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# Impact of Maternal Incarceration on the Criminal Justice Involvement of Adult Offspring: A Research Note

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## Abstract

*Objectives:* This note examines the relationship between maternal incarceration and adverse outcomes for offspring in early adulthood. *Methods:* Utilizing data derived from the National Longitudinal Survey of Adolescent Health, a series of multivariate models are conducted to examine the impact maternal incarceration has on criminal justice involvement among young adults. To control for selection effects that may be associated with maternal imprisonment, propensity score matching is utilized. *Results:* Respondents whose mothers had served time in prison were significantly more likely to have an adult arrest, conviction, and incarceration, even after controlling for important demographic factors and correlates of criminal behavior. This effect persisted following matching. *Conclusions:* Maternal incarceration had a substantial effect on the offspring's adult involvement in the criminal justice system. These findings bolster contentions regarding the unintended consequences of maternal incarceration that include long-term collateral damage to their children.

## Keywords

maternal incarceration, collateral consequences, Add Health, propensity score matching, PSM

The increased incarceration of women has adversely affected American families as almost two-thirds (61.7 percent) of state incarcerated women in 2007 were mothers (Glaze and Maruschak 2008), and the majority of children impacted by parental incarceration (77 percent) were cared for by their mother prior to her incarceration. It is increasingly evident, through cross-sectional and retrospective studies, that children with a history of maternal incarceration are an extremely vulnerable population who experience numerous adverse outcomes. Studies show a significant association between maternal incarceration and the offspring's likelihood of experiencing home disruptions and displacements, attachment disorder, separation anxiety, depression, poor academic performance, and delinquency (Dallaire 2007; Dallaire and Wilson 2010; de Ruyter, Hissel, and Bijleveld 2013; Parke and Clarke-Stewart 2003; Poehlmann 2005).

Less is known about the long-term impact of maternal incarceration on offspring across the life course. To date, there has been only one study examining the long-term effect of *maternal* incarceration on adult children. Building from Huebner and Gustafson's (2007) article, this research note, which relies on data drawn from the National Longitudinal Survey of Adolescent Health (Add Health), allows us to consider the impact of maternal incarceration during a more recent time period when incarceration rates have been higher overall and incarceration of women in particular has been widespread. This differential time frame may result in a greater number of youth affected by maternal incarceration than Huebner and Gustafson's earlier work.

## Maternal Incarceration in the United States

While female offenders continue to comprise a small proportion of the over- all state prison population (approximately 7 percent of the overall prison population; Carson and Golinelli 2013), the rate at which females have been entering the prison system has outpaced that of their male counterparts (Frost, Greene, and Pranis 2006). Carson and Golinelli (2013) have suggested that between 1991 and 2011, new court commitments to state prisons increased for females by 64 percent, but only by 22 percent for males. This rise in prison commitments is not attributable to a large rise in

female offending rates as measured by arrest (Snyder 2012). Similar to offenders of color, the rise in incarcerated female offenders is suggested to be the result of determinate sentencing policies and the War on Drugs, rather than an increase in the seriousness of women's crime (Chesney-Lind and Sheldon 1997; Mauer 1999).

### *Consequences of Maternal Incarceration*

The unintended consequences of America's imprisonment binge over the last couple of decades have been well documented (see Clear 2008; Mauer and Chesney-Lind 2002; Travis 2005, for reviews of this literature). A growing recognition exists that these consequences are gendered, and important differences also exist in the needs of incarcerated women and incarcerated men (Petersilia 2003). For instance, female inmates typically have higher rates of trauma exposure (Green et al. 2005; Grella, Lovinger, and Warda 2013; McClellan, Farabee, and Crouch 1997), comorbidity (Binswanger et al. 2010), and depression (Coolidge et al. 2011) than male inmates. In addition, female inmates generally have greater familial responsibilities than male inmates and plan to reunite with their dependents upon release (Petersilia 2003). Relatedly, incarcerated mothers state that separation from their children is one of the most difficult aspects of imprisonment (Celinska and Siegel 2010; Dodge and Pogrebin 2001; Hairston 1991).

Adverse consequences of female incarceration are very impactful on the children left behind. Children of incarcerated mothers are more likely to live with nonparental relatives (grandparents) than are children with incarcerated fathers, thus experiencing a higher likelihood of displacement from the home (Hanlon, Carswell, and Rose 2007), which in turn increases the child's risk of attachment disruptions, separation anxiety, depression, pre-occupation with loss of their parent, and sadness (Dallaire et al. 2010; Murray and Farrington 2008a; Poehlmann 2005).

