

Looking Inside the Black Box of Drug Courts: A Meta-Analytic Review

Deborah Koetzle Shaffer

There has been a rapid proliferation of drug courts over the past two decades. Empirical research examining the effectiveness of the model has generally demonstrated reduced rates of recidivism among program participants. However, relatively little is known about the structure and processes associated with effective drug courts. The current study seeks to address the issues by exploring the moderating influence of programmatic and non-programmatic characteristics on effectiveness. The methodology goes beyond previous meta-analyses by supplementing published (and unpublished) findings with a survey of drug court administrators. Consistent with previous research, the results revealed drug courts reduce recidivism by 9% on average. Further analyses indicated target population, program leverage and intensity, and staff characteristics explain the most variability in drug court effectiveness. These findings are discussed within the context of therapeutic jurisprudence and effective interventions.

Keywords drug court; meta-analysis; therapeutic jurisprudence; effective interventions

Introduction

Drug courts have grown rapidly since their inception in 1989. Today, there are over 2,000 adult drug courts and nearly 500 juvenile drug courts operating across the country and another 267 in the planning stages (Office of Justice Programs Drug Court Clearinghouse and Technical Assistance Project, 2009).

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Estimates suggest that over 70,000 offenders are receiving drug court services at any given time (Huddleston, Marlowe, & Casebolt, 2008) and that less than a third of these will recidivate two years post-graduation (Roman, Townsend, & Bhati, 2003). The seeming success of the drug court model has spawned an industry of problem-solving courts including mental health courts, domestic violence courts, reentry courts, and, more recently, veterans' courts.

Research surrounding the drug court model has generally been aimed at determining whether the model reduced recidivism and drug-related behaviors. Drug court participants have been found to have lower rates of recidivism compared with non-participants across a variety of settings (Banks & Gottfredson, 2004; Brewster, 2001; Goldkamp & Weiland, 1993; Gottfredson, Kearley, Najaka, & Rocha, 2005; Listwan, Sundt, Holsinger, & Latessa, 2003; Peters & Murrin, 2000; Spohn, Piper, Martin, & Frenzel, 2001; Vito & Tewksbury, 1998; Wolfe, Guydish, & Termondt, 2002). While some studies have failed to find reductions in recidivism (Deschenes & Greenwood, 1994; Granfield, Eby, & Brewster, 1998; Miethe, Lu, & Reese, 2000), meta-analyses have consistently found evidence of a treatment effect (Lowenkamp, Holsinger, & Latessa, 2005; Wilson, Mitchell, & MacKenzie, 2006).

Although drug courts enjoy empirical support, the fact remains that some drug courts "work" better than others. Wilson et al. (2006) estimated a mean odds ratio = 1.66 in their systematic review and reported a range of odds ratios from 0.60 to 25.00. Similarly, Lowenkamp et al. (2005) found a mean logged odds ratio = 0.29 with a range of -0.63 to 1.71. The variability in effect sizes points to the need to explore the characteristics of effective drug courts. Recent studies have focused on drug court effectiveness across offender types (Bouffard & Richardson, 2007; Dannerbeck, Harris, Sundet, & Lloyd, 2006; Gray & Saum, 2005; Hartman, Listwan, & Shaffer, 2007; Listwan, Shaffer, & Hartman, 2009; Shaffer, Hartman, & Listwan, 2009; Shaffer, Listwan, Latessa, & Lowenkamp, 2008), but relatively few efforts have been aimed at examining the impact of programmatic aspects of the drug court model on recidivism (see Festinger, Marlowe, Lee, Kirby, Bovasso, & McClellan, 2002; Goldkamp, White, & Robinson, 2001; Marlowe, Festinger, & Lee, 2004; Marlowe, Festinger, Lee, Dugosh, & Benasutti, 2006; Marlowe et al., 2003).

One challenge in assessing the characteristics of effective drug courts is the lack of a theoretical framework for their initial design and implementation. The first drug court emerged in Florida in 1989 in an effort to manage the growing number of drug offenders processed through the criminal justice system as a result of the war on drugs (see Finn & Newlyn, 1997; Listwan et al., 2003). The early success of the Miami Drug Court, coupled with financial and political support, led to its rapid expansion to jurisdictions throughout the country (Listwan et al., 2003). However, it took nearly a decade before the key components of the model were defined (Drug Courts Program Office [DCPO], 1997) and there was an attempt at providing a theoretical explanation (Hora, Schma, & Rosenthal, 1999) for its success. The lack of a theoretical model during the model's infancy, coupled with a lack of guidance on how to implement the key components resulted in considerable inconsistency in the structure of the model

across jurisdictions (see Goldkamp, 1999). For example, though treatment is considered a key component, some drug courts utilize external providers while others utilize internal providers, and the nature of treatment services differs across drug courts (Bouffard & Taxman, 2004; Taxman & Bouffard, 2002).

Though there have been a sizable number of evaluations, the variation in the implementation of the model makes it difficult to draw conclusions beyond the notion that drug courts reduce recidivism. Prior meta-analyses have attempted to address this by assessing moderators of drug court effectiveness but have been constrained by a general lack of data reported in technical reports and journal articles. The current study overcomes this limitation by supplementing a traditional meta-analytic approach with a survey of drug courts. After merging the two sources of data, moderators of drug court effectiveness are explored.

Theoretical Perspective

Therapeutic Jurisprudence

The main theoretical perspective applied to drug courts is therapeutic jurisprudence (TJ), which focuses on the therapeutic and anti-therapeutic consequences of the law (Wexler, 2000). Conceived as a legal theory, TJ contends that the law should be applied in a manner that maximizes therapeutic benefits within the context of other recognized legal safeguards such as due process (see Wexler, 2000). In practice, this means that the (1) interactions between judges, defendants, and other legal actors, (2) organization of the court and court proceedings, and (3) legal rules and policies all have the potential to be conducted or implemented in a manner that encourages health and positive growth (Rottman & Casey, 1999).

Though developed independently of drug courts, legal scholars have noted that the drug court model is a natural application of TJ (see Hora et al., 1999; Winick & Wexler, 2003). For example, the collaborative approach of the drug court model, the nature of interactions between the drug court judge and participants, the voluntary nature of the drug court, and the provision of treatment services is consistent with a TJ approach to jurisprudence (Hora, 2002). In one of the few empirical tests using TJ within the drug court setting, Senjo and Leip (2001) examined the relationship of court monitoring, treatment, court procedures, and offender characteristics to clean drug tests. Consistent with a TJ perspective, they found that positive comments and court-supported treatment were related to increased clean drug tests, while adversarial comments had a negative relationship with clean drug tests. None of the court procedure measures were related to behavioral change. Their findings provide some support for the TJ model; however, a dearth of research in this area limits the ability to draw definitive conclusions regarding TJ and drug court effectiveness.

