meth, nonmeth) did not have an effect.

Although the extant research suggests that drug courts can successfully treat meth users, relatively little is known about the impact of drug court services on those using some of the other more prevalent types of drugs (i.e., cocaine, marijuana, alcohol). One limitation of the cited research is that each study treated the nonmeth cases as a homogeneous group rather than recognizing differences across the different drug users (e.g., cocaine, heroin, and marijuana). This lack of inquiry is particularly intriguing given findings that suggest crack/cocaine is the most common drug of choice reported by drug court participants (U.S. General Accountability Office, 2005) and research suggesting there are significant differences between crack/cocaine users and other drug users. For example, cocaine users are 2 times more likely to become drug dependent compared to alcohol or marijuana users (Wagner & Anthony, 2007), are more paranoid than alcohol users (Hopwood, Baker, & Morey, 2008), and often suffer cognitive deficits resulting from use (Aharonovich et al., 2006; Cunha, Nicastrì, Gomes, Moino, & Peluso, 2004). As a result, crack/cocaine dependents have high rates of attrition in drug treatment programs when compared to those dependent on alcohol or marijuana (Hiller, Knight, & Simpson, 1999).

Consistent with the general treatment literature, cocaine users have traditionally fared worse in drug courts. For instance, Miller and Shutt (2001) found that participants who identified crack/cocaine as their drug of choice were less successful than their counterparts. Specifically, they found that 50% of other drug users completed the drug court program whereas less than 10% of crack users actually graduated. Their findings are consistent with other research considering the relationship between drug of choice and graduation. For example, in an examination of the relationship between race and graduation, Dannerbeck, Harris, Sundet, and Lloyd (2006) found an interaction effect between drug of choice and race. They found that African American participants were more likely to be cocaine users and that cocaine users were

significantly less likely to graduate. Similarly, Saum et al. (2001) found that crack users were less likely to graduate, even when controlling for demographics, a history of violence, and treatment characteristics. Finally, in a comparison of drug courts, Taxman and Bouffard (2003) found that crack/cocaine, amphetamine, and opiate users were significantly less likely to graduate when compared to marijuana users.

Although it is unclear why crack/cocaine users fare worse compared to other drug court participants, Dannerbeck et al. (2006) speculated that the treatment offered by drug courts may not be specialized enough to treat this population. Others have posited that the perception that crack users pose a greater danger to the community may lead judges to be less lenient (Saum et al., 2001) or that crack/cocaine users may have more serious problems than other drug users (Schiff & Terry, 1997). The high rates of failure among crack/cocaine users, relative to other users, are troubling when one considers the link between program completion and recidivism. Comparisons of drug court graduates to dropouts consistently find that graduates are significantly less likely to recidivate (Peters & Murrin, 2000; Vito & Tewksbury, 1998; Wolfe, Guydish, & Termondt, 2002). High attrition rates among crack/cocaine users, coupled with the link between program completion and recidivism, may help to explain findings that drug courts accepting cocaine users often have among the highest rates of recidivism (Roman, Townsend, & Bhati, 2002).

The current study seeks to add to the existing literature by exploring the impact of drug of choice (e.g., crack/cocaine, marijuana, and alcohol) in a community-based drug court. The current study examines differences in outcomes between the three groups to assess whether drug of choice mediates the efficacy of the drug court model. We hypothesize the following:

Hypothesis 1: Drug court participants reporting crack/cocaine as their drug of choice will be less likely to graduate than drug court participants reporting marijuana or alcohol as their drug of choice.

Hypothesis 2: Drug court participants reporting crack/cocaine as their drug of choice will be more likely to be rearrested than drug court participants reporting a preference for marijuana or alcohol.

Method

Research Design

The current study used secondary data. Using a quasi-experimental design, the data were originally collected as part of an evaluation study assessing the drug court's impact on recidivism (see Listwan, Shaffer, & Latessa, 2001). After receiving training on the data collection process and instruments, drug court staff collected data at both intake and termination. Data were collected on all participants entering the drug court and a comparison group of probationers. The current study only includes drug court participants.

