

Effects of a Multidisciplinary Family Treatment Drug Court on Child and Family Outcomes: Results of a Quasi-Experimental Study

Eric J. Bruns¹, Michael D. Pullmann¹, Ericka S. Weathers¹,
Mark L. Wirschem², and Jill K. Murphy²

Abstract

Family treatment drug courts (FTDCs) are an increasingly common approach for serving families involved in child welfare due to parental substance abuse; however, the evidence base for FTDCs remains emergent. This quasi-experimental study replicates previous research on FTDCs by comparing parental substance abuse treatment and child welfare outcomes for 76 FTDC participants to outcomes for 76 parents in the same system who did not participate in the FTDC, using propensity score matching. Data were obtained from the Superior court, FTDC, child welfare, and public substance use treatment service administrative databases. The follow-up window for participants ranged from 1 to 3 years. Results showed FTDC parents had significantly more review and motion hearings, were significantly more likely to enter treatment, entered treatment faster, received more treatment, and were more likely to successfully complete treatment. FTDC children spent significantly less time placed out of home, ended child welfare system involvement sooner, were more likely to be permanently placed and discharged from child welfare, and were more likely to return to parental care. Results demonstrate that FTDCs promote positive treatment and child welfare outcomes without deepening participants' involvement in justice systems.

Keywords

treatment, substance abuse, child welfare, parents/adults, children in child welfare

Parental substance abuse has consistently been found to be a contributing factor to child abuse and neglect and is one of the primary reasons parents become involved in the child welfare system (Green, Rockhill, & Furrer, 2006). Studies have documented that as many as 80% of children in foster care have at least one parent with a substance abuse problem (National Center on Addiction and Substance Abuse, 1999; U.S. Department of Health and Human Services, 1999; Worcel, Furrer, Green, Burrus, & Finigan, 2008). Problematically, initiation of substance abuse treatment services typically takes 4–6 months after entry to the child welfare system, and only 20–50% of parents with a substance abuse treatment need to ultimately complete a treatment episode (Choi & Ryan, 2006; Green et al., 2006; Smith, 2003). Meanwhile, parents with substance abuse problems have the lowest rates of reunification with their children, and their children stay in foster care much longer than other children involved in these systems (Green, Furrer, Worcel, Burrus, & Finigan, 2007; Gregoire & Schultz, 2001; Murphy et al., 1991; Tracy, 1994).

Despite these challenges, research is accumulating that demonstrates the importance of effectively linking parents to substance abuse treatment. Studies have demonstrated that

substance abuse treatment completion is associated with critical child welfare outcomes such as less time in foster care and reunification with birth parents (Green et al., 2006; Smith, 2003). Green and colleagues (2007) also found that more rapid treatment entry and longer treatment durations were also associated with positive outcomes. Such research reinforces the need for child welfare to work with other systems to ensure that parents in need of substance abuse services are able to access these services quickly and be supported to remain in services until their successful completion.

Family treatment drug courts (FTDCs) are an increasingly common approach to facilitating connection to substance abuse services for these parents, while also addressing the full range

¹ University of Washington School of Medicine, Seattle, WA, USA

² King County Superior Court, Seattle, WA, USA

Corresponding Author:

Eric J. Bruns, Department of Psychiatry, Division of Public Behavioral Health and Justice Policy, University of Washington School of Medicine, 2815 Eastlake Avenue East, Suite 200, Seattle, WA 98102, USA
Email: ebruns@uw.edu

of these families' complex and overlapping needs. FTDCs are one of an expanding array of therapeutic drug courts operating in the United States. The aim of most drug courts is to use the court process to facilitate a coordinated, team-based, and interdisciplinary approach to treat individuals who have been charged with an offense related to their addiction or substance involvement (Hora, 2002; Huddleston & Marlowe, 2011). The number of these therapeutic courts has increased 40% from 2005 to 2010; as of 2010, there were 2,459 drug courts in the United States (Huddleston & Marlowe, 2011).

While adult drug courts aim to keep offenders free from the influence of substances in order to avoid future involvement in the criminal justice system (Huddleston & Marlowe, 2011), FTDCs apply the drug courts' approach to cases of child abuse or neglect in which parental substance abuse is a contributing factor. The primary goals of FTDCs are to enhance the possibility of family reunification within legal timeframes by providing parents with support to become drug and alcohol abstinent, improve family functioning and child safety, and stabilize the home environment (Green et al., 2007; Huddleston & Marlowe, 2011). As of 2009, the National Association of Drug Court Professionals reported 322 FTDCs operating in the United States, an increase of 66% from 2005, and representing 13% of all drug courts in the United States (Huddleston & Marlowe, 2011).

Outcomes of FTDCs

Until recently, advocates for the FTDC model have primarily derived support from research on adult drug courts. Although the rigor of adult drug court research studies varies widely and has been criticized (Drug Policy Alliance, 2011; Justice Policy Institute, 2011), findings from seven meta-analyses have concluded that adult drug courts facilitate positive treatment outcomes and reduce rearrests for new offenses and technical violations (Aos, Miller, & Drake, 2006; Downey & Roman, 2010; Latimer, Morton-Bourgon, & Chertien, 2006; Lowenkamp, Holsinger, & Latessa, 2005; MacKenzie, 2006; Shaffer, 2006; Wilson, Mitchell, & MacKenzie, 2006).

FTDCs serve a distinct population from adult drug courts, however, and aim to promote quite a different range of outcomes. Therefore, it is critical to expand the research base specific to FTDCs. Among the priorities for ongoing research include evaluation of FTDCs' capacity to contribute positively to the three federal priority outcomes for child welfare systems: safety, permanency, and child well-being (Children's Bureau, 2010). In addition, research on FTDCs should address the rising chorus of criticism regarding drug courts as a problem-solving mechanism. Among the concerns: drug courts may unnecessarily widen the net for people involved in the justice system and/or mandate involvement of participants for longer periods of time; drug courts may limit access to effective treatments and/or may ultimately have no impact on successful treatment outcome; and drug courts may not ultimately be cost-effective, even if results of evaluations are generally

positive (Drug Policy Alliance, 2011; Justice Policy Institute, 2011).

Recent studies have begun to address the criticisms regarding the efficacy of drug courts as problem-solving interventions by comparing outcomes for children and parents in FTDCs to similar families served by regular dependency courts. A study of four FTDCs in sites across the United States found that participants enrolled in treatment more quickly, received treatment services for a longer mean duration, and were more likely to complete treatment successfully than parents in regular dependency courts (Green et al., 2007; Green, Furrer, Worcel, Burrus, & Finigan, 2009; Worcel et al., 2008). The study also found that FTDC participants had their children placed in permanent living situations more quickly and were more likely to be reunified.

