Published in final edited form as:
Pediatrics. 2007 September ; 120(3): e678–e685.

Socioemotional Effects of Fathers' Incarceration on Low-Income, Urban, School-Aged Children

MaryAnn B. Wilbur, BS[a], **Jodi E. Marani, MEd**[a], **Danielle Appugliese, MPH**[b], **Ryan Woods, MPH**[b], **Jane A. Siegel, PhD**[c], **Howard J. Cabral, PhD**[d], and **Deborah A. Frank, MD**[a]

a*Department of Pediatrics, Boston Medical Center, Boston, Massachusetts*

b*Data Coordinating Center, Boston University School of Public Health, Boston, Massachusetts*

c*Department of Sociology, Anthropology, and Criminal Justice, Rutgers University, Camden, New Jersey*

d*Department of Biostatistics, Boston University School of Public Health, Boston, Massachusetts*

Abstract

OBJECTIVE—The goal was to evaluate whether children of incarcerated fathers are more likely to report or exhibit behavioral symptoms than their equally disadvantaged peers without an incarcerated father.

METHODS—During an ongoing longitudinal study of intrauterine cocaine exposure involving 102 children (50% male and 89% black) from urban, low-income homes, questions regarding incarceration of the child's father were asked of the child's primary caregiver at each visit during school age. Children were administered the Children's Depression Inventory between the ages of 6 and 11 years, and their primary caregivers completed the Child Behavior Checklist. In addition, the children's teachers completed the Teacher Report Form. Children's Depression Inventory, Child Behavior Checklist, and Teacher Report Form data obtained at the oldest available age after the first report of paternal incarceration were analyzed.

RESULTS—In bivariate analyses, children whose fathers were in jail had higher Children's Depression Inventory total scores compared with children without incarcerated fathers, indicating more depressive symptoms. This finding was robust in multivariate analyses after adjustment for children's age, gender, prenatal cocaine and alcohol exposure, and school-age violence exposure. Teachers reported higher Teacher Report Form externalizing scores for children whose fathers were in jail, after adjustment for age, gender, prenatal cocaine and marijuana exposure, and school-age violence exposure.

CONCLUSIONS—Children of incarcerated fathers reported more depressive symptoms and their teachers noted more externalizing behaviors, after controlling for other biopsychosocial risks. Interventions targeted to ameliorate the distress of children with incarcerated fathers should be considered.

Keywords

child depression; externalizing behavior; paternal incarceration; alcohol; marijuana; cocaine

THE RECORD PRISON population[1] has resulted in an unprecedented number of children in the United States with an incarcerated parent.[2] More than one half (54.7%) of all imprisoned

Address correspondence to Deborah A. Frank, MD, Department of Pediatrics, Boston Medical Center, 725 Massachusetts Ave, M Floor, Boston, MA 02118. E-mail: dafrank@bu.edu.

The authors have indicated they have no financial relationships relevant to this article to disclose.

US men are estimated to be fathers of minor children, and nearly two thirds (65.3%) of women in prison are mothers.[3] Government estimates of the number of children of incarcerated parents,[3] adjusted for the current size of the prison population, indicate that ~1.6 million minor children have an incarcerated parent. These children represent 2.2% of the population of children <18 years of age in the United States, making parental incarceration 10 times more common than juvenile diabetes mellitus.[4] Children of color experience the highest rates of parental incarceration; 7% of black children and 2.6% of Hispanic children have an incarcerated parent, compared with <1% of white children.[3]

In the psychological and sociological literature, parental incarceration has been associated with a variety of concerning behaviors in children, difficulties that may persist beyond childhood. Parents and other caregivers frequently report that these children experience psychological problems, including depression,[5] withdrawal,[6,7] fearfulness,[8,9] and attachment difficulties,[10] although one study reported decreased depression among adolescents with incarcerated parents.[11] However, the authors of the latter study speculated that their clinical sample might have overrepresented adolescents with acting-out problems and underrepresented those with depression. When a parent is imprisoned, children have been reported to express feelings of abandonment, anxiety, shame, guilt, and concern for the parent.[12,13] The manifestation of these emotions may differ with the gender and developmental stage of the child.[14–16] Girls have been reported to experience more internalizing symptoms, whereas boys have been found to exhibit more externalizing behaviors.[14] Children's behavior may also be correlated with the gender of the incarcerated parent, with externalizing behaviors being linked to paternal incarceration and internalizing behaviors being linked to maternal incarceration.[7,13] Academic problems among children of incarcerated parents were identified in similar research.[6,7,17–20] Behavioral problems, especially aggression, among children of prisoners were noted in several studies.[6,8,11,15,21] One study found that youths whose fathers were incarcerated were significantly more likely than other youths to be imprisoned themselves, even as adults.[22]