Sample

The Akron Municipal Drug Court, located in Akron, Ohio, began in June 1995. The target population included felony offenders who had been charged with drug abuse, possession, or complicity. Offenders charged with these felonies in Summit County (Ohio) were screened for eligibility and referred to the drug court through pretrial services in the Common Pleas court; those with a history of violence or drug trafficking, more than one prior felony conviction, or more than four prior contempt charges were deemed ineligible. On approval by the treatment provider, prosecutor, police, and drug court judge, willing participants were admitted into the drug court. At the time of admission into the drug court, charges were amended to a misdemeanor attempted drug abuse charge.

The current sample includes individuals who were admitted to the drug court program between November 1997 and April 1999 ($N = 302$). Within this group of drug court participants are individuals who were identified as having a self-reported preference for crack/cocaine ($n = 121$), marijuana ($n = 108$), or alcohol ($n = 73$).² Drug of choice was determined through self-disclosure during an intake assessment process with the caseworker.

Setting

The drug court is composed of four phases. The first phase of the program is considered the *Pre-Treatment/Treatment* phase and typically lasts 2 to 3 months. Depending on their level of need, as determined by the SASSI, offenders participate in drug education (1.5 hr per week), outpatient treatment (1.5 hr per week), or intensive outpatient substance abuse treatment (16 hr per week). During this phase, participants also submit to drug testing twice a week, meet with probation two times a week, and appear at status review hearings every other week. The second phase of the program is considered the *Aftercare* phase and generally lasts 12 weeks. In addition to weekly treatment groups (1.5 hr per week), participants continue to submit to twice-weekly drug testing. They also meet with probation one to two times per week and attend monthly status review hearings. The third phase of the program is the *Maintenance* or *Step-Down* phase. This phase typically lasts 26 to 36 weeks and consists of stepped-down treatment (twice a month), weekly drug tests and probation visits, and status review hearings every 6 weeks. The final phase of the program is the *Maintained Sobriety* phase and generally lasts 3 months. Although participants do not attend any treatment services during this phase, they continue to have weekly drug testing, weekly to biweekly probation visits, and bimonthly status review hearings. In addition to these requirements, participants are required to attend 12-step meetings throughout all four phases. Participants who experience relapse during any of the later phases are moved back to the first phase of the program for relapse prevention services.

Successful completion of the drug court required 70% compliance with all treatment referrals, case management, sanctions, and aftercare. Participants also had to

demonstrate sobriety as indicated through regular drug testing. Participants identified as using drugs or alcohol during the last 3 months of the program were extended in the drug court for a minimum of 90 days. Individuals who failed to comply with the drug court conditions or who were rearrested for a felony charge were unsuccessfully terminated from the program. Graduates of the program had their charges dismissed on completion.

Measures

Drug of choice. The influence of drug of choice on drug court completion and criminal behavior was the main focus of the study. The primary independent variable, drug of choice, was measured as a self-reported preference. Although the drug of choice measure does not necessarily preclude the fact that participants may be polydrug users, this method of grouping is consistent with prior research measuring drug of choice (Dannerbeck et al., 2006; Listwan et al., 2009; Saum et al., 2001).

Risk of recidivism. Risk of reoffending was measured through the use of the Level of Service Inventory–Revised (LSI-R; Andrews & Bonta, 1995).³ The LSI-R is a 54-item risk and need assessment tool and has been widely validated (Gendreau, Little, & Goggin, 1996; Simourd, 2004).⁴ The tool has a scoring range⁵ of 0 to 54 and includes 10 domains: Criminal History, Education and Employment, Financial, Family/Marital, Accommodations, Associates, Substance Abuse, Leisure/Recreation, Personality/Behavior, and Attitudes and Orientations. Using the publisher's cutoff scores, offenders were categorized along five risk levels: high (41-54), medium high (34-40), moderate (24-33), low moderate (14-23), and low (0-13) (see Lowenkamp & Bechtel, 2007).