Other research has found that FTDC participants have a higher number of treatment entries, enroll in treatment earlier, spend more time in treatment, and reach reunification faster than participants in regular dependency court (Edwards & Ray, 2005). Boles, Young, Moore, and DiPirro-Beard (2007) found that families receiving FTDC services had substantially higher reunification rates than families in regular dependency court. At 24 months after entry, 42% of the FTDC children had reunified versus 27% of children whose parents had received standard services, and there were no statistically significant differences between the groups in subsequent removals from the home.

The above studies suggest that FTDCs have a positive impact on reunification and out-of-home placement outcomes without posing additional risks of harm or neglect to children. The findings also fit with the theoretical model of change, which suggests that more timely and intensive supports—coupled with consistent oversight and appropriate sanctions—provide parents with incentives to participate actively in substance treatment and other services and a greater overall likelihood of success. The ultimate result is a greater chance of being reunified with their children than regular dependency court procedures (Edwards & Ray, 2005).

It is important, however, to note the limitations in the current research base on FTDCs. First, although statistical controls were used, none of the above studies featured random assignment into court types. Per typical criteria for characterizing an intervention's level of empirical support (cf. Chambless & Hollon, 1998; Norcross, Beutler, & Levant, 2006), given the lack of pure experimental study designs in the extant FTDC research base, more quasi-experimental studies are needed to clarify the potential for positive effects (Chambless & Hollon, 1998). Second, prior research has indicated that there is substantial variation in FTDC programming (e.g., population of focus, enrollment and exclusion criteria, availability and diversity of treatment services, level of integration into the judicial system, and model of case management) that may relate to outcomes (Green et al., 2007; Worcel et al., 2008). Moreover, existing studies of FTDCs have not included detailed descriptions of the type, intensity, and/or duration of court activities for FTDC versus comparison groups. Evaluation of effects of

major subtypes of FTDC programs and greater documentation of the specific differences in court activities and services that are associated with these subtypes can facilitate understanding of what models are most promising. Such research is needed to guide public sector decision making about the wisdom of different types of investments.

Finally, while prior controlled research studies of FTDCs have tended to find consistent results in certain outcome domains, they have been equivocal in others. For example, while studies have consistently found greater substance abuse treatment enrollment and completion, permanency outcomes have differed across studies. Some studies have found more rapid achievement of permanency (e.g., Burrus, Mackin, & Finigan, 2011; Green et al., 2007) while at least one found the opposite to be true (Worcel et al., 2008). Resolving these inconsistencies is important, especially with outcomes such as time to permanency that are directly tied to federal definitions of success as well as concerns about drug courts' capacity to extend participants' time in the justice system.

The Current Study

Given the limitations of the existing knowledge base about FTDCs cited above, research studies are needed that have the capacity to (1) replicate previous research, (2) clearly present variations in the program model, (3) examine outcomes for a range of program variations, and (4) help resolve existing discrepancies in the FTDC research base. The current study aimed to contribute to the FTDC knowledge base in these ways using administrative data and a quasi-experimental design to examine the outcomes of participants in a FTDC in a large city in the western United States, as compared to participants in the same jurisdiction's regular dependency court. Based on the hypothesized theory of change—as well as prior research (e.g., Green et al., 2007) demonstrating a connection between parental treatment and child welfare outcomes—the current study focused on the effects of the FTDC on (1) parental substance use treatment and (2) child welfare outcomes.

Our primary research questions were as follows:

1. When compared to comparable non-FTDC participants, do FTDC participants differ in terms of their experience with the court and treatment system? Based on previous research and the FTDC theory of change, we hypothesized that FTDC participants would (a) have more court hearings; (b) enter treatment at higher rates; (c) enter treatment more quickly; (d) attend scheduled treatment sessions more consistently; (e) receive more treatment events overall; (f) receive a broader treatment array; (g) remain in treatment longer; and (h) successfully discharge from treatment more often.
2. When compared to children of non-FTDC participants, do children of FTDC participants demonstrate more positive child welfare outcomes? We hypothesized that FTDC children would (a) spend less time in out-of-home placements; (b) reunify with their parents at higher rates; (c) get placed

in permanent living situations more quickly; and (d) have fewer subsequent child welfare investigations and founded investigations.

Methods

Program Model: FTDC

As described in detail below, the FTDC examined in the current study adhered to typical components of the FTDC model as described in prior reports and research articles (e.g., Edwards & Ray, 2005; Green et al., 2009; Worcel et al., 2008) and promoted by federal entities and national advocacy organizations (e.g., Center for Substance Abuse Treatment, 2004; Huddleston & Marlowe, 2011), including use of a multidisciplinary, collaborative team, active judicial leadership, regular urinalysis (UA), and use of graduated incentives and sanctions. The current FTDC is an example of an “integrated” FTDC, whereby a single FTDC judge oversees all aspects of the case. This is in contrast to “parallel” models where the FTDC judge oversees treatment issues while other aspects of the child welfare case are directed by a separate family court judge (Boles et al., 1997; Worcel et al., 2008).

Families served. The FTDC serves up to 60 children at a time, whose parents meet the following criteria: (1) Admit to the court that his or her child is dependent or have an existing dependency finding; (2) Are chemically dependent and willing to go to treatment; (3) Are at least 18 years of age; (4) Sign a Consent to Release Confidential Information Form to permit information sharing with team members and outside community providers; (5) Have no felony child abuse or sexual abuse guilty findings; and (6) Have a referral received by the FTDC no later than 6 months from the date of dependency petition. Participation is voluntary, and parents agree to a more intensive court process that has an expected duration of 12–24 months.

FTDC characteristics. The FTDC employs a multidisciplinary team that includes representatives from the judicial system (judge, parent's and children's attorneys, assistant attorneys general), child welfare (social workers assigned to the FTDC), and treatment systems as well as other professionals who monitor and work on behalf of the parent and/or child (e.g., Court Appointed Special Advocates [CASAs]). The judge is actively involved in the case and assigns incentives and sanctions based on progress. Progress is assessed via results of UA and successful follow-through on case plans. Court hearings are more frequent than for a regular dependency court, usually every other week until frequency can be reduced due to positive progress. Cross-disciplinary team staffings occur before every hearing to promote understanding and a unified approach.