Although TJ provides a framework for exploring the drug court model, it is not necessarily comprehensive in its framework. While Senjo and Leip (2001)

found that court-supported treatment is related to behavioral change, TJ fails to specify the type of treatment that should be provided to offenders outside the courtroom setting. One of the tenets of TJ is that the law should draw on social science research to inform policies and procedures within the courtroom (Wexler, 2000). For example, Wexler (2000) suggests that judges should consider drawing on cognitive-behavioral techniques in their interactions with offenders. Consistent with this perspective, it would seem that a more comprehensive explanation of the drug court model should also consider the principles of effective interventions (EI; see Andrews & Bonta, 2006; Gendreau, 1996).

Principles of Effective Intervention

On the basis of narrative and meta-analytic reviews of the literature, the principles of EI identify characteristics associated with the most effective correctional interventions. Specifically, the principles contend that: (1) services should be intensive and behavioral in nature; (2) programs should target the criminogenic needs of high-risk offenders; (3) characteristics of offenders, therapists, and programs should be matched; (4) program contingencies and behavioral strategies should be enforced in a firm but fair manner; (5) therapist should relate to offenders in interpersonally sensitive and constructive ways and should be trained and supervised appropriately; (6) program structure and activities should be designed to disrupt the delinquency network; (7) relapse prevention strategies should be provided; and (8) high levels of advocacy and brokerage should be attempted (Gendreau, 1996, pp. 120-125; see also Andrews & Bonta, 2006).

In sum, the principles provide correctional treatment programs with guidance on the types of offenders that should be targeted for service, the types of behaviors that should be targeted, and the manner in which services should be delivered. Past research has been supportive of the risk principle (i.e., high-risk offenders should receive intensive services; Andrews & Dowden, 2006; Lowenkamp, Latessa, & Holsinger, 2006; Marlowe et al., 2006; Pratt, Holsinger, & Latessa, 2000), the use of cognitive and cognitive-behavioral strategies (Bourgon & Armstrong, 2005; French & Gendreau, 2006; Pearson & Lipton, 1999; Pearson, Lipton, Cleland, & Yee, 2002) and the importance of staff characteristics (Dowden & Andrews, 2004). Meta-analyses have found that correctional treatment programs in alignment with these principles enjoy the greatest reductions in recidivism (Dowden & Andrews, 1999, 2000).

As with TJ, drug courts were not designed with these principles in mind, though the degree to which they align with them may help to explain the variation in their effectiveness. For example, there is evidence to suggest that the risk principle has relevance within the drug court setting. For instance, Lowenkamp et al. (2005) concluded that drug courts serving higher-risk participants were more effective than programs serving lower-risk participants. In a more direct test of the risk principle, Marlowe et al. (2006) found that high-risk drug court participants who received intensive services were less likely to have positive drug

tests and more likely to graduate than high-risk participants who did not receive intensive services.

In sum, TJ provides a framework for understanding the legal aspect of drug courts, while EI offers guidance for understanding the treatment aspect of the model. Taken together, both TJ and EI also provide some context for exploring variation in drug court effectiveness. While neither perspective provides a complete explanation, elements of both can be found in the various frameworks previously proposed for exploring the drug court model.

Previous Frameworks for Exploring Drug Courts

The lack of a clear definition of drug courts at the outset resulted in a great deal of diversity in the model across jurisdictions. At their core, drug courts can be described as using a non-adversarial approach to treatment, court monitoring, and probation supervision (see DCPO, 1997). In an attempt to more fully describe variation in the drug court model, Goldkamp (1999) identified seven dimensions of drug courts including target problem, target population, processing, identification, screening, and evaluation of potential participants, treatment characteristics, client accountability, and system-wide support (pp. 173-174). While stopping short of describing drug courts along these dimensions, he proposed they would be useful for creating a drug court typology.

Sloan and Smykla (2003) used Goldkamp's framework to characterize 36 juvenile drug courts. Using secondary data, they described juvenile drug courts in terms of the courts' primary goals, types of charges juveniles needed to be eligible for the court, and the type and number of agencies that provided services and the types of services provided. They also examined the use of pretrial assessments and drug testing, phase requirements, graduation criteria, and length of program. Finally, they described the types of incentives and sanctions used to encourage participation and compliance. They concluded that while drug courts varied across the domains, there were some similarities in terms of their use of external agencies, sanctions and incentives, and clearly articulated target populations.

Although Goldkamp's dimensions have been useful for describing drug court variability, they have been criticized for being difficult to test (Longshore et al., 2001). Drawing on a TJ perspective, the 10 key components, and the existing research, Longshore et al. (2001) proposed a conceptual framework designed to engender direct tests of their dimensions and related hypotheses. Their framework consisted of two structural dimensions and three process dimensions. The structural dimensions included *leverage* and *population severity*. They defined leverage as the possible consequences of failure and hypothesized that drug courts will have better outcomes when leverage is high. In contrast, outcomes are expected to have an inverse relationship with population severity, which refers to the characteristics of program participants.

While the first two dimensions focused on drug court structure, the remaining three dimensions emphasized process. These included *program intensity*, *predictability*, and *rehabilitation emphasis*. Program intensity, hypothesized to be positively related to effectiveness, refers to the requirements for successful program completion including drug testing, review hearings, and treatment requirements. Predictability refers to the extent to which participants can predict the court's response to compliant and non-compliant behaviors. In contrast to Goldkamp (1999), who emphasized the types of sanctions and rewards, Longshore et al. (2001) focused on the certainty and consistency of responses and hypothesized that effectiveness will increase with predictability. The final dimension, rehabilitation emphasis, is most directly tied to TJ and weighs the program's emphasis of rehabilitation versus case processing and punishment. As with the other process measures, Longshore et al. predicted a positive relationship with outcomes. In addition to articulating a number of main effects, they also hypothesized that interaction effects would exist between the domains. For example, they speculated that the impact of program intensity would vary by population severity. Although this framework is the most fully developed model for exploring drug courts, it has yet to be directly tested.