Substance use. Participants were asked a series of questions about their substance use histories during the intake process for the program. In addition to asking about their drug of choice, participants were asked to self-report their age of first drug use and frequency of drug use. They also reported whether a family member had a chemical dependency problem and whether they had received previous drug treatment.

Sociodemographics. Also of interest was whether there were significant differences between the groups on a number of sociodemographic variables. Several variables were explored, including age, gender, race, education level, and employment status. In addition to these measures, we also examined whether there were significant differences between the groups in terms of marital status and the number of dependent children. Finally, criminal history was measured as the mean number of felony, misdemeanor, and juvenile arrests.

Dependent variables. The impact of the drug court was assessed by examining rates of program completion and recidivism between the groups. Recidivism was measured as any arrest postintake. Participants were followed from the time they entered the program through October 2000, when arrest data were collected. The average follow-up time was 856 days (2.3 years). Both program completion (1 = *graduate*) and rearrest (1 = *yes*) were measured as dichotomous variables.

Analytical Procedures

The analysis proceeded in two stages. First, bivariate statistics were used to describe the sample and compare the three groups (preference for crack/cocaine, marijuana, or alcohol). Independent samples *t* tests and one-way ANOVA procedures were used to test for differences on continuous variables whereas chi-square was used to test for differences on categorical variables. Next, multivariate logistic regression was used to assess the impact of drug of choice on the dependent variables⁶ while controlling for other factors. Specifically, the analysis controlled for the impact of age, gender (1 = *male*), race (1 = *White*), education (1 = *less than high school*), employment status (1 = *unemployed*), LSI-R score, prior treatment (1 = *yes*), and time followed.⁷

Results

Intake

Table 1 describes the overall sample of individuals processed through the drug court. Statistically significant differences existed between the three groups with regard to gender, age, education, and employment status. Post hoc analyses⁸ revealed that those preferring marijuana were significantly younger and less likely to have completed high school when compared to participants who preferred cocaine or alcohol. Those who preferred alcohol were significantly more likely to be employed than members of the cocaine group.⁹ The three groups were similar with regard to race, marital status, and number of dependent children. Although the majority of all three groups were not married, they reported having at least one dependent child.

Although all the participants scored relatively low on the LSI-R, there were significant differences between the groups. Specifically, those preferring crack/cocaine or marijuana had significantly higher scores than those preferring alcohol. The majority of the alcohol group was assessed as low risk whereas the majority of crack/cocaine and marijuana groups were assessed as low-moderate risk.

Finally, despite the differences in risk, the groups were similar in terms of prior record, with at least 75% in all three groups having a prior arrest. However, significant differences emerged when examining the mean number of arrests. Although members of all three groups averaged less than one felony arrest, post hoc comparisons indicated that members of the crack/cocaine group had significantly more felony arrests than members of the alcohol group, $M_s = 0.44$ and 0.19 , respectively, $t(191) = 2.523$, $p < .012$. However, there were no significant differences between the marijuana group ($M = 0.30$) and the other groups. Similar to felony-level arrests, there were relatively few juvenile arrests. However, post hoc contrasts indicated that members of the marijuana group had significantly more juvenile arrests ($M = 0.91$) than members of the crack/cocaine group, $M = 0.12$, $t(183) = -4.060$, $p = .000$, and members of the alcohol group, $M = 0.22$, $t(180) = -3.085$, $p = .002$. In contrast to

Table 1. Frequency and Percentage Distribution of Participants' Intake Information^a

