

This article was downloaded by: [University of Cincinnati Libraries]

On: 21 May 2014, At: 06:48

Publisher: Routledge

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



## Justice Quarterly

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/rjqy20>

### " Juvenile Drug Courts and Recidivism: Results from a Multisite Outcome Study"

Christopher J. Sullivan, Lesli Blair, Edward Latessa & Carrie Coen Sullivan

Published online: 12 May 2014.

To cite this article: Christopher J. Sullivan, Lesli Blair, Edward Latessa & Carrie Coen Sullivan (2014): " Juvenile Drug Courts and Recidivism: Results from a Multisite Outcome Study", Justice Quarterly, DOI: [10.1080/07418825.2014.908937](https://doi.org/10.1080/07418825.2014.908937)

To link to this article: <http://dx.doi.org/10.1080/07418825.2014.908937>

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the "Content") contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden. Terms & Conditions of access and use can be found at <http://www.tandfonline.com/page/terms-and-conditions>

# “Juvenile Drug Courts and Recidivism: Results from a Multisite Outcome Study”

**Christopher J. Sullivan, Lesli Blair,  
Edward Latessa and Carrie Coen Sullivan**

This study reports findings from a study of nine juvenile drug courts (JDCs) from across the US. A quasi-experimental design, with one-to-one matching on possible confounders and sociodemographics, was used for the outcome assessment ( $n = 1372$ ). Baseline and outcome data were drawn from justice system records. Although there is variation across sites and, to some extent, outcomes, these JDCs were generally ineffective in reducing recidivism. Similar findings have emerged in other recent studies of JDCs. Given the results of this study and others, it is essential that juvenile courts work to

Christopher J. Sullivan is an associate professor in the School of Criminal Justice at the University of Cincinnati. His research interests include developmental criminology; juvenile delinquency and prevention policy; and research methodology and analytic methods. His recent work has appeared in *Justice Quarterly*, *Journal of Research in Crime and Delinquency*, *British Journal of Criminology*, *Prevention Science*, and the *Journal of Experimental Criminology*. Lesli Blair is a doctoral candidate at the University of Cincinnati (UC). Her dissertation is on community gardens and their potential impact on crime via either collective efficacy theory or routine activities theory. Her research interests include testing and integrating criminological theories; the effects of imprisonment; and the psychology of criminal behavior. She worked for three and a half years at the UC Corrections Institute where she co-managed a national multisite study on juvenile drug courts. Edward J. Latessa received his PhD from the Ohio State University in 1979 and is a professor and director of the School of Criminal Justice at the University of Cincinnati. He has published over 140 works in the area of criminal justice, corrections, and juvenile justice. He has directed over 150 funded research projects including studies of day reporting centers, juvenile justice programs, drug courts, prison programs, intensive supervision programs, halfway houses, and drug programs. He and his staff have also assessed over 600 correctional programs throughout the United States. Carrie Sullivan, M.A is a Research Associate in the Center for Criminal Justice Research and serves as the Associate Director for the Corrections Institute at the University of Cincinnati (UC). She received her master's degree in criminal justice from the University of Massachusetts Lowell in 2001. Ms. Sullivan has 14 years of correctional experience and has been a project manager for numerous national, state, and local correctional projects. Ms. Sullivan conducts correctional program evaluations to assist agencies in providing effective correctional interventions and assists agencies in implementing evidence-based practices. Ms. Sullivan also trains correctional professionals on numerous evidence-based practices. Correspondence to: Christopher J. Sullivan, School of Criminal Justice, University of Cincinnati, 665 J Dyer Hall, Clifton Ave, Cincinnati, OH 45221, USA. E-mail: [christopher.sullivan@uc.edu](mailto:christopher.sullivan@uc.edu)

improve the effectiveness of JDCs by increasing adherence to known principles of effective intervention.

*Keywords:* juvenile justice; drug courts; evidence-based practice

The 1980s and 1990s saw a sizeable increase in youth “drug abuse violations” and, despite a decline since the late 1990s, there were 76% more of these arrests in 2010 than in 1991 (Puzzanchera, 2013). Adolescent substance use presents the juvenile justice system with a number of difficulties as it is considered normative behavior in certain circumstances, but, given the potential for harm to those minors and the community more broadly, as well as the immediate and long-term potential of substance use and abuse as a criminogenic risk factor and co-occurring behavioral problem (see Mulvey & Schubert, 2012), there is a strong desire on the part of policy-makers, practitioners, and applied researchers to “do something” about this problem.

A growing belief in the utility of adult drug courts coupled with the perception that the existing juvenile court process was insufficient to address the complex needs of these offenders led to the development and proliferation of the Juvenile Drug Court (JDC) model (Bureau of Justice Assistance [BJA], 2003; Johnston, O’Malley, Bachman, & Schulenberg, 2007; National Council of Juvenile and Family Court Judges, 2003). The first JDCs were implemented in 1995 (Sloan & Smykla, 2003) and their use has expanded rapidly since. By early 2012, these programs were operational or being planned in 47 US states, with the total number of operating courts reaching roughly 439 (Bureau of Justice Assistance Drug Court Technical Assistance Project, 2012).

Despite this growth in usage, there are still relatively few sound evaluations of JDC processes and outcomes (Hiller et al., 2010; Roman & DeStefano, 2004) and those that have been conducted suffer from important limitations (Belenko & Logan, 2003; Mitchell, Wilson, Eggers, & MacKenzie, 2012; Roman & DeStefano, 2004). Furthermore, the evidence that does exist on JDCs is mixed in terms of observed outcomes. The continued growth in the use of JDCs, despite this empirical evidence, suggests that further assessment of the outcomes of a diverse set of drug court programs can make an important contribution to research, policy, and practice.

### Review of Existing Literature

JDCs are one of several possible mechanisms for treating juvenile offenders with substance abuse issues. JDCs have been found to operate with considerable variability in terms of goals, target population, treatment activities, and level of collaboration with outside agencies (Balter Rossman, Butts, Roman, DeStefano, & White, 2004; Hiller et al., 2010; Sloan & Smykla, 2003). Still, as

part of their core mission, JDCs typically strive to provide effective substance abuse treatment and foster long-term behavioral change through mandated substance abuse treatment; frequent status hearings and drug testing, which trigger potential sanctions and rewards; and an integrated team approach incorporating a judge, others in the justice system, and treatment agencies (BJA, 2003; Marlowe, 2011). This typically occurs in a tiered structure, with participants “stepping down” to less-rigorous phases by meeting specified abstinence or behavioral goals (Sloan & Smykla, 2003).

Winters, Botzet, and Fahnhorst (2011) identified several treatment intensity levels and modalities for adolescent substance users. These ranged from brief educational or awareness programs to residential treatment for youth with more serious drug use problems. Modalities include both family-based and individual/group therapies, as well as pharmacological treatments. Although empirical studies of adolescent drug treatment models is limited as compared to those for adults, there is evidence that cognitive-behavioral interventions and treatment with family involvement tend to have the best results.<sup>1</sup> A meta-analysis by Stanton and Shadish (1997) reviewed results from seven studies on juvenile substance abuse treatments with family involvement. The most common family therapies used were Functional Family Therapy and Multisystemic Therapy (MST). The seven studies evaluated had a significant effect size (.39) when compared to those with no family involvement. Research reviewed for the development of Integrative Behavioral and Family Therapy (IBFT; Waldron, Brody, & Slesnik, 2001) compared the relapse rates of youth randomly assigned to cognitive-behavioral therapy (CBT), multisystemic family therapy (MFT) or treatment as usual. The study found that both CBT and MFT youth had the greatest reduction in substance use at a six-month follow-up, with CBT reductions lasting over 12 months (Waldron et al., 2001, p. 238). A more recent meta-analysis (Tanner Smith, Wilson, & Lipsey, 2012) found family-based approaches to be most consistently effective relative to other modalities, but generally highlights the importance of some form of quality treatment.

In addition to common treatment modalities for juvenile substance abuse, there is an important body of research concerning what works in changing offender behavior more generally. This research has been synthesized in the Risk, Need, and Responsivity (RNR) model (see Bonta & Andrews, 2007 for a review). The RNR model outlines *Who* should be targeted for intensive treatment services (i.e. moderate- and high-risk offenders), *How* offenders are best treated (i.e. cognitive-behavioral interventions), and *What* should be targeted for change (i.e. criminogenic or crime-producing factors that contribute to overall risk levels). A sufficient body of evidence has demonstrated that programs that adhere to the RNR model more often lead to reduced recidivism than those that do not (Andrews, Bonta, & Hoge, 1990; Lipsey 1989).

