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Maternal Jail Time, Conviction, and Arrest as Predictors of Children's 15-year Antisocial Outcomes in the Context of a Nurse Home Visiting Program

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Abstract

Data from the Nurse-Family Partnership intervention program were analyzed to compare the “selection” versus “unique” effects of maternal jail time on adolescent antisocial and health risk outcomes. Data from 320 women and their first-born children were available from the prenatal, birth, and 15-year assessments. Consistent with a selection perspective, prenatal and demographic risks directly and indirectly related to many adolescent antisocial outcomes. Maternal conviction and arrest were also associated with adolescent contact with the criminal justice system and health risk behaviors. Maternal jail time predicted whether or not children had ever been stopped by police, sent to youth corrections, or run away from home. However, these associations were not significant after controlling for prenatal risk factors and maternal conviction and arrest. The results highlight the importance of maternal criminality and other risk factors in children's environments, including prenatal variables.

During the past decade, the number of children with parents involved in the criminal justice system has dramatically increased (Glaze & Maruschak, 2008; Greenfeld & Snell, 1999). Although men make up the majority of the corrections population, women are more likely now, than ever before in United States (U.S.) history, to be involved in the criminal justice system (Glaze, 2010). Approximately 7 in 10 women under correctional sanction have minor children. In 1999, 1.3 million children had a mother under the supervision of a justice system agency (Greenfeld & Snell, 1999) and these rates have grown substantially since that time (Glaze & Maruschak, 2008).

Previous research has demonstrated the concentration of crime in families (Farrington, Jolliffe, Loeber, Stouthamer-Loeber, & Kalb, 2001). In 2004, approximately 50% of parents in state prisons reported that another close family member also had a history of incarceration (Glaze & Maruschak, 2008). Understanding the processes involved in intergenerational patterns of offending is vital to prevention and intervention efforts and, ultimately, for breaking cycles of criminality. Two competing perspectives have been discussed as they relate to intergenerational patterns of offending. The “Unique Effects” perspective suggests that a parent's incarceration results in negative outcomes in the next generation (Murray & Farrington, 2008a). Thus, parental incarceration is thought to pose some *unique* risk in a child's life, in part as the result of parent-child separation, changes in

living arrangements and caregivers, and other forms of disruption resulting from parental incarceration.

However, it is also possible that the contextual risks associated with parental incarceration are responsible for less optimal child and adolescent outcomes. Many sociodemographic risks associated with parental incarceration are associated with poor development more generally. For example, living in poverty, being raised in a single-parent household, and having a parent with limited educational attainment are all related to less optimal developmental outcomes (Brooks-Gunn & Duncan, 1997). Therefore, children with parents who engage in criminal behavior or who have a history of contact with the criminal justice system may also be at risk, even in the absence of jail or prison stays. For example, children may be exposed to parental criminal behavior, or their parents may be less skilled as caregivers as a result of mental health or substance use issues. Thus, even when the parent is not incarcerated, these children may be at exceptional risk because of the contexts in which they are developing. This “Selection” perspective assumes that children with incarcerated parents are already different from children whose parents are not incarcerated, prior to the imposition of the prison or jail sentence (Hagan & Dinovitzer, 1999). This perspective suggests that the risk factors associated with parental incarceration (e.g., unemployment, low education, criminal behaviors, arrest), and not specifically the incarceration, are responsible for adverse child and adolescent outcomes.

The Unique Effects and Selection perspectives broadly consider the effects of parental incarceration on children’s outcomes. However, some scholars have argued that these effects may be amplified when the incarcerated parent is the child’s mother (e.g., Myers, Smarsh, & Amlund-Hagen, 1999). Women involved in the criminal justice system often face multiple sociodemographic risk factors. Most women on probation are white; however, women serving time in local jails and state and federal prisons are more likely to be African American or Latina (Greenfeld & Snell, 1999; Glaze & Maruschak, 2008; Western & Wildeman, 2009; Wildeman, 2009). Further, most (74%) women involved in the criminal justice system are single, 40% have completed fewer than 12 years of education, and many experience substance abuse, mental health problems, poverty, and perinatal risk factors even prior to incarceration (Greenfeld & Snell, 1999). A majority of imprisoned mothers, but less than half of imprisoned fathers, report living with their children in the months prior to incarceration (Mumola, 2000). Thus, maternal incarceration may be particularly disruptive to the family system. In addition, most mothers in jail report a history of drug use in the month prior to their arrests (Kemper & Rivara, 1993) and some mothers report using substances during their pregnancies (Knight & Plugge, 2005), potentially conferring additional risks to their children’s future development.

Combined, these risks have important implications for the developmental outcomes of the next generation. Children with mothers involved in the criminal justice system experience multiple risk factors including poverty, prenatal substance exposures, problems with maternal substance use and mental health, as well as additional risks in the proximal caregiving environment (Dallaire, 2007; Hairston, 2002; James & Glaze, 2006; Johnson & Waldfogel, 2002). Some children have witnessed their mothers’ criminal activity or arrests (Dallaire & Wilson, 2010). In addition, many children of incarcerated mothers experience negative developmental and social outcomes, including attachment insecurity (Poehlmann, 2005a), behavior problems (Hagen, Myers, & Mackintosh, 2005), cognitive delays (Poehlmann, 2005b), substance abuse disorders, conduct problems, school failure, and delinquency (Murray & Farrington, 2005).

Previous research with this population of children has varied in the specificity and use of the term “parental incarceration.” Often “parental incarceration” is used as an umbrella term,

referring to current parental incarceration in jail (e.g., Dallaire & Wilson, 2010), current parental incarceration in prison (e.g., Poehlmann, 2005a), or parental incarceration in either type of corrections facility at some point during the child's youth (e.g., Murray, Farrington, Sekol, & Olsen, 2009). Jails are locally-operated correctional facilities that confine persons before or after adjudication. Sentences to jail (typically misdemeanors) are usually one year or less, whereas sentences to prison (typically felonies) are generally more than one year, although this varies by state (Bureau of Justice Statistics, 2010).

In contrast, some scholars have used the term "parental incarceration" in a broader manner than the definition presented above, emphasizing the importance of other parental contact with the criminal justice system (e.g., arrest, parole) or even incarceration that may have occurred prior to the child's birth. For example, Phillips, Erkanli, Costello, and Angold (2006) used the term to refer to past maternal contact with the criminal justice system, whereas Phillips and Erkanli (2008) included maternal arrest in their definition. As we learn more about the potential effects of current or past parental incarceration on children's developmental outcomes, specificity is needed in one's definition of the population under study. Further, in addition to the investigations focusing on children with incarcerated parents, it is also important that this area of inquiry be expanded to include research with children of arrested and convicted parents. In the current study, we focused on women who were arrested, convicted, or spent time in jail.

Phillips and colleagues (Phillips, Burns, Wagner, Kramer, & Robbins, 2002) examined family risks associated with parental incarceration in a sample of adolescents between 11 and 18 years old receiving mental health services. The parent was considered incarcerated, if the adult respondent indicated that an adolescent's parent had ever served time in prison or jail. When compared to adolescents without a history of parental incarceration, youth with a history of parental incarceration in jail or prison had more lifetime risk factors (abuse or neglect, poverty, parental drug or alcohol abuse) and were more likely to have diagnoses for Conduct Disorder or Attention-Deficit/Hyperactivity Disorder at intake. Further, youth with a history of parental incarceration in jail or prison had experienced more negative life events in the previous six months (e.g., witnessed violence and family crises), although they were less likely to be diagnosed with depression at intake, when compared to youth without a history of parental incarceration. However, because the sample only involved adolescents receiving mental health services, the generalizability of these findings is limited.