Characteristic	Cocaine		Alcohol		Marijuana		χ^2, F	p
	n	%	n	%	n	%		
Primary drug of choice								
Alcohol	0	0.0	73	100.0	0	0.0		
Marijuana	0	0.0	0	0.0	108	100.0		
Crack/cocaine	121	100.0	0	0.0	0	0.0		
Race								
White	60	49.6	39	53.4	40	37.0		
Non-White	61	50.4	34	46.6	68	63.0		
Gender*							$\chi^2 = 6.952$	.031
Male	84	69.4	61	83.6	88	81.5		
Female	37	30.6	12	16.4	20	18.5		
Mean age*	34.91		34.68		24.44		$F = 43.09$	.000
Education*							$\chi^2 = 31.19$	.000
Less than high school	31	25.6	14	19.2	59	54.6		
High school	90	74.4	59	80.8	49	45.4		
Employment status*							$\chi^2 = 10.43$	.005
Unemployed	66	54.5	24	32.9	59	54.6		
Employed	55	45.5	49	67.1	49	45.4		
Marital status								
Married	18	14.9	12	16.4	6	5.6		
Not married	103	85.1	61	83.6	102	94.4		
Number of dependents aged <18								
None	55	45.5	35	47.9	57	52.8		
One	23	19.0	20	27.4	28	25.9		
Two or more	43	35.5	18	24.2	23	21.3		
Mean	1.13		0.97		0.85			
LSI-R classification								
High	0	0.0	0	0.0	1	1.2		
Medium high	2	2.4	0	0.0	1	1.2		
Moderate	15	18.3	4	6.9	14	17.1		
Low moderate	36	42.9	23	39.7	43	52.4		
Low	29	35.4	31	53.4	23	28.0		
Mean LSI-R score*	17.90		14.48		17.76		$F = 8.291$	.000
Mean prior felony arrests*	0.44		0.19		0.30		$F = 3.276$	.039

(continued)

Table 1. (continued)

Characteristic	Cocaine		Alcohol		Marijuana		χ^2, F	<i>p</i>
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%		
Mean prior misdemeanor arrests	4.10		4.51		4.03			
Mean prior juvenile arrests*	0.12		0.22		0.91		<i>F</i> = 9.180	.000

Note: LSI-R = Level of Service Inventory-Revised.

a. Missing data were an issue for a number of variables including LSI-R, substance abuse history measures, and outcome measures across all three groups. Analyses failed to reveal any systematic pattern of missing data across the groups or measures.

**p* < .05.

felony-level arrests, members of all three groups were likely to have been previously arrested for misdemeanor arrests, *M*s = 4.10 (cocaine), 4.51 (alcohol), and 4.03 (marijuana).

Substance Use History

The participants were asked a variety of questions related to their substance use history. Table 2 shows the age at which the participants began using drugs and alcohol as well as frequency of use. The average age of first alcohol use was significantly lower for those preferring illicit drugs (15 years old) compared to those preferring alcohol (16 years old). There were also significant differences in terms of the age of first drug use. Those preferring marijuana reported first using drugs at an earlier age (15 years) compared to the crack/cocaine group (18 years) and the alcohol group (19 years). In terms of frequency, half of those preferring illicit drugs reported using daily. In contrast, less than a third of those preferring alcohol reported daily use; instead, the majority of this group reported using at least once a week. Finally, those preferring alcohol were significantly more likely to have received previous treatment for substance abuse compared to those preferring marijuana.

Outcome Information: Bivariate Analysis

The primary focus of the current study examined whether outcomes differed based on drug preferences. The results of these analyses are summarized in Table 3. First, the study examined whether drug of choice was related to program completion. We failed to find support for our initial hypothesis that those preferring crack/cocaine would be significantly less likely to graduate than their counterparts.

Table 2. Frequency and Percentage Distribution of Participants' Substance Use History

Characteristic	Cocaine		Alcohol		Marijuana		χ^2, F	<i>p</i>
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%		
Age at first alcohol use								
<11	8	7.2	5	6.8	7	6.7		
11-15	38	34.2	17	23.3	43	41.0		
16-20	56	50.5	54	51.4	45	61.6		
21-25	6	5.4	1	1.0	5	6.8		
>25	3	2.7	1	1.4	0	0.0		
Mean*	14.7		16.37		14.7		<i>F</i> = 3.404	.35
Age at first drug use								
≤10	4	3.5	1	1.5	7	6.7		
11-15	36	31.3	11	16.2	40	38.1		
16-20	51	44.3	36	52.9	48	45.7		
21-25	7	6.1	13	19.1	9	8.6		
>25	17	14.8	7	10.3	1	1.0		
Mean*	17.77		18.56		15.37		<i>F</i> = 4.962	.008
Frequency of use*								
Daily	62	52.1	22	30.1	55	50.9		
Once a week or more	45	37.8	35	47.9	33	30.6		
Less than once a week	12	10.1	16	21.9	20	18.5	$\chi^2 = 13.606$	.009
Family have chemical dependency problem								
Yes	40	35.1	17	23.6	38	35.5		
Previous substance abuse treatment*								
Yes	64	54.2	29	40.3	27	25.0	$\chi^2 = 20.04$	.000

