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To cite this article: Elizabeth J. Gifford, Lindsey M. Eldred, Frank A. Sloan & Kelly E. Evans (2016) Parental Criminal Justice Involvement and Children's Involvement With Child Protective Services: Do Adult Drug Treatment Courts Prevent Child Maltreatment?, Substance Use & Misuse, 51:2, 179-192, DOI: [10.3109/10826084.2015.1089906](https://doi.org/10.3109/10826084.2015.1089906)

To link to this article: <http://dx.doi.org/10.3109/10826084.2015.1089906>



Published online: 20 Jan 2016.



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ORIGINAL ARTICLE

Parental Criminal Justice Involvement and Children's Involvement With Child Protective Services: Do Adult Drug Treatment Courts Prevent Child Maltreatment?

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ABSTRACT

Background: In light of evidence showing reduced criminal recidivism and cost savings, adult drug treatment courts have grown in popularity. However, the potential spillover benefits to family members are understudied.

Objectives: To examine: (1) the overlap between parents who were convicted of a substance-related offense and their children's involvement with child protective services (CPS); and (2) whether parental participation in an adult drug treatment court program reduces children's risk for CPS involvement.

Methods: Administrative data from North Carolina courts, birth records, and social services were linked at the child level. First, children of parents convicted of a substance-related offense were matched to (a) children of parents convicted of a nonsubstance-related offense and (b) those not convicted of any offense. Second, we compared children of parents who completed a DTC program with children of parents who were referred but did not enroll, who enrolled for <90 days but did not complete, and who enrolled for 90+ days but did not complete. Multivariate logistic regression was used to model group differences in the odds of being reported to CPS in the 1 to 3 years following parental criminal conviction or, alternatively, being referred to a DTC program.

Results: Children of parents convicted of a substance-related offense were at greater risk of CPS involvement than children whose parents were not convicted of any charge, but DTC participation did not mitigate this risk.

Conclusion/Importance: The role of specialty courts as a strategy for reducing children's risk of maltreatment should be further explored.

KEYWORDS

Drug treatment courts; child maltreatment; convictions; substance use

Introduction

Adult drug treatment courts (DTCs) are an intervention used by the criminal justice system to address the relatively large population of nonviolent offenders who are substance users. Since their creation in 1989, DTCs have been one of the most heavily studied criminal justice programs (Goldkamp, 1994; Marlowe, 2010). By 2006, there were at least five independently conducted meta-analyses examining the effects of adult DTCs (Marlowe, 2010), and there have been several more since then (Mitchell, Wilson, Eggers, & MacKenzie, 2012; Seigny, Fuleihan, & Ferdik, 2013). Existing research suggests that DTC programs are effective in reducing the likelihood of re-arrest and drug use (Gifford, Eldred, McCutchan, & Sloan, 2014; Latimer, Morton-Bourgon, & Chretien, 2006; Mitchell et al., 2012; Wilson, Mitchell, & MacKenzie, 2006), and there is evidence that these courts save money, at least in the short-term, due to reduced costs of incarceration (Belenko, 1998; Carey & Finigan, 2004; Marlowe, 2010; Rossman et al., 2011). Although successful on many counts, there is concern that certain populations benefit from these

courts while other populations are more likely to fail and experience adverse legal consequences as a result (Orr et al., 2009). For instance, the way drug courts are structured, indigent populations may have difficulty maintaining employment and complying with all the demands of the DTC (Orr et al., 2009). Despite all that is known about adult DTCs, to our knowledge, whether these courts improve outcomes for participants' children has been unexplored.

Existing research on the relationship between DTC programs and children's involvement with social services has focused on family DTCs (for a review, see Gifford, Eldred, Vernerey, & Sloan, 2014), which operate in the civil court system and focus on family preservation. Studies find that children of parents who complete a family DTC program have shorter stays in foster care and are more likely to be reunified with their parents (Gifford, Eldred, Vernerey, et al., 2014). Adult DTCs differ in a number of regards; namely, they operate through the criminal justice system, and their primary focus is not family preservation, but rather

providing an intervention that treats an offender's underlying addiction.

DTCs were not developed through the use of a conceptual framework, though recently, therapeutic jurisprudence has been used as the theoretical basis for DTCs and has guided scholars' understanding of the potential mechanisms whereby such courts may benefit the individuals who are served (Fulton Hora, 2002; Lloyd, 2015). Therapeutic jurisprudence considers the law both as a social force that has consequences for the offender and as a therapeutic agent with the potential to heal (Wexler, 2015; Wexler, 2008; Wexler & Winick, 1996). When DTCs are designed, they typically utilize the Ten Key Components of Drug Treatment Courts (National Assoc of Drug Court Professionals, 1997). This framework relies on the idea of coordination of treatment with the criminal justice system and the belief that coerced treatment is equally effective as noncoerced treatment, and that an arrest is an opportunity for intervention (Boldt, 2010; Fulton Hora, 2002).

Prior research has documented a clear link between (a) parental substance use and child abuse and neglect (child maltreatment) (Famularo, Kinscherff, & Fenton, 1992; Kienberger Jaudes, Ekwo, & Van Voorhis, 1995; National Center on Addiction and Substance Abuse, 1999) and (b) parental substance-use treatment and improved outcomes for children (Andreas & O'Farrell, 2009; Kelley & Fals-Stewart, 2002; Rounsaville, O'Farrell, Andreas, Murphy, & Murphy, 2014). Coupling these associations with the framework of law as a social force, DTCs, by connecting parents to treatment services and reducing parent substance use, have the potential to improve outcomes for children.

This study's main research question was "*Does parental participation in an adult DTC reduce the probability that a child will become involved with child protective services (CPS)?*" To establish context, part one of our study examined the extent to which children whose parents were convicted of a substance-related offense were at increased risk for the adverse outcome of being reported to CPS for alleged maltreatment. Two comparison groups were considered: children whose parents were not convicted of any offense during our observation window, and children whose parents were convicted only on a nonsubstance-related offense. Part two of this study focused on the main research question. Our hypothesis, using the theory of therapeutic jurisprudence as a social force, was that after controlling for socioeconomic risk factors for CPS involvement, children whose parents completed the DTC program would have lower odds of being investigated or assessed by CPS in subsequent years than children who had parents with lower levels of participation.