Unique features. In addition to the above features, which are common among FTDCs nationally, the FTDC examined in the current study had several relatively unique features. First, the specific child welfare social workers working with the FTDC only serve FTDC families. Additionally, these social workers

had reduced case loads of no more than 15:1 during the time of this study. The FTDC also employs a wraparound facilitator who administers an intensive wraparound care coordination process to families (up to 15 at a time) who present with particularly complex needs, using a defined, evidence-informed model (Bruns et al., 2010).

Three additional positions are specific to and funded by this FTDC. First, a recruitment specialist is responsible for bringing cases into the program. This entails obtaining referrals and records, and then interviewing and engaging the client. This information is staffed by the team for program acceptance. A treatment liaison is responsible for linking parents to treatment options for mental health and chemical dependency programs and facilitating communication between the providers and the court. A Family Treatment Court Specialist manages the court calendar and tracks client progress toward program requirements. All three of these positions remain neutral parties in the case, not weighing in on permanency decisions, only program specific information and treatment.

Program Model: Comparison Dependency Court

The comparison group in this study participated in the regular dependency court within the same jurisdiction. The regular dependency process involves a traditional process through which a juvenile court judge oversees a series of hearings (e.g., 72-hr shelter care, 30-day shelter care, dependency pre-trial hearing, dependency fact-finding, and permanency planning). As in the FTDC, the dependency court may order the same array of services for parents and order Children's Administration to support parents in completing requirements. However, assistance in accessing these services is more limited, without a staff member dedicated to providing support for accessing substance abuse treatment, case management, and wraparound services. Rather, these services are under the domain of the Children's Administration and social workers, who carry higher caseloads (e.g., 25:1 as opposed to 15:1). Several additional services are available as standard adjuncts to the FTDC that are more infrequent in the regular dependency court, including CASAs and support from "veteran parents" who have successfully navigated the system. The regular dependency court does not have a pre-staffing with the judge prior to court hearings to plan what message will come from the bench. Judicial monitoring is not as active and court hearings are much less frequent, particularly review hearings.

Study Design

This study applied administrative data in a quasi-experimental design using propensity score matching to adjust for differences between the FTDC and comparison groups. The total parent sample size was 152, including 76 FTDC participants who entered the program between March 2006 and October 2009 (petitions were filed between September 2005 and July 2009). We compared these FTDC participants to 76 comparison group parents, matched using propensity scores from a pool

of 258 parents who had petitions filed during this same time period. This pool was randomly selected from all eligible parents who were not admitted because of (a) lack of attorney response to FTDC inquiries (42%), (b) over 6 months passing without a referral being made (18%), (c) choosing not to participate (8%), (d) being unable to contact (7%), and (e) other issues (8%). Seventeen percent were missing reasons for non-FTDC participation, due to our inclusion of participants who entered the court in 2006, before a comprehensive client tracking system was instituted in 2007. All comparison group parents met criteria for inclusion in the FTDC described earlier, with the following exceptions. We have no data on whether the parent was "willing to go to treatment," although the propensity scoring process resulted in a comparison group with similar treatment histories, as described below. The second exception is that comparison group members did not provide the court with consent to release confidential information to outside community providers.

Parents who entered the FTDC prior to March 2006 were not included in the study because the program was still under development. Data were collected in mid-August 2010. The study took an "intent to treat" approach—all parents ever admitted to FTDC were included in the FTDC group, regardless of whether the parent eventually opted out of the program, was discharged as noncompliant, or was unsuccessful in treatment. This approach likely results in more conservative findings than if only successful graduates had been studied.

Data Sources and Variables

The data for this study came from four sources. The FTDC administrative database provided identifying information for program participants, comparison group members, and all children involved in the case. The Washington State Division of Behavioral Health and Recovery provided data for state-funded substance use treatment service usage. The Washington State Department of Social and Health Services Children's Administration (DSHS) provided data on lifetime child welfare contacts. Court hearing data were provided by the County's Superior Court. Data sets were linked through indirect identifiers and anonymized. Variables are described below.

The *index petition* is the filed dependency petition that resulted in referral to the FTDC and served as a comparable "start date" for both groups. Because there is no comparable "FTDC entry date" for the comparison group, the index petition date serves as the start date for time variables as indicated, even though there were gaps between index petition date and entry into the FTDC. This approach was deemed the best alternative, given the lack of a parallel "entry date" for the comparison group.

Hearings were documented Superior Court hearings for the parent. They included hearings for review, motion, contempt, dismissal, disposition, fact finding, pre-fact finding, contested shelter care, uncontested shelter care, and status conferences.

Treatment episodes were periods of time when a participant was admitted to a course of treatment through DSHS.

Participants could have been admitted through several modalities including long-term residential, intensive outpatient, outpatient, intensive inpatient, the Methadone program, the Recovery House, or housing support.

Treatment events were actual events of treatment service delivery such as therapy sessions, case management sessions, and UA.

Length of time in first treatment was defined as either the length of time between first treatment admission and discharge (for those entering a new treatment after the index petition) or the time from index petition until treatment discharge (for those already in treatment at index petition).

Treatment completion was defined by treatment providers as whether a participant was discharged as successfully completing treatment rather than unsuccessful due to withdrawing against clinical advice, treatment rule violations, or being not amenable to treatment.

Graduation status had many categories. At the time of data collection, some participants were *currently enrolled* in the FTDC. Participants could also have *graduated*. Per criteria of the FTDC, graduation can occur when the child is returned home or in a permanent placement for at least 6 months; the parent has 6 months or more consecutive drug-free time since having been enrolled in the program; the parent has resolved all outstanding warrants, successfully completed a certified chemical dependency treatment program, and completed all dependency court services; the parent has drug-free housing and consistent attendance at a sober support program; and the parent has an established support system, relapse prevention program, and life plan (e.g., for employment, education, and/or vocational training). Other categories included *opting out of the program*, being discharged for *noncompliance* (based on consistent attendance of treatment groups, completion of UA tests, provider reports, participation in child visitation, and the effect of FTDC responses already imposed on the participant), being discharged after *relinquishing custody* of the child, being discharged after *dependency is dismissed*, and being discharged after *termination of parental rights*.

Out-of-home placements were defined as any child placement outside the parent's home while the child remained under court supervision, including foster care, nonparental kinship care, and placement in facilities such as residential treatment.

Length of time in out-of-home placement was defined as the total number of days in out-of-home placements any time after the index petition.