**p* < .05.

Although we found a global difference across the three groups, the only significant difference to emerge after applying the Bonferroni adjustment was between the alcohol and marijuana groups. Those preferring alcohol were significantly more likely to graduate than those preferring marijuana. Specifically, 60% of the alcohol group graduated from the program as of April 2000, compared to 33% of the marijuana group.

Table 3. Frequency and Percentage of Participants' Outcome Information

Characteristic	Cocaine		Alcohol		Marijuana		χ^2, F	<i>p</i>
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%		
Graduated successfully from drug court*							$\chi^2 = 11.25$	.004
Yes	46	41.1	38	59.4	33	33.0		
No	66	58.9	26	40.6	67	67.0		
Arrested for a new offense								
Yes	39	36.4	24	34.8	45	46.9		
No	68	63.6	45	65.2	51	53.1		
Average time followed (days)*	857.6		812.7		914.4		$F = 7.230$	.001

**p* < .05.

The analysis also examined whether the groups were similar with regard to rearrest. We failed to find support for our hypothesis that the crack/cocaine group would do worse than the other two groups. Despite the differences in program completion, there were no statistically significant differences found in the three groups in terms of rearrest. Specifically, 36% of the crack/cocaine group, 35% of the alcohol group, and 47% of the marijuana group were arrested during the follow-up period.

Outcome Information: Multivariate Analyses

To identify factors associated with outcome, and to control for differences between the groups, several logistic regression models were calculated. As illustrated in Table 4, the first model, predicting graduation, had a chi-square value equal to 33.402, which was statistically significant. Although drug of choice predicted program completion in the bivariate analysis, it was not a significant predictor when controlling for other factors, including risk level. Risk of recidivism was the only measure significantly related to program completion. Specifically, those with lower LSI-R risk scores were more likely to complete the program. The odds of program completion decreased approximately 6% with each increase in the LSI-R.

The model predicting arrest was also statistically significant, with a model chi-square equal to 43.783 (Table 5). However, as with the model predicting graduation, none of the drug of choice variables predicted arrest during the follow-up period. The analysis revealed that employment and age were related to the probability of arrest. Specifically, those who were younger and those who were unemployed were more

Table 4. Logistic Regression Predicting Drug Court Graduation: Cocaine Versus Alcohol and Marijuana^a

Variable	B	SE	p	OR	95% CI
Drug of choice ^a					
Marijuana	.057	.352	.870	1.059	0.531-2.112
Alcohol	.513	.346	.138	1.670	0.848-3.287
Gender	-.122	.325	.707	0.885	0.465-1.674
Race	.294	.277	.289	1.342	0.780-2.308
Age	.028	.015	.067	1.028	0.998-1.059
Education	-.235	.312	.451	0.790	0.429-1.457
Employment	-.078	.295	.792	0.925	0.519-1.650
LSI-R score*	-.063	.026	.016	0.939	0.892-0.988
Prior treatment	-.311	.301	.301	0.733	0.406-1.321
Time followed	-.001	.001	.153	0.999	0.997-1.000
Constant	0.914	1.028	.374	2.494	
Model chi-square	33.402**				
Nagelkerke R ²	.155				

Note: OR = odds ratio; CI = confidence interval; LSI-R = Level of Service Inventory–Revised.

a. Cocaine is the omitted variable.

*p < .05. **p = .01.