### *Current Research*

While there is a growing body of literature devoted to studying the effects of parental incarceration on children, the majority of this research has focused solely on

the impact of paternal incarceration (Miller and Barnes 2013; Perry and Bright 2012; Roettger and Swisher 2011; Roettger et al. 2010; Swisher and Roettger 2012; van de Rakt, Murray, and Nieuwbeerta 2012; Wildeman 2010) or parental incarceration more generally, with no delineation made between maternal and paternal effects (Aaron and Dallaire 2010; Arditti and Savla 2013; Dallaire and Wilson 2010; Murray and Farrington 2008b; Murray, Janson, and Farrington 2007; Murray, Loeber, and Pardini 2012; Nichols and Loper 2012; Phillips et al. 2006; Roettger and Boardman 2012). Fewer in number are the studies that have explored whether type of parental incarceration (i.e., paternal vs. maternal) has a differential impact on outcomes among children (Foster and Hagan 2013; Hagan and Foster 2012b; Lee, Fang, and Luo 2013; Nebbitt et al. 2013; Tasca, Rodriguez, and Zatz 2011).

It should also be noted that there is a paucity of attention directed at the impact of maternal incarceration on children across the life course (for exceptions, see Hagan and Foster 2012a; Huebner and Gustafson 2007; Lee et al. 2013). Considering the growth in the female prison and jail populations, of whom the vast majority are mothers with dependent children, it is imperative to better understand the long-term consequences of imprisonment on the offspring of prisoners. This research note is designed to fill this void.

## **Methods**

Given the intent of the current study to replicate Huebner and Gustafson's (2007) analysis, the current study chose measures from the Add Health, which most closely reflected this earlier work.

*Criminal justice outcomes.* Three dichotomous measures were included for the dependent variables. Adult arrest represented whether an individual reported having been arrested after the age of 18. Adult conviction represented whether an individual reported having been convicted after the age of 18, and adult incarceration represented whether an individual reported having served time in prison after the age of 18. While Huebner and Gustafson's study examined adult probation, these data were not available for the current study.

*Individual characteristics.* Huebner and Gustafson (2007) divided the individual-

level predictors into demographic factors and correlates of criminal behavior. As in the previous study, four demographic variables are included here: age, sex, race, and ethnicity. Additional variables indicated whether the respondent was a high school graduate and had experienced maternal absence (i.e., a period of time not living with biological mother) for any reason were included. Correlates of criminal behavior were captured with four variables: self-control, a delinquency scale, peer delinquency, and parental supervision.

*Maternal incarceration.* The wave IV survey asks respondents a series of questions about their biological parents' experiences with incarceration (separately for biological mothers and fathers). This information was used to create a dichotomous variable indicating whether the respondent's biological mother (maternal) and/or father (paternal) had ever served time in prison.

*Other maternal characteristics.* The Add Health is somewhat more limited in measuring characteristics of respondents' mothers in comparison to the data used in the Huebner and Gustafson study. Three measures were included in the current study, including dichotomous measures of whether the mother was an adolescent (younger than 18) when the respondent was born and whether the mother had ever smoked. Additionally, a continuous variable captured the respondent's mother's education level.

## **Results**

Initial comparisons between respondents whose mothers had been incarcerated and those with no experience of maternal incarceration indicated a number of significant differences (see Table 1). The group with incarcerated mothers was somewhat less likely to be male, Hispanic, and White (while more likely to be African American). Those with incarcerated mothers were more than three times more likely to report maternal absence and about half as likely to be a college graduate. Correlates of criminal behavior also differed significantly between the groups. Both involvement in delinquency and peer delinquency at wave I were significantly greater among those whose mothers had been incarcerated. The maternal incarceration group also had significantly lower levels of self-control at wave I and parental supervision at wave II. It is also important to note that those reporting maternal incarceration were also

considerably more likely to report that their biological fathers had also spent time in prison. In terms of adult offending outcomes, respondents whose mothers had served time in prison were more than twice as likely to have an adult arrest, an adult conviction, and an adult incarceration (see Table 1).

Table 2 presents results from a series of logistic regression models. For each of the three outcomes, a baseline model was estimated including respondent characteristics and maternal incarceration. The second model adds additional maternal characteristics, including whether the mother was an adolescent when she gave birth to the respondent, whether she had ever smoked, her education level, and whether the respondent's biological father had been incarcerated.

