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Criminally Involved Parents Who Misuse Substances and Children's Odds of Being Arrested as a Young Adult: Do Drug Treatment Courts Mitigate the Risk?

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Abstract

This paper examined (1) the association between parents who are convicted of a substance-related offense and their children's probability of being arrested as a young adult and (2) whether or not parental participation in an adult drug treatment court program mitigated this risk. The analysis relied on state administrative data from North Carolina courts (2005–2013) and from birth records (1988–2003). The dependent variable was the probability that a child was arrested as a young adult (16–21). Logistic regression was used to compare groups and models accounted for the clustering of multiple children with the same mother. Findings revealed that children whose parents were convicted on either a substance-related charge or a non-substance-related charge had twice the odds of being arrested as young adult, relative to children whose parents had not been observed having a conviction. While a quarter of children whose parents participated in a drug treatment court program were arrested as young adults, parental completion of this program did not reduce this risk. In conclusion, children whose parents were convicted had an increased risk of being arrested as young adults, irrespective of whether or not the conviction was on a substance-related charge. However, drug treatment courts did not reduce this risk. Reducing intergenerational links in the probability of arrest remains a societal challenge.

Keywords

Drug treatment court; Parental participation; Intergenerational; Young adult crime

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Compliance with Ethical Standards

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

Human and Animal Rights This research was approved by the Duke University Institutional Review Board (IRB). All IRB procedures were followed and full approval was obtained. No animals were used in this research.

Informed Consent Data came from administrative data and therefore informed consent was not feasible. Data linkage occurred through a two-step process whereby individual identifiers were separated from all other information contained in the administrative records. Moreover, data were stored and accessed solely through the Duke University protected data network through a secure protocol.

Introduction

Parental substance use is prevalent and has been linked to detrimental outcomes for their children including increased delinquency (Carbonneau et al. 1998; Grekin et al. 2005; Hanson et al. 2006; Obot and Anthony 2004). In the United States, the criminal justice system has a surprisingly large role in connecting adults with substance use treatment services. In fact, almost 50 % of all referrals to community-based substance use treatment come from the criminal justice system (*c.f.*, Magaletta et al. 2014). Understanding the effects of different strategies applied by the criminal justice system for this population is a public health priority. One strategy used by the criminal justice system is adult drug treatment courts (DTCs). Adult drug treatment courts serve adults whose needs are at the intersection of criminal involvement and substance misuse. These specialized courts provide treatment options to offenders to be used in lieu of or in conjunction with criminal penalties (Fulton Hora 2002). Participants remain in a community setting while attending treatment court. A large body of research suggests that these courts decrease criminal recidivism among participants (Brown 2010; Gifford et al. 2014; Marinelli-Casey et al. 2008; Mitchell et al. 2012). While relatively less information is available regarding the effectiveness of these courts in reducing participants' substance use (Wittouck et al. 2013), some evidence does suggest this (Marinelli-Casey et al. 2008). These courts, which connect offenders with substance use treatment services and monitor their progress throughout treatment, have been associated with both a decrease in criminal recidivism and an increase in abstinence from substances.

While recidivism and treatment effectiveness have been studied a great deal, few studies have examined the potential spillover effects on family members, in particular, on children of participants. Parental criminal involvement is associated with a host of negative outcomes for children. For one, families may face additional stresses in finding housing and perhaps losing eligibility for financial assistance programs (Ewald 2012). Such stress can take an emotional toll and can increase conflict in the home (Conger et al. 1994). Parental criminal involvement has been associated with increased risk of children's mental health problems (Dallaire and Wilson 2010; Phillips et al. 2002), child protective services involvement (Gifford et al. 2016), and lower school performance (Gifford et al. 2015). Moreover, a substantial body of research has found that criminality runs in families—particularly from fathers to sons (Bijleveld and Wijkman 2009; Farrington et al. 2001; Hjalmarsson and Lindquist 2012; Junger et al. 2013; Rowe and Farrington 1997; van de Rakt et al. 2009, 2010; van de Weijer et al. 2014).