Data in the medical literature about children of incarcerated parents are sparse. Most articles focus on infectious disease. Some studies suggest that children of incarcerated parents should be screened for exposure to infectious diseases, including HIV and other sexually transmitted diseases, tuberculosis, pneumococcal disease, varicella, and hepatitis.[23,24] In 1993, Kemper and Rivara[25] provided a broader descriptive analysis of children with incarcerated parents, identifying a double social risk because prisoners are more likely than other parents to be involved in drug and alcohol abuse. Children of incarcerated parents are also more likely than other children to be involved in substance abuse themselves.[25] Kemper and Rivara[25] concluded, “parental imprisonment is not rare, is often chronic, and is strongly associated with other psychosocial and health problems in the family. Screening for parental imprisonment potentially should be included as part of a comprehensive biopsychosocial assessment.” Since that seminal publication, however, there have been few pediatric publications based on data elucidating the psychosocial profiles of children of prisoners.

The available scientific literature suffers from a number of methodologic limitations, including the use of convenience samples, cross-sectional designs, an absence of comparison groups, and, most notably, nearly exclusive reliance on adult reports about children as a means of assessing outcomes among the children. Few studies use more than one informant, although multiple informants are recommended in most behavioral studies of older children.[26] Furthermore, the available literature provides little information on whether the behavioral and emotional symptoms ascribed to parental incarceration can be explained more accurately by associated biopsychosocial risk factors. The Department of Justice and independent researchers note that parents' incarceration is strongly correlated with parents' substance abuse[1,15,16,25] and family violence,[12,15,16,25,27] but the role of these factors as possible confounders of

the impact of parents' incarceration on the behavioral outcomes of their children has not been addressed.[28] In addition to these factors, potential determinants of socioemotional outcomes include not only the pervasive effects of poverty and the discrimination faced by minority children but the children's intrauterine exposure to psychoactive substances[29–33] and their exposure to the psychological distress of the current caregiver.[34]

Many more children experience the incarceration of their fathers than that of their mothers.[1] As several reviews summarized, fathers' involvement has strong correlations with positive child behavior outcomes.[35,36] Studies of children with deployed fathers found an increase in externalizing behaviors and self-reported rates of depressive symptoms.[37,38] However, the authors of those articles were quick to caution that the effects might be attributable not to separation from the father per se but to disorganization in the household after separation and depression in the parent left behind (usually the mother). In this context of high rates of incarceration among impoverished urban US men and the data regarding the importance of fathers to children's well-being, the goal of the current analysis is to describe whether there are significant differences in 2 treatable pediatric psychosocial conditions, depressive symptoms and behavior problems, among children of incarcerated fathers, compared with their peers of low socioeconomic status who do not have an incarcerated father.

METHODS

Design and Setting

The current study is a secondary analysis of school-age (6−11 years) data from a longitudinal study of intrauterine cocaine exposure that was started in 1990 at Boston Medical Center (then named Boston City Hospital). Mother/infant dyads were recruited from the maternity ward shortly after birth. The human studies committee of Boston Medical Center and the Boston University School of Medicine institutional review board approved this study at its inception and yearly thereafter.

Information regarding the study's initial recruitment criteria was published previously.[39] Approximately one half (123 of 252 infants) of the initially recruited sample had been exposed to cocaine in utero. At birth, infants' intrauterine cocaine and marijuana exposure was identified from interviews of mothers, as well as assays of mothers' urine and of infants' urine and meconium. Positive biological assay results and/or positive maternal reports were coded as intrauterine cocaine or marijuana exposure. Tobacco and alcohol use in pregnancy were determined through interview alone. In addition, mothers indicated composite levels of problems with alcohol, illicit drugs, and psychiatric symptoms on the Addiction Severity Index (ASI).[40]

After initial recruitment from 1990 to 1993, caregivers' written informed consent was obtained yearly, as was children's assent beginning at age 8.5 years. A writ of confidentiality was obtained from the federal government under Title 42 of Section 242A of the US code, to protect participants from having research data subpoenaed.

When the children were 6, 8.5, 9.5, and 11 years of age, trained research assistants who were unaware of the child's previous or current developmental findings conducted interviews with caregivers. These interviews included questions about incarceration of the child's birth parents and caregivers' assessment of the child's behavior and emotional status. With caregiver's consent, behavioral report forms were sent to the children's teachers without providing information about the nature of the study.

Trained assessors, who were masked to the children's prenatal substance exposure and subsequent social history, administered instruments to the children themselves, to measure the

children's reports of exposure to violence and their depressive symptoms. Instruments were administered in interview format, because literacy levels varied widely among the children. The examiner read the items on each scale to all children and recorded their responses. A visual analog scale was used to discriminate between Likert-type response categories for each item.