It is likely that other factors, beyond those identified by Longshore et al. (2001), should also be considered. For example, Belenko (2002) recommended that research should consider the role of status review hearings, coercive elements relating to compliance, drug testing and sanctions, the type and length of treatment provided to participants, and the ability of drug courts to address risk and need factors beyond substance abuse in assessing effectiveness. Finally, the level of integration between treatment and the criminal justice system, a key component of drug courts (see DCPO, 1997) should also be considered. Through an examination of structural issues focusing on assessment, treatment, supervision, and program completion, Taxman and Bouffard (2002) identified a continuum of service delivery ranging from a *brokerage model* (participants are referred to existing treatment services in the community) to an *in-house model* (participants receive services provided by the drug court itself).

Current Study

Building on Longshore et al.'s framework, the current study incorporates elements of both TJ and EI to identify characteristics of effective drug courts. Specifically, meta-analytic techniques are used to explore the relationship between six structural (target population, leverage, service delivery, staff, funding, and quality assurance) and five process (assessment, philosophy, treatment, predictability, and intensity) dimensions and drug court effectiveness. Previous meta-analyses have been limited in their ability to analyze moderating factors (Lowenkamp et al., 2005; Wilson et al., 2006). The current study overcomes this limitation by merging survey data with existing primary study data to determine the relative influence of each dimension.

Methods

Sample of Studies

Multiple sources were searched to locate both published and unpublished studies related to drug court effectiveness through January 2006. First, searches of social scientific databases were conducted using the keyword *drug court*. Databases included: Academic Press, Criminal Justice Abstracts, *Criminology*: a Sage publication, Criminal Justice Periodicals Index, Dissertation Abstracts Online, Government Publications Office Monthly, NCJRS, PapersFirst, PsychINFO, Social Sciences Citation Index, and Sociological Abstracts. These results were then compared to previously conducted meta-analyses on drug courts in an effort to identify further studies. Efforts to identify unpublished studies included searches of the American Society of Criminology and the Academy of Criminal Justice Sciences annual conference programs, the *National Drug Court Institute's Publication Guide*, 4th ed., and an online search using the *Google* search engine.

Inclusion Criteria

The above search process yielded over 300 articles, which included 198 evaluations. To be included in the meta-analysis, studies had to have evaluated a drug court program using an experimental or quasi-experimental design, included a distinct comparison group, and used at least one measure of criminal behavior as an outcome measure with a minimum six-month follow-up period. Finally, the drug court had to be based in the USA and must have been identifiable either within the study itself or via contact with the study authors. Applying these criteria resulted in 115 eligible studies. However, in several cases, multiple publications reported on the same drug court. Only a single study for each drug court was included to maintain independence between the effect sizes. Where multiple manuscripts had been collected, the most recent evaluation was used and the study with the longest follow-up period was selected when there were overlapping evaluation periods. This process resulted in the identification of 60 outcome evaluations. Six of these studies reported on multiple drug courts that were unable to be disaggregated. The remaining studies reported on 76 distinct drug courts. Of the 60 studies, 18 were included in Lowenkamp et al.'s (2005) meta-analysis and 30 were included in Wilson et al.'s (2006) study.

Survey

Although meta-analysts traditionally contact authors of primary studies to collect "missing" data (see Dowden & Tellier, 2004; Kelley, Kelley, & Tran, 2004), it was not expected that evaluators would have details on drug court policies and procedures, the primary focus of the current study. Consequently, a telephone survey of drug court personnel was conducted to gain additional details about the drug

courts' activities at the time of the evaluation.¹ Telephone interviews were selected in an effort to increase response rates and because they allowed the opportunity to clarify information and ask follow-up questions as needed.

A sample of drug court coordinators² was created to reflect the 76 unique drug courts in the study. In instances where potential respondents reported not having knowledge of the drug court at the time of the evaluation, they were asked to identify other drug court staff (current or former) who may have had more direct knowledge of the drug court's operations at the time of its evaluation. Interviews were conducted using a semi-structured interview guide (available upon request) and typically lasted 30-45 minutes.

While telephone interviews were selected for their ability to clarify information, some potential respondents were concerned about the potential length of time of the interviews and were given the option of completing a self-administered questionnaire sent via email. Follow-up emails and phone calls were made in this event to clarify information as necessary. The use of telephone interviews, in conjunction with self-administered surveys when necessary, resulted in the completion of 63 surveys. Of these surveys, 47 were completed by telephone (74.6%) and 16 were completed through self-administered questionnaires (25.4%). The overall response rate was 83%. The appendix contains a list of all studies included in the meta-analysis; those matched to a survey are indicated by an asterisk.

Measures

The studies were coded³ along five categories including

- (1) study characteristics (e.g., affiliation of authors, type of publication, and publication year),
- (2) sample characteristics (e.g., race, gender, age, and criminal history),
- (3) general program characteristics (e.g., program length, setting, adult/juvenile, year implemented, and graduation rate),
- (4) methodological characteristics (e.g., study design, sample size, attrition rate, outcomes, length of follow-up, and statistical power⁴), and
- (5) outcome characteristics (e.g., type of outcome and calculated effect size).

In addition, the data were collected across 11 dimensions that were hypothesized to be related to drug court effectiveness. These included

1. Drug courts evaluated in conjunction with other courts were excluded from this portion of the data collection process unless outcome data could be disaggregated.
2. Administrators, probation officers, and others filled the role of "coordinator" for programs that did not have coordinators.
3. A coding guide is available upon request.
4. Statistical power was a dichotomous measure and calculated using the GPOWER statistical power analysis (Faul & Erdfelder, 1992). Studies that had 80% or greater power were coded as having sufficient power.

- (1) target population (e.g., type of charge, type of offender, and motivation),
- (2) assessment (e.g., areas assessed and method of assessment),
- (3) leverage (e.g., drug court model, consequences of failure, and benefits of graduation),
- (4) philosophy (e.g., view toward substance abuse, primary role of judge, and flexibility of policies regarding rewards and sanctions),
- (5) treatment characteristics (e.g., length of treatment, graduation rate, type of treatment, treatment targets, and adolescents' participation in alcoholics anonymous and narcotics anonymous [AA/NA]),
- (6) predictability (e.g., system of rewards and punishers and immediacy of response to infractions),
- (7) intensity (e.g., average number of contacts and standard conditions and requirements),
- (8) service delivery (e.g., single provider, internal provider, and dedicated caseloads),
- (9) staff characteristics (e.g., initial training, conference attendance, and team meetings),
- (10) funding (e.g., adequate funding and federal funding), and
- (11) quality assurance (e.g., internal and external QA and advisory board).