Aside from the criminal justice system's effect on the children of defendants, parental substance use also has negative effects on children. Substance use by a parent has been linked to adolescent delinquency (Carbonneau et al. 1998; Grekin et al. 2005; Obot and Anthony 2004) and externalizing disorders (Clark et al. 1997; Gabel and Shindeldecker 1993; Marmorstein et al. 2009; Stanger et al. 1999). For example, Grekin et al. (2005) found that children of parents with alcohol use disorders were more likely to self-report committing violent (e.g. attacking someone with a weapon, armed robbery, etc.) and nonviolent (e.g. running away from home, skipping school, etc.) offenses. One study found that teachers rated the sons of alcoholics as higher on physical aggression than the sons of

non-alcoholics (Carbonneau et al. 1998). Data from the Minnesota Twin Family Study found that paternal alcohol dependence was associated with conduct disorder and oppositional defiant disorder at age 11 and with substance use at age 14 (Malone et al. 2002) and at age 17 (Marmorstein et al. 2009).

There are several reasons to presume that in addition to benefitting the participant adult drug treatment courts could also benefit participants' children. First, several studies have linked participation in substance use treatment services to better outcomes for the participants children, such as reduced lifetime probability of developing a substance use disorder (Arria et al. 2012) and a decrease in externalizing problems (Andreas and O'Farrell 2009). Another function of the drug treatment court is to connect individuals to ancillary services which varies across courts but can include job skills training, parenting classes, anger management and other forms of behavioral coping skills (Bouffard and Taxman 2004). Coupled with a reduction in future crime and substance misuse, such services may help participants to become productive members and improve their ability to function in multiple settings (e.g. home and work).

The goal of the current study was to examine whether parental participation in an adult drug treatment court program reduced their children's probability of being arrested as a young adult (ages 16–21). Based on prior findings that drug treatment courts reduce participant criminality and substance use and that treatment of parental substance use treatment reduces externalizing symptoms in children, we hypothesized that children of parents who completed a drug treatment court program would have lower probabilities of arrest as young adults. To understand the broader context, this study first compared criminal outcomes of children whose parents were convicted on a substance-related charge with children whose parents were: (a) not convicted on any charge and (b) convicted on a non-substance related charge. We hypothesized that children of parents who were convicted on any charge and on a substance-related charge in particular would be more likely to be arrested as young adults than children whose parents were not convicted on any charge.

Method

Participants

Participants for the first part of this study included three mutually exclusive groups of children aged 15–18 at the time of their parent's conviction or pseudo-conviction (described below). The groups differed according to the parent's prior criminal record: (1) not convicted on any charge (excluding infractions or traffic offenses for all observable years 2005–2013); (2) convicted on a substance-related charge (2005–2010); and (3) convicted on a charge other than a substance-related charge (2005–2010). (Infractions and traffic offenses other than for DWI were excluded from our analysis. Infractions are a category of offenses that do not carry the possibility of jail. An example of an infraction in North Carolina is driving with expired registration or improper equipment. Traffic offenses are misdemeanor crimes and include speeding and driving with a revoked license.) Children of parents who participated in a drug treatment court program were excluded from this analysis. Next, limiting the analysis to children of parents who were involved in a drug treatment court program, three groups of children were compared based on their parents' maximum

participation level: (1) referred but did not enroll; (2) enrolled but did not complete; and (3) completed.

Procedure

This study used statewide administrative data from several public systems linked at the child-level, the observational unit. Information on adults convicted of an offense came from the North Carolina Administrative Office of the Courts (NCAOC), 2005–2013. This database contains information on the person arrested (name, birthdate, gender, race/ethnicity), the charge, the date of the alleged offense, and information on arrest disposition (e.g. whether or not the person was convicted). Data on parental participation in an adult drug treatment court came from the Drug Treatment Court Management Information System (DTC-MIS). Finally, birth records from the North Carolina Department of Vital Statistics from 1988 to 2003 were used to link parents' court records with the records from their biological children. A father was listed on over 80 % of the birth records.