Independent Measures

Information on fathers' incarceration was obtained from the child's birth mother or other primary caregiver with structured questions at each interview. At the child's visits for ages 6 and 8.5 years, the primary caregiver was asked, “Has [name]'s father been incarcerated in the last 2 years?” At the visits for ages 9.5 and 11 years, the primary caregiver was asked, “Since the last interview, has [name]'s father been incarcerated?” Any report of the father's incarceration from the child's age of 6 years onward was used as the independent variable, because this was the youngest age in the study protocol at which most children might be expected to have some understanding of the meaning of imprisonment.

Candidate Covariate Measures

Birth mothers' perinatal covariates of interest, chosen on theoretical grounds, were use of cocaine (yes/no) and marijuana (yes/no) during pregnancy (based on self-reports and biological assays), average daily volume of alcohol, average daily number of cigarettes during pregnancy, ASI composite scores, and mother's perception at birth of the index child's father having a drug and/or alcohol problem (yes/no), which was reported previously.[41] School-age covariates included the child's current caregiver (birth mother versus other) and the current caregiver's distress, as measured with the global severity index of the Brief Symptom Inventory,[42] a self-report measure consisting of 53 items on a 5-point rating scale.

Child-level covariates included gender, age at assessment, and the Violence Exposure Scale for Children, Revised (VEX-R).[43] The VEX-R is a 21-item, cartoon-based interview intended to measure children's self-reported exposure to violence, either as a victim or as a witness. Responses are measured on a 4-point Likert scale. Internal consistency reliability of the VEX-R ranges from .80 to .86.[44] Data were inspected visually to determine the number of children reporting victimization versus witnessing of violence. The number of children acknowledging victimization was too small for separate analysis; therefore, the total score of the instrument was used in analyses.

Dependent Measures

Outcomes of interest were determined from multiple informants, that is, the children themselves, their primary adult caregivers, and their teachers. The measures available at the oldest study age after first report of the father's incarceration were used in the analysis because, the later in childhood these constructs are measured, the more they are predictive of later function. Children at 9.5 and 11 years were given the Children's Depression Inventory (CDI),[45] which generates a total score from subscales consisting of negative mood score, interpersonal problems score, ineffectiveness score, anhedonia score, and negative esteem score. All items on this 27-item questionnaire are designed for children between the ages of 7 and 17 years and assess depressive symptoms over the preceding 2 weeks. Each item is rated on a 3-point scale (0 = absence of symptom, 1 = mild symptom, 2 = definite symptom). In previous research, reliability indicators for this measure suggested that the scale distinguishes individuals with a diagnosis of major depressive disorder or dysthymia from those with other psychiatric symptoms and from “normal” individuals. The α reliability coefficients for the CDI overall range from .71 to .89.[45] Test-retest reliability measures reveal an acceptable level of stability, and the CDI has demonstrated strong explanatory and predictive validity.[45]

At each age between 6 and 11 years, caregivers were given the Child Behavior Checklist (CBCL) in interview format.[46] The CBCL is a 118-item questionnaire on which parents, or other individuals who know the child well, rate a child's problem behaviors and competencies. Each item is rated on a 3-point scale (0 = not true, 1 = somewhat or sometimes true, 2 = very true or often true).

The Teacher Report Form (TRF),[47] an instrument parallel to the CBCL, was completed by the child's teacher when the child was between 8.5 and 11 years of age, also at the latest available report after the age of the first report of the fathers' incarceration. Both the CBCL and the TRF generate an internalizing score, an externalizing score, and a total score, with raw scores and age-standardized *T* scores (mean: 50; SD: 10) for items related to behavioral or emotional problems during the past 6 months. The internalizing scores reflect not only children's sadness but also their manifestations of anxiety and withdrawal.

Description of Sample

Of the initial sample of 252 consenting mother/infant dyads, 35 formally withdrew consent at some point during this follow-up cycle and 57 lost contact with the study but did not withdraw consent. The remaining 160 children (63%) have been monitored to the 6- to 11-year age range in this longitudinal study, and there were no differences between the remaining sample and those lost to contact in any of the previously collected social or biological measurements. Thirty-four children whose caregivers could not or would not report whether the child's father was incarcerated were removed from the analysis, as were children whose mothers had been incarcerated ($n = 5$) and children who were missing the primary outcome measure, the CDI ($n = 22$). After removal of children from the sample for these reasons, which were not mutually exclusive, the result was a final sample of 102.

Of this final sample, 50% were male. Eighty-nine percent of the children's birth mothers identified themselves as black, and 53% had graduated from high school (an additional 12% of birth mothers had some college education). Between the ages of 6 and 11 years, 31 of these children had an incarcerated father and 71 children had fathers who were not incarcerated.