Attempts to use the studies to code the above variables were largely unsuccessful with over 50% of the studies failing to report data on nine of the 11 dimensions. As a result, these data were based on the surveys. To help minimize threats to validity introduced by this approach, survey respondents were asked about the impact the evaluation had on the program, changes to the program since the evaluation, and whether any changes had been made as a result of the evaluation. Answers to these questions were considered against the answers provided throughout the interview; any inconsistencies were clarified at that point.

A methodological quality index (MQI) was created to control for differences in methodological rigor across studies. The index was comprised of nine indicators related to the sample, follow-up period, and statistical power. Each indicator was worth one point and studies received points for using a matched comparison group, describing both the treatment and the comparison group in terms of age, gender, and race, reporting on treatment activities of the comparison group, and experiencing less than 20% attrition. Evaluations that used multiple outcomes, had at least a 12-month follow-up period, had similar follow-up periods for both the treatment and the comparison group, and used a post-program follow-up period were also rated more favorably. Finally, post hoc power analyses were conducted and studies received a point if they had statistical power at 0.80 or above.⁵ After summing these indicators, the MQI had a range of 2-8 and a mean of 5.6. Studies scoring above the mean were considered to be "above average" quality.

5. Alpha was set to 0.05 if not reported in the study.

Inter-Rater Reliability

The author of the study coded all of the evaluations. A second rater, with substantial experience in meta-analysis, coded a random subsample of studies and variables⁶ to assess reliability. The total number of agreements divided by the total number of agreements and disagreements (Yeaton & Wartmon, 1993) resulted in an agreement rating of 93%.

Statistical Analysis

The effect size (ES) for each study was coded using the phi coefficient. The phi coefficient was selected because of its equivalence to the Pearson's product-moment correlation coefficient, ease of interpretation (Rosenthal, 1994), and ability to be converted into the binomial effect size display (BESD; Rosenthal, 1991). Where necessary, a calculator was used to convert reported outcome data or statistics to the effect size (Wilson, 2002).

After calculating the effect size for each study, a weighted mean Pearson r was estimated to assess the mean effect size associated with drug courts. First, however, the Ley Statistic (1972) was used to correct Pearson r for samples that had extreme base rates⁷ (see Bonta, Law, & Hanson, 1998). Both the r and the adjusted r were transformed to $Z(r)$ using Fisher's table (Rosenthal, 1994; see French & Gendreau, 2006) to correct for r 's distribution. The $Z(r)$ for each study was weighted by the inverse of its variance (n^{-3} ; Hedges & Olkin, 1985). The mean effect size was then obtained by summing the weighted $Z(r)$ s and dividing that value by the sum of the inverse of the variance for each ES.⁸

Using a fixed-effects approach, moderating variables were explored through a series of weighted multiple regression models (Hunter & Schmidt, 1990; Lipsey & Wilson, 2001). Bivariate correlations⁹ were assessed, by dimension, to ensure that multi-collinearity would not be a problem for further analyses.¹⁰ Weighted multiple regression analyses were then run for each cluster of variables, allowing for the identification of significant variables within each area. The R -squares for each regression model were compared to assess the ability of each dimension to explain variance in the effect size relative to one another.

6. Analyses relating to inter-rater reliability were limited to the study features, methodological characteristics, general drug court characteristics, and outcome data.

7. Base rates were unavailable for nine studies and an assumption was made that extreme base rates was not an issue.

8. Macros written by Wilson (2002) were used for the calculations of the mean effect size and subsequent analyses. These macros are detailed in Lipsey and Wilson (2001) and are available online at <http://mason.gmu.edu/~dwilsonb/ma.html>.

9. Bivariate correlations are available upon request.

10. The variance inflation factor (VIF) was also examined for each model as an additional test of multi-collinearity.

Results

Study Characteristics

The search procedures described above resulted in the identification of 60 eligible studies reporting on 76 distinct drug courts and six "aggregated" drug courts. Table 1 provides descriptives for the included studies. As illustrated, the majority of the studies collected were technical reports (68.3%) with just over 25% published in scholarly journals or as book chapters. One criticism of meta-analyses is the over-reliance on published articles (Wolf, 1986). The sizable number of unpublished evaluations included in this study should help to

Table 1 Sample characteristics

Characteristic	<i>N</i>	%
Publication type		
Journal/book chapter	16	26.7
Thesis/dissertation	3	5.0
Unpublished report	41	68.3
Publication year		
Prior to 1998	2	3.6
1998-1999	8	14.3
2000-2001	19	33.9
2002-2003	13	23.2
2004-2005	13	23.2
2006	1	1.8
Affiliation of authors		
Academic	36	62.1
Government	10	17.2
Research firm/consultant	12	20.7
Age of drug court		
Less than one year	3	3.9
1-2 years	19	24.7
3-4 years	36	46.8
5-6 years	14	18.2
7 years	5	6.5
Setting		
Outpatient	69	85.2
Outpatient and residential	11	13.4
Capacity		
0-49	13	21.0
50-99	14	22.6
100-199	15	24.2
200-999	17	27.4
1,000+	3	4.8
Mean	231	

Table 1 (Continued)

Characteristic	N	%
Respondent worked with drug court at time of evaluation		
Yes	48	71.6
No	19	28.4
Years working with drug court		
0-2	9	13.4
3-5	17	25.5
6-8	23	34.3
9-11	13	19.4
12+	5	7.5
Position		
Case manager	2	3.0
Coordinator	28	41.8
Director/administrator	7	10.4
Judge	2	3.0
Probation officer	4	6.0
Program manager/supervisor	18	26.9
Treatment provider	2	3.0

minimize any type of publication bias often associated with meta-analyses.¹¹ All but 10 of the collected studies were published during or after the year 2000 and the majority of authors were affiliated with universities (62.1%).

Many of the drug courts were evaluated relatively early in their programmatic life. Nearly half of the programs were evaluated during years three or four of their implementation and approximately 29% were evaluated in the first or second year. Given that drug courts were designed to keep offenders in the community while providing treatment, it is not surprising that 85% of the drug courts were outpatient programs. Programs ranged in terms of capacity with the smaller drug courts serving fewer than 25 clients per year and the larger courts serving well over 1,000 clients per year.