Child welfare investigations were defined as any documented formal investigations for child maltreatment or neglect, *founded investigations* were considered by the Children's Administration to have sufficient evidence to prove the maltreatment or neglect occurred. We took two approaches to these variables: (1) whether investigations were conducted on parents for any child under their care and (2) whether investigations were conducted on behalf of the identified child in the study.

End of child welfare supervision was defined as the day that child welfare supervision ended, due to various reasons such as adoption, reunification, aging out, or dependency dismissals.

Child status at the end of the study was represented by two variables that collapsed several other categories of child status. These two variables are not mutually exclusive. *Permanent placement* included returning to the custody of their parent (i.e., dependency dismissed), being reunified, being adopted, or a legal transfer into a guardianship. *Returned home* was defined as having the dependency dismissed, being reunified, or being on a trial home visit.

This study received approval from the Institutional Review Boards of the Washington State DSHS and the University of Washington.

Sample

We gathered information on 258 potential comparison group parents. Due to possible selection bias resulting from the lack of random assignment to the FTDC, any differences in outcomes between the FTDC and the comparison groups could be confounded by preexisting differences between the groups. To reduce bias, we used propensity score matching (D'Agostino, 1998; Guo, Barth, & Gibbons, 2006; Worcel et al., 2008). We calculated propensity scores by running a logistic regression predicting the probability of FTDC membership using variables including caregiver age, caregiver race, child age, number of prior CPS investigations, whether the parent was in substance use treatment at index petition, number of prior substance use treatment episodes, and the caregiver's primary drug of choice. The administrative data set did not contain data on other variables of interest, specifically the parent's motivation to enter treatment. The extent to which this limits our study is unknown. We also lacked other important variables that likely contribute to success, such as peer group characteristics, employment, and housing. Hence, though propensity score matching in this study can reduce the risk of selection bias, it cannot eliminate it.

We tested the propensity scores through a method described by D'Agostino (1998), by comparing unadjusted analyses of variance (ANOVAs) predicting membership by variable to ANOVAs after adjusting for propensity score. All tests found that the propensity score adjustments successfully removed significant covariance. Participants were matched using nearest neighbor propensity matching (Guo et al., 2006) within a caliper of .25 of a standard deviation and with removal after matching, as recommended by Rosenbaum and Rubin (1985). Therefore, each FTDC participant was matched to one randomly selected comparison group participant who had a propensity score within .25 of a standard deviation from their own. We Winsorized both groups so individuals in each group had a minimum of 11 months and maximum of 3 years of follow-up (1,095 days), resulting in an overall mean of 870 days of follow-up, with no statistically significant difference in follow-up lengths, $t(150) = -1.26, p = .21$.

Table 1 presents descriptive information for the parent and child samples stratified by FTDC and comparison groups. The majority of caregivers were White, with less than a fifth being African American, Hispanic, or American Indian. Children in

Table 1. Parent and Child Descriptives and Group Comparisons

	FTDC (%)	Comparison (%)
Caregiver descriptives		
Detailed caregiver race/ethnicity		
White	58	57
African American	18	16
American Indian/Alaskan Native	15	18
Hispanic	7	7
Native Hawaiian/Other Pacific Islander	1	1
Asian	1	0
Missing	0	1
Any child welfare investigations prior to petition	72	79
Type of allegations prior to index petition		
Abandonment	3	1
Abuse	33	34
Medical Neglect	7	11
Prenatal Injury	8	13
Neglect	71	78
Any SA treatment admission prior to index petition	59	63
In SA treatment at index petition	32	26
Child descriptives		
Child gender		
Female	57	49
Male	43	51
Child of color		
59	58	
Detailed child race/ethnicity		
White	43	41
African American	25	25
Native American	22	24
Hispanic	9	7
Asian/PI	0	3
Unknown	2	1
Type of allegation at index petition		
Abandonment	0	0
Abuse	27	22
Medical neglect	0	0
Prenatal injury	5	3
Neglect	85	90

Note. There were 76 caregivers in the comparison group and 76 caregivers in the Family treatment drug court (FTDC) group. There were 76 children in the comparison group and 65 children in the FTDC group. There were no statistically significant differences between the groups on any variables. SA = substance abuse

the sample were more diverse, with the majority listed as non-White. Three quarters of the sample had a prior child welfare investigation. As would be expected, the vast majority of maltreatment allegations for the current (index) petition were of neglect. As a testament to the effectiveness of the propensity score matching procedure, *t*- and chi-square tests found no statistically significant differences in caregiver or child demographics for the two groups.

Many parents had multiple children identified in the case; because the fate of all identified children in a family are usually closely tied, for child-level analyses we randomly selected one child for each family in order to conform to statistical assumptions of independent observations. Additionally, there were

seven co-parents in the FTDC group, but none in the comparison group. We analyzed data from one child per co-parent group. Therefore, our child sample size for the FTDC group was 65 versus 76 for the comparison group. The average age of children in the comparison group was 3.3 years (*SD* = 4.5) and the average age of children in the FTDC group was 2.9 (*SD* = 4.2).

Analyses. *t*-Tests were used to compare groups on continuous dependent variables, Mann-Whitney *U* tests were used with nonparametric continuous dependent variables, and cross-tabulations with chi-square tests were used to compare groups on categorical variables. Time-to-event analyses such as time to treatment entry or discharge were conducted using Kaplan–Meier analyses. Kaplan–Meier analyses are analogous to *t*-tests in that groups are compared on continuous variables (in this case, number of days until an event occurred), but allow the inclusion of “censored” data, or data from study participants who did not have the event occur by the end of the study window. This technique also allows for different follow-up study windows for participants due to the ongoing enrollment process, as it includes all participants with data at each time point in calculating proportional hazards (Singer & Willett, 2003).

We generally present findings using the median number of days until an event occurred, while retaining those for whom the event did not occur. This is a different approach than all previous publications (e.g., Ashford, 2004; Green et al., 2009), which report mean days after removing cases for whom the event did not occur (hence, our descriptive findings are not directly comparable with theirs). We believe the median is more appropriate, but to facilitate comparability we also separately report our data using their approach.

Results

FTDC-Specific Outcomes

Time to FTDC entry. A mean of 140 days passed between the time the index petition was filed and entry into FTDC. However, this distribution was highly positively skewed due to a few extreme outliers who took up to a year to enter the program (*SD* = 72, median = 121, range = 25–342). After referral, parents required a screening and outside documentation needed to be received by the FTDC prior to entry. On average, it took 40 days after screening for parents to be accepted into the FTDC (*SD* = 33, median = 34, range = 0–194).