1. For a more thorough review of cognitive-behavioral and family therapies for adolescents, see Milkman and Wanberg (2012).

Although few studies have directly examined the RNR model for juveniles, a meta-analysis of interventions with juveniles showed support for this approach (Lipsey, 2009). Consistent with the Risk and Need principles, the study found that treatment interventions were more effective at reducing recidivism than control/coercion methods (e.g. boot camps, "Scared Straight"). Additionally, interventions that focused on higher risk juveniles were more effective at reducing recidivism, especially when the youth did not have a history of violence. Lipsey (2009) indicated that "it may well be that these [cognitive behavioral and skill building interventions] derive their effectiveness by targeting criminogenic needs with change strategies that are responsive under the Andrews et al. definition" (Lipsey, 2009, p. 144). Vieira, Skilling, and Peterson-Badali (2009) also considered RNR in the context of matching youth to treatment and found that adherence to the principles helped in reducing recidivism.

### The Evidence on JDC Effectiveness

Contrary to some of the general juvenile treatment literature, findings from research on JDCs are inconsistent with respect to intended outcomes (e.g. recidivism, drug use, social functioning) and mode and quality of evaluation more generally. In particular, meta-analyses indicate that JDCs are not as effective as their adult counterparts. Shaffer (2006) found that while adult drug courts reduced recidivism by 10% on average, JDCs produced a 5% average reduction in recidivism. Additionally, Wilson, Mitchell, and MacKenzie's (2006) meta-analysis found equivocal outcomes for JDC and comparison youth. In a more recent meta-analysis that included 34 quasi-experimental or experimental evaluations, Mitchell et al. (2012) found that, although there was a small, significant effect favoring the drug court group for general recidivism (Odds Ratio = 1.37), JDCs were generally not as effective as adult drug courts and their effects on drug-related offending were nonsignificant.

Despite these meta-analysis results, several studies have found positive effects for JDCs. For example, Carey (2004) and Carey, Waller, and Marchand (2006) evaluated an Oregon drug court and observed significantly more referrals/arrests for the comparison group at 24 months post-intake. Latessa, Shaffer, and Lowenkamp (2002) examined drug court effectiveness for juveniles in the state of Ohio, finding that the probability of rearrest for those in the JDC group was 16% lower than those in the comparison group. Similarly, using a more extensive follow-up period than is often seen in the literature (3 years), Rodriguez and Webb (2004) found that drug court participants were significantly less likely to commit a later delinquent act than juvenile probationers. Henggeler, McCart, Cunningham, and Chapman (2012) likewise found positive effects in a JDC intervention that included evidence-based programming. Still, in a study that illustrates the mixed nature of the literature more generally, Crumpton, Carey, Mackin, and Finigan (2006) found that, in the first year after intake, youth participating in a Maryland JDC spent significantly

more days in detention than matched comparison youth. However, in the second year after intake, when most had completed drug court, comparison youth had significantly more referrals than those in the JDC group.

## Limitations in the Existing JDC Literature

In Mitchell and colleagues' (2012) recent meta-analysis, the effects favoring JDCs tended to emerge from studies that they classified as worse on their scale of methodological rigor.<sup>2</sup> Additionally, in an earlier review, Belenko (1998, 2001) found that many studies failed to include individuals who were unsuccessfully terminated in their analyses, others failed to follow program participants for an extended period following drug court completion, and many used designs that failed to remove key threats to internal validity. Similarly, Roman and DeStefano (2004) highlight various insufficiencies in the existing literature such as weak contrasts for identifying effects (e.g. graduates vs. nongraduates; volunteers vs. those who refused), small sample sizes, brief follow-up periods, and limitations in the scope of outcome measures.

## Current Study

Given uncertainty in the existing literature, we study whether there were reductions in recidivism associated with participation in JDC programs—relative to comparison groups—using an intent-to-treat analysis.<sup>3</sup> In particular, the study utilizes subject-level matching to maximize the internal validity of key conclusions (Mitchell et al., 2012) within a sample of several drug courts from across the US to establish some external validity around the central results.

## Methods

### Study Sites

A roster of JDCs funded by the Office of Juvenile Justice and Delinquency Prevention (OJJDP) during fiscal years 2003 to 2005 was utilized as an initial sampling frame.<sup>4</sup> All courts were sent a letter describing the study and asking for their participation; follow-up calls were then made seeking participation. The

2. Mitchell et al. used the Maryland Scientific Methods Scale (see Farrington, Gottfredson, Sherman, & Welsh, 2006) to categorize studies based on rigor along a four-point ordinal scale, ranging from weak quasi-experiments to randomized experiments.

3. This was meant to overcome some of the comparison group issues highlighted by Belenko and Logan (2003) and Butts and Roman (2004); it also preserves the nature of the policy as implemented (Shadish, Cook, & Campbell, 2002).

4. Per the original Request for Proposals (RFP), sites were selected only from those receiving some funding from OJJDP.

nine courts that comprised the final sample encompass multiple regions of the United States including the Northeast, the Midwest, the Pacific Northwest, and the West Coast.<sup>5</sup> They also vary in the size and nature of localities served: three are in large metropolitan areas ranging from one to three million persons; five are located in areas with 175,000 to 475,000 persons; and the last is in an area with a population of approximately 70,000. These courts represent urban, suburban, and rural counties and one state system. They were all established for several years prior to the recruitment of participants (see Table 1). Two of the selected drug courts serve approximately 60 youth per year; another two process roughly 50 juveniles; two serve between 30 and 50 youth per year, and the remaining courts serve fewer than 30 youth per year. The stage at which juvenile offenders were brought into and processed in these courts also varied across sites. For example, three used a pre-dispositional model while the others are either post-dispositional courts or followed a mixed model.

All of the JDCs involved in this study followed a process similar to that used in adult drug courts (see Figure 1).<sup>6</sup> Specifically, they included fixed phases and drug court youth had frequent status reviews and drug tests, which diminished in their intensity based on phase in the program and youth performance. Further, the JDCs were similar concerning their processes for rewards, sanctions and court activities. Typical rewards in the JDC's included: social rewards such as verbal praise and recognition in court; token rewards such as certificates or having their case heard first during court sessions; tangible rewards such as candy, gift cards, reductions in fees/fines, early termination from drug court, or reduction/dismissal of charges; and activity-based rewards such as special permission to attend/participate in activities past curfew or out-of-county/state travel. Typical sanctions in these courts included: more frequent drug testing, more frequent court/probation reporting, verbal admonishment from the judge during court sessions, written assignments, community service/work detail, electronic monitoring/house arrest, and phase regression. Where these courts differed from adult drug courts was in the realm of family/parent involvement. Every court required parent/family involvement in the court process. This varied widely by court from requiring parent/family attendance in court only, to parent/family participation in probation activities (e.g. meeting with the probation officer) or case management. Only one court required that all families be formally trained via parenting classes, however. Table 1 presents some core characteristics of each court, including adjudication status (pre-, post-, both), eligibility criteria, average length of drug court process, risk/need assessment tools utilized, and treatment modalities.

5. Initially, 10 courts agreed to participate, but one was eventually dropped due to enrollment issues.

6. This information was taken from a larger process study conducted at the same time as the current research. This involved site visits to each of the JDCs to collect data on the drug court process and available treatment. Those details are beyond the scope of the current study; please see the full report for details (Latessa, Sullivan, Blair, Sullivan, & Smith, 2013).



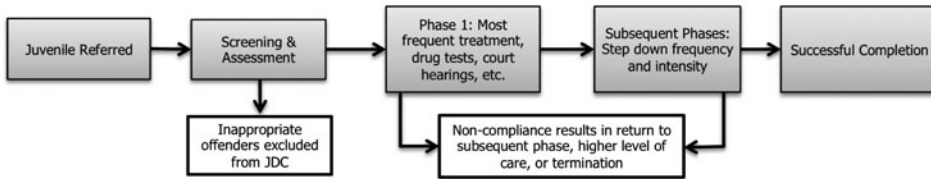


Figure 1 JDC process.