Analyses of large-scale longitudinal data sets focusing on the relative effects of parental criminality, incarceration, and other risk factors on children's outcomes have only recently emerged. Analyses of four prospective longitudinal studies from four countries have documented associations between parental incarceration and children's long-term outcomes, although the results of only two of these studies have been consistent with a Unique Effects model. Analyses of the Cambridge Study on Delinquent Development, a study of 411 boys from south London followed to age 48 (Murray & Farrington, 2005, 2008b), found associations between parental incarceration and offspring antisocial and internalizing outcomes, even controlling for prior risk factors. In addition, in their analysis of data from the National Longitudinal Survey of Youth, Huebner and Gustafson (2007) compared the rates of adult offending behavior among 31 U.S. children with and 1,666 children without incarcerated mothers. They also found significant associations between maternal incarceration and antisocial outcomes in the next generation, controlling for prior risk factors.

Project Metropolitan, a Swedish data set analyzed by Murray, Janson, and Farrington (2007), compared the rates of adult offending behavior in 283 children with and 14,589 children without incarcerated parents. In this study, the association between parental

incarceration and offspring antisocial outcomes was accounted for by prior parental convictions. The Mater University Study of Pregnancy (Kinner, Alati, Najman, & Williams, 2007) compared 137 Australian children whose fathers had been incarcerated with 2,262 children whose fathers had not been incarcerated. In their sample, the association between paternal incarceration and offspring antisocial outcomes was not significant after controlling for socioeconomic status, maternal mental health and substance use, parenting style and family adjustment.

Although these longitudinal studies provide information about the potential long-term effects of parental incarceration and other risks on children, additional research with U.S. samples needs to be conducted testing the two competing models (i.e., Selection versus Unique Effects). Furthermore, much of the previous research examining the effects of parental criminality and incarceration on children's outcomes has focused on fathers or effects on boys (Farrington et al., 2001). As the number of mothers involved in the criminal justice system grows, the need for additional research exploring the effects of maternal criminality and incarceration in jail or prison on boys' and girls' outcomes becomes more imperative.

Although there may be overlapping risk factors among mothers in jail and prison (e.g., limited education, poverty, single parent status), there may be important distinctions as well, because prison sentences are often longer than jail sentences, and prisons are typically located further away from the offenders' prior residences compared to jails. Even in a jail sample, however, we might see unique effects of maternal jail time on children's outcomes because maternal incarceration of any kind is likely to disrupt the family system. Because of relatively brief jail stays (compared to prison stays), children of jailed mothers may have, in a short time, witnessed their parents' crime, arrest and sentencing, moved in with another family member, and potentially changed schools after relocating to another neighborhood. Thus, it is important that children of jailed mothers also be considered within this literature. However, it is unclear if research should combine children of jailed and imprisoned mothers or children of jailed and arrested mothers.

Current Study

In this report, we utilized longitudinal data from the Elmira, New York, trial of the Nurse-Family Partnership (NFP; Olds, Henderson, Tatelbaum, & Chamberlin, 1986a) to examine the relative effects of maternal jail time, conviction, and arrest, and earlier risks on adolescent outcomes at age 15. The NFP is a nurse home visiting program designed to improve the health and well-being of low-income, first-time parents and their children. Previous research with the NFP dataset has shown treatment effects on maternal conviction and arrest and adolescent outcomes (Olds et al., 1998; Olds, 2007). Adolescents whose mothers received nurse visits, compared to those in the control groups, were less likely to experience conviction or arrest. In addition, adolescents whose mothers were unmarried, low-socioeconomic status, and received nurse visits were less likely to have run away compared to those in the control groups (Olds et al., 1998). In the 19-year follow-up study, prenatal and infancy home visiting decreased the percentage of girls entering the criminal justice system, although there were few effects for boys (Eckenrode et al., 2010). However, the direct effects of maternal incarceration and criminal behavior on adolescent outcomes have not been examined previously within this sample.

To test the assumptions of a Selection Model, we examined prenatal and demographic risk factors as predictors of maternal jail time, conviction, and arrest and adolescents' 15-year antisocial behaviors (involvement in the juvenile justice system and health risk behaviors) in the context of a nurse home visiting program. In addition, we also examined whether maternal conviction and arrested predicted adolescents' 15-year antisocial behaviors after

controlling for treatment status and prenatal risk factors. To test the assumptions of the Unique Effects Model, we examined whether maternal jail time uniquely predicted adolescents' 15-year antisocial behaviors after controlling for the effects of treatment status, and prenatal and demographic risk factors. We hypothesized that when mothers spent time in jail during the child's first 15 years of life, children would exhibit more antisocial outcomes, even controlling for treatment status, and prenatal and demographic risks. To test the specificity of this effect and contrast it with the Selection model, we tested whether maternal jail time uniquely predicted adolescents' 15-year antisocial behaviors after controlling for the effects of treatment status, prenatal and demographic risks, and maternal conviction and arrest. We hypothesized that any unique effects of maternal jail time would remain, even after controlling for maternal conviction and arrest.

Method

Participants

Pregnant women were recruited from a free clinic in Elmira, New York between April 1978 and September 1980. Women with no previous live births who were less than 19 years old, unmarried, or of low socioeconomic status and who were less than 25 weeks pregnant were recruited to participate in the program. Of the 500 women who were invited to participate, 400 (80%) enrolled in the study. At the time of enrollment, women gave informed consent to participate in the study. A majority of women (85%) were young, unmarried, or from low-socioeconomic households. Additional information about the original sample and intervention can be found in previously published reports (Olds, Henderson, Tatelbaum, & Chamberlin, 1986a, 1986b; Olds, et al., 1997; Olds, 1998). The current analyses use data from assessments conducted at prenatal registration, 32-weeks gestation, and the 15-year longitudinal follow-up. At the 15-year follow-up, 330 mothers (83% of those originally enrolled) and 315 (79%) adolescents participated in interviews.

Procedure

Approval for this research was obtained from the Research Subjects Review Board at the University of Rochester. Around the time of their first-born child's fifteenth birthday, mothers were contacted via mail and telephone about their possible participation in the follow-up study. Mothers and custodial adults provided consent for the research staff to interview their children, to have access to their educational records, and to review their social service records. Children provided assent to be interviewed and to allow review of their academic and social services records. All data were gathered by trained interviewers who had no access to the families' treatment assignments, except in a few cases in which the mothers revealed that they were visited by a nurse. Whenever possible, staff tried to conduct face-to-face interviews. Mother interviews were most frequently conducted in the field office (52%); 36% were interviewed by phone and 11% were interviewed at home. Arrangements were made with the local school districts to conduct the child interviews after school hours in the guidance offices (28%); 39% of children were interviewed by phone, 31% were interviewed in the field office, and 2% were interviewed at home. Upon completion, each interview was carefully checked and edited by the original project director to ensure proper completion. Missing data or coding problems were identified, and in some cases, interviewers were asked to call back respondents to gather further information. (See Olds, et al. (1997) and Olds, et al. (1998) for additional information regarding the 15-year follow-up study.)