Graduation status. At the time of data collection, 16 of the 76 members of the FTDC group (22%) were still enrolled in the program. Among the 60 participants no longer in the program, 34% had graduated from the program and an additional 9% had received a certificate of participation, which indicates substantial progress not rising to the level required for graduation. An additional 14% had opted out of the program, 29% were discharged as noncompliant, 9% were discharged after relinquishing

custody, 5% were discharged after dependency was dismissed, and 2% were discharged after termination of parental rights.

Court Hearings

Parents in the FTDC had substantially more court hearings during 11 months post-petition, which is the minimum follow-up time for our sample, and represents the most active period of the intervention, Mean(FTDC) = 16.1, SD = 4.8; Mean(Comp) = 5.9, SD = 2.4; $t(110) = 16.6, p < .001$. This difference is mostly due to increased review hearings for the FTDC group, which were 4.5 times more frequent than in the comparison group and accounted for 75% of the FTDC group’s total hearings, as compared to 45% of the comparison group’s total. Motion hearings made up an additional 17% of the FTDC group’s hearings, and 24% of the comparison groups, but were twice as frequent for the FTDC. Other types of hearings, such as contempt, pre-fact finding, fact-finding, and shelter care, were infrequent in both groups and roughly equivalent in number. Therefore, the FTDC was consistent with its design to provide more intensive supervision through increased review hearings, and the FTDC also had slightly more motion hearings.

Substance Abuse Treatment Outcomes

Treatment admission. Chi-square analyses revealed that parents in the FTDC were 1.5 times more likely than comparison parents to be admitted to substance use treatment, 84% vs. 57%, $\chi^2(1) = 12.79, p < .001$. Because some parents were already in treatment at the time of the index petition, we examined time until treatment including those who were already in treatment as having 0 days between petition and treatment entry. Kaplan–Meier analyses revealed that parents in FTDC entered treatment more quickly (log-rank $\chi^2 = 10.9, p < .001$). This is depicted in Figure 1, which plots the proportion of people who have not yet experienced the event (treatment entry) on the Y-axis by the number of days (time points) on the X-axis. When an individual enters treatment, the line decreases in an amount proportional to the total people who have not experienced the event or who have not been “censored” by that time point (i.e., their individual follow-up window ended without the event occurring, which adjusts the number of persons for assessing proportions, but does not change the trajectory of the line). Censoring events are also depicted in Figure 1. The median number of days until treatment entry for the FTDC group was 36, compared to 120 days for the comparison group.

Treatment receipt. For these analyses, we only included the parents who were admitted to or received treatment. Because the FTDC group was much more likely to receive treatment of any kind, these analyses represent a very conservative estimate of the impact of the FTDC on receipt of substance use treatment. Table 2 displays the types of treatment admission modalities and treatment activities received by parents after the

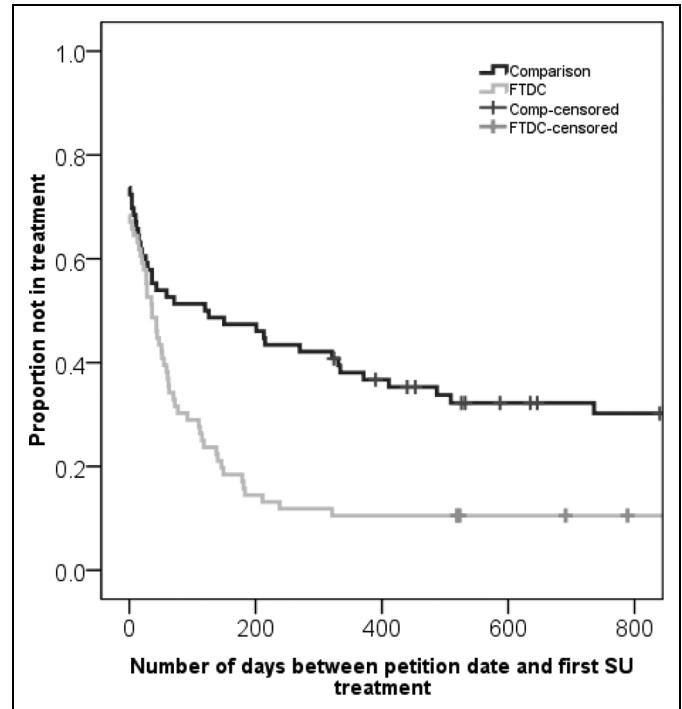


Figure 1. Kaplan–Meier analysis of days until treatment entry by FTDC and comparison groups.

Table 2. Types of Treatment Received Post-Index Petition of Those Who Received any Treatment

	FTDC (%)	Comparison (%)
Treatment admission modality—any received		
Long-term residential ^a	65	46
Intensive outpatient	56	40
Outpatient	50	50
Intensive inpatient	35	44
Methadone	27	23
Recovery house	9	2
Housing support	3	8
Treatment event activity—any received		
Individual therapy ^b	100	86
Group therapy ^c	97	86
Case management	89	80
Urinalysis	50	50
Methadone/opiate substitution	23	21

Note. Treatment admission modality data were analyzed for 52 caregivers in the comparison group and 68 caregivers in the Family treatment drug court (FTDC) group. Treatment event activity data were analyzed for 44 caregivers in the comparison group and 64 caregivers in the FTDC group.

^a $\chi^2(1) = 4.1, p = .04$.

^b $\chi^2(1) = 9.2, p = .002$.

^c $\chi^2(1) = 4.2, p = .04$

index petition. Cross-tabulations with chi-square tests revealed that parents in the FTDC group were 1.4 times more likely to be admitted to long term residential treatment. Parents in the FTDC group were also more likely to receive individual and group therapy. Parents in the FTDC group also had

significantly more treatment, and more types of treatment. Of those parents who had any type of treatment after the index petition was filed, the FTDC parents had a mean of 116 treatment events ($SD = 97$), compared to a mean of 51 ($SD = 57$) for the comparison parents, though both distributions were highly skewed (Mann-Whitney $U = 694, p < .001$).

Of the seven different types of treatment events, and of those who had any treatment activities at all, FTDC parents experienced more than the comparison group, with borderline significance, $M = 3.8$ vs. $3.4, t(106) = -1.9, p = .07$. Parents in the FTDC were not significantly more likely to attend treatment. FTDC parents attended an average of 90% of all of the treatment events that were scheduled, compared to 88% of the comparison group, $t(59.7) = -.77, p = .40$. However, the standard deviations for these mean scores indicated that the FTDC group had less variance in their attendance rates ($SD = 11$ vs. $21, Levene's F = 7.1, p = .009$).