### Youth Participants

To complete the outcome evaluation, a quasi-experimental design, with matching on possible confounders and sociodemographics, was used ( $n = 1372$  with 686 in Drug Court [DC] and 686 in the Comparison [C] group). All youth enrolled in the study (youth assent and parent consent were obtained) were matched within the same jurisdiction. Youth enrollment in the study began in May 2008 and continued through December 2011. Regular correspondence with the JDCs indicated that fewer than 10 youth—across both groups—refused to participate. While some sites struggled with enrolling matched comparison youth, this was from the standpoint of coordinating with probation units as opposed to parents/youth not providing consent. As an alternative, a blanket consent process was implemented to allow the research team to collect de-identified record data for matching and follow-up.<sup>7</sup> The number of youth enrolled in the study per site ranged from 72 to 292, split evenly between the DC and C groups (i.e. matched one-to-one). Each site was asked to match DC participants with a standard probation youth on risk level, race, gender, and alcohol/drug abuse or dependence.<sup>8</sup> To meet criteria for inclusion in the Comparison group, a youth either required an assessment confirming substance abuse issues or a file review had to indicate a recent pattern of use of alcohol and/or drugs. When exact matches could not be obtained, sites were instructed to prioritize matching in the following order: risk level, gender, and race. Youth were not always matched exactly on all four variables. While there was some variation across the matching variables and sites, this process generally produced groups that were comparable at baseline.<sup>9</sup>

7. 196 youth (279%) in the probation group were enrolled in the study through this process, which allowed for each drug court to identify a comparison case by accessing already collected court data to match cases and collect official record data without specific consent or assent. In sites where blanket consents were sought, the University IRB and the Court in question was required to approve the process. These cases are equivalent to administrative record controls.

8. In all sites except one, comparison groups comprised solely youth on probation. A portion of that site's drug court is a diversionary program, so comparison cases for the diversionary portion of the drug court were obtained from a nondrug court diversion program ( $n = 26$  in DC and C groups).

9. Further analysis of matching quality by site revealed no association between treatment effects and the degree to which youth were/were not perfectly matched. This issue is also investigated further in the Results and Discussion sections.



**Table 1** Overview of characteristics of drug court sites

Drug court Est.	Adjudication status	Eligibility requirements	Exclusions	Program length (Mos.)	Graduation rate	Risk	Substance use	Treatment approaches
1	2003 Pre	14–18; high or moderate risk and high or moderate need	Violent offenders, drug dealers, sex offenders	9–16	50%	YLS/CMI	GAIN	Group-based talk therapy
2	2001 Post	14–17; drug/alcohol charge and level II need on ASAM	Violent offenders, sex offenders	12–14	50%	Validated state instrument	ASAM	Group- and individual-based talk therapy
3	2003 Pre and post	14–16; first-time felons	Violent offenders, trafficking > \$300	2 Tracks: 4–6 or 10–12	86%	SAVRY	SASSI	Group- and individual-based talk therapy, 12-Step
4	2000 Pre	13–17; drug/alcohol issues, moderate and high risk	Violent offenders, sex offenders	10–12	65%	Validated state instrument	MAYSI	Mix of CBT, 12-Step
5	2004 Pre and post	14–17.5; dependence or abuse on SO-QUICK	Violent offenders, sex offenders, runaway	6–9	59%	Nonvalidated local instrument	SO-QUICK	Mix of Motivational Interviewing, CBT, Stages of Change

6	2004	Pre and post	13–18; drug/ alcohol charge, clinician recommendation	Violent offenders, drug dealers, sex offenders	4–10	75%	YLS/CMI/ OYAS (varied)	PADDI	Group-based talk therapy
7	2000	Pre and post	13–17; Drug Offense or Use	Violent offenders, drug dealers, sex offenders	4–24	76%	None	None	Mix of MST, Talk therapy, Motivational Interviewing, Psychoanalytic 12-Step, Talk therapy, Motivational interviewing, CBT
8	1998	Post	13–17.6; substance abuse treatment conditions of probation	Violent offenders, documented gang involvement, arson	12	62%	Validated local instrument	SASSI	Talk therapy, Motivational interviewing, CBT
9	1996	Post	Under age 18; history of substance abuse	Violent offenders, drug dealers, felony sex offenders, firearm charges, prior commitments	12	42%	Validated local instrument	GAIN and ASAM	Group- and Individual-Based Talk therapy

## Data Collection and Measures

The data predominantly consisted of drug court descriptions and individual-level measures on drug court participants and their matches. These were collected by study staff and site contractors who were trained on data extraction, coding, and ethical research practices. The individual-level measures were intended to have been easily found through case reviews. As shown in Table 1, eight of the drug courts assessed risk. Three used validated fourth-generation risk/need instruments, two used validated state-specific instruments, two used validated county-specific instruments, and one used a nonvalidated local instrument. In the site where no risk assessment was used (Site 7), a risk score was created based on the number of prior charges, the level of the youth's current charge, age at first referral, and number of prior adjudications. In order to create a pooled risk assessment measure across sites, benchmarks associated with each of the original instruments were used to categorize youth as low, medium, or high risk. All sites used some form of substance abuse assessment, but each differed in their preferred diagnostic tool. Approaches varied from biopsychosocial interviews which used American Society of Addiction Medicine (ASAM) or Diagnostic and Statistical Manual of Mental Disorders (DSM) criterion to assessments such as the Adolescent Substance Abuse Subtle Screening Inventory (SASSI).

Numerous youth-level measures were drawn from file review including offender sociodemographics (e.g. age, sex, race/ethnicity), characteristics of the current court case (e.g. date, level and charge for the most serious offense, date of first court appearance, legal status [adjudicated or pre-adjudicated], disposition date), prior criminal history (e.g. number of prior referrals [felony and misdemeanor], and previous drug charges), drug use history (e.g. drugs used, frequency of use, age of first use), and family factors (e.g. living arrangements, criminal history). In addition, motivation surveys were given to both the DC and C groups at the time of consent. Specifically, the TCU Treatment Motivation Scale from the Client Evaluation of Self and Treatment, which has been validated previously (Simpson & Joe, 1993), was administered. It had an alpha reliability of .76 in this sample, which is in line with previous research. Other youth-level measures include legal processing indicators (e.g. date of referral and disposition, time in detention), treatment services received (e.g. type of program, completion status), drug screen results (e.g. date, result), court violations (e.g. reason, sanctions received) and associated sanctions, rewards for compliance (e.g. reason, reward received), and case-closing information (e.g. treatment completed, JDC requirements met).

Outcome measures consisted of official referrals to juvenile court or new arrests in the adult system and adjudications (i.e. a court finding that the

youth was delinquent) or convictions in the adult system.<sup>10</sup> Given the ages of youths involved, the outcome measures were predominantly drawn from juvenile records, but cases were followed into the adult system via record as necessary. The outcome data provided by the sites includes details such as date, most serious level of offense (felony, misdemeanor, or status), most serious charge (property, personal), if the charge involved alcohol or drugs, adjudication/disposition status, and sanction(s) received. As the length of follow-up varied (see Table 2), we added a control to the multivariate models to account for that elapsed time.

## Analytic Process

Procedures included group mean comparisons and Chi-square tests for the initial analysis and multivariate logistic regression modeling to answer questions related to drug court outcomes. The results are presented for the sample as a whole and by individual sites. In all cases, the results include controls for (a) sociodemographics, (b) rival variables that have some theoretical or substantive relevance, or (c) variables identified as possible between-group differences. Covariates were prioritized based on their relevance in matching and/or their association with initial differences between groups (e.g. risk score with many juvenile record and behavioral history variables shown in Table 2). In addition to the use of multivariate models, several subgroup analyses and sensitivity checks were undertaken to further unpack the main study findings. For example, hierarchical logistic regression models allowed for some formal examination of possible site-level differences in outcomes and treatment effects (Raudenbush & Bryk, 2002; Snijders & Bosker, 1999).

## Results

### Sample Descriptives

Table 2 presents the descriptive analysis for the full sample, stratified by DC and C groups, with some consideration of possible between-group differences for the matching, baseline, court process, and treatment motivation variables.<sup>11</sup> The results provide a sense of the nature of the problems faced by the youth included in the study—especially their substance use profiles (see Butts, Zweig, & Mamalian, 2004). This also presented an opportunity to examine

10. A self-report follow-up survey was also administered, but data are not analyzed here due to a low overall response rate.

11. The main analyses presented below were repeated with full information maximum likelihood estimation (see Schafer & Graham, 2002) in order to better account for missing data. The results were similar to those reported here.