Measures

Treatment status—After registration, families were stratified by marital status, race, and geographic region and were then randomized into one of four treatment conditions.

Treatment groups 1 and 2 were comparison groups and treatment groups 3 and 4 were intervention groups. Treatment group 3 received nurse-visitation during pregnancy. Treatment group 4 received nurse-visitation during pregnancy and infancy. Persons involved in data collection at registration and the 15-year follow-up were blind to the participants' treatment conditions. Because treatment status was not a primary interest for this report, it was recoded into a dichotomous variable (0 = control groups, 1 = treatment groups) and was included as a control variable in all analyses.

Prenatal and demographic risk factors—At registration, mothers completed an interview about their family structure, sociodemographic characteristics, physical health, and social support. Mothers were interviewed again when they were 32-weeks pregnant, during which time mothers reported their social support, physical health, and use of services. On the basis of previous research and analyses with this sample (Olds, Henderson, & Tatelbaum, 1994a; 1994b), five prenatal risk factors were identified (maternal marital status, education, age, number of prenatal primary care visits, and prenatal tobacco use). Maternal marital status was recoded into a dichotomous variable, where 1 = married. Child gender was also included in the final model. Maternal race was not included in the final models, because the majority of mothers were white ($n = 281$, 87.5%). However, we conducted a sensitivity analysis to examine any differences when race was included in the models (see Results). Descriptive statistics for prenatal risk factors are presented in Table 1.

Maternal criminality—Interviews with mothers at the 15-year follow-up focused on several broad issues: 1) life course development; 2) psychological resources and well-being; 3) sources of support from partners, friends, and family; 4) health-related behaviors; 5) characteristics of the women's partners; 6) legal contacts, including arrests and imprisonment. Complete maternal criminal history data were available for 320 mothers (80% of the 400 mothers originally enrolled in the study).

We utilized maternal reports of legal contacts. Mothers were asked the following questions: Did you spend at least one night in jail as a result of any arrest or conviction? How long were you in jail? Since (study child) was born, have you ever been convicted (found guilty) of any crime? How many times have you been convicted of a crime? Please tell me what you were convicted of. Since (study child) was born, have you ever been arrested for any reason? How many times have you been arrested? Please tell me why you were arrested. Mothers' records of criminal convictions and arrests were also abstracted from the New York State Division of Criminal Justice Services.

The number of days spent in jail, convictions, and arrests were documented from both of these sources. For the purposes of this study, the continuous variables for the number of days in jail, number of convictions, and number of arrests were each recoded into dichotomous variables (for each variable, 1 = any incidence and 0 = none). One mother was incarcerated for 1096 days, indicating that time served likely occurred in prison, rather than jail; therefore, this case was dropped from additional analyses. Jail time ranged from 1 to 152 days ($Mn = 29$ days; $SD = 43$ days). Among mothers who served jail time, seven mothers were incarcerated for one day.

Next, we combined maternal reports with criminal records information, creating the following three dichotomous variables (for each variable, 1 = any incidence and 0 = none): 1) maternal jail time, 2) maternal conviction, and 3) maternal arrest. We were interested in understanding the separate effects of maternal jail time, conviction, and arrest on children's outcomes. Therefore, in the maternal jail models, we compared mothers who had a history of serving any time in jail ($n = 16$) with mothers who had no criminal history (no jail time, conviction, or arrest, $n = 239$). For the maternal conviction models, we compared mothers

who had a history of conviction (but not jail time) ($n = 44$) with mothers who had no criminal history. Finally, for the maternal arrest models, we compared mothers who had a history of arrest, but not conviction or jail time ($n = 21$), with mothers who had no criminal history. Thus, the comparison group (mothers who had no history of jail time, conviction, or arrest) was the same for all of the models.

Adolescent antisocial and health risk behaviors—At the 15-year follow-up, several aspects of adolescent functioning and well-being were assessed: 1) perceptions of mothers' and fathers' parenting styles; 2) perceptions of school; 3) perceived support from peers and family; 4) emotional adaptation including self-esteem, self-efficacy, and depression/anxiety; 5) behavioral adaptation including externalizing problems, delinquency, arrests, drug and alcohol use, and sexual behaviors. A separate self-administered questionnaire was used to obtain the more sensitive information from the adolescents, such as their use of drugs and their sexual and delinquent behavior, except for participants who were interviewed by phone, in which case these questions were asked directly.

For the current study, we utilized several items that assessed youths' antisocial behavior and substance use. In particular, adolescents were asked the following forced-choice questions: Have you ever been stopped by the police, but not picked up or arrested? Have you ever been arrested? Have you ever been booked or charged for breaking a law, either by the police or by someone connected with the courts? Have you ever been convicted of any charges? For each of these questions, additional follow-up questions were also asked (e.g., How many times have you been stopped? In the past 12 months, how many times have you been stopped? How old were you when this first happened?). Additional force-choice questions included, Have you ever been sentenced to spend time in a corrections institution, like a jail, prison, or a youth institution such as a training school or reform school? Have you ever run away from home? Have you ever had a [person in need of supervision] PINS filed against you? In New York, the PINS designation may be used if a child is truant, or behaving in a way that is dangerous or out of control, or frequently disobeying his or her parents, guardians or other authorities. Follow-up questions inquired about the frequency of the events and how recently they had occurred.

A series of questions was asked about adolescents' substance use, including: Have you ever tried marijuana (pot, grass, weed, hash)? How old were you when you first tried marijuana? During the past six months, about how often did you use marijuana (using a 9-point scale ranging from never to daily)? These same questions were asked about crack/cocaine, inhalants (e.g., sniffed or inhaled glue, paint), hallucinogens (e.g., angel dust, peyote, mescaline), and heroin. Using a 5-point scale (never, once, twice, three or four times, five or more times), adolescents were also asked to respond to a series of statements about problems they may have experienced (with parents, at school, with friends, in dating relationships, or with police) as a result of their substance use.

Most adolescent antisocial behaviors occurred at a low frequency; therefore, many of the 15-year adolescent outcomes were positively skewed. Because of these distributions and the developmental salience of the presence of any such high-risk behaviors, we transformed highly skewed variables into dichotomous variables. We examined the following dichotomous adolescent outcomes (for each variable, 1 = any incidence and 0 = none): 1) stopped by the police, 2) arrested, charged, or convicted, 3) sent to youth corrections, 4) run away from home, 5) adjudicated a person in need of supervision (PINS), 6) used cigarettes, 7) used any alcohol or drugs in the last six months, and 8) reported any problem as a result of substance use.

Results

Prenatal Risks and Maternal Criminality

Logistic regression was conducted to identify associations between treatment status and prenatal risk factors (maternal education, age, marital status, prenatal visits, and prenatal smoking) and the dichotomous maternal jail time, conviction, and arrest variables (Table 2). The maternal jail time model was significant, $\chi^2(6, N = 255) = 17.32, p < .001$, although none of the individual predictors reached statistical significance. In the maternal conviction model, $\chi^2(6, N = 283) = 19.17, p < .001$, mothers in the treatment conditions ($OR = .51$) and women who were married ($OR = .30$) were less likely to have been convicted of a crime. The maternal arrest model was also significant, $\chi^2(6, N = 260) = 24.57, p < .001$. Mothers were less likely to be arrested for each additional year of education they obtained ($OR = .58$).