The first set of analyses focus on adult arrest of the offspring as the outcome measure. Age, sex, race, and education are all significant predictors of the likelihood of an adult arrest. Respondents who were older at wave I,  $\exp(b) = .918$ ,  $p < .01$ , and those who had graduated from high school,  $\exp(b) = .351$ ,  $p < .01$ , were significantly less likely to have an adult arrest. Male,  $\exp(b) = 5.384$ ,  $p < .01$ , and African American,  $\exp(b) = 1.927$ ,  $p < .01$ , respondents were significantly more likely to report an adult arrest. With the exception of a nonsignificant effect for parental supervision, the correlates of criminal behavior measures were all significantly related to adult arrest as expected. Respondents with a greater degree of involvement in delinquency,  $\exp(b) = 1.065$ ,  $p < .01$ , and greater peer delinquency at wave I,  $\exp(b) = 1.144$ ,  $p < .01$ , were significantly more likely to report an adult arrest. Those with higher levels of self-control were significantly less likely to have an adult arrest,  $\exp(b) = .974$ ,  $p < .01$ . Additionally, maternal absence significantly increased the likelihood of an adult arrest,  $\exp(b) = 1.367$ ,  $p < .05$ . Controlling for all of these factors and for maternal absence, respondents whose mothers had served time in prison were significantly more likely to report an adult arrest,  $\exp(b) = 2.492$ ,  $p < .01$ , with the odds being nearly 2.5 times higher compared to those whose mothers had not been incarcerated. The second arrest model that incorporated additional maternal characteristics and paternal incarceration produced similar results. The magnitude and significance of the baseline variables remained similar. While maternal smoking,  $\exp(b) = 1.335$ ,  $p < .01$ , maternal education,  $\exp(b) = .963$ ,  $p < .05$ , and paternal incarceration,  $\exp(b) = 1.873$ ,  $p < .01$ ,

all significantly impacted the likelihood of an adult arrest, the impact of maternal incarceration remained large and statistically significant,  $\exp(b) = 1.737$ ,  $p < .01$ .

**Table 1. Differences in Descriptive Statistics and Outcome Variables by Sample Group.**

Variables	Biological Mom Served Time in Prison		Test Statistic
	No ( $n = 14,701$ )	Yes ( $n = 640$ )	
Male	46.9%	41.7%	6.857**
Age (wave I)	16.10 (1.73)	15.88 (1.78)	3.257**
Hispanic	16.2%	13.0%	4.770*
White	63.9%	50.4%	48.016**
African American	22.2%	42.4%	140.926**
College graduate	32.4%	13.8%	98.090**
Maternal absence (wave I)	16.5%	59.7%	768.064**
Correlates of criminal behavior			
Delinquency scale (wave I)	4.19 (5.12)	6.12 (6.83)	-7.062**
Self-control scale	0.01 (4.07)	-0.35 (4.23)	2.199*
Peer delinquency	2.47 (2.61)	3.28 (2.96)	-6.781**
Parental supervision (wave II)	11.99 (2.75)	11.15 (3.24)	5.365**
Biological dad served time in prison	14.3%	46.7%	412.166**
Outcome variables			
Adult arrest (after 18)	15.0%	38.1%	201.154**
Adult conviction (after 18)	11.2%	25.6%	120.742**
Adult incarceration (after 18)	13.2%	32.0%	174.017**

Note:  $N = 15,341$ .

\* $p < .05$ . \*\* $p < .01$ .



**Table 2. Logistic Regression of Demographic Factors, Correlates of Criminal Behavior, and Maternal Characteristics on Offspring Involvement with the Criminal Justice System.**