Treatment completion. Kaplan–Meier analyses of length of time in first treatment post-petition, when only considering those who were in treatment at any time post-petition, indicated that FTDC parents remained in treatment longer, (log-rank $\chi^2 = 3.7, p = .053$, Breslow $\chi^2 = 5.4, p = .02$, Tarone-Ware $\chi^2 = 5.0, p = .03$). The median number of days in treatment for the FTDC group was 109, compared to 44 for the comparison group. FTDC parents were more likely to successfully complete at least one treatment episode. Of those who entered treatment, FTDC parents were 1.3 times more likely than the comparison parents to be considered by their treatment provider to have a successful discharge, 72% vs. 54%, $\chi^2(2) = 6.4, p = .04$.

Child Welfare Outcomes

Length of time in out-of-home placements. A Kaplan–Meier analysis revealed that children whose parents were in the FTDC group were in out-of-home placements for less time before returning home (defined as returning home for a trial home visit or being discharged from child welfare), log rank $\chi^2 = 4.6, p = .03$ (see Figure 2). The median number of days until out-of-home placements ended was 476 for the FTDC group and 689 for the comparison group.

Length of time until end of child welfare supervision. By the end of the study window, the proportion of children in the FTDC group who had exited the child welfare system (i.e., “permanently placed” or aged out of the system) was higher than the proportion of children in the comparison group, (61% vs. 43%, $\chi^2 = 4.5, p = .03$). A Kaplan–Meier analysis found that FTDC children spent less time in child welfare, with a median of 718 days between initial petition and end of supervision, compared to 813 days for the comparison group, log-rank $\chi^2 = 4.2, p = .04$.

Placement types at the end of study and reunifications. Table 3 depicts the children’s placement status at the end of the study

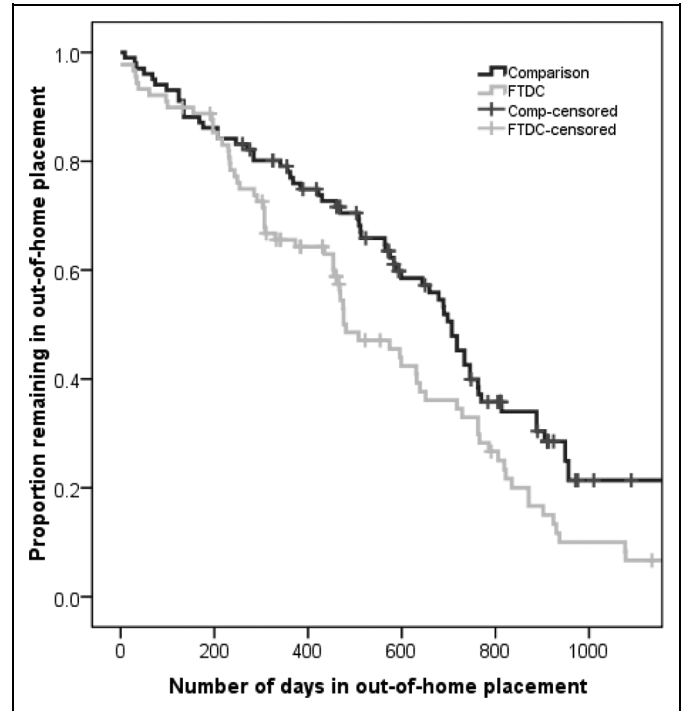


Figure 2. Kaplan–Meier analysis of number of days until out-of-home placement ended by FTDC and comparison groups.

Table 3. Placement Outcomes for all Identified Children at the End of the Study

	FTDC (n = 65) %	Comparison (n = 76) %
Returned to custody of guardian— dependency dismissed ^a	27	11
Adoption	19	15
Trial home visit	15	13
Reunification	13	7
Guardianship	2	8
Transition to adulthood/emancipation	0	1
In out-of-home placement at end of study ^b	24	46

^a $\chi^2(1) = 5.8, p = .016$.

^b $\chi^2(1) = 6.8, p = .009$.

window. With statistical significance, children with parents in FTDC were 2.5 times more likely to be returned to the custody of their guardian and were half as likely to remain in an out-of-home placement at the end of the study window. Children whose parents were in FTDC were 1.9 times more likely to be returned home (returned to custody, on trial home visit, or reunified; 55% vs. 29%, $\chi^2(1) = 9.1, p = .003$).

Subsequent child welfare investigations. Table 4 depicts cross tabulations with chi-square tests analyzing differences in the proportion of parents and children who had subsequent Child Welfare investigations. Overall, parents in the FTDC group were no more or less likely to have any subsequent child

Table 4. Subsequent Child Welfare Investigations

	FTDC (%)	Comparison (%)	$\chi^2(df)$	<i>p</i>
All parents				
Any subsequent investigation	34	41	.70(2)	.40
Any subsequent founded investigation	28	29	.03(2)	.86
Only parents with 1 child returned				
Any subsequent investigation	33	64	2.9(2)	.09
Any subsequent founded investigation	22	46	2.1(2)	.15
All children				
Any subsequent investigation	37	49	2.0(2)	.16
Any subsequent founded investigation	29	32	.9(2)	.76
Only children returned home				
Any subsequent investigation	38	54	1.6(2)	.20
Any subsequent founded investigation	27	42	1.4(2)	.23
Any subsequent removal from the home	3	13	2.3(2)	.13

welfare investigations than comparison parents for any children under the parent's care. There were also no differences in the number of subsequent founded investigations. However, as we described above, parents in the FTDC were more likely to have children returned to them, hence their likelihood of reinvestigation was higher. To address this, we reanalyzed the data by selecting only those parents who had at least one of their children returned to them. The resulting decrease in sample size underpowered our tests so they could detect only large effect sizes, increasing our probability of committing a Type II error and incorrectly failing to reject the null hypothesis. Approaching statistical significance, parents in FTDC were about half as likely as comparison parents to have a subsequent investigation, 33% (9/27) vs. 64% (7/11); $\chi^2(2) = 2.9, p = .09$. There were no significant differences between FTDC parents and comparison parents on subsequent *founded* investigations, but the raw difference was in the predicted direction.