**Table 2** Sample descriptives and group comparison

Measures	Drug court group (n = 686) Mean (sd)/%	Probation group (n = 686) Mean (sd)/%	t/ $\chi^2$ (df)	% Missing
<i>Matching variables</i>				
Risk level <sup>1</sup>				
Low	17.4	6.2	42.09 (2)*	3.0
Moderate	42.3	51.6		
High	40.2	42.3		
Sex				
Male	75.5	75.7	.00 (1)	.0
Race				
White	59.3	56.1	5.87 (5)	2.3
Black	8.4	11.5		
Hispanic	28.8	29.2		
Other	3.4	3.2		
Alcohol use frequency				
Daily	4.6	5.7	10.13 (2)*	28.6
Once a week or more	28.3	19.5		
Less than once a week	67.2	74.7		
Drug use frequency				
Daily	31.7	24.3	12.14 (2)*	21.4
Once a week or more	41.8	40.4		
Less than once a week	26.4	35.3		
<i>Other baseline variables</i>				
Age	16.1 (1.12)	16.2 (1.31)	-2.89 (1337.60)	.1
Offense level				
Felony	29.7	32.7	10.54 (2)*	.2
Misdemeanor	52.4	55.7		
Status	17.9	11.7		
Offense type				
Personal	8.4	21.7	68.68 (7)*	.6
Property	24.1	25.0		
Drug/Alcohol	42.9	31.2		
Other	24.7	22.1		
Prior adjudications (1 = Yes)	50.8	53.4	.88 (1)	1.8
Previous drug charge (1 = Yes)	35.4	23.6	22.59 (1)*	.7
Gang involvement (1 = Yes)	12.7	17.2	5.24 (1)*	1.5
Runaway history (1 = Yes)	23.2	24.3	.25 (1)	3.0
Prior out of school suspension (1 = Yes)	46.1	39.9	5.05 (1)*	5.2
Truancy record (1 = Yes)	58.2	49.2	10.71 (1)*	4.4

(Continued)

Table 2 (Continued)

Measures	Drug court group (n = 686) Mean (sd)/%	Probation group (n = 686) Mean (sd)/%	t/χ <sup>2</sup> (df)	% Missing
<b>Drug of choice</b>				
Alcohol	23.5	22.4	8.39 (2)*	7.2
Marijuana	71.1	75.2		
Other	5.4	2.3		
Age of first alcohol use	13.4 (1.75)	13.5 (1.64)	-.61 (826)	39.7
Age of first drug use	13.5 (3.43)	13.5 (1.69)	-.32 (931)	32.0
Substance abuse diagnosis (w/ screen)	31.9	34.9	.75 (.39)	43.8
Previous D/A treatment (1 = Yes)	23.5	17.3	7.88 (1)*	3.8
MH treatment ever (1 = Yes)	37.6	28.7	10.66 (1)*	12.2
<b>Court process and motivation</b>				
Number of case hearings	15.3 (15.64)	5.1 (4.53)	15.42 (695.07)*	10.1
Number of Status reviews	8.1 (9.88)	1.2 (3.25)	15.62 (674.02)*	17.9
Number of treatment referrals	3.2 (4.61)	1.4 (3.75)	8.27 (1315.98)*	1.3
Number of drug tests	42.2 (32.58)	9.6 (11.70)	16.62 (858.78)*	17.3
Number of failed drug tests	4.7 (6.95)	3.3 (4.2)	-4.09 (1093.66)*	17.6
Proportion of drug tests failed	.17 (.21)	.25 (.24)	6.01 (980.37)*	17.6
Number of incentives	5.12 (6.69)	.33 (1.65)	18.22 (768.23)*	.7
Number of sanctions	3.6 (4.97)	1.6 (2.38)	9.90 (984.87)*	3.3
<b>Motivation scale scores—</b>				
baseline				
Problem recognition scale	28.6 (8.97)	23.3 (8.82)	7.30 (731)*	46.6
Desire for help	32.7 (8.59)	27.3 (7.91)	8.08 (379.06)*	45.6
Treatment readiness	33.3 (8.76)	29.1 (7.52)	6.40 (407.12)*	44.5
<b>Termination status</b>				
Successful	60.4	63.0	63.67 (8)*	1.1
Unsuccessful	34.1	22.4		
Data collection ended	2.3	11.7		
Expiration of term	1.2	1.3		
Other	2.1	1.5		
Time at risk for new offense (months)	26.1 (10.06)	22.0 (13.89)	6.12 (1248.80)*	.2

\*t/χ<sup>2</sup> indicates statistically significant difference at p < .05.

Notes: t = t-statistic used for comparisons between scores or other continuous measures (e.g. age). χ<sup>2</sup> = Chi Square statistic used for comparisons between categorical measures (e.g. any prior drug charges).

sd = standard deviation; df = degree of freedom.

<sup>1</sup>Common risk levels across site risk assessments were combined into the ratings of low, medium, and high risk.

balance across the groups on key variables that might be related to selection into treatment. Looking at the four matching variables, there were two significant differences across the groups on risk level and frequency of substance use. First, relatively more youth in the DC group were classified as low risk. Second, DC youth had significantly higher preference for alcohol and “other drugs” than C youth.

The last panel of Table 2 shows measures for several key court process and motivation variables. Not surprisingly, there were significant differences in the mean number of case hearings and status reviews across groups. Their respective standard deviation values (shown in parentheses) suggest that there was considerable variation within those groups as well. There were also significant differences in the number of treatment referrals, drug tests, incentives, and sanctions, with greater mean estimates for the DC youth in each instance. The DC group was clearly subject to greater intervention and sanction on the part of the court and treatment programs, and later results must be contextualized in terms of the elevated levels of monitoring, treatment referrals, and drug tests experienced and failed by the DC group. The baseline motivation survey evidenced significant differences between groups for all scales. Overall, a greater percentage of DC youth were terminated unsuccessfully (e.g. returned to custody; moved to traditional probation) relative to those in the comparison group (e.g. absconded; moved to a custodial sanction). Lastly, while the means suggest approximately two years of post-intake follow-up for youth in this sample, DC cases had significantly more months at risk to recidivate on average (calculated from start date of drug court or probation).

### Recidivism Outcomes

Overall, 60% of the DC group had a new referral/arrest while in the program or during follow-up compared to 49% for C cases. For new adjudication or conviction, the overall prevalence of recidivism was 45 and 33% for the two groups, respectively. Given the remaining post-matching differences observed in Table 2, we estimated multivariate logistic regression models in order to further examine the key study outcomes. The analysis included controls for months at risk of a new offense (calculated as date of entry into program to date of data collection);<sup>12</sup> youth age, gender, and race (coded as white/non-white); and risk level.<sup>13</sup>

As shown in Table 3, the covariates included in these models generally had significant effects. The likelihood of recidivism tended to increase with the level of risk and months elapsed following youth intake. The odds of recidivism

12. The date of termination in the analyses focused only on outcomes following program involvement.

13. Multicollinearity diagnostics indicate tolerance values above .90 and variance inflation values ranging from 1.0 to 1.8 suggesting no problems with linear dependence among the covariates.



generally decreased for youths as they got older, and females and Whites had significantly lower likelihoods of new referrals or adjudications relative to males and Nonwhites, respectively. The results for official recidivism (any new referral, adjudication)—(a) while the youth was still in Drug Court or on standard probation, (b) after termination, and (c) both—suggest that DC youth had worse outcomes than the C group. Specifically, for the condition that encompasses a new referral or adjudication while in drug court or under formal supervision *and* post-completion or failure, DC youth had 75% greater odds of a new referral (OR=1.75) and 78% greater odds of a new adjudication (OR=1.78) relative to those in the C group, controlling for other factors. The results for hypothesis tests and effect sizes were comparable across the other follow-up conditions as well.<sup>14</sup> Given the nature of the intervention and the relatively high level of baseline substance use offenses, new drug or alcohol-related delinquency was a particular interest. Analyses were conducted that parallel those shown in the table to consider such outcomes. In each of the three possible time frames, the effects suggest DC youth had a greater likelihood of recidivism. For example, the Odds Ratio value for the any post-intake drug or alcohol-related arrest model is 2.16, indicating a significantly greater likelihood of this type of recidivism for DC youth relative to the C group.<sup>15</sup>

The main study results shown in Table 3 were extended in two ways. First, the baseline frequency of substance use was added to the “any” new referral and conviction models as a covariate. This reduces the number of valid cases in the model by about 17% the majority of which are in the comparison group ( $n = 1102$ ). The inclusion of this variable reduced the size of the odds ratio for the drug court/comparison estimate in both models (1.75 to 1.56 for new referral and 1.78 vs. 1.56 to new conviction), but both remained statistically significant ( $p < .05$ ). In both cases, the effect of substance use frequency is statistically significant such that those youth with higher baseline levels (moving in unit increments from “less than once weekly” to “daily”) also have significantly greater odds of recidivism (OR = 1.21 and 1.29 for new referral and adjudication, respectively). Given the two significant main effects and the possibility that the seriousness of a drug use problem might affect treatment performance (e.g. Williams & Chang, 2000), a second stage of supplemental analysis examined the possibility of a moderating effect. Specifically, this assessed whether youth with greater pretreatment substance use might be

14. These analyses were also conducted using negative binomial regression models for the number of new referrals (Mean = 1.66,  $sd = 2.48$ ) and number of new convictions (Mean = .95,  $sd = 1.82$ ). The relative risk ratios were 1.31 in both scenarios, suggesting that the Drug Court group had roughly 30% higher expected counts on the outcome measures—controlling for risk level, time at risk of a new offense, age, sex, and race.