Table 1 also provides descriptives of the survey respondents. One concern regarding the methodology employed for this study centered around the issue of whether current drug court staff would have knowledge of the policies and procedures of the programs at the time of their evaluation. Over 70% of the individuals interviewed were working with the drug court during its evaluation period. Nearly half of those interviewed were coordinators or had job responsibilities analogous

11. A fail-safe estimate was calculated using Orwin's formula (1983) as presented by Lipsey and Wilson (2001): $k_0 = k[(\bar{ES}_k/\bar{ES}_c)-1]$ where k_0 equals the number of studies needed to reduce the mean effect size to the ES_c or the alternative mean effect size. Using this formula, k is the number of studies included in the calculation of the weighted mean effect size and ES_k is the estimated weighted mean effect size. The alternative effect size, ES_c was set to $(ES_k/2)$. The number of studies necessary to reduce the mean effect size in half was 82.

to that of a drug court coordinator. Program managers or supervisors accounted for just over a quarter of those interviewed. These individuals differed from coordinators as they managed multiple programs or drug courts while coordinators were responsible for only a single drug court.

Drug Court Characteristics

Table 2 reports the characteristics of the drug courts. As indicated, the majority of drug courts accepted offenders with a history of felony charges and non-compliance. Most of the programs required that offenders have a substance abuse problem and required some level of motivation on the part of potential participants. Roughly half of the programs reported conducting assessments during the screening process and the majority of the programs reported using

Table 2 Drug court characteristics

Characteristic	N	%	$\bar{X}$
Target population			
Felony charges required	15	23.8	
Prior felonies accepted	51	81.0	
Prior non-compliance accepted	48	76.2	
Drug dealers accepted	19	30.2	
Violent offenders accepted	10	15.9	
Substance abuse required	57	90.5	
Motivation required	40	63.5	
Assessment practices			
Assessed at screening	32	51.6	
Mean assessment score ¹	—	—	3.94
Leverage			
Pre-adjudication model	19	30.2	
Post-adjudication model	31	49.2	
Defer sentence to secure facility	22	34.9	
Charges dismissed/expunged	39	61.9	
Failures incarcerated	37	58.7	
Philosophy ²			
View S/A as a disease	55	88.7	
Judicial role primarily therapeutic	25	39.7	
Minor response to first positive U/A	37	58.3	
Prior failures denied reentry	32	50.8	
Mean flexibility regarding sanctions	—	—	3.78
Mean flexibility regarding rewards	—	—	3.56
Mean flexibility regarding phases	—	—	2.90
Mean rehabilitative orientation	—	—	2.70
Predictability			
Immediate response to minor infraction	29	49.1	

Table 2 (Continued)

Characteristic	N	%	$\bar{X}$
Major infractions responded to within one day	32	54.2	
Formal system of punishers	32	50.8	
Formal system of rewards	18	29.8	
Treatment			
Uses evidence-based approach	17	31.5	
Targets additional criminogenic needs	32	50.8	
Provides relapse prevention	55	90.2	
Provides aftercare services	32	55.5	
Provides family services	10	16.4	
Requires AA/NA	44	69.8	
Graduation rate between 45% and 75%	22	39.3	
Mean length of S/A treatment (months)	—	—	11.50
Intensity			
Requires restitution	11	17.7	
Requires fines	13	20.6	
Requires community service	19	30.2	
Requires employment	48	76.2	
Requires education	38	60.3	
Other requirements	16	25.4	
Requires payment for services	46	74.2	
Mean total contacts	—	—	106.00
Service delivery			
Single provider	23	36.5	
Internal provider	10	16.1	
Mean% drug court team devoted	—	—	0.41
Staff			
Trained on model	44	75.9	
Attend national conferences	43	69.4	
100% of treatment staff D/A certified	36	66.7	
100% of team participates in regular meetings	32	54.2	
Average 4+ meetings per month	32	52.5	
Funding			
Relied on federal funds	25	40.3	
Mean adequacy of funding ³	—	—	6.70
Quality assurance			
Formal external QA	42	68.9	
Formal internal QA	40	64.5	
Advisory board	34	58.6	

¹Scores ranged from 0 to 9; alpha = 0.68.²Each of the rated items in this dimension ranged from 1 to 5 with 5 representing the greatest amount of flexibility and the greatest orientation toward rehabilitation.³Respondents were asked to rate the adequacy of funding at the time of the evaluation on a scale of 1-10 with 10 = very adequate.

actuarial-based substance abuse assessments and clinical risk/needs assessments. A 12-item scale was created to reflect assessment practices. The scale contained three items each (assessment conducted, actuarial assessment used, and reassessment conducted) for risk, needs, responsivity, and substance abuse. Scores ranged from 0 to 9 with a mean score of 4.

Drug courts were mixed in terms of leverage and philosophy. Nearly half of the drug courts were post-adjudication with less than a third operating as pre-adjudication drug courts. For most, charges were dismissed upon graduation and the majority of failures were incarcerated following termination. In general, drug courts viewed substance abuse as a disease and viewed the role of the judge as a mix between legalistic, punitive, and therapeutic roles. Most issued an informal sanction to the first positive drug test and reported some flexibility regarding the use of sanctions and rewards.

The types of services provided also varied across the programs. The average length of substance abuse treatment was 12 months and most drug courts reported providing both relapse prevention and aftercare services. Most also indicated that AA/NA was a required component of the program. The programs also differed in terms of their predictability. On average, drug courts waited a week before issuing a response to a minor infraction, but the majority issued responses to major infractions within a day. Only half of the drug courts had a formal system of punishers and fewer than a third had a formal system of rewards. In an effort to assess the intensity of drug court services, courts were asked to report the average number of contacts (drug tests, status review hearings, supervision contacts, and treatment hours) per phase. On average, drug courts required a total of 106 contacts across four phases. Most drug courts also required employment, education (as needed), and imposed some fees for service.

Most of the drug courts utilized external providers and had a selection of providers to choose from. In most cases, drug court team members worked with offenders other than drug court participants. On average, 40% of the drug court team was assigned only to the drug court. In general, team members received training when first assigned to the drug court and attended national conferences annually. Over half of the drug courts reported that all treatment staff were drug/alcohol certified and about half reported that all of the team members participate in regular meetings. Forty percent of the drug courts were solely reliant on federal funds at implementation while a third received funding from multiple sources. On average, respondents rated funding, at the time of the evaluation, as 6.7 on a scale of 10 (10 = very adequate). Finally, over half of the drug courts reported having some type of quality assurance mechanism in place.