Statistical Analyses

All analyses were conducted by using SAS 8.2 software (SAS Institute, Cary, NC). A 2-tailed α level of .05 was set a priori. We first compared those in the sample ($N = 102$) and those from the original sample whose data were not analyzed ($N = 150$) with respect to demographic (gender, birth weight, maternal education, and ethnicity) and neonatal (prenatal cigarette, alcohol, marijuana, and cocaine exposure) characteristics, as well as the birth mother's alcohol use, illicit drug use, and psychiatric composite scores on the ASI,[40] by using bivariate analyses (*t* tests for continuous variables and χ^2 tests for categorical variables). The only significant differences in these measures were lower illicit drug exposure ASI scores (0.03 vs 0.06; $P = .0001$) and lower rates of intrauterine cocaine exposure (45% vs 62%; $P = .01$) for those retained in the analytic sample.

After bivariate comparisons of children with and without incarcerated fathers with respect to the outcomes of interest, base models based on previous research findings were created by using multivariate linear regression. These models adjusted for children's intrauterine cocaine exposure (yes/no; the target variable of the original study), their age at examination, and their gender. Next, more-complex multivariate models were used to examine the relationship between fathers' incarceration and children's behavioral outcomes after controlling for additional covariates. These additional candidate covariates included intrauterine exposure to alcohol, tobacco, and marijuana, current caregiver (birth mother versus other), distress of current caregiver (Brief Symptom Inventory score), child's exposure to violence, and mother's

perception at birth of father's drug/alcohol problems. Covariates were selected a priori on the basis of the research literature and were evaluated in the base model one at a time. Any significant ($P < .05$) covariate was retained in the final model.

RESULTS

No statistically significant differences were found between the children of incarcerated fathers and the other children with respect to either the demographic or neonatal characteristics examined (Table 1). The groups had similar rates of intrauterine drug exposure, birth mother's ASI alcohol use, illicit drug use, and psychiatric composite scores, and maternal reports of drug or alcohol use by the birth father. Bivariate analyses of the outcome variables revealed that children whose fathers were in jail had significantly higher CDI total scores ($P = .03$), indicating increased self-reports of depressive symptoms, and TRF externalizing scores ($P = .048$) (Table 2), indicating increased teacher reports of externalizing behaviors. These findings remained unchanged in the base models. There was also a trend for paternal incarceration to be associated with higher caregiver-reported CBCL externalizing scores in the base model ($P = .06$). There were no differences in caregiver-reported CBCL internalizing scores according to paternal incarceration. In this prepubertal sample, however, caregivers of boys, compared with caregivers of girls, were more likely report greater internalizing symptoms, regardless of paternal incarceration.

After testing each potential covariate individually, we found that, for the majority of the outcomes tested, the base model remained as the final model (no other covariates were found to be significant when added to the base model); the exceptions were the CDI total score and TRF externalizing score, both of which were correlated with the child's exposure to violence. In addition, CDI total scores were associated with the child's prenatal exposure to alcohol and TRF externalizing scores were associated with the child's prenatal exposure to marijuana. However, including these other factors did not alter the association of these outcomes with paternal incarceration.

After controlling for age, gender, prenatal cocaine and alcohol exposure, and VEX-R scores, children whose fathers were incarcerated had higher CDI total scores than did those whose fathers were not incarcerated ($P = .02$) (Table 3). Girls in this sample had higher CDI total scores. After controlling for these variables, paternal incarceration remained a significant predictor of children's self-reported depressive symptoms.

Similarly, children of incarcerated fathers had higher TRF externalizing scores ($P = .03$), compared with children whose fathers were not incarcerated, after controlling for age, gender, prenatal cocaine and marijuana exposure, and VEX-R scores. Prenatal marijuana exposure and VEX-R scores were also significant predictors of TRF externalizing scores in this final model.

DISCUSSION

Limitations

This study is intended to be an exploratory beginning into necessary research on the needs of children experiencing incarceration of their fathers. The population from which this cohort was recruited is that of a largely black, urban community, and the results may not be representative of the effects of fathers' incarceration on children in other populations. The children in this study were originally recruited as part of a larger study of intrauterine cocaine exposure. Although intrauterine cocaine exposure was not a factor differentiating children with an incarcerated father from those without an incarcerated father and this exposure was controlled for in all analyses, the results should still be interpreted judiciously. Moreover, the group of children from the parent study who were retained in this secondary analysis had lower

intrauterine cocaine exposure and mothers with lower ASI scores and therefore might be at less biological risk than the original sample. Fathers' incarceration was determined solely from the report of the children's caregivers. We do not have more-detailed information about fathers' gang involvement or the length of or reason for their incarceration. Statistical power was limited by the size of our sample, which also precluded analysis of the effects of having an incarcerated mother. Other subtle effects of paternal incarceration might have been identified in a larger sample.