Selection Effects: Prenatal Risks and Adolescents' 15 Year Outcomes

To examine prenatal risk factors as predictors of adolescents' outcomes at age 15 (Selection Model), a series of logistic regression analyses was conducted. Separate regressions were conducted for each outcome variable, with treatment status, maternal prenatal risk factors, and child gender entered simultaneously in one step.

Treatment status, prenatal risks, and child gender significantly predicted four of the eight adolescent outcomes (Table 3), including whether or not adolescents had ever been stopped by police; arrested, charged, or convicted; reported smoking cigarettes; or reported any problems with drugs or alcohol. Adolescents were more likely to be stopped by police if their mothers were not married ($OR = .41$) and if they were male ($OR = 3.47$). Adolescents were more likely to be arrested, charged, or convicted of a crime if their mothers had smoked during their pregnancy ($OR = 1.03$) or if the adolescent was male ($OR = 2.19$). Maternal prenatal smoking was also a significant predictor of whether or not youth reported smoking ($OR = 1.04$). Finally, adolescents were more likely to report problems with drugs or alcohol if their mothers had experienced more prenatal primary care visits ($OR = 1.12$).

Selection Effects: Maternal Conviction and Arrest and Adolescents' 15 Year Outcomes

To further examine the Selection Perspective, two additional sets of regression analyses were conducted. In the first set of regressions, treatment status, maternal prenatal risk factors, and child gender were entered in the first step and maternal conviction was entered in the second step (Table 5). In these analyses, we compared mother who had a history of conviction (but not jail time), with mothers who had no criminal history (i.e., no history of jail time, conviction, or arrest). In the second set of regressions, treatment status, maternal prenatal risk factors, and child gender were entered in the first step and maternal arrest was entered in the second step (Table 6). In these analyses, we compared mothers who had a history of arrest (but not conviction or jail time) with mothers who had no criminal history.

Controlling for treatment status, prenatal risk factors, and child gender, maternal conviction was a significant predictor of several 15-year adolescent outcomes. Compared to mothers with no criminal history, adolescents whose mothers had been convicted were more likely to have been stopped by the police ($OR = 2.36$), been sent to youth corrections ($OR = 10.15$), run away from home ($OR = 3.25$), been identified PINS ($OR = 4.11$), to report smoking cigarettes ($OR = 2.22$), and to have experienced problems as a result of drug or alcohol use ($OR = 2.84$).

Controlling for treatment status, prenatal risks, and child gender, adolescents whose mothers had a history of arrest were more likely to have been stopped by police ($OR = 4.02$), sent to

corrections ($OR = 9.41$), smoked cigarettes ($OR = 3.50$), and report problems with drugs and alcohol ($OR = 4.22$).

Unique Effects: Maternal Jail Time and Adolescents' 15 Year Outcomes

To examine the unique effects of maternal jail time on adolescent outcomes, controlling for treatment status, prenatal risk factors, and child gender (Unique Effects Model), a set of logistic regression analyses was conducted. In this set of regressions, treatment status, maternal prenatal risk factors, and child gender were entered in step one and maternal jail time was entered in step two (Table 4). In these analyses, we compared mothers who had a history of serving any time in jail with mothers who had no criminal history.

Controlling for treatment status, prenatal risk factors, and child gender, adolescents were significantly more likely to have been stopped by police ($OR = 5.96$), sent to youth corrections ($OR = 11.81$), and run away from home ($OR = 7.03$) if their mothers had a history of jail time (Table 4). Maternal jail time did not predict any of the other adolescent outcomes.

Specificity of Unique Effects Model: Maternal Jail Time and Adolescents' 15 Year Outcomes, Controlling for Maternal Conviction and Arrest

To further assess the Unique Effects model, we tested whether maternal jail time uniquely predicted adolescents' 15-year antisocial behaviors after controlling for the effects of prenatal and demographic risks, treatment status, and maternal conviction and arrest. Treatment status, maternal prenatal risk factors, and child gender were entered in the first step, maternal conviction and arrest were entered in the second step, and maternal jail time was entered in the third step (Table 7). In these analyses, maternal jail time was not a significant predictor of any of the adolescent outcomes.

Maternal Race

Maternal race was not included in the final models; however, as mentioned previously, we conducted a sensitivity analysis to examine whether or not our results changed when race was included. Although ethnicity was not a predictor of maternal conviction or arrest, African American mothers were more likely to have spent any time in jail, compared to white mothers ($OR = .23$). In addition, when youths' outcomes were examined, we found that adolescents whose mothers were white were less likely to be stopped by the police ($OR = .25$).

Discussion

In our analysis of data from a nurse home visiting program, we found that maternal jail time predicted whether or not children had ever been stopped by police, sent to youth corrections, or if they had ever run away from home, controlling for prenatal risks and treatment status. However, when maternal conviction and arrest were accounted for, maternal jail time was not a unique predictor of adolescent antisocial and health risk behaviors.

Overall, the pattern of findings appeared consistent with the Selection model rather than the Unique Effects model, suggesting that processes occurring prior to the mother's incarceration, such as the mother's conviction and arrest, have potentially powerful effects on adolescents' antisocial outcomes. Our findings are consistent with the results from Phillips and Erklani's (2008) analysis of data from the National Survey of Child and Adolescent Well-Being, which focused on families who were reported for maltreatment. In their analysis, Phillips and Erklani found that maternal arrest patterns predicted family service need patterns and child behavior problems. Combined, these findings suggest that

maternal conviction and arrest (and not solely maternal incarceration) have important implications for the next generation. Thus, in addition to examining the unique effects of current or past parental incarceration on children (and the mechanisms responsible for such effects), it is also important to investigate mechanisms linking maternal conviction and arrest with child and adolescent outcomes.

Our results indicate that maternal conviction and arrest have powerful effects on adolescents' developmental outcomes. Controlling for prenatal risks, treatment status, and child gender, we found that any maternal conviction was associated with whether adolescents had ever been stopped by police, experienced time in juvenile corrections, run away from home, been identified PINS, smoked cigarettes, or experienced problems with drugs or alcohol. In addition, maternal arrest during the child's first 15 years of life was associated with an increased likelihood that the adolescent had ever been stopped by police, experienced time in a juvenile correctional facility, smoked cigarettes, or experienced problems with drugs or alcohol. Thus, these results suggest that maternal criminality has long-lasting implications for negative outcomes in the next generation, even after accounting for prenatal and demographic risk factors.

Maternal Criminality and Adolescent Outcomes

Our findings are consistent with previous research that has documented negative effects of parental criminality on offspring (Kinner et al., 2007; Murray et al., 2007). Certain problems, such as being sent to youth corrections, may place these youths on paths that perpetuate intergenerational cycles of criminal behavior, whereas other outcomes, such as adolescent drug use, may indicate intergenerational cycles of substance abuse. There are several possible mechanisms that may link a mother's criminality during the first 15 years of her child's life with less optimal adolescent outcomes. Murray (2005) and Hagan and Dinovitzer (1999) have speculated about such mechanisms, including factors related to children's imitation of parental behaviors, social stigma, and strain. In addition, social learning theory (Patterson, DeBaryshe, & Ramsey, 1990) may offer explanations for these effects, such as parental modeling of criminal behaviors, family socialization regarding the acceptance of deviant behaviors, and lack of supervision when parents are committing crimes or imprisoned. In Sack's (1977) clinical study of eight boys with incarcerated fathers, for example, some children imitated their fathers' crimes. Moreover, Dallaire and Wilson (2010) found that witnessing the parents' criminal activity or arrest can be traumatizing, thus leading to possible negative outcomes. Researchers using a developmental psychopathology perspective have pointed to the negative effects of accumulated risks for children's antisocial outcomes (e.g., Rutter, 1997), whereas other researchers have examined potential genetic markers of antisocial behaviors (e.g., Carey & Goldman, 1997).