Table 5. Logistic Regression Predicting Arrest: Cocaine Versus Alcohol and Marijuana^a

Variable	B	SE	p	OR	95% CI
Drug of choice ^a					
Marijuana	-.427	.371	.249	0.652	0.316-1.349
Alcohol	.121	.359	.737	1.128	0.558-2.282
Gender	.624	.350	.074	1.866	0.941-3.703
Race	-.332	.294	.260	0.718	0.403-1.278
Age**	-.051	.016	.002	0.950	0.920-0.981
Education	.404	.324	.212	1.498	0.794-2.827
Employment*	.724	.309	.019	2.062	1.125-3.779
LSI-R score	.030	.026	.248	1.030	0.980-1.083
Prior treatment	-.113	.316	.720	0.893	0.480-1.659
Time followed	.002	.001	.055	1.002	1.000-1.003
Constant	-1.346	1.072	.209	0.260	
Model chi-square	43.783**				
Nagelkerke R ²	.204				

Note: OR = odds ratio; CI = confidence interval; LSI-R = Level of Service Inventory–Revised.

a. Marijuana is the omitted variable.

*p < .05. **p < .01.

likely to be arrested during the follow-up period. The odds of being arrested decreased 5% with each year increase in age whereas unemployed participants were 2 times more likely to be rearrested compared to those who were employed.

Discussion

The question of whether the drug court model can be effective across different types of drug offenders is an important one given recent policy shifts aimed at keeping drug offenders in the community rather than simply incarcerating them. As these treatment-oriented policies are implemented, it can be expected that probation departments will be faced with an increasing number and array of drug offenders in need of services. Although the drug court model has enjoyed immense political, anecdotal, and financial support, the literature is relatively sparse when differentiating the impact of drug courts across crack/cocaine, marijuana, and alcohol users.

The study's primary intent was to examine whether drug of choice was related to drug court outcomes, namely program completion and arrest. Although those preferring marijuana were significantly less likely to complete the program than members of the alcohol group, the findings suggest that drug of choice fails to predict graduation when controlling for other factors. The study also examined the impact of drug of choice on rearrest. Similar to program completion, the analyses indicated that when controlling for risk and demographic factors, drug of choice was not significantly related to the probability of arrest during the 2-year follow-up period. As with the findings on program completion, these results are similar to previous studies that examined the link between a preference for methamphetamine and drug court outcomes (see Belenko, 2002; Bouffard & Richardson, 2007; Listwan et al., 2009; Shaffer, 2006). Although some literature suggests that cocaine users may be more difficult to treat, these findings offer support for the notion that community-based treatment approaches can be effective across different types of drug offenders.

The failure to find significant differences in terms of outcomes is especially salient given the differences across the groups, suggesting that the drug court under study was able to treat a wide variety of offenders.¹⁰ Members of the marijuana group began using drugs and alcohol at a younger age and were less likely to have received prior substance abuse treatment. Yet the multivariate analyses revealed they were just as successful in the program as their counterparts. Although treatment data were not available, the findings may provide some indication that the drug court was successful in matching services to individual needs. Future research should explore the interaction between drug of choice, treatment needs, and treatment dosage in an effort to more fully explore predictors of drug court outcomes.

Predictably, sociodemographic factors such as age and employment status were related to outcomes in the expected directions. Previous research has found that older participants tend to do better in drug courts than younger participants (American University Drug Court Clearinghouse and Technical Assistance Project, 1998; Butzin, Saum, & Scarpitti, 2002). In terms of graduation and employment, studies have found that offenders who are employed while in drug court are more likely to successfully complete these programs (see Butzin et al., 2002; Dannerbeck et al., 2006; Roll, Prendergast, Richardson, Burdon, & Ramirez, 2005). Finally, LSI-R score was

related to program completion. Participants who scored lower on the LSI-R were more likely to graduate successfully from the drug court under study, regardless of drug of choice. Interestingly, the LSI-R failed to predict recidivism in the current study. In part, this may be a reflection of the relatively homogeneous nature of the sample, in terms of risk (i.e., the sample was primarily composed of low- to moderate low-risk clients).