Background

Substance misuse increases the chances that an adult will become involved in the criminal justice system (Phillips, Erkanli, Keeler, Costello, & Angold, 2006) and the chances that a dependent child will become involved in CPS (Young, Boles, & Otero, 2007). A small number of studies have documented the overlap between the criminal justice system and CPS. For example, in a representative sample of U.S. children who were reported to CPS, the primary caregiver had a prior arrest record in 30% of the cases (Phillips & Dettlaff, 2009), was arrested within 6 months prior to the CPS report in 12% of cases (Phillips, Burns, Wagner, & Barth, 2004), and was placed on probation in the year prior to the investigation in 5% of cases (Phillips, Leathers, & Erkanli, 2008). While these studies by Phillips and colleagues (2004, 2008, 2009) excluded children who entered foster care, another study documented similarly high levels of criminal involvement among the mothers of children who entered foster care—with 5% of mothers incarcerated during the child's foster care placement (Ross, Khashu, & Wamsley, 2004). Despite the high rate of overlap between the two systems documented by these studies, it may be underreported. The studies by Phillips and colleagues (2004, 2008, and 2009) excluded caregivers who were serving jail or prison sentences from follow-up data collection, and in the study by Ross et al. (2004), fathers' criminal involvement was not examined. Yet, nationally, adult males were arrested twice as often as adult females (U.S. Department of Justice, 2013).

A main tenet of adult DTCs is connecting individuals to substance-use treatment services. To the extent that parental substance-use treatment can reduce parents' misuse of substances and, in turn, children's risk of maltreatment, DTCs may reduce children's probability of becoming involved in CPS. Mixed results have been reported on the effect of a parent's completion of substance-use treatment services on children's experiences in the child welfare system (Barth, Gibbons, & Guo, 2006; Brook & McDonald, 2007; Green, Rockhill, & Furrer, 2007; Gregoire & Schultz, 2001; Grella, Needell, Shi, & Hser, 2009). One study found that those who received substance-use treatment were nearly twice as likely to have a child reported for abuse over an 18 month follow-up period (Barth et al., 2006). Another study found that the time until reunification did not differ between participants and nonparticipants of a substance-use treatment program, and children of program participants were more likely to re-enter foster care (Brook & McDonald, 2007). Further, neither program completion nor sobriety attainment improved a parent's chance of being reunified with their child (Gregoire & Schultz, 2001). Other studies have found more encouraging results for the effect

of substance-use treatment services and keeping families intact. For example, children spent less time in foster care when their mother's substance-use treatment was initiated more quickly, when she spent more time in treatment, and when she completed at least one treatment episode (Green et al., 2007). Perhaps one of the more promising outcomes of existing studies found that among mothers who participated in a substance-use treatment program, those who completed 90 or more days of treatment roughly were twice as likely to be reunified with their children (Grella et al., 2009).

Methods

Data

Data for this study were drawn from four sources (Figures 1 and 2). First, information on parental convictions for criminal offenses came from the North Carolina Administrative Office of the Courts (AOC). Second, the AOC also supplied information on parental participation in adult DTCs via the Drug Treatment Court Management Information System (DTC-MIS). Third, birth records served as a means to link adult criminal and DTC records with their children's CPS records. Birth records also provided information on key attributes known to predict youth outcomes, including maternal education, maternal age at child's birth, and receipt of timely prenatal care. Fourth, the North Carolina Division of Social Services provided information regarding children's involvement with CPS. This study was approved by the Duke University Institutional Review Board. Because the data for this study are protected, data use agreements were obtained from each public agency from which data were obtained.

Analytic samples

Part one of this study examined whether children whose parents were convicted of a substance-related offense were at an increased risk of being reported to CPS. Children's birth records from 1989 to 2012 were linked to their parents' court records from 2005 to 2013 (Figure 1). Three groups of parent-child pairs were considered: group one consisted of children whose parents were convicted on a substance-related charge from 2005 to 2010;¹ group two consisted of children of whose parents were convicted on a nonsubstance-related charge during 2005–2010; excluded from this group were individuals who were convicted of a substance-related offense in later years

(2011–2013); and group three consisted of children whose parents were not convicted of any offense during any of the years that we were able to observe. Because group three was large (2.0 million children), a 30% random sample was used to select matched comparisons. To create mutually exclusive groups, parents who were referred to a DTC during any available year of data (2000–2012) were included only in part two of this study.

Part two of this study was limited to children whose parents were referred to an adult DTC between 2005 and 2010. Representing a progression through the court system, four levels of parental participation in an adult DTC were considered: (a) referred but not enrolled, (b) enrolled for less than 90 days but did not complete, (c) enrolled for more than 90 days but did not complete, and (d) completed. We chose the 90-day cutoff for enrollment based on prior research that demonstrated that at least 90 days of treatment participation was required to optimize treatment outcomes (Simpson, 1981; Simpson, Joe, & Broome, 2002).

Measures

The dependent variable indicated whether CPS received a report on a child and took action to investigate or assess the situation (referred to CPS). We were able to link 93% of children who were referred to CPS to their birth record (Figure 2). The follow-up window for part one of our study began 1 year following the parent's *conviction date* and 1 year following the parent's *referral date* to a DTC for part two. The window ended 3 years following the conviction or referral date. To establish the follow-up window for children of parents who were not convicted on any charge, a "conviction" date between January 1, 2005, and May 31, 2013, was randomly assigned to these parents.

The key covariate in part one of this study was the type of charge on which the parent was convicted: (a) substance-related, (b) nonsubstance-related (other), and (c) not convicted on any charge, the omitted reference group. The key covariates in part two were related to how far a parent progressed in the adult DTC—ranging from only referred but not enrolling, to the omitted reference group, to completing a DTC program.