Linking datasets was based on individual's first name, last name, gender, and birthdate (Figure 1). For observations that did not merge on these criteria, we matched on the child's birthdate and last and first name, the latter using Soundex. The Soundex algorithm codes words or names phonetically (Fan 2004). The Duke University Institutional Review Board approved this study, and each partnering agency signed a data use agreement.

Measures

The dependent variable was a binary variable that indicated whether or not the child aged 16–21 years was *arrested* on any charge (in years 2006–2013). In North Carolina, individuals aged 16 years and older are tried as adults (Birckhead 2008). The follow-up period over which arrests of children were monitored was between 1 year following the parent's *conviction date* or the parent's *referral date* to a drug treatment court and 3 years following the conviction or referral date. The 1-year gap between the conviction or referral date and the beginning of follow-up was applied to allow for a "treatment" effect. For parents with no convictions, we randomly assigned a hypothetical "conviction" date (or pseudo-conviction date) between January 1, 2005 and December 31, 2009 using Stata's random date generator function with the start and end dates based on the same criteria as for adults with convictions (StataCorp 2013).

The key covariates in the first part of the analysis were mutually exclusive binary variables describing parents' conviction records: not convicted; convicted on a substance-related charge; convicted on a non-substance-related charge. In the second part of our analysis, the key covariates were mutually exclusive binary variables describing the level of participation in a drug treatment court program: referred but did not enroll; enrolled but did not complete; and completed. Other covariates controlled for parents' ages at conviction: <35; 35–45; >45. If a parent had multiple convictions during the observational period, the age at the first conviction was used.

Child characteristics came from the child's birth certificate: gender female or male (reference), age at parents' conviction 15–16 or 17–18 (reference), and race/ethnicity (Black non-Hispanic, other non-Hispanic, Hispanic, White non-Hispanic (reference)). The birth

certificate data also provided information on socioeconomic status correlates: low birth weight (<2500 g); prenatal care initiated after the first trimester; no father listed on the birth certificate; maternal education less than high school; paternal education <high school, paternal education missing for fathers listed on the certificate; and mother age's <20 at child's birth.

Data Analyses

Propensity score matching (PSM) was used to create two control groups for children of parents convicted on a substance-related charge. The two control groups were children of parents who were not convicted on any charge and children whose parents were convicted on a non-substance-related charge. The specific PSM approach used was one-to-one nearest neighbor matching in Stata 14 with the option `psmatch2` (Leuven and Sianesi 2003). The quality of the matches was assessed by examining the standardized percent differences before and after matching and t-tests for differences in mean values. A standardized difference is the difference in means of treatment and control groups as a percentage of the square root of the two groups' mean sample variances (Rosenbaum and Rubin 1985). Standardized differences were computed using a user-written command `pstest` for Stata (Leuven 2003). An advantage of examining standardized differences is that they are 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 a match was satisfactory was a standardized percent difference of <10.

Following the PSM, a logistic regression model was used to examine the odds of being arrested as a young adult conditional on parental conviction on a substance-related charge or a non-substance related charge and the covariates used for matching. The model corrected for clustering of children born to the same mother.

In the second part of the study, all parents had some involvement with a drug treatment court. For this reason and given the much smaller sample, PSM was not used. With the child as the observational unit, we used multivariate logistic regression to assess a child's odds of being arrested for criminal charge during a 1- to 3-year follow-up period. We accounted for clustering of children with the same mother.

Results

Before matching, children of parents who were convicted on a substance-related offence differed from those of parents never convicted on several characteristics—most notably race/ethnicity and socioeconomic status measured at child's birth—initiating prenatal care in the first trimester, maternal and paternal education <high school, and birth to a teenage mother (Table 1). After matching, standardized percent differences were all <10 indicating that the matched samples were similar on observed characteristics. Before matching, children of parents convicted on a substance-related charge were similar to those of parents convicted of a non-substance-related offense, and following matching all standardized percent differences were <10 %.

A quarter of children (26.5 %) with parents convicted on a substance-related charge were arrested as young adults, about the same share as children with parents convicted on a non-substance-related offence, but this was about double the rate of children of parents with no convictions—in either the matched or unmatched samples.