Effect Size Analysis

A total of 82 effect sizes were calculated across the studies. Consistent with prior meta-analyses (Lowenkamp et al., 2005; Wilson et al., 2006), Table 3 reveals that drug courts significantly reduce recidivism. Specifically, drug courts

Table 3 Drug court mean effect size

Characteristic	<i>k</i>	<i>N</i>	<i>Z</i> ⁺	CI	<i>Z</i>	<i>Q</i>
Overall	82	24,322	0.09	0.08 to 0.10	14.29*	366.06*
Methodological quality						
High	45	15,077	0.07	0.06 to 0.10	11.50*	221.46*
Low	37	9,232	0.12	0.10 to 0.14	11.50*	132.84*

Note. The significant *Q* indicates a heterogeneous sample; the removal of outliers did not change the results.

**p* < 0.001.

have a mean effect size of 0.09 with a confidence interval (CI) of 0.08-0.10. While the effect sizes ranged from -0.33 to 0.35, the majority of studies revealed that drug courts reduced recidivism (78.0%). Using Rosenthal's (1991) BESD, the mean effect size reveals the drug court group would have a 45.5% recidivism rate while the comparison group would have a 54.5% recidivism rate.

Using the MQJ, 45 effect sizes came from studies deemed to be of above average quality and had a mean effect size of 0.07 with a CI = 0.06-0.10. The calculations for the mean effect size of the lower-quality studies resulted in a finding of 0.12 with a CI = 0.10-0.14. While poorer-quality studies have a higher mean effect size, an examination of the confidence intervals indicates that there is not a significant difference between the categories.

Moderators of Drug Court Effectiveness

Each of the models discussed above was significantly heterogeneous which was assumed to be the result of systematic differences between cases in the distribution rather than a result of sampling error alone (see Lipsey & Wilson, 2001). The results of the weighted regression analyses are presented in the order of the model *R*-squares. The four dimensions explaining the greatest amount of variance are presented in Table 4. Three of the four major dimensions were related to structural characteristics of the drug court including target population, leverage, and staff characteristics (Table 4) with intensity the lone process dimension identified in this category. This suggests that the people involved in the drug court, whether as employees or as participants, have a great deal of influence on its overall effectiveness. In addition to staff and participant characteristics, the basic design of the drug court and its requirements also help to explain variation in effectiveness.

The analyses also revealed significant predictors within these four dimensions. Histories of non-compliance and prior violence both were negatively related to effect size within *target population* ($R^2 = 0.19$), indicating drug courts that exclude individuals with a history of non-compliance or violent offenders are more successful than those that accept these types of offenders.

Table 4 Inverse-variance weighted regression results, major clusters

Characteristic	B (SE)	Model R-square
Target population		0.19
Felony charges required	0.0103 (0.0198)	
Prior felonies accepted	0.0221 (0.0188)	
Prior non-compliance accepted	-0.0510*** (0.0197)	
Drug dealers accepted	-0.0185 (0.0166)	
Violent offenders accepted	-0.1134*** (0.0245)	
Substance abuse required	0.0072 (0.0229)	
Motivation required	-0.0213 (0.0149)	
Constant	0.1265*** (0.0298)	
Leverage		0.017
Pre-adjudication model	0.0950* (0.0234)	
Post-adjudication model	0.0353 (0.0192)	
Defer sentence to secure facility	-0.0660*** (0.0168)	
Charges dismissed/expunged	0.0028 (0.0180)	
Failures incarcerated	0.0863 (0.0181)	
Constant	0.0368 (0.0228)	
Staff characteristics		0.17
Trained on model	-0.0351* (0.0179)	
Attend national conferences	0.0531*** (0.0158)	
100% certified	-0.0424** (0.00161)	
100% attendance	-0.0468*** (0.0154)	
4+ meetings per month	0.0356* (0.0151)	
Constant	0.1130*** (0.0232)	
Intensity		0.14
Restitution	0.0639** (0.0249)	
Fines	-0.0473* (0.0214)	
Community service	-0.0410* (0.0177)	
Employment	-0.0613** (0.0196)	
Education	0.0511** (0.0167)	
Other requirements	0.0826*** (0.0220)	
Payment for services	0.0370 (0.0212)	
Total contacts	-0.0317* (0.0157)	
Constant	0.0926*** (0.0225)	

Note. For all models: $k = 63$, $n = 19,550$.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

These findings may be related to the limited ability of the drug courts to target criminogenic needs associated with violence or non-compliance and suggest the need for drug courts to increase the scope and intensity of services for this population. Drug courts were intended to serve as an alternative to incarceration; those that fail to provide intensive services to higher-risk populations may be undermining their effectiveness. In terms of *leverage* ($R^2 = 0.17$),

pre-adjudication drug courts are more effective than post-adjudication drug courts while both deferring a sentence to a secure facility (at entry) and terminating supervision upon graduation were associated with reduced effect sizes. Together, these findings seem to suggest that drug courts are more effective when the consequence of failure is the imposition of charges rather than the imposition of a sentence. Viewed from a benefit perspective, drug courts are more effective when the benefit of graduation is avoiding a conviction rather than avoiding a proscribed sanction.

Within *staff characteristics* ($R^2 = 0.17$), both regular attendance at national conferences and weekly team meetings were predictive of increased effectiveness. In contrast, formal training on the model at hiring, estimates that all treatment staff are drug and alcohol certified, and 100% attendance at team meetings was associated with reduced effect sizes. This is not to suggest that training, certification, and meetings do not matter. Rather, it may be an indication that the quality of these activities is in need of improvement. For instance, state requirements for drug and alcohol certification differ across states and may not guarantee providers that utilize cognitive-behavioral interventions. In a review of drug court treatment, Bouffard and Taxman (2004) found that drug courts tend to provide eclectic treatment services and draw on 12-step modalities which may attenuate any benefit gained from having certified drug and alcohol counselors.

A number of predictors were also significant in the *intensity* ($R^2 = 0.14$) analysis. Although some program requirements (restitution, education, and "other" requirements) were positively associated with effectiveness, other requirements (community service, fines, employment, and number of minimum contacts) had a negative relationship. Intensity is likely to interact with target population (see Longshore et al., 2001), and although this finding suggests that imposing additional requirements is appropriate, drug courts should take care to match requirements to the needs of the offenders they serve.

Two structural dimensions (service delivery and funding) and two process dimensions (treatment and philosophy) were among the more moderate predictors of effectiveness (Table 5). Despite the importance of treatment in reducing recidivism in the general literature, the *treatment* dimension only explained a moderate level of variance ($R^2 = 0.11$) relative to the other dimensions. The analysis revealed drug courts that keep participants in substance abuse treatment for longer periods of time are more effective than those with shorter treatment periods. Consistent with prior research, the analysis also revealed that required AA/NA participation was negatively associated with effectiveness (see Wells-Parker & Bangert-Drowns, 1995).