15. Although frequency of substance use (alcohol, other drugs) was collected for the majority of youth ( $n = 1060$ ), it was not included in the main models due to data loss (particularly among comparison youth). Given that it is a relevant covariate and the baseline differences observed between groups, the main outcome analysis was repeated using that measure and the results were found to be similar to those reported here.

**Table 3** Multivariate logistic regression models with recidivism

	Supervised						Follow-Up						Any					
	Referral			Adjudication			Referral			Adjudication			Referral			Adjudication		
	b	se	OR	b	se	OR	b	se	OR	b	se	OR	b	se	OR	b	se	OR
DC vs. C	.66*	.12	1.95	.53*	.13	1.70	.46*	.12	1.59	.58*	.14	1.78	.56*	.12	1.75	.58*	.12	1.78
Risk level	.31*	.09	1.36	.22*	.10	1.25	.22*	.10	1.24	.41*	.11	1.51	.41*	.09	1.51	.41	.09	1.50
Time at Risk	.01	.01	1.01	-.01	.01	.99	.02	.01	1.02	.03*	.01	1.03	.01*	.01	1.03	.01	.01	1.01
Age at Intake	-.21*	.05	.81	-.23*	.05	.79	-.11*	.05	.90	.04	.06	1.04	-.27*	.05	.77	-.16*	.05	.85
Sex (1 = Female)	-.30*	.14	.74	-.24	.16	.79	-.38*	.15	.68	-.37*	.17	.69	-.43*	.14	.65	-.30*	.14	.74
Race (1 = White)	-.37*	.12	.69	-.35*	.14	.71	-.64*	.13	.53	-.55*	.14	.58	-.42*	.12	.66	-.41*	.12	.66
Constant	2.0	.92		2.6	1.0		.31	.94		-3.5	1.1		3.6	.93		1.1	.92	
Model $\chi^2$ (df)	92.80	(6)*		53.45	(6)*		93.92	(6)*		94.05	(6)*		129.61	(6)*		95.49	(6)*	
Nagelkerke $R^2$	.09			.06			.10			.11			.12			.10		
N	1320			1292			1316			1316			1316			1300		

Note: \*  $p < .05$ ; DC = Drug Court; C = Comparison; b = logit coefficient, se = standard error, OR = Odds Ratio.

differentially affected by the intervention. The included interaction terms were nonsignificant in both models. We also repeated these analyses with youths with a documented substance abuse diagnosis on a validated screening tool and found neither main effects nor treatment interaction effects on the outcomes of interest.<sup>16</sup>

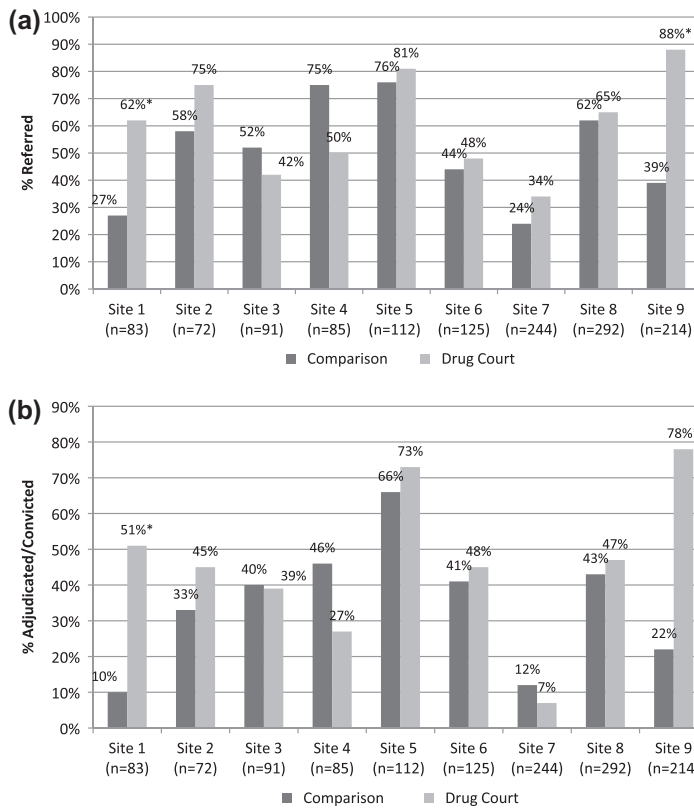
### Drug Court Outcomes by Site

An examination of the sample descriptives and multilevel logistic regression models for “new referral” and “new adjudication” identified substantial variance around the overall likelihood of recidivism (statistically significant for adjudication), suggesting that its level differed across the study sites (this is also evident in Figure 2, and Appendix 1). The direction and size of the effects were generally the same as in Table 3 and the DC/C indicator variable was significant and positive in both analyses. The Odds Ratio values were 1.61 and 1.70 for new referral and new adjudication, respectively. This means that those youth in DC had significantly higher odds of recidivism than the C group, while controlling for key covariates and adjusting for any shared effects among youth at the same site. Although nonsignificant, there was some site-level variation in the effect.

Further details on the site-by-site comparisons for new referral or adjudication following program entry are shown in Figure 2a and b. Statistical significance was assessed based on multivariate models including the controls included above. While there was variation across sites in terms of the significance and direction of the treatment/recidivism relationship, the majority of sites show outcomes favoring the comparison condition. In particular, Site 1 and Site 9 show large, statistically significant differences in the prevalence of recidivism for DC and C youth. Those were the only two sites that had statistically significant effects after control variables were added to the analysis. Although nonsignificant, Sites 2, 5, 6, and 8 showed effects favorable for youth in the C group in terms of new referrals. Sites 2, 5, 6, and 8 also showed effects favoring the C group on new adjudications.

Of the nine sites, only two show effects that favor DC for both new referrals and adjudications. Specifically, in Site 3, which had a total sample size of 91 cases, DC youth had a lower level of post-intake referral than comparison youth. The two groups had similar levels of new adjudication, however, with a one percentage point difference favoring DC. In Site 4, 50% of the DC group had a new referral after program entry compared to 75% for those in the C group. DC youth also had a lower prevalence of new adjudication than youth in the C group. Additionally, although youth at Site 7 had higher levels of new referral, they had lower prevalence of new adjudication following program

16. This analysis was based on 750 cases with available data on the official diagnosis measure.



**Figure 2** (a) Comparative summary of new referrals by site, and (b) comparative summary of new adjudications by site.

Note. \* $p < .05$ .

entry—relative to the comparison group. While the group differences are sizeable in some cases, none of these effects was statistically significant in the multivariate model with controls.

As noted above, the main analyses were repeated in a multilevel framework; still, given observed differences in sites, we conducted sensitivity analysis to consider the degree to which the main study findings held when further adjusting for that variation. Specifically, we truncated the data by removing sites at the extreme ends of the distribution. First, the full-sample estimates were likely affected by the fact that two sites had very large discrepancies for the DC and C groups (Sites 1 and 9). Consequently, we removed those sites from the analysis and reran the “any new referral” and “any new adjudication” analyses shown in Table 3. The Odds Ratios for both referral (1.16) and adjudication (1.10) diminished in size and were no longer statistically significant. Second, we also examined the results when removing both the low- (Sites 1 and 9) and high-performing sites in terms of Drug Court effects (Sites 3 and 4). The odds ratios for both referral (1.35) and adjudication (1.20)

were diminished in size, but the former remained statistically significant. Together, these analyses suggest that, although heavily driven by two sites with findings that break strongly against DC, the majority of estimates favor the comparison condition for key recidivism measures.<sup>17</sup> Furthermore, even when excluding those sites with more pronounced effects, there is, at a minimum, a small effect favoring the comparison group.

## Discussion

This study adds to the existing literature on JDCs by providing a national multi-site outcome study of nine established programs using a participant-level matching design that accounts for some issues mentioned in prior reviews of the literature (e.g. Belenko 2001; Mitchell et al., 2012). These findings echo some previous research that has found that JDCs are not as effective as adult courts and, in some cases, result in about the same or worse outcomes than probation.