The multivariate analysis confirmed these findings (Table 2). Again, children of parents with prior convictions were about twice as likely to be arrested than were those of parents with no convictions. And there was no statistical difference in the odds of an arrest between children of parents with a prior substance use and a non-substance use conviction.

Relative to White non-Hispanic children, Black non-Hispanic children were 24 % more likely to be arrested; however Hispanic children were 34 % less likely to be arrested than were White non-Hispanic children. Other risk factors for being arrested were being male, being of older age (17–18 vs. 15–16), prenatal care initiated after first trimester, no father on birth certificate, low maternal education, and low paternal education. Children who were low or very low weight had a lower odds of being arrested—after controlling for other measures in the model.

Characteristics of children with parents who participated in a drug treatment court program are described in Table 3. Although the arrest rate of these young adults was high, ranging from 26.1 % to 30.6 %, there were no statistically significant differences based on their parents' level of participation in a drug treatment court program. In fact, there were no statistically significant differences in any of the characteristics—parental age at referral, child demographic characteristics, and attributes recorded on the birth records.

Multivariate logistic regression analysis presented in Table 4 confirmed the descriptive results presented in Table 3. Only one result was statistically significant. Female children had about a 60 % lower odds of being arrested than did males.

Discussion

Children of convicted parents, whether or not the charge was substance-related, were at increased risk of being arrested as a young adult. Level of parental participation in a drug treatment court program was unrelated to the odds of a child arrest. Even though finding a relationship between the level of participation in a drug treatment court program and the probability of a child arrest would have been encouraging, particularly in view of other empirical evidence indicating that drug treatment courts are an effective intervention (Brown 2010; Marinelli-Casey et al. 2008; Mitchell et al. 2012), the lack of a finding is not necessarily surprising. First, the primary objective of drug treatment court programs is to change the participants' substance and criminal behavior, not to have beneficial intergenerational effects. For the participant, staying out of jail may be a major motivator. Most North Carolina judicial districts with drug treatment courts structure these courts as post-plea or post-sentence diversionary programs for convicted persons (Innovation Research Training Inc. 2005a, b, c, d, e, f, g, h). Entering these courts allows participants to reduce or postpone jail time by enrolling in an intensive treatment program. However, if a

participant fails to complete a program, the original jail sentence could be reinstated or a new sentence issued.

Second, it is not clear at what stage in the youth's development the parental treatment would need to occur to prevent adverse criminal outcomes for youth. On average, the difference in time between parent involvement in a drug treatment court program and the date of the child arrest (conditional on the child being arrested) was 1.8 years. It is possible that if we had been able to observe parental participation earlier in the children's lives, we may have been able to document a relationship between parental drug treatment court participation and children's odds of being arrested as a young adult. In another study, treatment of fathers' substance use disorders was associated with greater improvement for young children than for adolescents as measured by mother-reported internalizing and externalizing symptoms of the child/adolescent (Kelley and Fals-Stewart 2008).

Our study found that children who had low or very low birth weight were statistically significantly less likely to be arrested as a young adult than were children of normal or higher birth weights, after controlling for other measures in the model. Findings regarding the relationship between birth weight and future offending are inconsistent—with at least one study other than our own finding a negative relationship (Hack et al. 2004), another finding no association (Rantakallio et al. 1992), and others finding a positive relationship (Tibbetts and Piquero 1999). Moreover our study did not find a statistical association between having been born to a teen mother and future offending whereas other studies have found a positive relationship between these measures (Conseur et al. 1997; Nagin et al. 1997; Pogarsky et al. 2003). This study controlled for many factors related to socioeconomic status including parental education, teen mother, timing of prenatal care initiation, paternity established at birth, and race/ethnicity. Better understanding whether characteristics surrounding one's birth such as weight and mother's age are causal predictors of future offending or are latent markers for familial attributes (e.g. socioeconomic status, family stress, conflict) is worthy of future research (D'Onofrio et al. 2010; Lu and Halfon 2003).