As shown in Table 4, the sample of children of FTDC parents was no less likely to be the subject of a subsequent investigation or a founded investigation. However, children of parents in FTDC were more likely to be returned home; therefore they may have been at increased risk of subsequent abuse or neglect than the comparison group. As above, restricting the analysis to only these children resulted in underpowering our subsequent tests so they could only detect large effect sizes. Of the children returned home, there were no statistically significant differences in subsequent investigations, subsequent founded investigations, or a subsequent removal from the home, though all of these were in the expected direction.

Comparisons With Other Research Findings

Table 5 compares our results to findings from previous studies. Most previous studies report mean days, rather than median, until an event occurred, while excluding those for whom the event did not yet occur. To facilitate comparability, Table 5 provides our findings using this approach and indicates that results from the current study are highly consistent with previous findings. Estimates from the current study are within the

ranges of other studies for the percentage of parents enrolled in treatment, the mean number of days until treatment entry, the mean number of days in first treatment, the percentage of children reunified by the end of the study window, recidivism rate, and removals subsequent to returning to the home. The current study found a higher percentage of caregivers completing a treatment episode, a higher percentage of children reaching permanency, and higher mean days until permanency was achieved.

Discussion

Results of this study add to the evidence that FTDCs hold the promise of promoting more positive treatment and child welfare outcomes for families involved in the system because of problems stemming from parental substance abuse. The study showed that FTDC parents were significantly more likely to enter treatment, entered treatment faster, received more treatment, and were more likely to successfully complete treatment. Such treatment outcomes are important, given research (Green et al., 2007) showing the association between being connected to and successfully completing substance abuse treatment and subsequent court and child welfare outcomes. True to theory and previous research, child welfare outcomes were also more positive for the families in the FTDC. FTDC children spent significantly less time in out-of-home placements, ended involvement with the child welfare system more quickly, were more likely to have a permanent placement, and more frequently returned to the care of their parent/parents. They were generally less likely to be the subject of subsequent investigations or founded investigations of abuse or neglect, though these findings only approached significance due to low rates of occurrence and small sample sizes.

Findings from this study are remarkably consistent with previous outcomes research on FTDCs. This is important because science demands replication in varying contexts to support and establish external validity and generalizability. However, there were some differences; when compared to FTDC users in other studies, this study found a higher proportion of FTDC caregivers

Table 5. Comparisons Among Results of Studies of Family Treatment Drug Courts (FTDC)

		Current study	Ashford (2004) ^a	Boles et al. (2007)	Burrus et al. (2011)	Green et al. (2007)	Worcel et al. (2008)
% (N) Enrolled in treatment	FTDC	84 (76)	97 (33)	56 (111) ^b		89 (200)	82 (301)
	Comp.	57 (76)	67 (45)	56 (573) ^b		69 (251)	59 (919)
Mean (SD) days to treatment entry	FTDC	63 (63)			57 (na)	73 (98)	84 (na)
	Comp.	99 (43)			88 (na)	182 (264)	122 (na)
Mean (SD) days in first treatment	FTDC	142 (149)		89 (69) ^c	138 (na)	303 (238)	306 (na)
	Comp.	96 (120)		114 (147) ^c	82 (na)	184 (230)	148 (na)
% (N) completed treatment	FTDC	72 (63)	48 (33)	64 (111) ^b	64 (142)	44 (200)	65 (251)
	Comp.	54 (43)	31 (45)	64 (573) ^b	36 (93)	34 (251)	33 (823)
% (N) children reaching permanency	FTDC	61 (65)			35 (200)	47 (200)	
	Comp.	43 (76)			38 (200)	54 (251)	
Mean (SD) days until permanency	FTDC	475 (320)	251 (na)		249 (70)	359 (264)	288 (na)
	Comp.	502 (283)	341 (na)		325 (78)	435 (373)	228 (na)
% (N) children reunified	FTDC	55 (65)	52 (33)	42 (173)	70 (70)	57 (200)	69 (380)
	Comp.	29 (76)	36 (45)	27 (861)	35 (78)	44 (251)	39 (1318)
% (N) Subsequent founded investigation ^d	FTDC	28 (65)				23 (200)	
	Comp.	29 (76)				15 (251)	
% (N) Subsequent removal from home ^e	FTDC	3 (65)	46 (33)	11 (47)			
	Comp.	13 (76)	50 (45)	23 (362)			

Note. na = Data not available.

^aAshford (2004) features data from two comparison groups. Data presented here are from a comparison group that received treatment as usual from two similar jurisdictions.

^bPoint estimates were not stratified by groups for nonsignificant comparisons in Boles et al. (2007).

^cMean days averaged across all treatment episodes.

^dFor all parents, regardless of whether they had children returned to their home.

^eOf those children who had been returned to the care of their parents or never removed.

completing treatment, more FTDC children reaching permanency, and more mean days until permanency was reached. While these differences may be attributable to study particularities such as differences in the clients served, the specific approaches of the FTDCs, and the varying community contexts, it is also likely that differences are due to varying research methods. For instance, our study included follow-up data up to 3 years for the earliest enrolled families, compared to 1 or 2 years for most other studies. Hence, this longer window may have provided additional opportunities for children to reach permanency and parents to complete treatment, but may also have contributed to extreme outliers that inflated the mean days until permanency was reached. Given that the current—and previous—studies were quasi-experimental, differences in results could also be due to differences in the treatment and comparison samples across the studies that were unaccounted for.

Our findings appear to contradict one previous publication that found children in the comparison condition reached permanency and/or exited the system faster (Worcel et al., 2008). Such findings led to speculation that FTDCs may encourage more time to comply with court orders and thus delay permanency decisions for some children. By contrast, and consistent with other studies (Ashford, 2004; Burrus, Mackin, & Finigan, 2011; Green et al., 2007), the current study found that the FTDC achieved significantly higher reunification rates and fewer days in the child welfare system. Such results have meaningful implications for the cost–benefit ratio of FTDCs and

help address concerns leveled at drug courts about extending the duration of involvement in legal systems.

The positive effects are also impressive, given methodological approaches that would be expected to yield more conservative findings. In particular, the “intent to treat” approach means that all FTDC participants were included, even those who eventually opted out of the program, or were discharged due to noncompliance or poor treatment outcome. Ultimately, nearly half of the FTDC participants opted out or were discharged as noncompliant. Nonetheless, outcomes were more positive for the FTDC enrollees overall. This variation in participant success in the FTDC program points to the importance of studying how and why FTDCs promote outcomes that are consistently more positive than regular dependency courts. For example, in the context of the “integrated” model studied here, what factors account for the most variance in outcomes? The FTDC teamwork and decision making process? The substance abuse treatment itself? The additional supports provided by the FTDC? Or some combination of factors?