Although the results of the present study focused on mothers experiencing shorter jail stays rather than longer prison sentences, the findings contribute to the literature focusing on the effects of parental incarceration on children. Our findings are consistent with results of Project Metropolitan in Sweden (Murray et al., 2007). In the Swedish study, as well as the present analysis of U.S. data, the association between parental incarceration and offspring antisocial outcomes and health risk behaviors was accounted for by parental criminality. In contrast, analyses of the Cambridge Study on Delinquent Development (Murray & Farrington, 2005, 2008b) and the National Longitudinal Survey of Youth (Huebner & Gustafson, 2007) found associations between parental incarceration and offspring antisocial and internalizing outcomes, even controlling for prior risk factors.

Maternal Prenatal Risks and Adolescent Outcomes

Although maternal criminality was associated with many adolescent antisocial outcomes, maternal prenatal risks continued to be statistically significant after the addition of maternal criminality in the analyses for some outcomes. This was especially true for single marital status, prenatal primary care visits, and prenatal maternal smoking. Compared to children whose mothers were married during the prenatal period, children whose mothers were not married were more likely to be stopped by police and to have used drugs or alcohol. Compared to mothers who did not smoke during pregnancy, mothers who smoked during pregnancy had children who were more likely to have been arrested, charged, or convicted. In addition, compared to mothers who did not smoke during pregnancy, mothers who smoked during pregnancy had children who also reported smoking. These findings highlight the negative effects of these maternal behaviors. However, none of the variables predicted whether adolescents had ever drank alcohol, perhaps because, compared to other antisocial behaviors, alcohol initiation and use are often seen as more common among adolescents (Johnston, O'Malley, Bachman, & Schulenberg, 2006).

We also found that when compared to mothers who attended fewer prenatal primary care visits, mothers who attended more prenatal primary care visits had children who were more likely to have ever been stopped by police and to have children who reported a history of problems with drugs or alcohol. These findings were unexpected. However, we speculate that mothers who attended more primary care visits may have experienced pregnancies that were complicated by maternal health, mental health, or substance issues, potentially prompting additional visits to monitor the health of the fetus. Such problems, especially substance use and abuse, are likely to be associated with less optimal adolescent outcomes (Hawkins, Catalano, & Miller, 1992).

Finally, there were no significant racial differences in whether mothers had ever been convicted or arrested. However, we did find that, compared to white mothers, African American mothers were more likely to have spent time in jail. Whereas other sociodemographic risk factors predicted maternal conviction and arrest (e.g., maternal education, marital status), race was the only factor that we assessed that was a significant predictor of jail time. This may reflect racial disparities in the judicial system or other factors that result in individuals from underrepresented racial groups being disproportionately incarcerated, thus creating a greater proportion of children from ethnic minority groups affected by maternal incarceration (Glaze & Maruschak, 2008; Western & Wildeman, 2009).

Limitations

Several limitations should be considered when interpreting the results of our analyses. First, few mothers in this sample ($n = 16$, 6%) spent any time in jail. The continuous measure of maternal jail time (number of days in jail) was skewed and was subsequently recoded into a dichotomous variable (any or no time in jail). This dichotomization does not capture the variability of maternal jail time within this sample. Future research should consider the length of the parent's incarceration, as children's outcomes may vary depending on the length of parent-child separation and the level of disruption for the child.

These findings may also be limited by only using adolescents' reports of their own antisocial and health risk behaviors, which may be subject to bias. However, previous research suggests that adolescents typically self-report *more* behavior problems than their parents report (Seifge-Krenke & Kollmar, 1998; Verhulst & Van der Ende, 1992). Although some adolescents may inflate the true nature of their behavior, it is also likely that parents are unfamiliar with the frequency of antisocial and health risk behaviors that adolescents engage

in (Verhulst & Van der Ende, 1992). Juvenile court records may have helped corroborate adolescents' reports. However, these data were not collected at the time of the original study. Furthermore, it is unlikely that adolescents with and without a history of maternal criminal behavior would differentially self-report their antisocial behavior.

We were unable to examine the exact timing of maternal criminal episodes in relation to children's development (e.g., we could not examine the relative effects of maternal arrest while the child was an infant, preschooler, or adolescent). Thus, we were not able to examine factors that mediated or moderated the effects of maternal criminality on adolescent outcomes (e.g., separation from mother, loss of income or employment, change in caregivers, attachment insecurity, changes in home environment quality). These are important questions for future inquiry and would be valuable contributions to this literature.

Finally, given the relatively small sample size of mothers who spent time in jail, these results should be interpreted with caution. In a simulation study, Peduzzi and colleagues (Peduzzi, Concato, Kemper, Holford, & Feinstein, 1996) evaluated the effect of the number of events per variable (EPV) in logistic regression analyses. They found that regression coefficients were biased when EPV values were less than 10, as was the case for some of the outcomes in our study. Thus, the large confidence intervals in some of the models (particularly those examining maternal jail time) are likely related to the low EPV values and may be indicative of model instability. Such low EPV values could have influenced the validity of the logistic models with this sample and should be considered a limitation of this study.

Despite these limitations, this study has important strengths. A notable strength is the longitudinal design and the risk data that enabled us to examine associations between maternal criminality and adolescents' antisocial outcomes. The focus on mothers' criminality in the United States is particularly valuable to the literature, as much longitudinal research on this subject has examined the effects of fathers' criminality on children's outcomes and has used international samples.

Implications for Research, Policy, and Practice

It is important for future research to make a distinction between jailed and imprisoned samples, as different findings regarding child and adolescent outcomes may emerge depending on the type and length of parental incarceration. We suspect that one reason we did not find support for the Unique Effects model is that few mothers in the present sample were incarcerated for substantial periods of time. A few days or a month of jail time likely causes much less disruption in children's lives compared to maternal incarceration that lasts for many months or years. Because the severity of a crime is often related to the length of an individual's incarceration, this may be another important factor to consider in future research. Effects may also depend on the age of the child, the timing of the mother's incarceration, or the child's knowledge of his mother's criminal activity, data that were not available in the present study.

We were not able to examine the complex family processes that typically unfold following maternal imprisonment, such as issues related to finding an alternate caregiver for the child or quality of the caregiving environment (Poehlmann, Shlafer, Maes, & Hanneman, 2008), disruptions in children's attachment relationships (Poehlmann, 2005a), effects of child visitation at the jail or prison (Arditti, Lambert-Shute, & Joest, 2003; Poehlmann, Dallaire, Loper, & Shear, 2010), or co-parenting issues (Loper, Carlson, Levitt, & Scheffel, 2009). These factors may mediate or moderate the effects of maternal incarceration on children and adolescents' developmental outcomes, and they should be examined in future longitudinal research with imprisoned and jailed samples.