Our observations remained robust after the current caregivers' distress, children's exposure to violence, gender, and history of prenatal exposure to psychoactive substances were considered, but there are unmeasured variables that might have influenced these outcomes. Although they were not measured directly in this study, children's feelings about parental incarceration are likely to differ among populations, with some children experiencing feelings of shame and others perceiving incarceration as a symbol of status. Loss of resources, changes in family dynamics, anger, and resentment occurring after a father goes to prison can all add to the life stressors already present in many of these homes.

Conclusions

Within these limitations, our analyses confirm and extend previous observations of children of imprisoned fathers,[12,25,48] confirming that, after consideration of other biopsychosocial risk factors not measured in previous studies, fathers' incarceration remained correlated with children's depressive symptoms and behavior problems, as ascertained from multiple informants. As we reported in other studies from this cohort,[27,49] children's exposure to violence was associated independently with the children's reports of their own depressive symptoms and adults' reports of the children's externalizing behaviors. Consistent with the work of other investigators,[32] we also found prenatal alcohol exposure to be associated with children's depressive symptoms and prenatal marijuana exposure to be associated with externalizing symptoms.[33]

Implications

Criminal justice policies implemented in the past 2 decades, mandating widespread incarceration, affect not only the individuals jailed but also their families and communities. The results of this study indicated that children of incarcerated fathers were more likely to report depressive symptoms than were children from similar backgrounds whose fathers were not incarcerated. In addition, their teachers were significantly more likely to report that children of incarcerated fathers exhibited more externalizing behaviors, compared with their peers, which their primary caregivers also noted but not at the level that meets formal criteria for statistical significance. However, despite the children's increased reports of experiencing increased depressive symptoms, neither parents nor teachers reported observing increased internalizing symptoms among children of incarcerated fathers. Parents' lack of awareness of children's depressive symptoms, even when the child actually acknowledges suicidal ideation, has been noted in other research with this cohort.[49] However, this is the first report on this cohort in which teachers also observed externalizing symptoms but not children's internalizing symptoms.

Clinically, pediatricians should be prepared to ask about parental incarceration, because this information is not often offered spontaneously. If such a history is obtained, formal screening of the children for depression and behavior problems may be indicated. Conversely, when children present with these symptoms, the possible contribution of parental incarceration should be ascertained. Pediatricians are in a unique position, because the physician may represent an important constant in the lives of children after parental imprisonment.[11,50]

From a research perspective, we hope that this study will serve as a "springboard" for other studies to investigate the specific needs of children who experience parental incarceration, considering the many diverse and difficult situations in which these children reside before, during, and after incarceration of their fathers. As of this writing, there is currently no criminal justice or child welfare organization systematically tracking how many children are affected by parental incarceration.[14] From a public health standpoint, we recommend adding a question regarding parental incarceration to a national pediatric survey, such as the National Children's Study, if it is funded, or the Early Childhood Longitudinal Study. Eventually, it may be found to be prudent health practice to offer mental health services to all children of incarcerated parents. Primary prevention would require public reevaluation of the risks and benefits of current criminal justice policies, a reevaluation to which pediatricians could provide input as advocates for children.

ACKNOWLEDGMENTS

This work is a secondary analysis of a longitudinal study supported by grant DA06532 from the National Institute on Drug Abuse (to Dr Frank) and by grant M01 RR00533 from the National Institutes of Health, National Center for Research Resources.

Thanks go to Frantzsou Balthasar, Anna Villavicencio, Donna Santagati, and Julie Nussman for research assistance in testing the children. Thanks also go to the families for their gracious participation in this study.

Abbreviations

CDI, Children's Depression Inventory; ASI, Addiction Severity Index; CBCL, Child Behavior Checklist; VEX-R, Violence Exposure Scale for Children, Revised; TRF, Teacher Report Form.