### Summary of Key Findings

The baseline profiles of these cases provide some insight into why these courts may not have attained desired results. In particular, the descriptives for regularity of substance use suggest that the majority of cases did not engage in problem use nor did they take drugs that might be considered to be more serious, such as cocaine or opiates. Additionally, the motivation measures suggest that these youth had fairly low treatment readiness (with a mean score of 33.3 out of 50), which is below the estimate reported by the instrument's developers (34.5) (TCU Institute for Behavioral Research, 2005). This might limit responsiveness to intervention. Additionally, descriptive analysis of intermediate outcomes such as failed drug tests, violations of court orders, or school-related violations suggests that DC youth were more likely to fail while on supervision. This may be due in part to the intensity of JDC supervision and treatment protocols, which is evidenced in the number of status reviews and drug screens for DC relative to C youth. For example, this can be observed in the fact that DC youth had fewer positive drug screens as a proportion of the total but experienced far more of them in the aggregate, which increases their

17. Further analysis of those two sites in terms of the characteristics of the youth involved and the processes of the drug courts revealed relatively few differences from the other seven. Most of those variables were either (a) controlled for in the analyses (e.g. time at risk) or elements of the drug court process that tended to vary between treatment and comparison youth at all sites (e.g. number of case hearings, number of drug tests). More information on site-level differences is provided in Latessa et al. (2013).

potential opportunities for failure.<sup>18</sup> Outcome analysis consistently showed that—controlling for several relevant factors—drug court was not as effective as standard probation and, in fact, showed an effect favoring the comparison group. This was the case whether considering new referrals or adjudications while under direct supervision, following completion of DC or probation, or both. The direction of the effect typically held in sensitivity analysis as well. There was some variation in effects including two sites showing favorable, albeit nonsignificant, results.

### Study Limitations

This study has some features that help to deal with critiques of the existing JDC literature, but it also brings some limitations. The main outcomes are based on officially recorded offenses and consequently there may be some cause for question around the content validity of these measures. For example, some surveillance effects may be operating in the main results. Nevertheless, the main study findings emerged even after youth were terminated from drug court or probation supervision, suggesting that a monitoring effect would only be a partial explanation for the observed differential between the two groups.

Additionally, while the matching approach was generally effective in this study and is considered to be a solid base for inference in light of selection effects (Mitchell et al., 2012; Shadish, Cook, & Campbell, 2002), Table 2 highlights that there were some residual differences among the groups at intake. Although multivariate regression partially accounts for this, there is still a question of whether there are comparable cases across the range of the distribution of those measures (Stuart, 2010). Consequently, we re-analyzed the main referral and adjudication outcomes with a matching estimator as an analytic supplement to the original case-by-case process carried out at the sites (Abadie, Drukker, Leber Herr, & Imbens, 2004). This procedure seeks to minimize the distance on the covariates to identify comparable cases and was set to exact matching on certain variables (e.g. risk level, sex, site); it has the advantage of allowing for cases to be matched with similar others across the entire sample (within each site) rather than at the time of intake. The latter constrains the ability of those in the system to find the most adequate matches as it requires finding a close 1:1 match within a relatively narrow time window. Using the covariates presented in Table 3 (and site) as matching variables, over 91% of cases were directly matched in that analysis. The average treatment effect, marking the DC/C difference in units of the outcome, for the number of new referrals was .36 ( $p < .05$ ). The effect for new adjudications was

18. There was, however, missing data in the drug screen variables that predominately affected the comparison group.

roughly .18, but the associated probability value was slightly greater than a .05 threshold. Thus, the results using the alternative matching estimator generally confirm those presented in the main analyses shown above. Additionally, given some of the restrictions of intent-to-treat analysis (Shadish, Cook, & Campbell, 2002) we also (a) controlled for time in drug court or probation and (b) conducted the analyses with only those cases that completed drug court or probation successfully ( $n=836$ ) and reached similar conclusions in terms of the size, direction, and statistical significance of the effects reported here.

Although there are advantages to the multisite design used here, there are also challenges for data collection and analysis. As mentioned earlier, there were some data collection difficulties at certain sites that affected the matching process and measurement. For example, the level of precision of measurement available for DC cases was superior to that of the comparison group. For practical purposes, this means that measures such as the nature of the substance use problem may have been of different quality across conditions and sites, which precluded a full analysis of some of those factors in terms of their possible influences. Although all data were reviewed and processed centrally, it is possible that different record-keeping procedures across sites affected the results particularly given the use of officially recorded outcome variables. Additionally, the nine sites have various base characteristics and sample sizes sometimes differed substantially across the sites. Although some analyses were repeated using multilevel models to accommodate those issues, the sample size at the site level ( $n=9$ ) was not sufficient to formally study the degree to which variation in the drug courts may have affected individual outcomes (Snijders & Bosker, 1999).

### Implications for Policy and Practice

Despite these limitations, this study provides important insight for policy and practice related to JDCs. Perhaps most importantly, the findings of this study are in line with some prior research on JDCs. Given that, it is imperative that policy-makers, practitioners, and researchers continue to ask questions about the structure and processes of these interventions. Specifically, examining how JDCs can become more effective in reducing recidivism should be a priority in future research and planning. This should include an emphasis on *Who?*, *How?*, and *What?* questions.

*Who* questions need to be answered with respect to whether the drug court structure is best suited to dealing with juvenile drug use (see also Butts & Roman, 2004). Due in part to the order in which they emerged, the practices of adult drug courts provide a natural model and benchmark for their counterparts in the juvenile system. However, while JDCs share many commonalities with the traditional adult model, it is evident that adolescents present issues that are distinct from those faced by adult drug court participants (Butts &



Roman, 2004; Cooper, 2002; Roberts, Brophy, & Cooper, 1997; Stein, Deberard, & Homan, 2012). This is particularly important in thinking about effective treatment modalities for adolescents (Winters et al., 2011). In a study of multiple drug courts in the state of Ohio (Lowenkamp, Holsinger & Latessa, 2005), for example, the average age of adult offenders was 32, with participants averaging 12 years of substance use. The juveniles in this study averaged roughly 16 years of age, and 3 years of substance use. Further, they overwhelmingly used alcohol and marijuana as opposed to other more serious drugs. Although some evidence suggests that youth with less serious initial drug problems may be more successful, there is a need to focus on youth with more serious drug problems who are likely to benefit from its close supervision and intensive treatment (Cooper, 2001). While the nine sites studied here utilized some type of intake assessment, most did not differentiate between substance use, abuse, or dependence or consider the amount and severity of consequences experienced by virtue of use.

A recent survey conducted by the Substance Abuse and Mental Health Services Administration (SAMHSA; 2010) suggests that most adolescents stop their illegal drug use, or use alcohol legally as adults without abuse or dependence diagnoses and also that sustained, serious drug abuse is relatively infrequent. While justice-involved youth tend to have higher rates of substance use than those in the general population (Aarons, Brown, Hough, Garland, & Wood, 2001; National Institute of Justice, 2000), adolescents often engage in substance use for reasons distinct from those of adults. In particular, juveniles are often strongly influenced by peers who tend to facilitate and reinforce substance use and delinquency in a number of ways (Warr, 2002). This begs the question of whether JDCs might be providing too much intervention relative to the level of need—given that most youths will age out naturally. Because adolescent substance users are still developing cognitively, socially, and emotionally (Cauuffman & Steinberg, 2012), JDCs must consider the degree to which they are responding to normative use as opposed to abuse or dependence and calibrate the level of intervention accordingly (Butts et al., 2004).

Beyond possible distinctions in the etiology of substance use for juveniles and adults, research has suggested that adolescent offenders may not be as motivated as adults to engage in substance abuse treatment (Battjes, Gordon, O'Grady, Kinlock, & Carswell, 2003; Cooper, 2001; Melnick, De Leon, Hawke, Jainchill, & Kressel, 1997)—perhaps owing to the fact that they have not yet experienced the consequences that come from an extended period of abuse and perceive this as normative behavior (Breda & Heflinger, 2007; Butts et al., 2004). Although the response rate for the motivation survey was low for this study, those participants who completed it scored lower than reported norms, suggesting that these youth were not highly motivated to participate in a lengthy and intensive court and treatment process. This creates challenges in fostering long-term behavioral change among participants (Battjes et al., 2003). As such, the results observed here and in other recent studies may stem in part from the fact that adult offenders are further along in their substance

abuse and have likely experienced more negative consequences from this abuse and associated criminal behavior.

Relatedly, the DC group contained significantly more low-risk youth than the C group. Given the poor outcomes seen in this study and the RNR literature more generally, JDCs should question the utility of including low-risk offenders. It is problematic to assume that general transference of the drug court model to juveniles will be successful, so JDCs must consider these factors in the way that they are structured and the processes by which they wish to affect participants' behavior. It is essential that JDCs work to exclude low-risk youth and youth with low need for substance abuse treatment (i.e. those who will not develop serious alcohol/drug problems) and identify and include moderate- and high-risk youth and youth with problematic substance use. This will necessitate enhancement in risk and need assessment capabilities and clear cut-off rules for drug court entry (see also Mears, 2004).