If drug treatment courts are to better serve the broader needs of participant's family members, it will be necessary to incorporate specific features in the program design. As currently set up, individual case plans are created for participants by a treatment team. These are in addition to the requirements of the drug treatment courts in North Carolina [e.g. frequent meetings with the judge and case coordinator, drug tests at least weekly, and participation in a treatment program such as Alcoholics Anonymous (AA) or Narcotics Anonymous (NA) meetings (Innovation Research Training Inc. 2005e)]. Treatment plans can also include goals other than substance-use treatment, such as obtaining housing, additional education, employment, and/or other supportive services (e.g. behavioral couples therapy, parenting classes, life skills training). For these courts to affect children of participants, there needs to be a purposeful focus on the needs of the family as a whole. Several studies of effects of parental substance use treatment on children have demonstrated that the nature of service delivery is a key factor in outcomes. For example, in a randomized controlled study of men who entered outpatient substance abuse treatment, behavioral couples therapy was shown to better improve children's psychosocial functioning, parents' dyadic adjustment and father's substance use than individual-based therapy (Kelley and

Fals-Stewart 2002). Another study found that relative to behavioral couples therapy alone, pairing parenting with behavioral couples therapy was more effective in reducing children's internalizing symptoms (Lam et al. 2008) and in improving parenting and reducing children's involvement with child protective services (Lam et al. 2009). In another study, children whose parents received only medication management or detoxification had significantly higher somatization scores, more social withdrawal, and greater attention problems than did children whose parents participated in outpatient therapy (Burns et al. 2013). A prerequisite for better program design is an improved knowledge base that is specifically applicable to drug treatment courts and the populations they serve.

The results of this study complement two other studies that demonstrated that the children of drug treatment participants, and the broader population of individuals with convictions who are not served by drug treatment courts, are at an elevated risk of being involved with child protective services (Gifford et al. 2016) and of having poor academic outcomes (Gifford et al. 2015). Given the enormous societal costs of involvement with child protective services, being arrested as a youth, and poor school outcomes (Cohen 1998; Cohen et al. 2010; Fang et al. 2012; Sum et al. 2009), learning how to implement effective prevention strategies is warranted. Preventing criminal involvement at the young adult stage may require interventions at the pre-adolescent stage.

Strengths and Limitations

Our study has several important strengths. First, the data came from administrative records rather than from survey data based on self-reports. Several studies based on national U.S. samples, have relied on survey data, which may be biased due to lack of recall or even knowledge of the respondent. For example, in the Pittsburgh Longitudinal Study of Youth, the boys' caregiver (usually the mother) provided information on arrest and incarceration of family members (Farrington et al. 2001). However, this respondent may not have known the full histories of other family members. Moreover, survey data tend to have limited information on the timing of events such as arrest. Second, rather than come from a single locality, our study was based on administrative data from an entire state. Third, with data spanning several years, we could perform longitudinal analysis, linking parental convictions and participation in a drug treatment court program to arrests of their children. The data allowed us to isolate substance-related arrests from arrests on other charges. Using birth records, we could merge information on parents with information on their children. Finally, we know of no other study that has examined whether children of drug treatment court participants are at lower risk of being arrested and if drug treatment courts can play a role in mitigating this risk.

We also acknowledge several study limitations. First, this analysis was limited to only biological relationships between children and parents. We lacked information on the living arrangements of children and therefore could not know if and when the children lived with, or spent time with, their biological parents. Second, we could only observe events that occurred within North Carolina; there was no information on which of our study participants have moved out of state. Third, while we could document associations between parent and child experiences with the criminal justice system and with drug treatment courts, we

acknowledge that the relationships are not necessarily causal. The lack of a relationship between the level of drug treatment court participation and probability that the child was arrested suggests that a causal effect is also likely to be lacking.

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Fig. 1.

Description of administrative data set linking: identifying children's parents and parental involvement with the criminal justice system and participation in a drug treatment court program (DTC).