Mutually exclusive binary variables indicated which parent was convicted of a crime in part one or was referred to a DTC in part two. These covariates were: father only, both parents, and mother only as the omitted reference group. The models included a binary variable for parent's age at time of conviction or referral as either 30 years or over—with younger being the reference category.

The study also controlled for other factors previous studies have found to be related to the probability of being reported for child maltreatment, including race/ethnicity

¹ The six most common nonsubstance-related charges were misdemeanor offenses: simple worthless check, larceny, assault on a female, resisting public officer, simple assault, and communicating threats.

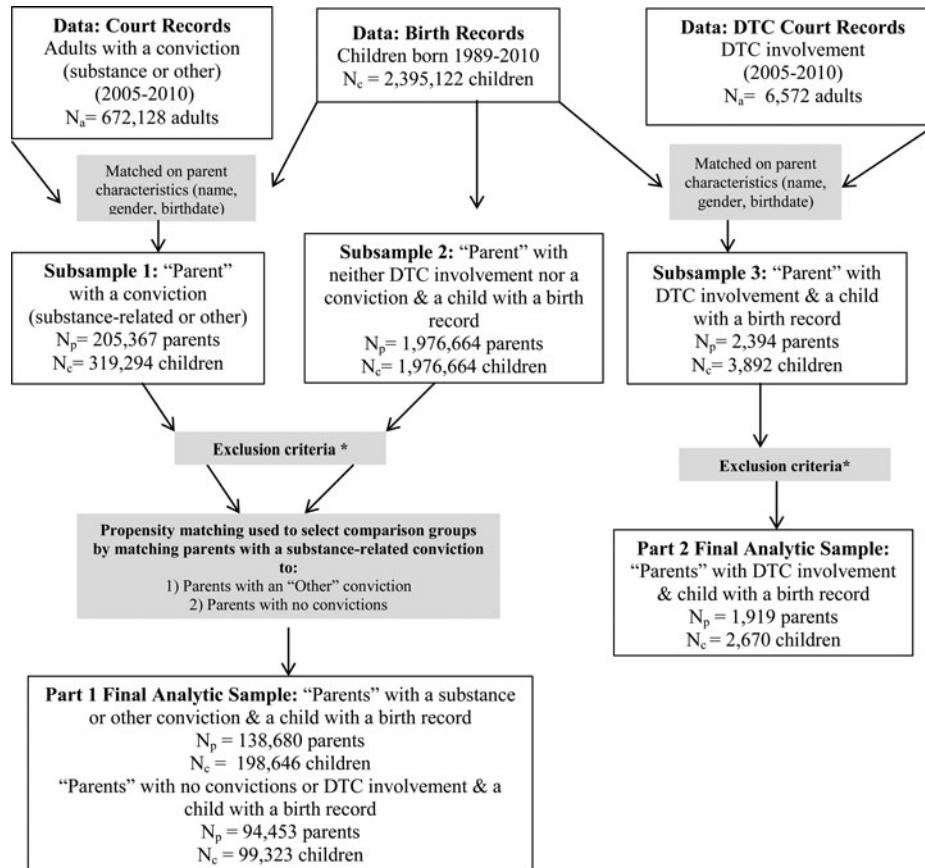


Figure 1. Linking administrative datasets to create analytic samples. This figure documents how information from each administrative dataset was used to create the final analytic samples. The birth records provided a means of creating a crosswalk between parents and their children. The subsamples were an intermediate step toward creating the final analytic subsamples. *After applying exclusion criteria, our final analytic samples were created. Exclusion criteria: Sample was limited to an individual's first observed conviction or DTC referral; If both parents were convicted or referred, then mother's information was used; observations with item missingness on covariates were omitted; Parents with DTC involvement from 2000 to 2012 were excluded from the conviction sample; dropped observations with data entry problems on DTC dates (i.e. completion date before referral date or missing referral date). N_A = Number of Adults; N_P = Number of Parents; N_C = Number of Children.

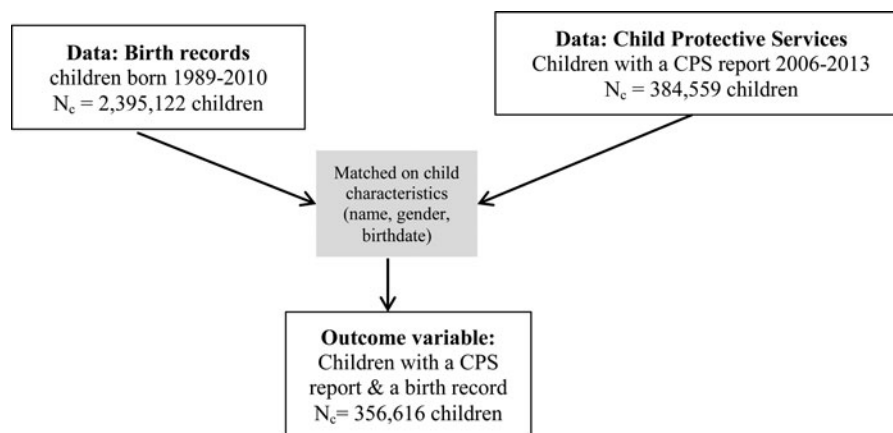


Figure 2. Linking birth records to child protective services administrative data to create the dependent variable. This figure documents how information from child's birth records was linked to data from the North Carolina Division of Social Services in order to determine if a child had been the subject of an investigation or assessment by child protective services. N_C = Children.