REFERENCES

1. Harrison, P.; Beck, A. Prisoners in 2004. US Department of Justice, Bureau of Justice Statistics; Washington, DC: 2005.
2. Downs, A. Innocents of incarceration.. Boston Globe. May 9. 2004 Available at: www.boston.com/news/local/massachusetts/articles/2004/05/09/innocents_of_incarceration. Accessed July 2, 2007
3. Mumola, C. Incarcerated Parents and Their Children. US Department of Justice, Office of Justice Programs; Washington, DC: 2000.
4. Centers for Disease Control and Prevention. Fact Sheet: SEARCH for Diabetes in Youth. Centers for Disease Control and Prevention; Atlanta, GA: 2005.
5. Jose-Kampfner, C. Post-traumatic stress reactions in children of incarcerated mothers.. In: Gabel, K.; Johnston, D., editors. Children of Incarcerated Parents. Lexington Books; New York, NY: 1995. p. 89-100.
6. Baunach, P. Mothers in Prison. Transaction Books, Rutgers University Press; New Brunswick, NJ: 1985.
7. Fritsch T, Burkhead J. Behavioral reactions of children to parental absence due to imprisonment. Fam Relat 1981;30:83–88.
8. Sack W, Seidler J, Thomas S. The children of imprisoned parents: a psychosocial exploration. Am J Orthopsychiatry 1976;46:618–628. [PubMed: 998741]
9. Boswell, G.; Wedge, P. Imprisoned Fathers and Their Children. Jessica Kingsley Publishers; London, England: 2002.
10. Johnston, D. Effects of parental incarceration.. In: Gabel, K.; Johnston, D., editors. Children of Incarcerated Parents. Lexington Books; New York, NY: 1995. p. 59-88.
11. Phillips S, Burns B, Wagner R, Kramer T, Robbins J. Parental incarceration among adolescents receiving mental health services. J Child Fam Stud 2002;11:385–399.

12. Phillips S, Barth R. Parental arrest and children involved with child welfare service agencies. Am J Orthopsychiatry 2004;74:174–186. [PubMed: 15113246]
13. Women's Prison Association. Breaking the Cycle of Despair: Children of Incarcerated Mothers. Women's Prison Association; New York, NY: 1995.
14. Seymour C. Children with parents in prison: child welfare policy, program, and practice issues. Child Welfare 1998;77:469–493. [PubMed: 9744069]
15. Gabel S. Behavioral problems in sons of incarcerated or otherwise absent fathers: the issue of separation. Fam Process 1992;31:303–314. [PubMed: 1451775]
16. Gabel S, Shindledecker R. Characteristics of children whose parents have been incarcerated. Hosp Community Psychiatry 1993;44:656–660. [PubMed: 8354504]
17. Stanton, A. When Mothers Go to Jail. Lexington Books; Lexington, MA: 1980.
18. Hanlon T, Blatchley R, Bennett-Sears T, O'Grady K, Rose M, Callaman J. Vulnerability of children of incarcerated addict mothers: implications for preventive intervention. Child Youth Serv Rev 2005;27:67–84.
19. Sack W. Children of imprisoned fathers. Psychiatry 1977;40:163–174. [PubMed: 870921]
20. Sharp S, Marcus-Mendoza S. It's a family affair: incarcerated women and their families. Women Crim Justice 2001;12:21–49.
21. Lowenstein A. Temporary single parenthood: the case of prisoners' families. Fam Relat 1986;36:79–85.
22. Murray J, Farrington D. Parental imprisonment: effects on boys' antisocial behaviour and delinquency through the life-course. J Child Psychol Psychiatry 2005;46:1269–1278. [PubMed: 16313427]
23. White C, Tulsky J, Goldenson J, Portillo C, Kawamura M, Menendez E. Randomized controlled trial of interventions to improve follow-up for latent tuberculosis infection after release from jail. Arch Intern Med 2002;162:1044–1050. [PubMed: 11996616]
24. Bur S, Golub J, Armstrong J, et al. Evaluation of an extensive tuberculosis contact investigation in an urban community and jail. Int J Tuberc Lung Dis 2003;7:5417–5423.
25. Kemper K, Rivara F. Parents in jail. Pediatrics 1993;92:261–264. [PubMed: 8337027]
26. Offord D, Boyle M, Racine Y, et al. Integrating assessment data from multiple informants. J Am Acad Child Adolesc Psychiatry 1996;35:1078–1085. [PubMed: 8755805]
27. Augustyn M, Frank D, Posner M, Zuckerman B. Children who witness violence, and parent report of children's behavior. Arch Pediatr Adolesc Med 2002;156:800–803. [PubMed: 12144371]
28. Gabel S. Children of incarcerated and criminal parents: adjustment, behavior, and prognosis. Bull Am Acad Psychiatr Law 1992;20:33–45.
29. Wakschlag L, Hans S. Maternal smoking during pregnancy and conduct problems in high-risk youth: a developmental framework. Dev Psychopathol 2002;14:351–369. [PubMed: 12030696]
30. Sood B, Bailey BN, Covington C, et al. Gender and alcohol moderate caregiver reported child behavior after prenatal cocaine. Neurotoxicol Teratol 2005;27:191–201. [PubMed: 15734270]
31. Nordstrom-Bailey B, Sood B, Sokol R, et al. Gender and alcohol moderate prenatal cocaine effects of teacher report of child behavior. Neurotoxicol Teratol 2005;27:181–191. [PubMed: 15734269]
32. O'Connor M, Paley B. The relationship of prenatal alcohol exposure and the postnatal environment to child depressive symptoms. J Pediatr Psychol 2006;31:50–64. [PubMed: 15802607]
33. Goldschmidt L, Day N, Richardson G. Effects of prenatal marijuana exposure on child behavior problems at age 10. Neurotoxicol Teratol 2000;22:325–336. [PubMed: 10840176]
34. Accornero V, Morrow C, Bandstra E, Johnson A, Anthony J. Behavioral outcome of preschoolers exposed prenatally to cocaine: role of maternal behavioral health. J Pediatr Psychol 2002;27:259–269. [PubMed: 11909933]
35. Tiedje L, Darling-Fisher C. Fatherhood reconsidered: a critical review. Res Nurs Health 1996;19:471–484. [PubMed: 8948401]
36. Pruett K. Role of the father. Pediatrics 1998;102(supple E):1253–1261. [PubMed: 9794965]
37. Jensen PS, Grogan D, Xenakis SN, Bain MW. Father absence: effects on child and maternal psychopathology. J Am Acad Child Adolesc Psychiatry 1989;28:171–175. [PubMed: 2925568]
38. Jensen PS, Martin D, Watanabe H. Children's response to parental separation during Operation Desert Storm. J Am Acad Child Adolesc Psychiatry 1996;35:433–441. [PubMed: 8919705]