Within *philosophy* ($R^2 = 0.11$), the significant predictors were the response to an initial positive drug test and whether program failures were re-admitted. Specifically, drug courts that provide a formal response to the first positive drug test are more effective than are those drug courts that bar failures from further participation in the drug court. The finding regarding program failures is expected from a statistical standpoint; previous failures are likely to fail again, which may deflate the effect size. However, it is not clear how many program failures were

Table 5 Inverse-variance weighted regression results, moderate clusters

Characteristic	B (SE)	Model R-Square
Treatment		0.11
Length of S/A treatment	0.0053*** (0.0015)	
Evidence-based approach	-0.0070 (0.0188)	
Additional criminogenic needs	0.0083 (0.0158)	
Relapse prevention	0.0083 (0.0158)	
Aftercare services	0.0130 (0.0157)	
Family services	-0.0510 (0.0288)	
AA/NA Required	-0.0571** (0.0181)	
Graduation rate	0.0131 (0.0158)	
Constant	0.0262 (0.0250)	
Philosophy		0.11
View S/A as a disease	0.0229 (0.0237)	
Judicial role: therapeutic	-0.0133 (0.0158)	
Response to first positive U/A	-0.0379* (0.0159)	
Prior failures denied reentry	-0.0429** (0.0159)	
Flexibility: sanctions	0.0020 (0.0073)	
Flexibility: rewards	-0.0115 (0.0063)	
Flexibility: phases	-0.0098* (0.0050)	
Orientation	-0.0118 (0.0132)	
Constant	0.2021*** (0.0474)	
Funding		0.11
Adequate funds	-0.0425** (0.0149)	
Federal funds	0.0687*** (0.0149)	
Constant	0.0844*** (0.0123)	
Service delivery		0.09
Single provider	-0.0510** (0.0168)	
Internal provider	0.0818*** (0.0186)	
% Devoted team	-0.0003 (0.0003)	
Constant	0.0997*** (0.0165)	

Note. For all models: $k = 63$, $n = 19,550$.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

included in the various treatment samples or how often failures are re-admitted to these programs. Interpreting this finding from a programmatic standpoint is less clear. Drug courts that allow previous failures to be re-admitted may be construed as having a greater rehabilitative emphasis, which is hypothesized to be positively associated with effectiveness. At the same time, programs that re-admit failures may have less leverage over participants, also hypothesized to be positively associated with effectiveness. Further exploration of treatment of program failures is warranted to better assess how it influences effectiveness.

Both predictors within the *funding* ($R^2 = 0.11$) dimension were significant though in the opposite direction of one another. Relying on federal funds at

implementation increased effectiveness whereas programs that identified their funding as more adequate than others had lower effect sizes. It may be that this rating is especially susceptible to recall bias and that respondents rated past funding relative to current funding and services. This finding, therefore, should be viewed with caution. The final cluster within the moderate category was *service delivery* ($R^2 = 0.09$), which examined the relationships and responsibilities among the drug court team members and treatment providers. Both significant predictors within this cluster involved the treatment provider. Drug courts that utilized multiple providers were more effective than those that utilized single providers, while drug courts with internal providers were more effective than those with external providers. Collectively, it may be that these measures are actually an indication of the need for drug courts to have some direct control over their treatment providers. Programs utilizing multiple providers may gain an advantage in two ways. First, they may be able to match participants to specific providers on the basis of need. Second, having a choice of providers may allow programs to systematically refer participants to those agencies perceived as providing better quality services. In contrast, drug courts with a single provider may have to rely on a "one size fits all" treatment approach, often inconsistent with the research on EI.

Finally, *predictability* ($R^2 = 0.06$), *assessment* ($R^2 = 0.05$), both process dimensions, and *quality assurance* ($R^2 = 0.03$), a structural dimension, were all minor predictors of effectiveness (Table 6). Responding to major infractions immediately and having a formal system of punishers both were positively

Table 6 Inverse-variance weighted regression results, minor clusters

Characteristic	B (SE)	Model R-Square
Predictability		0.06
Minor infraction response	-0.0142 (0.0193)	
Major infraction response	0.0510** (0.0173)	
System of punishers	0.0442* (0.0191)	
System of rewards	-0.0408* (0.0194)	
Constant	0.0519*** (0.0127)	
Assessment practices		0.05
Assessed at screening	-0.0230 (0.0150)	
Assessment practices	0.0506*** (0.0149)	
Constant	0.0653*** (0.0119)	
Quality assurance		0.03
Formal external QA	0.0160 (0.0144)	
Formal internal QA	-0.0052 (0.0141)	
Advisory board	-0.0105 (0.0154)	
Constant	0.0792*** (0.0132)	

Note. For all models: $k = 63$, $n = 19,550$.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

related to effectiveness while having a formal system of rewards was negatively related. These findings suggest that predictability is important for curbing undesirable behaviors as hypothesized by Longshore et al. (2001). At the same time, a formal system of rewards may actually curtail the courts' ability to provide individualized, meaningful rewards, which may be more relevant than the ability to predict the application of rewards. Finally, as expected, drug courts that have better assessment practices are more effective than those that do not. This finding is consistent with previous literature on EI and highlights the importance of offender assessment (Gendreau, 1996). It is somewhat surprising that the *R*-square for this cluster is so low given the saliency of assessment in regard to EI. However, the import of assessment may be less related to whether assessments are completed and more a function of how assessment data are used.

Discussion

Consistent with the previous research, the current study provides support for the drug court model. In general, drug courts reduce recidivism, but only moderately so. While previous meta-analyses explored the impact of basic differences in the drug court model, the focus of the current study was on the impact of drug courts' policies and procedures on effectiveness. The findings suggest that variation in drug court effectiveness can be explained, at least in part, by elements of both TJ and EI.

The dimensions with the greatest explanatory power suggest that the success of drug courts depends on the type of offenders it targets, the leverage it holds over them, the expectations placed upon them, and the quality of their staff. Specifically, the findings suggest that drug courts are more effective when violent and non-compliant offenders are excluded from participation. It also appears that the legal status of participants is important as indicated by the finding that pre-plea drug courts are more effective. The results regarding program intensity may be taken to suggest that drug courts must make sure that the expectations and requirements of participants are appropriate for the population they are serving. The finding regarding the importance of staff characteristics is supportive of both the TJ and EI perspectives. Having well-qualified, competent staff not only increases the likelihood of positive interactions with participants, but also helps to ensure that the program is designed as delivered.