Our findings highlight the negative effects of maternal criminality for adolescent outcomes and have important implications for policies related to arrest and conviction. In particular, our research supports policy recommendations outlined in the Bill of Rights for children with incarcerated parents, developed by the San Francisco Children of Incarcerated Parents Partnership (2003). Specifically, our findings highlight the importance of policies that protect and support children when a parent is arrested, including training for police officers to understand children's needs at the time of arrest, and recruitment and training of advocates to support children during and after a parent's arrest and conviction.

In addition to these policy implications, our findings underscore the importance of early intervention, including efforts like those provided by the Nurse-Family Partnership (NFP) (Olds et al., 1986a). Mothers were significantly less likely to be convicted and somewhat less likely to have been arrested when they had participated in the treatment program, thus indirectly affecting adolescent outcomes. Early interventions are critical in society's efforts to protect high risk families and their children from negative outcomes, such as those associated with maternal criminal behaviors, and they are a means of fostering resilience processes in children and adolescents (Luthar & Cicchetti, 2000).

Previous NFP studies have shown that among low-socioeconomic, unmarried women, nurse home visiting during the first two years of life is associated with decreased rates of maternal conviction, arrest, and child maltreatment (Olds et al., 1997). Findings from the 15-year follow-up study (Olds et al., 1998) showed that when mothers received home visiting during pregnancy and infancy, adolescents were significantly less likely to be arrested or convicted compared to controls. By improving pregnancy and birth outcomes (e.g., through the reduction of fetal exposure to tobacco, improving the quality of women's prenatal diets) and improving maternal social support, nurse home visiting is thought to decrease prenatal stress, improve children's neuropsychological functioning, and ultimately promote healthy functioning across childhood and adolescence.

Early interventions such as the NFP should be considered as one way of preventing maternal criminal behavior and improving adolescent outcomes in high risk families. In our study, maternal conviction and arrest appear to have dramatic and long-lasting effects on adolescents' antisocial outcomes in this U.S. sample. Future research should continue to examine the intergenerational processes of antisocial behavior and the implications of this research for policy and prevention efforts designed to break this cycle.

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Table 1

Descriptive statistics of mothers' sociodemographic risks, prenatal risks, and criminal histories.

Variable	Range	Mean (SD) or % coded 1
Maternal marital status ^a	0-1	38.4%
Maternal education (years)	6-17	11.26 (1.53)
Maternal age (years)	13-34	19.37 (3.18)
Prenatal primary care visits	1-19	10.13 (3.24)
Prenatal smoking (# of cigarettes per day)	0-40	6.45 (8.56)
Maternal jail time ^b	0-1	6.3%
Maternal conviction ^c	0-1	15.5%
Maternal arrest ^d	0-1	8.1%

Note:

^a 1 = married;^b 1 = any jail time,^c 1 = ever convicted, but not jailed;^d 1 = ever arrested, but not convicted or jailed.

Table 2Logistic Regression Analyses Predicting any Maternal Jail Time, Conviction, and Arrest.¹

Maternal Outcome:	Jail Time <i>OR</i> (95% CI)	Conviction <i>OR</i> (95% CI)	Arrest <i>OR</i> (95% CI)
Treatment status ^a	.45 (.15-1.33)	.51 (.26-1.00) [*]	.39 (.15-1.04) ⁺
Maternal marital status ^b	.23 (.05-1.12) ⁺	.30 (.13-.70) ^{**}	.39 (.12-1.31)
Maternal education	.68 (.45-1.01) ⁺	1.00 (.74-1.34)	.58 (.39-.86) ^{**}
Maternal age	1.06 (.83-1.35)	.92 (.79-1.08)	1.06 (.85-1.32)
Prenatal primary care visits	.86 (.74-1.01) ⁺	.99 (.89-1.10)	.90 (.78-1.03)
Prenatal smoking	.98 (.91-1.05)	.99 (.94-1.03)	1.04 (.99-1.09)
Model <i>R</i> ²	.18	.11	.21
Model χ^2	17.32 ^{**}	19.17 ^{**}	24.57 ^{**}

¹ Each of these models remained significant when maternal race was included as a predictor. Minority mothers were slightly more likely to be convicted, *OR* = .44 (.18-1.10), *p* < .10, and were significantly more likely to have experienced time in jail, *OR* = .23 (.07-.80), *p* < .05. Maternal race was not a significant predictor of maternal arrest.

^a 1 = treatment group;

^b 1 = married;

^{**} *p* < .01,

^{*} *p* < .05,

⁺ *p* < .10.

Prenatal Risk Factors Predicting 15-year Adolescent Outcomes: Odds Ratios and 95% Confidence Intervals from Logistic Regression Analyses

Table 3

Adolescent Outcome:	Stopped by Police	Arrested/Charged/Convicted	Sent to Corrections	Run Away	PINS	Smoked Cigarettes	Used Drugs/Alcohol	Problems with Drugs/Alcohol
Treatment status ^a	.86 (.53-1.40)	.57+ (.31-1.05)	.58 (.22-1.52)	1.64 (.82-1.14)	.58 (.29-1.14)	.95 (.51-1.58)	1.00 (.63-1.59)	1.20 (.69-2.08)
Maternal marital status ^b	.41 ** (.23-.71)	.51+ (.25-1.04)	.72 (.23-2.25)	.87 (.40-1.87)	1.05 (.48-2.29)	1.04 (.59-1.84)	.53* (.31-.91)	.63 (.33-1.19)
Maternal education	.85 (.69-1.05)	.87 (.67-1.12)	.75 (.51-1.12)	.84 (.63-1.11)	.75+ (.56-1.00)	.86 (.70-1.07)	.95 (.78-1.16)	.83 (.66-1.04)
Maternal age	1.08 (.98-1.19)	1.03 (.91-1.17)	1.00 (.81-1.23)	.95 (.82-1.10)	.99 (.86-1.10)	.99 (.89-1.10)	1.04 (.94-1.14)	.97 (.87-1.09)
Prenatal primary care visits	1.09* (1.01-1.19)	1.06 (.96-1.18)	1.02 (.88-1.20)	1.08 (.96-1.20)	1.10 (.98-1.23)	1.05 (.97-1.14)	1.06 (.98-1.14)	1.12* (1.02-1.22)
Prenatal smoking	1.01 (.98-1.04)	1.03* (1.00-1.07)	1.04+ (.99-1.09)	1.02 (.98-1.06)	1.02 (.98-1.06)	1.04** (1.02-1.07)	1.01 (.98-1.03)	1.01 (.98-1.04)
Child gender ^c	3.47** (2.12-5.68)	2.19* (1.18-4.07)	1.53 (.58-4.04)	.64 (.32-1.25)	1.00 (.51-1.99)	.77 (.47-1.29)	.80 (.50-1.27)	.72 (.42-1.25)
Model <i>R</i> ²	.17	.10	.08	.07	.08	.07	.04	.08
Model χ^2	41.92**	20.21**	9.24	11.99	12.84+	15.10*	8.73	16.20*

Note: When maternal race was included as a predictor, the model for run-away also became significant. Adolescents whose mothers were ethnic minorities were more likely to be stopped (*OR* = .25 (.11-.56), *p* < .01) or run away from home (*OR* = .35 (.14-.86), *p* < .05).