Questions concerning *How* JDC's should operate also must be explored. To some extent, the inherent structure of drug courts and intensity of their processes may be resulting in poor outcomes shown here. Only one JDC in the study provided a shorter track lasting six months (Site 3; one of two sites evidencing positive outcomes for DC youth relative to C youth). All of the other courts averaged approximately 12 months in the drug court, with a range of nine to 18 months. Youth in drug court had considerably more status reviews, case hearings, and drug tests than youth on probation. As such, they had much more opportunity to fail and had greater prevalence of technical violations related to substance use, treatment noncompliance, and school-related problems. These factors may be contributing to the low graduation rate for DC youth (see Table 1). While those measures in part reflect the performance of individual youth, the findings necessitate further thinking about whether the philosophy and processes inherent in drug courts are a good fit for adolescent drug users—particularly low and moderate risk/need cases. This presents a question as to whether youth who only use alcohol or marijuana should be placed in intensive services modeled after treatment and supervision regimens designed for addicted criminals in the adult system. It is possible that these youth would benefit more from interventions that help in building their social and peer-refusal skills, especially if they are relatively low-risk cases engaged in use that might be considered normative (Sullivan & Jolliffe, 2012). In general, placing them on probation and requiring completion of quality treatment might be more conducive to successful abstinence and desistance.

Beyond targeting and the general applicability of drug court practices, the specific treatment modalities used in these programs must be given greater scrutiny. This brings up the question of *What* type of programming is provided within the JDC. Research clearly indicates that intervention should target higher risk offenders, focus on core criminogenic needs, and use cognitive-behavioral approaches with family involvement when possible. Few courts in this study fully followed these principles. For example, most treatment provided in the study focused on substance use while ignoring other criminogenic

needs, and most treatment was predominantly talk therapy and education-based treatment, both of which have had limited success in changing offender behavior. Furthermore, family members and/or caregivers were rarely given guidance on how to support their substance-involved youth in recovery. If they were involved, it was primarily via appearances at drug court hearings or support groups. In contrast, the body of research on juvenile offender rehabilitation strongly supports cognitive-behavioral treatment approaches for offenders and operation of a drug court in the context of juvenile offenders requires attention to other domains of risk, such as family dynamics. For example, in a randomized trial, Henggeler et al. (2012) found that drug courts in which therapists were trained to deliver evidence-based substance abuse treatment in combination with family engagement had significantly better outcomes than drug courts using treatment as usual. The current study reinforces lessons about the importance of both family involvement and evidence-based treatment for JDC success.

On the whole, while there certainly are limitations in implementation and study methodology that require acknowledgment, these and other recent findings raise important questions about the effectiveness of drug court for juveniles. While it is possible that a well-executed drug court program can effectively work with an appropriately targeted juvenile population, it is important to keep in mind that, in general, most youth may not be particularly well suited to the intensity of the drug court process. The prior evidence and the results presented here suggest that there may also be a “design failure” in terms of the underlying program theory (Berman & Fox, 2010). JDCs should carefully assess their adherence to principles of effective intervention to ensure that they are appropriately targeting and treating justice-involved youth. In a broader sense, policy-makers and practitioners should consider where drug courts fit in the various programs that are implemented within the juvenile court and adolescent treatment more generally to determine which youth should be involved and how they might operate more effectively in the future.

## Acknowledgments

This study was supported by Grant No. 2007-DC-BX-0016 awarded by the Office of Juvenile Justice and Delinquency Prevention, Office of Justice Programs, US Department of Justice. Points of view or opinions in this article are those of the authors and do not necessarily represent the official position or policies of the US Department of Justice. The authors wish to acknowledge and thank research staff in the University of Cincinnati Corrections Institute, as well as those at the various study sites for their help in coordinating and carrying out research activities. We also thank the Editor and anonymous reviewers for helpful comments on an earlier version of this article.

## References

- Aarons, G. A., Brown, S. A., Hough, R. L., Garland, A. F., & Wood, P. A. (2001). Prevalence of adolescent substance use disorders across five sectors of care. *Journal of the American Academy of Child & Adolescent Psychiatry*, 40, 419–426.
- Abadie, A., Drukker, D., Leber Herr, J., & Imbens, G. W. (2004). Implementing matching estimators for average treatment effects in Stata. *The Stata Journal*, 4, 290–311.
- Andrews, D. A., Bonta, J., & Hoge, R. D. (1990). Classification for effective rehabilitation: Rediscovering psychology. *Criminal Justice and Behavior*, 17, 19–52.
- Balter Rossman, S., Butts, J. A., Roman, J., DeStefano, C., & White, R. (2004). What juvenile drug courts do and how they do it. In J. A. Butts & J. Roman (Eds.), *Juvenile drug courts and teen substance abuse* (pp. 55–106). Washington, DC: The Urban Institute Press.
- Battjes, R. J., Gordon, M. S., O'Grady, K. E., Kinlock, T. W., & Carswell, M. A. (2003). Factors that predict adolescent motivation for substance abuse treatment. *Journal of Substance Abuse Treatment*, 24, 221–232.
- Belenko, S. (1998). *Research on drug courts: A critical review*. New York, NY: The National Center on Addiction and Substance Abuse at Columbia University.
- Belenko, S. (2001). *Research on drug courts: A critical review 2001 update*. New York, NY: The National Center on Addiction and Substance Abuse at Columbia University.
- Belenko, S., & Logan, T. K. (2003). Delivering more effective treatment to adolescents: Improving the juvenile drug court model. *Journal of Substance Abuse Treatment*, 25, 189–211.
- Berman, G., & Fox, A. (2010). *Trial and error in criminal justice reform: Learning from failure*. Washington, DC: Urban Institute Press.
- Bonta, J., & Andrews, D. A. (2007). *Risk-need-responsivity model for offender assessment and rehabilitation* (User Report 2007–06). Ottawa: Public Safety Canada.
- Breda, C. S., & Heflinger, C. A. (2007). The impact of motivation to change on substance use among adolescents in treatment. *Journal of Child & Adolescent Substance Abuse*, 16, 109–124.
- Bureau of Justice Assistance. (2003). *Juvenile drug courts: Strategies in practice*. Washington, DC: U.S. Department of Justice, Office of Justice Programs.
- Bureau of Justice Assistance Drug Court Technical Assistance Project. (2012). *Drug court activity update: Composite summary information*. Washington, DC: American University.
- Butts, J. A., & Roman, J. (2004). *Juvenile drug courts and teen substance abuse*. Washington, DC: The Urban Institute Press.
- Butts, J. A., Zweig, J. M., & Mamalian, C. (2004). Defining the mission of juvenile drug courts. In J. A. Butts & J. Roman (Eds.), *Juvenile drug courts and teen substance abuse* (pp. 137–184). Washington, DC: The Urban Institute Press.
- Carey, S. M. (2004). *Clackamas County juvenile drug court outcome evaluation: Final report*. Portland, OR: NPC Research.
- Carey, S. M., Waller, M., & Marchand, G. (2006). *Clackamas County juvenile drug court enhancement: Process, outcome/impact and cost evaluation*. Portland, OR: NPC Research.
- Cauffman, E., & Steinberg, L. (2012). Emerging findings from research on adolescent development and juvenile justice. *Victims & Offenders*, 7, 428–449.
- Cooper, C. S. (2001). *Juvenile drug court programs*. Washington, DC: U.S. Department of Justice, Office of Juvenile Justice and Delinquency Prevention.
- Cooper, C. S. (2002). Juvenile drug treatment courts in the United States: Initial lessons learned and issues being addressed. *Substance Use & Misuse*, 37, 1689–1722.