(Fluke, Yuan, Hedderson, & Curtis, 2003; Putnam-Hornstein, Needell, King, & Johnson-Motoyama, 2013); child's age (U.S. Department of Health and Human Services, 2013); socioeconomic status (Jonson-Reid, Drake, & Kohl, 2009); and factors measured at birth, including lack of timely prenatal care, teenage mother, maternal educational attainment, and established paternity (Putnam-Hornstein & Needell, 2011; Putnam-Hornstein et al., 2013; Wu et al., 2004; Zhou, Hallisey, & Freymann, 2006). Specifically, child demographic characteristics were race/ethnicity coded as mutually exclusive categories for Black non-Hispanic, White non-Hispanic; Other non-Hispanic, and Hispanic (any race); female gender, with male as the omitted reference group; and child's age as younger than 1 year, 1 to 3 years, 4 to 6 years, and 7 to 18 years. The child's birth records also provided information on families' socioeconomic status at time of the child's birth—mother's education (coded as a binary variable for 1 is less than high school vs. 0 otherwise), mother's age at child's birth (coded as 1 for mother younger than 20 at child's birth vs. 0 otherwise), whether a father was listed on the birth certificate (1 = not listed vs. 0 for father listed), whether the mother initiated prenatal care in a timely fashion (1 = initiated care in first trimester vs. 0 for initiated later or not at all), and whether the child had a low birth weight (1 = <2,500 g and 0 = 2,500 g or higher).

Statistical approach

Part one of this study relied on propensity score matching (PSM) to select control groups because children of parents who were and were not convicted differed on many characteristics. The PSM approach used was one-to-one nearest neighbor matching in Stata 13 using the command `psmatch2` (Leuven & Sianesi, 2003). The quality of the match was assessed by examining the percent standardized differences before and after matching, and *t*-tests were used to compare mean differences. The standardized difference is the percent difference of the means of the treatment and control groups as a percentage of the square root of the two groups' average sample variances (Rosenbaum & Rubin, 1985). This was computed using a user-written command `pstest` for Stata (Leuven, 2003). An advantage of examining percent standardized difference is that it is not influenced by sample size; the analysis sample for the first part of our study was large, such that even small differences in means were statistically significant (Austin, 2009). The guideline we used for determining whether the match was satisfactory was a standardized difference of less than 10 percent.

Because part two of this study was limited to children of parents who were at least referred to a DTC and, as a

result, the comparison groups were drawn from a plausibly more homogeneous population, propensity score matching was not used. Regression analysis was used to control for demographic and socioeconomic risk factors for involvement with CPS. Multivariate logistic regression was used to assess a child's odds of being referred to CPS during a three-year follow-up period. Models accounted for clustering of children who had the same mother.

Results

Are children of parents who were convicted of a substance-related offense at increased risk of becoming involved with child protective services?

Comparison of children based on parents' conviction status

Prior to matching, the children whose parents were convicted of a substance-related offense differed from the children of non-offending parents on many characteristics; after matching, the characteristics of the two groups were more balanced, as indicated by all of the standardized differences being below 10% (Table 1). Even before matching, children of parents convicted on a substance-related charge were fairly similar to children whose parents were convicted on a non-substance-related charge. Because of the large sample size, many of the differences were statistically significant, but the standardized differences between the children of parents convicted for substance-related vs. non-substance-related offenses were generally low. Exceptions included which parent was convicted (mother, father, or both) and whether a father was listed on the birth certificate. Even after matching, a higher proportion of children of substance-related offenders had a father involved in the criminal justice system relative to children whose parent was convicted of other offenses (69% versus 61%), and the standardized difference remained above 10%.

Parental conviction and child's risk of involvement with child protective services

Children whose parents were not convicted of any offense had 66% lower odds of being reported to child protection services than children of parents convicted of a substance-related offense, after controlling for other factors (Table 2). In contrast, children of parents convicted on a substance-related offense had slightly lower odds of being reported to CPS than children of parents convicted on nonsubstance-related offenses. Many of the covariates were also predictive of a CPS report, such as low maternal education, young child age, and having both parents convicted of an offense.

Table 1. Comparison of child characteristics based on parental conviction before and after propensity score matching.