^a1 = treatment group;

^b1 = married;

^c1 = male;

**
p ≤ .01,

*
p < .05,

+
p < .10.

Maternal Conviction Predicting Adolescent Antisocial Behavior – Odds Ratios and 95% Confidence Intervals from Logistic Regression Analyses

Table 4

Adolescent Outcome:	Stopped by Police	Arrested/Charged/Convicted	Sent to Corrections	Run away	PINS	Smoked Cigarettes	Used Drugs/Alcohol	Problems with Drugs/Alcohol
Treatment status ^a	.99 (.58-1.68)	.60 (.31-1.16)	.89 (.27-2.96)	2.18 ⁺ (.98-4.83)	.67 (.31-1.45)	1.15 (.66-2.02)	1.01 (.61-1.68)	1.35 (.73-2.51)
Maternal marital status ^b	.50 [*] (.28-.91)	.50 ⁺ (.23-1.06)	1.82 (.45-7.35)	1.15 (.50-2.63)	1.24 (.51-3.03)	1.19 (.64-2.19)	.51 [*] (.29-.89)	.73 (.37-1.45)
Maternal education	.88 (.70-1.11)	.91 (.67-1.22)	.70 (.42-1.17)	.92 (.66-1.27)	.79 (.56-1.11)	.93 (.73-2.19)	.98 (.79-1.21)	.88 (.68-1.14)
Maternal age	1.07 (.96-1.18)	1.05 (.92-1.19)	1.04 (.82-1.32)	.93 (.79-1.10)	.97 (.82-1.15)	.98 (.88-1.10)	1.03 (.94-1.14)	.98 (.86-1.11)
Prenatal primary care visits	1.14 ^{**} (1.04-1.26)	1.09 (.97-1.23)	1.12 (.91-1.38)	1.07 (.94-1.21)	1.15 ⁺ (1.00-1.32)	1.07 (.97-1.17)	1.06 (.97-1.15)	1.11 [*] (1.00-1.24)
Prenatal smoking	1.00 (.97-1.03)	1.03 ⁺ (1.00-1.07)	1.04 (.98-1.11)	1.03 (.99-1.07)	1.02 (.97-1.06)	1.04 [*] (1.00-1.07)	1.01 (.98-1.04)	1.01 (.97-1.04)
Child gender ^c	3.79 ^{**} (2.21-6.51)	2.50 ^{**} (1.26-4.97)	2.13 (.61-7.44)	.73 (.35-1.53)	1.07 (.49-2.33)	.75 (.43-1.30)	.74 (.45-1.22)	.67 (.37-1.23)
Maternal conviction ^d	2.36 [*] (1.13-4.93)	2.05 ⁺ (1.90-4.67)	10.15 ^{**} (2.66-38.76)	3.25 ^{**} (1.35-7.80)	4.11 ^{**} (1.68-10.06)	2.22 [*] (1.07-4.58)	1.53 (.77-3.04)	2.84 ^{**} (1.35-5.98)
Step 2 χ^2	5.32 [*]	2.76 ⁺	11.59 ^{**}	6.51 [*]	9.08 ^{**}	4.47 [*]	1.47	7.26 ^{**}
Model R^2	.20	.13	.20	.10	.14	.07	.06	.10
Model χ^2	42.76 ^{**}	21.51 ^{**}	18.32 [*]	15.44 ⁺	19.90 [*]	13.37	12.01	18.37 [*]

Note: When maternal race was included as a predictor, we found that adolescents whose mothers were ethnic minorities were more likely to be stopped ($OR = .30$ (.12-.75), $p < .05$).

^a 1 = treatment group;

^b 1 = married;

^c 1 = male;

^d 1 = any instance;

^{**} $p \leq .01$,

^{*} $p < .05$,

⁺ $p < .10$.

Maternal Arrest Predicting Adolescent Antisocial Behavior: Odds Ratios and 95% Confidence Intervals from Logistic Regression Analyses

Table 5

Adolescent Outcome:	Stopped by Police	Arrested/Charged/Convicted	Sent to Corrections	Run away	PINS	Smoked Cigarettes	Used Drugs/Alcohol	Problems with Drugs/Alcohol
Treatment status ^a	1.10 (.62 – 1.93)	.44* (.21-.91)	.46 (.11-1.90)	2.20+ (.88-5.50)	.42+ (.17-1.02)	.93 (.52-1.68)	.73 (.43-1.24)	1.39 (.72-2.69)
Maternal marital status ^b	.50* (.27-.93)	.34* (.15-.77)	1.03 (.23-4.69)	1.32 (.54-3.22)	.99 (.38-2.54)	.91 (.48-1.71)	.47* (.26-.84)	.72 (.35-1.45)
Maternal education	.91 (.71-1.16)	.88 (.65-1.20)	.77 (.42-1.39)	.85 (.59-1.21)	.65* (.45-.96)	.89 (.69-1.15)	.96 (.77-1.21)	.89 (.67-1.17)
Maternal age	1.08 (.97-1.20)	1.09 (.95-1.25)	1.14 (.90-1.44)	.99 (.84-1.16)	1.03 (.87-1.21)	1.00 (.89-1.12)	1.09 (.98-1.21)	.97 (.85-1.11)
Prenatal primary care visits	1.14** (1.03-1.25)	1.06 (.94-1.20)	1.14 (.91-1.43)	1.06 (.92-1.22)	1.20* (1.03-1.40)	1.11* (1.00-1.22)	1.05 (.96-1.14)	1.10+ (.99-1.23)
Prenatal smoking	1.00 (.97-1.03)	1.03+ (1.00-1.07)	1.04 (.97-1.12)	1.02 (.97-1.06)	1.01 (.96-1.06)	1.03 (.99-1.06)	1.00 (.97-1.04)	1.01 (.97-1.04)
Child gender ^c	4.34** (2.44-7.74)	2.87** (1.34-6.15)	3.95 (.75-20.93)	.90 (.39-2.05)	1.26 (.53-3.03)	.83 (.47-1.49)	.73 (.43-1.23)	.73 (.39-1.39)
Maternal arrest ^d	4.02* (1.30-12.41)	1.23 (.37-4.40)	9.41** (1.76-50.42)	.91 (.18-4.70)	3.38+ (.98-11.68)	3.50* (1.26-9.71)	1.15 (.42-3.10)	4.22** (1.48-12.05)
Step 2 χ^2	6.29*	.11	6.62**	.01	3.52+	5.83*	.07	7.12**
Model R^2	.22	.16	.23	.05	.18	.09	.06	.11
Model χ^2	44.72**	24.71**	17.23*	6.20	22.31**	16.01*	11.64	17.78*

Note: When maternal race was included as a predictor, we found that adolescents whose mothers were ethnic minorities were more likely to be stopped ($OR = .30 (.11-.82), p < .05$).

^a1 = treatment group;

^b1 = married;

^c1 = male;

^d1 = any instance;

**
 $p \leq .01$,

*
 $p < .05$,

+
 $p < .10$.