- Crumpton, D., Carey, S. M., Mackin, J. R., & Finigan, M. W. (2006). *Harford county juvenile drug court performance evaluation: Final report*. Portland, OR: NPC Research.
- Farrington, D. P., Gottfredson, D. C., Sherman, L. W., & Welsh, B. C. (2006). The Maryland scientific methods scale. In L. W. Sherman, D. P. Farrington, B. C. Welsh, & D. L. MacKenzie (Eds.), *Evidence-based crime prevention* (2nd ed., pp. 13–21). New York, NY: Routledge.
- Henggeler, S. W., McCart, M. R., Cunningham, P. B., & Chapman, J. E. (2012). Enhancing the effectiveness of juvenile drug courts by integrating evidence-based practices. *Journal of Consulting and Clinical Psychology, 80*, 264–275.
- Hiller, M. L., Malluche, D., Bryan, V., DuPont, M. L., Martin, B., Abensur, R., ... Payne, C. (2010). A multisite description of juvenile drug courts: Program models and during-program outcomes. *International Journal of Offender Therapy and Comparative Criminology, 54*, 213–235.
- Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2007). *Monitoring the future national results on adolescent drug use: Overview of key findings, 2006* (NIH Publication No. 07-6202). Bethesda, MD: National Institute on Drug Abuse.
- Latessa, E. J., Shaffer, D. K., & Lowenkamp, C. (2002). *Outcome evaluation of Ohio's drug court efforts* (Technical Report). Cincinnati, OH: Center for Criminal Justice Research, University of Cincinnati.
- Latessa, E. J., Sullivan, C., Blair, L., Sullivan, C. J., & Smith, P. (2013). *Final report: Outcome and process evaluation of juvenile drug courts*. (Technical Report). Cincinnati, OH: Center for Criminal Justice Research, University of Cincinnati.
- Lipsey, M. W. (1989, November). *The efficacy of intervention for juvenile delinquency: Results from 400 studies*. Paper presented at the 41st annual meeting of the American Society of Criminology, Reno, NV.
- Lipsey, M. W. (2009). The primary factors that characterize effective interventions with juvenile offenders: A meta-analytic overview. *Victims & Offenders, 4*, 124–147.
- Lowenkamp, C. T., Holsinger, A. M., & Latessa, E. J. (2005). Are drug courts effective: A meta-analytic review. *Journal of Community Corrections, 15*, 5–11.
- Marlowe, D. B. (2011). *Adult and juvenile drug courts*. New York, NY: Springer.
- Mears, D. P. (2004). Identifying adolescent substance abuse. In J. A. Butts & J. Roman (Eds.), *Juvenile drug courts and teen substance abuse* (pp. 185–220). Washington, DC: The Urban Institute Press.
- Melnick, G., De Leon, G., Hawke, J., Jainchill, N., & Kressel, D. (1997). Motivation and readiness for therapeutic community treatment among adolescents and adult substance abusers. *The American Journal of Drug and Alcohol Abuse, 23*, 485–506.
- Milkman, H. B., & Wanberg, K. W. (2012). *Criminal conduct & substance abuse treatment for adolescents: Pathways to self-discovery and change*. Thousand Oaks, CA: Sage.
- Mitchell, O., Wilson, D. B., Eggers, A., & MacKenzie, D. L. (2012). Assessing the effectiveness of drug courts on recidivism: A meta-analytic review of traditional and non-traditional drug courts. *Journal of Criminal Justice, 40*, 60–71.
- Mulvey, E., & Schubert, C. (2012). Some initial policy implications from the pathways to desistance study. *Victims & Offenders, 7*, 407–427.
- National Council of Juvenile and Family Court Judges, National Drug Court Institute and United States Bureau of Justice Assistance. (2003). *Juvenile drug courts: Strategies in practice*. Washington, DC: U.S. Department of Justice, Office of Justice Programs.
- National Institute of Justice. (2000). *1999 annual report on drug use among adult and juvenile arrestees. Juvenile program findings*. Washington, DC: U.S. Department of Justice, Office of Justice Programs, National Institute of Justice.

- Puzzanchera, C. (2013). *Juvenile arrests 2010*. Washington, DC: U.S. Department of Justice, Office of Justice Programs Office of Juvenile Justice and Delinquency Prevention.
- Raudenbush, S. W., & Bryk, A. (2002). *Hierarchical linear models* (2nd ed.). Thousand Oaks, CA: Sage.
- Roberts, M., J. Brophy, & C. Cooper (1997). *The juvenile drug court movement. Fact sheet*. Washington, DC: U.S. Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention.
- Rodriguez, N., & Webb, V. J. (2004). Multiple measures of juvenile drug court effectiveness: Results of a quasi-experimental design. *Crime & Delinquency*, *50*, 292–314.
- Roman, J., & DeStefano, C. (2004). Drug court effects and the quality of existing evidence. In J. A. Butts & J. Roman (Eds.), *Juvenile drug courts and teen substance abuse* (pp. 107–136). Washington, DC: The Urban Institute Press.
- Schafer, J. L., & Graham, J. W. (2002). Missing data: Our view of the state of the art. *Psychological Methods*, *7*, 147–177.
- Shadish, W. R., Cook, T., & Campbell, D. T. (2002). *Experimental and quasi-experimental design for generalized causal inference*. Boston, MA: Houghton-Mifflin.
- Shaffer, D. K. (2006). *Reconsidering drug court effectiveness: A meta-analytic review* (doctoral dissertation). Cincinnati, OH: University of Cincinnati.
- Simpson, D. D., & Joe, G. W. (1993). Motivation as a predictor of early dropout from drug abuse treatment. *Psychotherapy: Theory, Research, Practice, Training*, *30*, 357–368.
- Sloan, J. J., & Smykla, J. O. (2003). Juvenile drug courts: Understanding the importance of dimensional variability. *Criminal Justice Policy Review*, *14*, 339–360.
- Snijders, T., & Bosker, R. (1999). *Multilevel analysis: An introduction to basic and advanced multilevel modeling*. Thousand Oaks, CA: Sage.
- Stanton, M. D., & Shadish, W. R. (1997). Outcome, attrition, and family-couples treatment for drug abuse: A meta-analysis and review of the controlled, comparative studies. *Psychological Bulletin*, *122*, 170–191.
- Stein, D. M., Deberard, S., & Homan, K. (2012). Predicting success and failure in juvenile drug treatment court: A meta-analytic review. *Journal of Substance Abuse Treatment*, *44*, 159–168.
- Stuart, E. (2010). Matching methods for causal inference: A review and a look forward. *Statistical Science*, *25*, 1–21.
- SAMHSA (Substance Abuse and Mental Health Services Administration) (2010). *Results from the 2009 national survey on drug use and health: Volume I. Summary of national findings*. Rockville, MD: Office of Applied Studies, NSDUH Series H-38A, HHS Publication No. SMA 10-4856).
- Sullivan, C. J., & Jolliffe, D. (2012). Peer influence, mentoring and crime prevention. In B. C. Welsh & D. P. Farrington (Eds.), *Handbook of crime prevention* (pp. 207–225). New York, NY: Oxford University Press.
- Tanner-Smith, E. E., Wilson, S. J., & Lipsey, M. W. (2012). The comparative effectiveness of outpatient treatment for adolescent substance abuse: A meta-analysis. *Journal of Substance Abuse Treatment*, *44*, 145–158.
- TCU Institute for Behavioral Research. (2005). *Offender functioning in treatment: Assessment factsheet*. Retrieved December 2013, from <http://www.ibr.tcu.edu/evidence/TCU-CJ-CEST-AFS.pdf>
- Vieira, T. A., Skilling, T. A., & Peterson-Badali, M. (2009). Matching court-ordered services with treatment needs predicting treatment success with young offenders. *Criminal Justice and Behavior*, *36*, 385–401.
- Waldron, H. B., Brody, J. L., & Slesnik, N. (2001). Integrative behavioral and family therapy for adolescent substance abuse. In P. M. Monti, S. M. Colby, & T. A. O'Leary (Eds.), *Adolescents, alcohol, and substance abuse: Reaching teens through brief interventions* (pp. 216–243). New York, NY: The Guildford Press.

- Warr, M. (2002). *Companions in crime*. New York, NY: Cambridge University Press.
- Williams, R. J., & Chang, S. Y. (2000). A comprehensive and comparative review of adolescent substance abuse treatment outcomes. *Clinical Psychology: Science and Practice*, 7, 138–166.
- Wilson, D. B., Mitchell, O., & MacKenzie, D. L. (2006). A systematic review of drug court effects on recidivism. *Journal of Experimental Criminology*, 2, 459–487.
- Winters, K. C., Botzet, A. M., & Fahnhorst, T. (2011). Advances in adolescent substance abuse treatment. *Current Psychiatry Reports*, 13, 416–421.

## Appendix 1

**Table A1**

	Supervised		Follow-Up		Any	
	% New Referral	% New Adjudication	% New Referral	% New Adjudication	% New Referral	% New Adjudication
Site 1	17.9	8.8	32.5	25.3	44.6	31.3
Site 2	47.2	19.7	36.1	22.2	66.7	38.8
Site 3	25.0	19.8	30.0	25.0	47.0	39.4
Site 4	51.1	26.1	19.3	13.6	62.5	36.4
Site 5	71.2	65.3	33.1	22.9	78.8	69.5
Site 6	32.8	28.8	23.4	21.1	46.1	43.0
Site 7	10.4	6.6	22.2	2.7	28.8	9.4
Site 8	44.3	21.3	39.5	31.1	63.5	44.9
Site 9	44.2	37.8	47.1	28.0	63.6	50.5