Variables	Sample: Raw vs. Matched	Parental conviction group (by offense type)			None vs. substance (A vs. B)	Substance vs. other (B vs. C)		
		None ¹ (A) (%)	Substance (B) (%)	Other (C) (%)	%std dif.	<i>t</i> -stat (<i>p</i> -value) ²	%std dif.	<i>t</i> -stat (<i>p</i> -value) ³
CPS report 1–3 years after conviction ⁴	Raw	4.6	16.8	18.8		– 137.577 ^a (.000)		11.835 ^a (.000)
	Matched	7.7	16.8	18.4		– 62.589 ^a (.000)		9.279 ^a (.000)
Parent convicted (<i>reference = mother only</i>)								
Father only	Raw	NA	69.4	52.7			34.8	– 79.976 ^a (.000)
	Matched		69.4	60.9			17.8	– 40.099 ^a (.000)
Both parents	Raw	NA	10.2	15.4			– 15.6	35.873 ^a (.000)
	Matched		10.2	13.2			– 8.9	20.566 ^a (.000)
Parent < 30 at conviction ⁵	Raw	25.0	42.6	43.2	37.8	– 111.442 ^a (.000)	– 1.3	2.888 ^b (.004)
	Matched	43.2	42.6	43.0	– 1.3	2.684 ^b (.007)	– 0.9	1.895 (.058)
Child characteristics								
Child race/ethnicity (<i>reference = White non-Hispanic</i>)								
Black non-Hispanic	Raw	20.4	38.9	42.7	41.2	– 123.962 ^a (.000)	– 7.9	18.138 ^a (.000)
	Matched	38.4	38.9	36.4	1.1	– 2.244 ^c (.025)	5.1	– 11.625 ^a (.000)
Other non-Hispanic	Raw	6.1	8.9	8.4	10.3	– 30.817 ^a (.000)	1.7	– 3.877 ^a (.000)
	Matched	8.8	8.9	9.1	0.2	– 0.467 (.641)	– 0.9	1.970 ^c (.049)
Hispanic	Raw	13.2	5.2	4.6	– 27.8	70.521 ^a (.000)	2.8	– 6.471 ^a (.000)
	Matched	5.2	5.2	5.0	0.2	– 0.566 (.571)	1	– 2.261 ^c (.024)
Child Female	Raw	48.8	49.2	48.9	0.8	– 2.373 ^c (.018)	0.6	– 1.415 (.157)
	Matched	49.1	49.2	49.1	0.2	– 0.462 (.644)	0.2	– 0.498 (.618)
Child's age (at conviction) ⁵ (<i>reference = 7–14 years old</i>)								
<1 year	Raw	7.2	8.1	8.3	3.4	– 9.852 ^a (.000)	– 1	2.249 ^c (.024)
	Matched	7.7	8.1	7.4	1.5	– 3.352 ^a (.001)	2.2	– 5.101 ^a (.000)
1–3 years	Raw	21.2	24.6	25.4	8.1	– 23.188 ^a (.000)	– 1.8	4.195 ^a (.000)
	Matched	22.7	24.6	24.0	4.6	– 10.092 ^a (.000)	1.4	– 3.219 ^b (.001)
4–6 years	Raw	20.5	22.5	22.0	4.8	– 13.793 ^a (.000)	1.2	– 2.664 ^b (.008)
	Matched	21.3	22.5	22.8	2.9	– 6.412 ^a (.000)	– 0.8	1.700 (.089)
Child characteristics at birth								
Low or very low birth weight (<i>reference = >2500+gr</i>)	Raw	7.2	10.4	10.4	11.4	– 33.919 ^a (.000)	0	– 0.114 (.909)
	Matched	10.3	10.4	10.6	0.3	– 0.567 (.571)	– 0.8	1.683 (.092)
Prenatal care started > 1st trimester (<i>reference = 1st trimester</i>)	Raw	14.5	23.4	24.0	23	– 68.959 ^a (.000)	– 1.4	3.131 ^b (.002)
	Matched	24.4	23.4	23.9	– 2.6	5.198 ^a (.000)	– 1.2	2.777 ^b (.005)
No father on birth certificate (<i>reference = father listed</i>)	Raw	8.6	6.8	10.4	– 6.6	18.050 ^a (.000)	– 12.8	29.422 ^a (.000)
	Matched	8.7	6.8	8.8	– 7.2	15.879 ^a (.000)	– 7.1	16.623 ^a (.000)
Maternal education <H.S. (<i>reference = H.S. or greater</i>)	Raw	18.8	35.8	36.6	38.9	– 117.377 ^a (.000)	– 1.7	3.810 ^a (.000)
	Matched	35.9	35.8	37.9	– 0.2	0.421 (.674)	– 4.4	9.780 ^a (.000)
Mother < 20 years old at birth (<i>reference = 20 years+</i>)	Raw	10.2	26.1	26.2	42.3	– 135.335 ^a (.000)	– 0.1	0.169 (.865)
	Matched	26.5	26.1	26.4	– 1.0	– 1.83 (.067)	– 0.7	1.616 (.106)
Number of Observations	Raw	410,555	99,323	114,700				
	Matched	99,323	99,323	99,323				

¹ This is a 30% random sample of the full sample of eligible children whose parents were not convicted of any offense other than infractions or traffic offenses during 2005–2013.

² Degrees of freedom: Unmatched = 509,876, Matched = 198,644.

³ Degrees of freedom: Unmatched = 214,021, Matched = 198,644.

⁴ This is the dependent variable and was not included in matching.

⁵ Children of parents who were never convicted were assigned a “pseudo conviction date” that was randomly generated.

%std dif = % standardized difference.

^a *p* < .001.

^b *p* < .01.

^c *p* < .05.

Table 2. Logistic regression results: Odds of child being reported to child protective services by parent's conviction status.

	Odds ratio	95% confidence interval
Parental Conviction (<i>reference = substance-related</i>)		
No conviction	0.343 ^a	0.328–0.359
Nonsubstance-related conviction only	1.036 ^c	1.004–1.069
Parent convicted (<i>reference = Mother</i>)		
Father	0.708 ^a	0.679–0.737
Both parents	1.530 ^a	1.458–1.606
Parent's age <30 at conviction ¹ (<i>reference = 30+</i>)	1.177 ^a	1.138–1.218
Child's Race/ethnicity (<i>reference = White-non-Hispanic</i>)		
Black non-Hispanic	0.806 ^a	0.782–0.831
Other non-Hispanic	0.982	0.938–1.028
Hispanic	0.572 ^a	0.535–0.612
Unknown race/ethnicity	0.786	0.409–1.511
Child female (<i>reference = male</i>)	1.007	0.986–1.029
Child's age at conviction ¹ (<i>reference = 7-14 years</i>)		
Less than 1 year at first conviction	1.354 ^a	1.295–1.417
1–3 years old at first conviction	1.289 ^a	1.248–1.331
4–6 years old at first conviction	1.158 ^a	1.124–1.193
Low or very low birth weight (<i>reference = >2500+gr</i>)	1.141 ^a	1.100–1.184
Prenatal care initiated after first trimester (<i>reference = 1st trimester</i>)	1.119 ^a	1.090–1.149
No father on birth certificate (<i>reference = father listed</i>)	1.354 ^a	1.294–1.415
Maternal education <H.S. (<i>reference = H.S. or greater</i>)	1.950 ^a	1.894–2.006
Mother < 20 years old at child's birth (<i>reference = 20 years or more</i>)	1.042 ^b	1.012–1.072
Constant	0.152 ^a	0.145–0.159
# of children	297,969	

¹ Children of parents who were never convicted were assigned a "pseudo conviction date" that was randomly generated.

Model accounted for clustering across children with the same mother.

^a $p < .001$.

^b $p < .01$.

^c $p < .05$.

Does parental participation in an adult drug treatment court reduce the probability that a child will become involved with child protective services?