The current FTDC also incorporated several novel elements, such as a designated treatment liaison, a recruitment specialist, a family treatment court specialist, a wraparound care coordinator, and designated social workers with reduced case loads. There could be a cumulative or synergistic relationship between these elements and positive outcomes. Or, specific elements may relate to specific outcomes; for example, the treatment liaison may have been a primary facilitator of treatment outcomes, while having a judge and case workers

dedicated to this relatively small number of families may have influenced child welfare processing and court decision making, and thus the child welfare outcomes.

Limitations

The primary limitation of the current study is that it did not have an experimental design. Propensity score matching reduced selection bias by controlling for factors related to enrollment in FTDC. This method does not, however, ensure that group status and outcomes are independent after statistical controls. Although propensity score matching has been established as a rigorous method in quasi-experimental research (D'Agostino, 1998; Guo et al., 2006), it cannot guarantee the removal of selection bias. Moreover, there is no test of bias reduction because unmeasured or unknown conditional factors are, by definition, unavailable.

This does not mean that we cannot speculate about unmeasured factors that may bias the study groups. An obvious example is motivation to participate in the court or in treatment. Such motivation might be perceptible to attorneys or other referents and systematically introduce bias into the nature of the participants in the two groups. Indeed, the finding that significantly more FTDC participants received long-term residential treatment could reflect that participants referred to FTDC were perceived as more likely to be able to accommodate this level of treatment, and the life disruptions that are likely to be associated with it, as opposed to meaning that the FTDC itself promoted this treatment outcome. Prior research, however, contradicts the notion that measures of motivation are related to treatment success. Three different studies found that selecting participants for drug court based on screening instruments or "suitability" criteria (such as motivation for treatment) had no effect on court graduation, recidivism rates, or outcome costs (Carey, Finigan, & Pukstas, 2008; Carey, Pukstas, Waller, Mackin, & Finigan, 2008).

Several other factors suggest that the outcome effects are not due to confounds. First, discussions with Court officials suggest that the primary drivers of FTDC referral and enrollment—attorney attitudes and/or knowledge about the Court—are likely independent of the outcomes. Second, even before propensity score matching, we found relatively few differences between FTDC enrolled parents and children and regular dependency court participants who were flagged in the referral database from which we derived the comparison group. Finally, propensity score adjustment successfully reduced or eliminated bias for the included covariates.

Another limitation is that some of the analyses were conducted using the index petition as the "start date" even though there may have been a considerable length of time between the index petition date and entry into the FTDC. As a result, some events may have occurred prior to the official entry into the FTDC, such as entry into substance use treatment services.

A third limitation of the study is that we chose our comparison group from the full pool of eligible parents who had petitions filed during the study period. Although the majority was

not admitted due to factors outside the parent's control, the group also included parents who chose not to participate (8%) and for whom reasons were missing (17%). Narrowing to a more fully comparable pool would have been ideal; however, the study was constrained by limitations in the administrative data over the study period.

Future Research

This study features two common shortcomings of the research base on FTDCs: it did not evaluate long-term outcomes nor did it evaluate child well-being except for child welfare outcomes of safety and permanency. Future research should be adequately resourced to evaluate Court goals that are not as easily measured, such as child health and mental health and parent-child attachment. Although small sizes of many FTDCs and the costs of conducting long-term studies that include primary data collection present an array of methodological challenges, such research is needed if we are to fully understand the effects of FTDCs and the mechanisms contributing to effects.

More rigorous study designs are also needed to build on the results of quasi-experimental studies. Ideally, one or more randomized studies will be conducted in the near future that also incorporates assessment of long-term stability of placements, child welfare recidivism, and other relevant outcomes. Given the number of FTDCs that are being initiated nationwide, the relatively small number of parents that are often served relative to the total dependency caseload, and the need to base policy and programming decisions on evidence for effectiveness, it would seem plausible to find one or more such opportunities for experimental research on the FTDC model.

In addition to more rigorous longitudinal research, given current fiscal constraints, it is paramount that future research on mechanisms of effects be conducted that can determine which court, treatment, and staffing investments are most critical to achieving outcomes. The FTDC (and the regular dependency court) studied here provided families with an array of judicial, treatment, care coordination, social work, and other interventions. However, small sample sizes and limited study resources precluded us from exploring which factors contributed to effects. One or more multisite studies of "real-world" dependency courts (FTDCs and more traditional courts) that differ meaningfully across these variables, adequately resourced to reliably measure this array of potential predictors of change, would go far toward meeting this critical information need.

Finally, future studies must also integrate a rigorous longitudinal cost-benefit component. Although the FTDC group demonstrated consistently better outcomes, parents in both groups experienced long periods to reunification (over 2 years on average), some regular dependency court parents experienced positive outcomes, and almost half of the FTDC parents dropped/opted out. Given the resource intensiveness of FTDCs, research is needed that clarifies the return on investment of different models that incorporate different components. In addition, research that determines which parents might be most

likely to benefit from the FTDC model and targeting them for the higher intensity services may be another way to address cost issues in an era of fiscal constraints.

Conclusion

Although the FTDC model has yet to be subjected to a randomized study, the consistency of findings across multiple quasi-experimental published studies supports the notion that a FTDC that includes a full array of prescribed program components has the potential to achieve positive treatment and child welfare outcomes. As described above, there are still gaps in the FTDC research base, particularly in terms of understanding how long the effects of this innovative model endure, and the mechanisms that underlie its effects. The current fiscal environment demands answers to difficult questions about the long-term benefits of FTDCs against costs, which program elements are most critical, and which families should be enrolled. Additionally, the complex family problems addressed by FTDCs raise questions about impacts on possible social costs and benefits that are difficult to monetize, including impacts on quality of life, family cohesion, and neighborhood and community health. Researchers must now find opportunities to explore these questions.

Acknowledgment

The authors would like to acknowledge the invaluable assistance of the entire staff at the King County Family Treatment Court, past and present. Special thanks to the leadership of King County Superior Court Judges. The authors also appreciate the insight and support of the members of the KCFTC Advisory Committee as well as thoughtful assistance provided by Beth Green and the affiliated researchers of NPC Research.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: Funding for this research was provided by the King County Superior Court [D40041D].

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