Maternal Jail Time Predicting Adolescent Antisocial Behavior: Odds Ratios and 95% Confidence Intervals from Logistic Regression Analyses

Table 6

Adolescent Outcome:	Stopped by Police	Arrested/Charged/Convicted	Sent to Corrections	Run away	PINS	Smoked Cigarettes	Used Drugs/Alcohol	Problems with Drugs/Alcohol
Treatment status ^a	1.05 (.60-1.86)	.43 [*] (.21-.90)	.87 (.20-3.87)	3.23 [*] (1.23-8.48)	.49 (.20-1.23)	1.19 (.65-2.19)	.92 (.53-1.58)	1.17 (.85-3.47)
Maternal marital status ^b	.52 ^{**} (.28-.98)	.32 ^{**} (.13-.75)	2.98 (.48-18.69)	1.71 (.67-4.40)	.89 (.32-2.53)	.91 (.47-1.76)	.45 ^{**} (.25-.82)	.72 (.34-1.51)
Maternal education	.86 (.67-1.10)	.80 (.59-1.10)	.66 (.36-1.23)	.65 [*] (.46-.91)	.70 ⁺ (.47-1.04)	.92 (.71-1.20)	1.00 (.79-1.26)	.91 (.68-1.21)
Maternal age	1.09 (.98-1.22)	1.10 (.95-1.27)	1.06 (.80-1.41)	1.02 (.87-1.19)	.94 (.77-1.15)	.97 (.86-1.10)	1.07 (.96-1.19)	.97 (.85-1.11)
Prenatal primary care visits	1.12 [*] (1.02-1.24)	1.10 (.97-1.26)	1.04 (.79-1.36)	1.06 (.92-1.23)	1.14 (.96-1.35)	1.08 (.97-1.20)	1.04 (.95-1.14)	1.10 (.97-1.23)
Prenatal smoking	1.00 (.96-1.03)	1.03 (.99-1.07)	1.05 (.98-1.13)	1.02 (.98-1.07)	1.02 (.96-1.07)	1.03 ⁺ (1.00-1.07)	1.01 (.98-1.05)	1.01 (.98-1.05)
Child gender ^c	3.91 ^{**} (2.19-6.98)	2.05 ⁺ (.97-4.34)	2.04 (.41-10.14)	.88 (.38-2.02)	1.02 (.41-2.56)	.83 (.46-1.51)	.70 (.41-1.19)	.76 (.39-1.49)
Maternal jail time ^d	5.96 ^{**} (1.59-22.35)	1.17 (.28-4.90)	11.81 [*] (1.26-110.63)	7.03 ^{**} (1.70-29.12)	1.32 (.23-7.59)	1.85 (.55-6.21)	.71 (.22-2.31)	.72 (.14-3.62)
Step 2 χ^2	7.93 ^{**}	.04	4.24 ^{**}	6.69 [*]	.09	.94	.32	.17
Model R^2	.20	.15	.15	.17	.11	.05	.06	.06
Model χ^2	39.34 ^{**}	21.95 ^{**}	9.44	22.24 ^{**}	12.71	8.63	10.95	8.29

Note: When maternal race was included as a predictor, we found that adolescents whose mothers were ethnic minorities were slightly more likely to be stopped ($OR = .42$ (.16-1.09), $p < .10$).

^a 1 = treatment group;

^b 1 = married;

^c 1 = male;

^d 1 = any instance;

^{**} $p \leq .01$,

^{*} $p < .05$,

⁺ $p < .10$.

Table 7
Maternal Jail Time Predicting Adolescent Antisocial Behavior, Controlling for Arrest and Conviction: Odds Ratios and 95% Confidence Intervals from Logistic Regression Analyses

Adolescent Outcome:	Stopped by Police	Arrested/Charged/Convicted	Sent to Corrections	Run away	PINS	Smoked Cigarettes	Used Drugs/Alcohol	Problems with Drugs/Alcohol
Treatment status ^a	.97 (.59-1.61)	.61 (.33-1.12)	.72 (.26-1.99)	1.98 ⁺ (.95-4.11)	.65 (.32-1.31)	1.05 (.63-1.78)	1.03 (.64-1.65)	1.38 (.78-2.46)
Maternal marital status ^b	.49 [*] (.27-.88)	.57 (.28-1.18)	1.23 (.36-4.27)	1.10 (.49-2.48)	1.45 (.63-3.33)	1.25 (.69-2.26)	.55 [*] (.32-.95)	.73 (.38-1.41)
Maternal education	.90 (.72-1.10)	.88 (.67-1.15)	.83 (.55-1.26)	.84 (.63-1.13)	.80 (.59-1.08)	.89 (.72-1.19)	.95 (.78-1.16)	.85 (.67-1.08)
Maternal age	1.08 (.97-1.19)	1.04 (.92-1.17)	1.02 (.82-1.27)	.96 (.82-1.12)	1.00 (.86-1.15)	.99 (.89-1.10)	1.04 (.95-1.15)	.98 (.87-1.11)
Prenatal primary care visits	1.12 ^{**} (1.03-1.22)	1.07 (.96-1.19)	1.07 (.91-1.25)	1.09 (.97-1.23)	1.12 ⁺ (1.00-1.27)	1.07 (.98-1.17)	1.06 (.98-1.14)	1.13 [*] (1.03-1.24)
Prenatal smoking	1.01 (.98-1.04)	1.04 [*] (1.00-1.07)	1.05 ⁺ (1.00-1.10)	1.02 (.99-1.06)	1.02 (.98-1.06)	1.05 ^{**} (1.02-1.08)	1.01 (.98-1.03)	1.01 (.98-1.04)
Child gender ^c	3.94 ^{**} (2.35-6.60)	2.31 ^{**} (1.23-4.33)	1.71 (.62-4.73)	.70 (.35-1.40)	1.05 (.52-2.13)	.79 (.47-1.33)	.80 (.50-1.28)	.71 (.41-1.25)
Maternal arrest ^d	3.60 [*] (1.28-10.08)	1.21 (.36-3.49)	9.24 ^{**} (2.21-38.65)	.64 (.13-3.14)	4.69 ^{**} (1.53-2.78)	3.32 [*] (1.29-8.56)	1.16 (.46-2.91)	3.88 ^{**} (1.42-10.61)
Maternal conviction ^d	.67 (.22-2.03)	1.92 (.57-6.46)	.83 (.22-3.11)	5.30 [*] (1.06-26.58)	.87 (.27-2.78)	.71 (.26-1.97)	1.36 (.50-3.70)	.78 (.26-2.30)
Maternal jail time ^d	2.25 (.59-8.63)	.77 (.18-3.32)	1.01 (.18-5.61)	2.34 (.57-9.51)	.50 (.10-2.61)	.80 (.23-2.73)	.53 (.16-1.81)	.22 ⁺ (.04-1.10)
Step 3 χ^2	1.47	.13	.00	1.36	.75	.13	1.05	4.27 [*]
Model R^2	.22	.12	.20	.15	.15	.11	.05	.14
Model χ^2	57.04 ^{**}	23.65 ^{**}	23.68 ^{**}	25.59 ^{**}	25.31 ^{**}	24.58 ^{**}	10.89	29.87 ^{**}

Note: When maternal race was included as a predictor, we found that adolescents whose mothers were ethnic minorities were more likely to be stopped ($OR = .29$ (.13-.68), $p < .01$).

^a 1 = treatment group;

^b 1 = married;

^c 1 = male;

^d 1 = any instance;

^{**} $p \leq .01$,

^{*} $p < .05$,

⁺ $p < .10$.