39. Frank D, Rose-Jacobs R, Beeghly M, Bellinger D, Cabral H, Heeren T. Level of prenatal cocaine exposure and scores on the Bayley Scales of Infant Development: modifying effects of caregiver, early intervention, and birthweight. Pediatrics 2002;110:1143–1152. [PubMed: 12456912]
40. McLellan AT, Kushner H, Metger D, et al. The fifth edition of the addiction severity index. J Subst Abuse Treat 1992;9:199–213. [PubMed: 1334156]
41. Frank D, Brown J, Johnson S, Cabral H. Forgotten fathers: an exploratory study of mothers' report of drug and alcohol problems among fathers of urban newborns. Neurotoxicol Teratol 2002;24:339–347. [PubMed: 12009489]
42. Deragotis L, Melisaratos N. The Brief Symptom Inventory (BSI): an introductory report. Psychol Med 1983;13:594–605.
43. Fox, N.; Leavitt, L. Violence Exposure Scale for Children-Revised (VEX-R). Institute for Child Study, University of Maryland, College Park; Baltimore, MD: 1985.
44. Shahinfar A, Fox N, Leavitt L. Preschool children's exposure to violence: relation of behavior problems to parent and child reports. Am J Orthopsychiatry 2000;70:115–125. [PubMed: 10702856]
45. Kovacs, M. The Children's Depression Inventory: A Self-Rated Depression Scale for School-Aged Youngsters. University of Pittsburgh School of Medicine; Pittsburgh, PA: 1992.
46. Achenbach, T. Manual for the Child Behavior Check List (CBCL). University of Vermont; Burlington, VT: 1991.
47. Achenbach, T. Manual for the Teacher Report Form (TRF). University of Vermont; Burlington, VT: 1991.
48. Kelder S, Murray N, Orpinas P, et al. Depression and substance use in minority middle-school students. Am J Public Health 2001;91:761–766. [PubMed: 11344884]
49. O'Leary C, Frank D, Grant-Knight W, et al. Suicidal ideation among urban nine and ten year olds. J Dev Behav Pediatr 2006;27:33–39. [PubMed: 16511366]
50. Weissman M, LaRue C. Earning trust from youths with none to spare. Child Welfare 1998;77:579–595. [PubMed: 9744075]