Notes: N_a Number of adults, N_c number of child, N_p Number of parents, BR birth record

Table 1

Child characteristics by parental conviction: before and after propensity score matching

	Substance-related offense (A)	No convictions 2005–2013 (B)		Non-substance-related offense (C)		% Standardized Diff in matched sample	
	Full = matched	Full	Matched	Full	Matched	A versus B	A versus C
Observations	14,697	250,763	14,697	15,718	14,697		
Child's arrest 1–3 years after parent's conviction ¹	26.5	12.5	14.9	25.4	24.9		
Parent age at conviction ²							
Parent <35 at first conviction	10.4	7.1	10.0	11.8	10.3	−1.4	0.2
Parent 35–45 at first conviction	61.7	55.9	62.3	63.1	63.1	1.3	−2.9 ^c
Parent >45 at first conviction	28.0	37.0	27.7	25.1	26.6	−0.5	3.0 ^c
Child characteristics							
Child race/ethnicity							
White non-Hispanic	58.1	65.8	57.9	52.2	55.4	−0.4	5.3 ^a
Black non-Hispanic	35.7	27.0	35.8	41.3	38.1	0.2	−4.9 ^a
Other non-Hispanic	4.5	4.0	4.6	5.0	4.9	0.4	−1.8
Hispanic	1.6	3.2	1.6	1.4	1.5	0.2	0.9
Child Female	49.1	48.8	49.0	48.7	48.7	−0.1	0.7
Child's age at parent's conviction							
15–16 years	68.3	68.6	68.0	69.8	69.4	−0.6	−2.5 ^c
17–18 years	31.7	31.4	32.0	30.2	30.6	0.6	2.5 ^c
Child characteristics at birth							
Low or very low birth weight	9.3	6.8	9.8	8.7	8.8	1.7	1.9
Prenatal care started >1st trimester	30.8	19.8	31.1	31.3	30.3	0.6	1.1
No father on birth certificate	6.1	8.1	6.3	8.1	6.0	0.7	0.2
Maternal education <H.S.	39.4	19.1	39.4	38.4	37.7	0.2	3.4 ^b
Paternal education <H.S.	31.5	12.1	31.2	27.1	29.0	−0.6	5.5 ^a
Paternal education missing & on birth certificate	10.6	9.7	10.7	14.0	10.8	0.4	−0.7
Mother <20 years old at child's birth	26.1	13.4	26.0	27.4	25.9	−0.4	0.6

Also included in the model were variables for missing race/ethnicity, birth weight, prenatal care, maternal education, and mother's age. Each of these had fewer than 0.35 % of the cases missing

^a $p < 0.001$;

^b $p < 0.01$;

^c $p < 0.05$

¹ This is the dependent variable in the analyses and was not used in matching

² For parents who were never observed with a conviction date, a pseudo-conviction date was randomly assigned

Table 2

Logistic regression results: parental conviction status and child's odds of arrest as a young adult

	Odds ratio	95 % Confidence interval
Parental conviction (<i>reference = No conviction</i>)		
Substance conviction	2.138 ^a	2.013–2.270
Other conviction	1.965 ^a	1.850–2.088
Parent age at conviction ^I (<i>reference = >45 years old</i>)		
Parent was under 35 at time of conviction	1.073	0.962–1.196
Parent was 35–45 at time conviction	1.053	0.992–1.116
Child's race/ethnicity (<i>reference = White-non-Hispanic</i>)		
Black non-Hispanic	1.245 ^a	1.180–1.313
Other non-Hispanic	0.987	0.881–1.106
Hispanic	0.662 ^a	0.536–0.816
Child female (<i>reference = male</i>)	0.412 ^a	0.393–0.433
Child's age at parent's conviction (<i>reference = 17–18 years old</i>)		
Child was 15–16 years old at referral/conviction	0.817 ^a	0.777–0.859
Low or very low birth weight (<i>reference = >2500 + gr</i>)	0.768 ^a	0.705–0.837
Prenatal care initiated after first trimester (<i>reference = 1st trimester</i>)	1.137 ^a	1.080–1.197
No father on birth certificate (<i>reference = father listed</i>)	1.519 ^a	1.377–1.677
Maternal education <H.S. (<i>reference = H.S. or greater</i>)	1.369 ^a	1.294–1.448
Paternal education <H.S. (<i>reference = H.S. or greater</i>)	1.189 ^a	1.122–1.260
Paternal education missing & on birth certificate	1.512 ^a	1.395–1.638
Mother <20 years old at child's birth (<i>reference = 20 years or more</i>)	0.954	0.891–1.021
Constant	0.194 ^a	0.180–0.210
# Of children	44,091	