While treatment appears to be only moderately related to effectiveness, it is important to recall that the measures of treatment did not assess the *quality* of the treatment services provided. Some may argue the findings provide evidence that the success of the drug court model is more closely tied to TJ rather than treatment in and of itself. That is, while treatment is important, this finding may point to the importance of the broader model for bringing about reductions in recidivism. A more likely explanation is that the quality of treatment is lacking. Few of the drug courts reported using services that are consistent with the literature. It is possible that measures of treatment integrity would be able to

explain greater variance in the distribution than those simply measuring the provision of services (Lowenkamp, Latessa, & Smith, 2006).

The philosophy of the drug court also explains some of the variance within the distribution. Specifically, it appears that it is important for drug courts to hold clients accountable within the rehabilitative model while those courts that are perhaps too "warm and fuzzy" are less effective. From a TJ perspective, this is consistent with using court proceedings in a supportive manner to promote behavioral change. Similarly, this finding is in alignment with the research on EI, which speaks to the importance of holding offenders accountable and using a system of rewards and sanctions to promote positive change while extinguishing antisocial behaviors.

In addition to these process measures, the findings suggest that other structural dimensions are also important for explaining variability. In terms of funding, it would seem that the guidelines and regulations implicit in the receipt of federal funds have had their intended impact as programs implemented under federal dollars are more effective than others. Finally, the service delivery model also appears to be moderately predictive of drug court effectiveness. Drug courts that have some amount of control over the treatment provider, either by making choices among multiple providers, or by providing service themselves, are more effective than those programs that are reliant on a single provider.

Less predictive moderators of drug court effectiveness include predictability, assessment, and quality assurance. The findings suggest that the ability to predict the courts' response to behaviors is more important for sanctions than rewards. The limited ability of assessment practices to predict effectiveness is somewhat surprising. It may be that the application of eligibility and exclusionary criteria identified within the target population may act as a quasi-assessment process. Despite its limited ability to explain variance in this study, research on program effectiveness and assessment in general suggests that formalized assessment processes are an important part of EI (Andrews, Bonta, & Wormith, 2006). Similar to treatment, the findings may be an indictment of the manner with which drug courts use assessment results rather than the types of assessments used. As with many correctional programs, drug courts should continue to work to improve their assessment practices (e.g., Listwan, Cullen, & Latessa, 2006).

Although none of the quality assurance measures were predictive, the importance of quality assurance should not be dismissed. In some ways, the drug court model has a number of quality assurance measures built into it. For instance, the use of regular status review hearings and drug testing provide formal measures of offender progress. Regular team meetings provide formal outlets for staff input and discussion of cases. Formal screening processes and the use of eligibility and exclusionary criteria all work together to increase the likelihood that drug courts are receiving appropriate clients. Moreover, all of the drug courts included in this study have undergone an outcome evaluation, providing yet another measure of quality assurance. Thus, while quality assurance, as a dimension, was the least important, it is likely that the various mechanisms built into the drug court model are having the intended effect.

While the current findings provide some insight into the characteristics of effective drug courts, there are some limitations that should be considered. First, many of the drug courts included in the meta-analysis were evaluated several years prior to the current study and the survey data may be subject to recall bias. However, efforts were made to increase validity through the use of pre-notification cards and prompts throughout the interview intended to focus respondents on the proper time frame. Second, as noted, data related to treatment services emphasized the type of treatment provided rather than the quality of treatment. Future research should explore the relationship between treatment quality and drug court effectiveness. Third, the small sample limited the type of analyses that could be completed. It is likely that many of the dimensions interact with one another, yet the limited number of cases did not allow testing interaction effects. Similarly, splicing the sample into sub-groups rendered the groups too small to be able to analyze moderating effects for the different types of drug courts (i.e., pre-adjudication versus post-adjudication, adult versus juvenile). Finally, while the *R*-square for each dimension provides an indication of their influence relative to one another, it would be preferable to analyze all of the dimensions in a single model.

Despite these limitations, the current study is an important first step in systematically explaining the variability of drug court effectiveness. While the findings provide some support for TJ, the importance of the principles of EI should not be overlooked. Though the contributions are relatively modest in this study, there is ample research documenting the relationship between adhering to these principles and improved outcomes (e.g., Andrews & Dowden, 2006; Bourgon & Armstrong, 2005; Dowden & Andrews, 1999, 2000; French & Gendreau, 2006; Lowenkamp et al., 2006; Pearson et al., 2002). The findings suggest many of the drug courts included in this study may not have fully considered the principles when designing their respective programs. For example, only 32% of the drug courts reported utilizing evidence-based practices and nearly half of the programs failed to target criminogenic needs beyond substance abuse. Moreover, although half of the drug courts had formal policies regarding the use of sanctions, less than a third had policies in place governing the use of rewards. Policy-makers would be well served to draw on the existing literature on EI to develop formal policies governing target populations, assessment, cognitive-behavioral interventions, and the use of rewards and sanctions.

Future research should continue to explore the contributions of both TJ and EI for explaining drug court effectiveness and should include measures related to both process and structure. Variables aimed at measuring process should include the number of contacts, use of rewards and sanctions, types of responses to infractions, and treatment characteristics, while structural level measures should be related to target population, leverage, and service delivery. Testing the impact of these measures, particularly structural measures, likely requires experimental manipulation. Though challenging, researchers should follow the lead of Marlowe and his colleagues who have successfully

manipulated the frequency of status review hearings within a drug court setting (Marlowe et al., 2003, 2006) to test the influence of these factors. Future systematic reviews may benefit from categorizing drug courts along a TJ/EI dimension to further test each perspective's impact on recidivism. Additionally, the inclusion of measures related to treatment quality and integrity will provide greater insight into the model.

Finally, it should be recognized that continued research in this area has implications not only for drug courts, but also for the wider specialty-court movement. The popular and political support associated with drug courts has helped spawn an industry of problem-solving courts including re-entry and mental health courts. Given the current economic climate, it is likely that jurisdictions will increasingly rely on community-based programs, including problem-solving courts, as an alternative to incarceration (see Listwan, Jonson, Cullen, & Latessa, 2008). Understanding when and how drug courts work best can help to ensure the success of the broader specialty-court model.

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Appendix. Studies included in the Meta-Analysis

(Asterisk indicates studies that were matched to surveys.)

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