TABLE 1

Demographic Characteristics According to Fathers' Incarceration Status

Demographic Variable	Total Sample (*N* = 102)	Father in Jail (*n* = 31)	Father Not in Jail (*n* = 71)	*P*
Maternal characteristics				
Maternal education, %				.78
Not high school graduate	35.29	38.71	33.80	
High school graduate	52.94	48.39	54.93	
Any college	11.76	12.90	11.27	
Ethnicity, %				.42
White (not Hispanic)	7.84	6.45	8.45	
Black (born in United States)	77.45	83.87	74.65	
Black (not born in United States)	11.76	6.45	14.08	
Hispanic	1.96	0.00	2.82	
Other	0.98	3.23	0.00	
Pregnancy history				
Mother's substance use during pregnancy				
Cocaine use, %	45.10	32.26	50.70	.09
Daily volume of alcohol past 30 d of pregnancy, mean ± SD, oz	0.30 ± 1.55	0.13 ± 0.72	0.37 ± 1.79	.34
Log daily volume of alcohol past 30 d of pregnancy, mean ± SD	0.10 ± 0.39	0.06 ± 0.29	0.121 ± 0.43	.36
No. of cigarettes per d during pregnancy, mean ± SD	6.07 ± 10.39	6.00 ± 9.62	6.10 ± 10.78	.96
Log No. of cigarettes per d during pregnancy, mean ± SD	1.10 ± 1.28	1.11 ± 1.30	1.10 ± 1.28	.96
Marijuana use, %	20.59	19.35	21.13	.84
ASI scores, mean ± SD				
Alcohol composite score[a]	0.04 ± 0.11	0.03 ± 0.09	0.05 ± 0.12	.52
Illicit drugs composite score[b]	0.03 ± 0.05	0.03 ± 0.05	0.04 ± 0.06	.33
Psychiatric composite score[c]	0.04 ± 0.10	0.04 ± 0.08	0.04 ± 0.10	.88
Mother reports father has drug/alcohol problem, %	19.61	25.81	16.90	.30
Infant characteristics				
Male, %	50.00	51.61	49.30	.83
Birth weight, mean ± SD, g	3212.13 ± 494.74	3165.39 ± 470.00	3232.54 ± 507.06	.53

[a] $N = 100$

[b] $N = 99$

[c] $N = 101$.

TABLE 2

Bivariate Mean Scores for Children's Outcomes According to Fathers' Incarceration Status

Outcome	*N*	Father in Jail (*n* = 31)	Father Not in Jail (*n* = 71)	*P*
CDI total *T* score	102	46.16 ± 9.65	41.96 ± 6.42	.03
CBCL				
Internalizing *T* score	102	48.06 ± 9.17	47.66 ± 10.49	.85
Externalizing *T* score	102	51.42 ± 10.73	48.13 ± 10.76	.16
Total *T* score	102	49.03 ± 12.49	46.46 ± 13.74	.37
TRF				
Internalizing *T* score	90	56 ± 10.62	54.3 ± 10.2	.48
Externalizing *T* score	90	63.12 ± 12.62	57.67 ± 11.24	.048
Total *T* score	90	59.38 ± 12.96	58.03 ± 10.34	.60

Values are presented as mean ± SD.

TABLE 3

Final Multivariate Models

Outcome/Parameter	Regression Coefficient	SE	*P*
CDI total score			
Jail group (father in jail vs not)	3.61	1.51	.02
Child's age	−1.14	1.15	.32
Gender (female vs male)[a]	3.11	1.35	.02
Cocaine exposure (exposed vs unexposed) during pregnancy	−0.26	1.42	.86
Log average daily volume of alcohol during pregnancy	4.25	1.79	.02
Violence exposure (most-recent VEX-R score)	0.26	0.07	.0001
CBCL internalizing score			
Jail group (father in jail vs not)	0.70	2.21	.75
Child's age	0.43	2.25	.85
Gender (female vs male)[a]	−6.73	1.97	.001
Cocaine exposure (exposed vs unexposed) during pregnancy	−1.31	2.01	.51
CBCL externalizing score			
Jail group (father in jail vs not)	4.57	2.42	.06
Child's age	1.47	2.47	.55
Gender (female vs male)[a]	−3.66	2.16	.09
Cocaine exposure (exposed vs unexposed) during pregnancy	2.48	2.20	.26
CBCL total score			
Jail group (father in jail vs not)	3.37	2.41	.16
Child's age	−0.34	2.46	.89
Gender (female vs male)[a]	−6.06	2.15	.005
Cocaine exposure (exposed vs unexposed) during pregnancy	0.12	2.19	.96
TRF internalizing score			
Jail group (father in jail vs not)	1.79	2.63	.50
Child's age	0.34	1.01	.73
Gender (female vs male)[a]	−1.89	2.31	.41
Cocaine exposure (exposed vs unexposed) during pregnancy	0.86	2.36	.72
TRF externalizing score			
Jail group (father in jail vs not)	5.87	2.64	.03
Child's age	0.62	1.01	.54
Gender (female vs male)[a]	−2.06	2.29	.37
Cocaine exposure (exposed vs unexposed) during pregnancy	2.97	2.37	.21
Prenatal marijuana exposure (yes vs no)	8.81	2.87	.002
Violence exposure (most-recent VEX-R score)	0.31	0.12	.01
TRF total score			
Jail group (father in jail vs not)	1.59	2.73	.56
Child's age	0.46	1.05	.66
Gender (female vs male)[a]	−2.63	2.40	.27
Cocaine exposure (exposed vs unexposed) during pregnancy	2.48	2.45	.31

[a] Gender: 1 = male, 2 = female.