Comparison of children based on parents' participation in an adult drug treatment court

Children of parents convicted on a substance-related charge but not referred to a DTC differed on a number of attributes from children whose parents were both convicted on a substance-related charge *and* referred to a DTC program but who did not enroll (Table 3). Importantly, there was a five percentage point gap in being reported to CPS between children whose parents were referred to a DTC program but who did not enroll and those whose parents were convicted of a substance-related offense (22% vs. 17% $t(100,744) = -5.278, p = .000$). Among children whose parent was referred to a DTC program but who did not enroll, mothers (48%) and fathers (51%) were nearly equally distributed as the criminally involved parent. In contrast, for children whose parent was convicted of a substance-related crime, fathers (69%) were typically the criminally involved parent, with it not being uncommon for both parents to be involved (10%). Socioeconomic factors identified on the child's birth certificate were statistically significant but relatively small in magnitude (less than three percentage points) for these two groups. An exception was that a higher proportion of

children of parents who were referred but did not enroll lacked a father on their birth certificate, relative to children of parents who were convicted of a substance-related offense (16% vs. 7% $t(100,744) = -13.293, p = .000$).

There were no statistically significant differences between children whose parents were referred to a DTC program and did not enroll and those whose parents enrolled for less than 90 days but did not complete. However, a higher proportion of children whose parents enrolled in a DTC program for more than 90 days without completing were reported to CPS than children whose parents were referred but did not enroll (27% vs. 22% $t(1,936) = -2.177, p = .030$); a key difference between these two groups was that 36% of children whose parents enrolled for more than 90 days without completing were Black non-Hispanic, relative to 45% of those who were referred but did not enroll ($t(1,936) = 3.539, p = .000$).

Children of parents who completed the DTC program differed from children of parents who were referred but did not enroll on a number of characteristics. Fathers were the DTC participant for 60% of children whose parent completed the program but only 51% for children whose parents were referred but did not enroll. Parents who participated in the DTC program tended to be older in the completion sample, relative to the referred but did not


Table 3. Descriptive statistics of children whose parents were convicted of a substance-related crime or participated in a DTC referral program.

	Parental DTC group ²								
	Substance conviction ¹ (A) (%)	Referred (B) (%)	Enrolled <90 days (C) (%)	Enrolled 90+ days (D) (%)	Completed (E) (%)	Substance vs. referred (A vs. B) t-stat (p-value) ³	Referred vs. enrolled <90 days (B vs. C) t-stat (p-value) ⁴	Referred vs. enrolled 90+ days (B vs. D) t-stat (p-value) ⁵	Referred vs. completed (B vs. E) t-stat (p-value) ⁶
CPs report 1–3 years after referral/conviction	16.8	22.1	18.3	26.8	19.6	– 5.278a (0.000)	1.357 (0.175)	– 2.177c (0.030)	1.143 (0.253)
Parent convicted/referred to DTC (reference = mother)									
Father	69.4	50.5	45.9	52.6	60.2		1.340 (0.180)	– 0.842 (0.400)	– 3.699a (0.000)
Both parents	10.2	1.2	2.3	0.8	0.8	11.24a (0.000)	– 1.447 (0.148)	0.785 (0.433)	0.636 (0.525)
Parent under 30 at conviction/referral	42.6	40.2	42	45.4	31.6	1.824 (0.068)	– 0.549 (0.583)	– 2.069c (0.039)	3.358a (0.001)
Child characteristics									
Child's race/ethnicity (reference = White non-Hispanic)									
Black non-Hispanic	38.9	44.7	41.2	35.7	43.2	– 4.468a (0.000)	1.025 (0.306)	3.539a (0.000)	0.583 (0.560)
Other non-Hispanic	8.9	6.7	6.2	7.6	6.7	2.875b (0.004)	0.267 (0.789)	– 0.687 (0.492)	– 0.046 (0.963)
Hispanic	5.2	2.9	1.2	3.5	3.2	3.956a (0.000)	1.584 (0.113)	– 0.695 (0.487)	– 0.308 (0.758)
Child Female	49.2	47.9	43.2	47.6	46.9	0.950 (0.342)	1.400 (0.162)	0.138 (0.890)	0.370 (0.711)
Child's age at conviction/referral (reference = 7–14 yrs)									
<1 year	8.1	6.0	5.1	8.3	6.9	2.777b (0.005)	0.617 (0.537)	– 1.800 (0.072)	– 0.703 (0.482)
1–3 years	24.6	23.4	27.2	26.8	22.9	1.027 (0.304)	– 1.325 (0.185)	– 1.539 (0.124)	0.203 (0.840)
4–6 years	22.5	23.3	22.2	20.4	16.2	– 0.720 (0.471)	0.378 (0.705)	1.338 (0.181)	3.246b (0.001)
Child characteristics at Birth									
Low or very low birth weight	10.4	13.8	14.8	14.6	12	– 4.225a (0.000)	– 0.400 (0.689)	– 0.402 (0.687)	1.022 (0.307)
Prenatal care initiated after first trimester	23.4	26.5	26.5	28.5	22.9	– 2.731b (0.006)	0.011 (0.991)	– 0.897 (0.370)	1.533 (0.125)
No father on birth certificate	6.8	15.8	17.5	17.5	11.2	– 13.293a (0.000)	– 0.682 (0.495)	– 0.877 (0.381)	2.487c (0.013)
Maternal education <H.S.	35.8	39.3	37.4	40.8	29.5	– 2.748b (0.006)	0.583 (0.560)	– 0.593 (0.553)	3.851a (0.000)
Mother < 20 years old at child's birth	26.1	24.2	19.5	26.2	18.3	1.608 (0.108)	1.667 (0.096)	– 0.887 (0.375)	2.672b (0.008)
# of children	99,323	1,423	257	515	475				
# of parents	71,060	1,039	165	373	347				

¹Parental substance convictions occurred from 2005–2010. Individuals who were referred to a DTC program were excluded from this sample.

²DTC groups are mutually exclusive.

³Degrees of freedom = 100,744.

⁴Degrees of freedom = 1,678.

⁵Degrees of freedom = 1,936.

⁶Degrees of freedom = 1,896.