Model accounted for clustering across children with the same mother and included binary variables for missing variable indicators race/ethnicity, birth weight, prenatal care, maternal education, and mother's age. Each of these had fewer than 0.35 % of the cases missing

^a $p < 0.001$,

^b $p < 0.01$,

^c $p < 0.05$

^I For parents who were never observed with a conviction date, a pseudo-conviction date was randomly assigned

Table 3

Descriptive statistics of children by parental participation in a drug treatment court (DTC) Program

	Referred to DTC, not enrolled	Enrolled in DTC, not completed	Completed DTC	Referred versus enrolled (<i>p</i> value)	Referred versus completed (<i>p</i> value)
Adult arrest 1–3 years after referral/conviction	26.1	27.6	30.6	0.760	0.386
Parent age at referral/conviction					
Parent under 35	16.6	13.8	14.3	0.482	0.588
Parent 35–45	59.0	68.1	60.2	0.088	0.832
Parent over 45	24.4	18.1	25.5	0.170	0.827
Child characteristics					
Child's race/ethnicity					
White non-Hispanic	42.7	43.1	49.0	0.943	0.280
Black non-Hispanic	52.9	53.4	46.9	0.918	0.309
Other non-Hispanic	4.1	2.6	3.1	0.472	0.653
Hispanic	0.3	0.9	1.0	0.494	0.413
Child Female	52.2	50.0	48.0	0.688	0.468
Child's age at referral/conviction					
15–16 years	75.3	78.4	78.6	0.495	0.506
17–18 years	24.7	21.6	21.4	0.495	0.506
Child characteristics at birth					
Low or very low birth weight	15.3	11.2	8.2	0.290	0.075
Prenatal care initiated after first trimester	34.2	29.3	33.7	0.340	0.919
No father on birth certificate	16.3	12.1	16.3	0.285	0.990
Maternal education <H.S.	39.7	37.1	30.6	0.629	0.109
Paternal education <H.S.	27.5	32.8	26.5	0.287	0.859
Paternal education missing & on birth certificate	11.9	10.3	13.3	0.664	0.715
Mother <20 years old at child's birth	32.2	30.2	31.6	0.691	0.917
# Of children	295	116	98		
# Of parents	262	103	91		

^a
 $p < 0.001$,^b
 $p < 0.01$,^c
 $p < 0.05$

Table 4

Logistic regression results: parental participation in an adult drug treatment court (DTC) program and child's odds of arrest as a young adult

	Odds ratio	95 % Confidence interval
DTC participation level (<i>reference = referred not enrolled</i>)		
Enrolled	1.081	0.657–1.779
Completed	1.251	0.723–2.166
Child's race/ethnicity (<i>reference = White-non-Hispanic</i>)		
Black non-Hispanic	0.856	0.523–1.401
Other non-Hispanic	0.854	0.293–2.488
Hispanic	1.305	0.156–10.911
Child female (<i>reference = male</i>)	0.408 ^a	0.270–0.616
Low or very low birth weight (<i>reference = >2500 + gr</i>)	0.959	0.505–1.822
Prenatal care initiated after first trimester (<i>reference = 1st trimester</i>)	1.157	0.711–1.881
No father on birth certificate (<i>reference = father listed</i>)	1.05	0.477–2.312
Maternal education <H.S. (<i>reference = H.S. or greater</i>)	1.623	0.921–2.860
Paternal education (<i>reference = H.S. or greater</i>) <H.S.	1.233	0.714–2.128
Paternal education missing & on birth certificate	1.368	0.667–2.805
Mother <20 years old at child's birth (<i>reference = 20+ years</i>)	0.820	0.452–1.488
Constant	0.657	0.333–1.296
# Of children	509	

Model accounted for clustering across children with the same mother

^a $p < 0.001$,

^b $p < 0.01$,

^c $p < 0.05$