There are several methodological issues that should be considered. First, the determination of drug of choice was self-reported through semistructured interviews with the client. The self-classification of client's drug of choice does not preclude the fact that those who are categorized as preferring one type of drug may also use other types of drugs. However, the use of self-reported drug of choice as a grouping variable helps to ensure that our point of comparison is between those who prefer crack/cocaine to those who prefer alcohol or marijuana (see Listwan et al., 2009). Second, although the treatment model used by this drug court is similar to other drug courts across the nation, we, as previously noted, are lacking detailed treatment data. Although our findings provide evidence for the efficacy of the model across different types of drug offenders, we are unable to report the impact of the type of treatment or treatment dosage on outcome or its relationship to drug of choice. Finally, the majority of participants in both groups were classified as low to moderate according to the LSI-R, which may limit the generalizability of these findings to drug courts in other jurisdictions serving higher risk offenders.

Despite these limitations, the current study has a number of implications. First, the similar outcomes across the groups support the notion that drug courts can address a variety of substance users. It may not be necessary to develop and implement new treatment strategies for drug offenders in the community. Rather, we can depend on empirically supported alternatives such as the drug court model to effectively serve many of these offenders. This is not to suggest that these courts can serve all drug offenders; however, systematically excluding offenders based on drug of choice does not appear warranted. Second, with recidivism rates at approximately 40%, these drug court participants were doing far better than drug offenders released from prison with an average rearrest rate of 67% (Langan & Levin, 2002). Efforts, however, should be made to further improve the outcomes among these participants. It may be that better use of the LSI-R for case management and treatment planning would further reduce recidivism rates. Future research should explore this issue, along with the impact of treatment type and dosage on outcomes.

Declaration of Conflicting Interests

The authors declared no conflicts of interests with respect to the authorship and/or publication of this article.

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Notes

1. Including Connecticut, Louisiana, Michigan, Mississippi, New York, North Dakota, and Maine.
2. Twenty-three cases were excluded from the analysis because data on primary drug of choice was missing. An additional 12 cases were dropped because they reported a preference for drugs other than the three explored in the current study. Of these, 8 indicated a preference for narcotics and 4 indicated a preference for stimulants.
3. The LSI-R was used by the drug court at the time of its inception. Offenders were assessed at intake with the intent of varying treatment services by risk level. A lack of detailed treatment data precluded us from exploring this issue.
4. Research supports its validity (see, e.g., Andrews, Kiessling, Robinson, & Mickus, 1986; Bonta, 1989; Bonta & Motiuk, 1990; Holsinger, Lowenkamp, & Latessa, 2004; Kelly & Welsh, 2008; Lowenkamp, Holsinger, & Latessa, 2001) although there is some debate regarding its utility for female offenders (see Holtfreter & Cupp, 2007).
5. The total LSI-R scores were included in the multivariate models. The categories listed in the bivariate analyses were those adopted by the drug court under study.
6. Although there is a documented relationship between program completion and recidivism, we chose to treat these two variables as distinct outcomes because of the drug court's policies regarding rearrest and termination. The drug court terminates participants who are arrested for felony charges while in the program; therefore, a single act can result in both outcomes. Excluding program completion from the recidivism model allows us to test the robustness of our findings across the models.
7. Similar results were found in the logistic regression analyses conducted with and without the criminal history variables. In an effort to conserve statistical power, the LSI-R, rather than criminal history variables, was included as measure of risk.
8. Post hoc analyses were performed for all significant variables to assess between-group differences. The alpha was adjusted using Bonferroni's correction because of the number of additional statistical tests (33).
9. Despite a small p value, the difference in employment status between the alcohol and marijuana groups failed to obtain significance because of Bonferroni's adjustment to the alpha.
10. An alternative explanation for the null findings may be that the analyses lacked sufficient statistical power. However, the current study meets the recommended threshold of 10 cases with the least common outcome (event) for each predictor variable (EPV; see Bagley, White, & Golomb, 2001; Peduzzi, Concato, Kemper, Holford, & Feinstein, 1996) with $EPV = 11.7$ for the graduation model and $EPV = 10.8$ for the arrest model.

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