^ap < .001.

^bp < .01.

^cp < .05.

enroll sample. A key difference is that a higher proportion of children whose parents were referred but did not enroll in a DTC program had a mother with less than a high school degree (39% vs. 30% $t(1,896) = 3.851$ $p = .000$) and a teenage mother (24% vs. 18% $t(1,896) = 2.672$ $p = .008$), relative to children whose parent completed the DTC program.

Parental DTC participation and children's risk of child protective services involvement

Parental participation level in a DTC program did not affect the probability of a child being reported to CPS during follow-up (Table 4). There were no statistically significant differences in the odds of a report in any of the comparisons. Some other results were statistically significant at conventional levels. Children of mothers who were referred to a DTC had higher odds of being reported to CPS than children whose fathers participated or children where both parents participated. Young children—infants and 1–3 year olds—were more likely to be reported to CPS than older youth aged 7–14. Low maternal education was also predictive of greater odds of being reported to CPS.

Discussion

Our results demonstrated that children of parents who were convicted on either a substance-related or other offense were at risk for CPS involvement. Contrary to our hypothesis, parental participation in an adult DTC program did not appear to mitigate this harm. This result coincides with findings from another study examining the impact of adult DTCs on child educational outcomes. In this study, using the same data, we could not detect an intergenerational benefit on children's school performance resulting from parents' participation in an adult DTC (Gifford, Sloan, Eldred, & Evans, 2015). In contrast to our findings on adult DTCs, family DTCs do have a significant impact on the well-being of children. The children of participants completing a family DTC program had both shorter stays in foster care and higher rates of reunification with their parent (Gifford, Eldred, Vernerey, et al., 2014).

A key distinction between criminal adult and family DTCs is that family DTCs operate in a civil court system that has the focus of helping substance-using parents regain or retain custody. With this in mind, family DTCs coordinate services with social service agencies, and participants are provided treatment specific to parenting and emotion management in addition to traditional substance-use treatment. In contrast, adult DTCs function primarily with partners within criminal justice agencies, such as probation officers or the sheriff's

department, and treatment providers. The focus of adult DTCs is on adults and the issues most directly related to their substance use, including preventing substance-use relapse and criminal recidivism. Fostering relationships with social service agencies in addition to criminal justice agencies and treatment providers could expand the therapeutic value of the court and create the potential to improve outcomes for children of adult DTC participants.

In one respect, it is disappointing, but not surprising, that our results showed children of substance abusers fared worse than their peers, but this finding is consistent with previous research (Johnson & Leff, 1999; Semidei, Feig Radel, & Nolan, 2001; Skinner, Fleming, Haggerty, & Catalano, 2014). Improved outcomes for children would at best occur only as a byproduct of their beneficial effects on parents. The structure of these two types of courts suggests that for a diversionary treatment program to improve outcomes for children of participants, it must not only treat a substance user's addiction, but there also must be resources aimed at family preservation. In addition, therapeutic jurisprudence faces a number of criticisms, not the least of which includes the objections that coerced treatment is not as effective as non-coerced treatment in a criminal justice setting and that the entire basis for therapeutic jurisprudence may be at odds with a traditional treatment approach. These criticisms have implications not only for the successful completion of drug treatment, but also for the parent-child relationship. Successful recovery from substance use often includes many relapses, but when occurring in a criminal justice setting, these relapses may result in jail time or other penal outcomes (Fulton Hora, 2002). DTCs also create entry and completion barriers for certain populations, in particular immigrants, those with histories of violent crime, and indigent populations (Orr et al., 2009).

Our finding that CPS involvement was even more likely for parents convicted on nonsubstance-related charges implies that specialized courts that are more broadly conceived than adult DTCs may be needed to cope with issues related to child maltreatment. Suspected child maltreatment that leads to CPS involvement may reflect only relatively severe forms of neglect and abuse. If we had additional information on factors such as the children's home environment, family interactions, and children's physical health and mental health, we might have found that parental participation in an adult DTC improved some dimensions of child well-being (Pollard & Lee, 2003). Considering that most (87%) of the CPS involvement among the children in this study was for neglect, well-being may need to be measured in more nuanced ways that reflect neglect (Mennen, Kim, Sang, & Trickett, 2010).

Table 4. Logistic regression results: Odds of child being reported to child protective services by parent's participation in a DTC program.

	Odds ratio	95% confidence interval
DTC Participation Level (<i>reference = referred not enrolled</i>)		
Enrolled < 90 days (not complete)	0.780	0.493–1.234
Enrolled 90 or more days (not complete)	1.280	0.946–1.732
Completed	0.944	0.670–1.330
Parent referred (<i>reference = Mother</i>)		
Father referred to DTC	0.610 ^a	0.471–0.791
Both parents referred to DTC	0.289 ^c	0.087–0.964
Parent was under 30 at time of first referral to DTC	1.186	0.879–1.599
Child's Race/ethnicity (<i>reference = White-non-Hispanic</i>)		
Black non-Hispanic	1.055	0.820–1.357
Other non-Hispanic	0.796	0.468–1.356
Hispanic	1.035	0.533–2.010
Child female (<i>reference = male</i>)	1.029	0.852–1.243
Child's age at referral (<i>reference = 7–14 years</i>)		
Less than 1 year at first referral	1.549 ^c	1.035–2.319
1–3 years old at first referral	1.370 ^c	1.032–1.818
4–6 years old at first referral	1.054	0.803–1.382
Low or very low birth weight (<i>reference = >2500+greater</i>)	0.889	0.661–1.195
Prenatal care initiated after first trimester (<i>reference = 1st trimester</i>)	1.050	0.841–1.311
No father on birth certificate (<i>reference = father listed</i>)	0.730	0.531–1.003
Maternal education <H.S. (<i>reference = H.S. or greater</i>)	1.655 ^a	1.299–2.110
Mother < 20 years old at child's birth (<i>reference = 20 years or more</i>)	1.053	0.816–1.360
Constant	0.245 ^a	0.181–0.330
# of children	2,670	

Model accounted for clustering across children with the same mother.

^a $p < .001$.

^b $p < .01$.

^c $p < .05$.

The overlap between the parents who are involved with the criminal justice system—regardless of their involvement with a DTC program—and their children's involvement with CPS suggests that therapeutic courts could play a role in addressing families' needs. Therapeutic courts are not without their criticisms. For example, some courts are set up in a pre-plea model. This model requires that defendants waive their right to a speedy trial in order to enter the DTC (Mitchell et al., 2012). In the alternative, post-plea models require a defendant to plead guilty before being allowed access to the services provided by a DTC. Both models pose constitutional issues of due process. In other courts, if a sentence is suspended pending successful completion of a DTC, failure to complete the DTC program results in reinstatement of the original sentence, and possible other penalties (Gifford, Eldred, McCutchan, et al., 2014). Other criticisms focus on the quality of the services that are offered and whether there is equitable access to the services across participants (Murphy, 2012). Any court that strives to couple supports with the criminal process should consider these potential harms and develop strategies to mitigate them.

Our study has several important strengths. The most important strength is that our data allow us to study intergenerational effects of participation in adult DTC

programs. The data are longitudinal, which allowed us to assess the probability of CPS involvement after the receipt of the DTC intervention. We not only had data on referrals to and participation in adult DTC programs, but we also had data on the biological children of parents who had not participated in such programs but were convicted on a substance-related or other charge or not convicted at all for the purpose of comparing rates of CPS involvement over a follow-up period. The study covered an entire state rather than a single locality or DTC program. Because court systems did not choose to be either included or excluded from this study, our results are not biased by such selection forces.

We acknowledge several study limitations. Our data do not allow us to track outcomes for individuals who move out of state or even to determine which individuals have moved. The most important limitation is that we could only make inferences based on the child's biological parent. However, children may not live or even interact with their biological parent. We lacked information on children's living arrangements, including grandparents, stepparents, and cohabiting partners who may have cared for the child. Currently, administrative criminal databases are designed to track the alleged offender through the criminal system. Given the growing knowledge that criminal involvement may have collateral

consequences on the alleged offender's family members, public systems should consider ways to better track outcomes for family members—particularly minor dependents (Akesson et al., 2012). Such tracking could then be used to improve public systems in ways that minimize harm and reduce societal costs (Lynn, Heinrich, & Hill, 2000). Findings may be able to reveal factors that enable or impede an individual's ability to enroll in and/or complete specialty courts. For example, primary caretakers of minor children may be less able to meet the current demands of a specialty court. With this knowledge, court practices could be altered to better accommodate participants' needs.

An additional limitation has to do with our measure of child maltreatment; reports for alleged maltreatment are not synonymous with child maltreatment. Nevertheless, researchers have shown that children who are reported to CPS, regardless of whether the case was substantiated or not, were at similar risk for a host of negative outcomes, such as behavioral and developmental outcomes (Hussey et al., 2005) or being re-reported to CPS (Kohl, Jonson-Reid, & Drake, 2009). Moreover, parents who have come to the attention of the courts may be under extra scrutiny by law enforcement and social services. Therefore, the higher rate of CPS involvement may partially reflect this increased supervision. Because comparison samples were drawn from children with court-involved parents, this factor is less likely to be affecting our results. Finally, our four levels of DTC progression (from being referred but not enrolling all the way through completion) may not fully capture unobserved sources of heterogeneity between groups that affect a child's risk of subsequent CPS involvement. Because we do not observe a beneficial effect, even in those who successfully complete the program, it is doubtful that these unobserved factors have biased our results.

Finally, our measures of progression through the DTC were based on the participants' decision to enroll, the amount of time they remained enrolled, and whether or not they completed the program. Progression through these stages may be correlated with unobserved factors. For example, those who enroll may be more ready to receive treatment, to be amenable to recovery services, and to make lifestyle changes. Length of time in treatment is, to some extent, set by the court policies but also reflects whether an individual is able to comply with court regulations. The administrative data used in this study did not allow us better understand treatment motivation or compliance. Regardless, our assumption is that individuals who completed the DTC program would have been more likely to be motivated to enroll, to comply with treatment, and to make life changes, and that these factors

likewise would be related to better child outcomes. That is, individuals who complete a DTC program inherently have the factors to be more successful by the fact that they were successful. Yet, even so, we still find no effect on child outcomes. Therefore, our finding that children of parents who completed were not at reduced risk of CPS involvement relative to children who were referred is robust.

Despite these limitations, this analysis offered unique insight into patterns of interagency involvement—here the criminal justice and child welfare systems—that researchers are rarely able to document. Jonson-Reid and Drake (2008) acknowledged the need for multi-sector, longitudinal, administrative data to conduct research that could inform better policies for serving children and families at risk for maltreatment. Given recent documentation of the collateral consequences that children of parents who are criminally involved face, this study examines outcomes for children within one public system. This study did not find that adult DTCs mitigated the risk of children's involvement with CPS. However, given the sizable overlap in the populations served by the two systems, it raises the question as to whether problem-solving courts could be a strategy to improve child well-being for this vulnerable group.

Glossary

Child protective services (CPS) report: In this paper, a report to child protection services referred to reports received by local social service agencies that lead to an investigation or assessment by a social worker.

Drug treatment court (DTC): A type of therapeutic court that provides an alternative to incarceration for offenders with substance use disorders. Terms of enrollment specify that an offender comply with the terms of the court and complete required treatment. Upon successful completion of the court program, charges may be dismissed or penalties can be reduced.

Propensity score matching: A statistical approach for matching observable characteristics across groups, often used to select comparable groups before analysis.

Reunification: Refers to children being returned to their family or caregiver after a stay in state custody.

Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

Funding

This work was supported by the National Institute of Drug Abuse [Grant number 5R01DA032548-02] and the Robert Wood Johnson Public Health Law Research Program [Grant number 24452].

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