Variables	Adult Arrest (n ¼ 8,922)				Adult Conviction (n ¼ 8,865)				Adult Incarceration (n ¼ 8,847)			
	b	Exp (b)	b	Exp (b)	b	Exp (b)	b	Exp (b)	b	Exp (b)	b	Exp (b)
Constant	–1.413 (0.455)	0.243**	–1.654 (0.471)	0.191**	–0.761 (0.455)	0.467	–1.236 (0.470)	0.291**	–1.299 (0.431)	0.273**	–1.506 (0.448)	0.222**
Individual characteristics												
Age (wave I)	–0.085 (0.025)	0.918**	–0.082 (0.025)	0.921**	–0.106 (0.025)	0.900**	–0.100 (0.025)	0.905**	–0.052 (0.024)	0.949*	–0.049 (0.024)	0.952*
Male	1.640 (0.085)	5.156**	1.683 (0.085)	5.384**	1.376 (0.081)	3.957**	1.399 (0.082)	4.049**	1.287 (0.075)	3.622**	1.339 (0.077)	3.814**
African American	0.656 (0.088)	1.927**	0.657 (0.089)	1.929**	0.203 (0.091)	1.225*	0.197 (0.092)	1.218*	0.490 (0.084)	1.632**	0.480 (0.086)	1.615**
Hispanic	0.105 (0.103)	1.111	0.068 (0.108)	1.071	–0.209 (0.108)	0.811	–0.174 (0.113)	0.840	0.132 (0.097)	1.141	0.056 (0.102)	1.058
High school graduate	–1.048 (0.108)	0.351**	–0.868 (0.112)	0.420**	–0.749 (0.113)	0.473**	–0.613 (0.117)	0.542**	–1.074 (0.104)	0.342**	–0.856 (0.108)	0.425**
Delinquency scale (wave I)	0.063 (0.007)	1.065**	0.062 (0.007)	1.064**	0.045 (0.007)	1.046**	0.044 (0.007)	1.045**	0.048 (0.007)	1.049**	0.048 (0.007)	1.049**
Maternal absence (wave I)	0.312 (0.149)	1.367*	0.171 (0.151)	1.186	0.312 (0.149)	1.366*	0.184 (0.151)	1.202	0.376 (0.140)	1.457**	0.206 (0.142)	1.229
Self-control scale (wave I)	–0.026 (0.009)	0.974**	–0.026 (0.009)	0.974**	–0.012 (0.009)	0.989	–0.011 (0.009)	0.989	–0.006 (0.009)	0.994	–0.005 (0.009)	0.995
Peer delinquency (wave I)	0.135 (0.015)	1.144**	0.125 (0.015)	1.133**	0.117 (0.015)	1.124**	0.106 (0.015)	1.112**	0.134 (0.014)	1.144**	0.124 (0.014)	1.132**
Parental supervision (wave II)	–0.025 (0.015)	0.975	–0.027 (0.015)	0.974	–0.037 (0.015)	0.963*	–0.039 (0.015)	0.961**	–0.034 (0.014)	0.967*	–0.035 (0.014)	0.965*

(continued)

Table 2. (continued)

Variables	Adult Arrest (n ¼ 8,922)				Adult Conviction (n ¼ 8,865)				Adult Incarceration (n ¼ 8,847)			
	b	Exp (b)	b	Exp (b)	b	Exp (b)	b	Exp (b)	b	Exp (b)	b	Exp (b)
Maternal characteristics												
Mother ever incarcerated	0.913 (0.197)	2.492**	0.552 (0.203)	1.737**	0.875 (0.197)	2.399**	0.564 (0.202)	1.758**	0.908 (0.187)	2.478**	0.470 (0.193)	1.600*
Adolescent mother	—	—	0.075 (0.148)	1.078	—	—	0.181 (0.147)	1.198	—	—	0.082 (0.140)	1.086
Ever smoked	—	—	0.289 (0.077)	1.335**	—	—	0.387 (0.077)	1.473**	—	—	0.276 (0.073)	1.318**
Mother's education	—	—	-0.037 (0.017)	0.963*	—	—	0.002 (0.017)	1.002	—	—	-0.055 (0.016)	0.946**
Father ever incarcerated	—	—	0.628 (0.090)	1.873**	—	—	0.483 (0.092)	1.621**	—	—	0.802 (0.084)	2.231**
Nagelkerke R <sup>2</sup>	.232		.247		.155		.172		.184		.209	
Block w <sup>2</sup>			77.581**				61.568**				130.697**	

\*p &lt; .05. \*\*p &lt; .01

The pattern of results for both adult conviction and adult incarceration was similar to the adult arrest models (see Table 2). In the baseline model, age, sex, race, and education (being a high school graduate) significantly predicted the likelihood of an adult conviction. Among the correlates of criminal behavior, involvement in delinquency, peer delinquency, and parental supervision also significantly predicted the likelihood of an adult conviction. Maternal absence significantly increased the likelihood of a conviction, and controlling for that, maternal incarceration also significantly increased the likelihood of an adult conviction,  $\exp(b) = 2.399, p < .01$ , with the odds of an adult conviction about 2.4 times greater compared to those whose mothers had not been incarcerated. In the second model, maternal smoking and paternal incarceration both significantly increased the likelihood of an adult conviction. Controlling for these additional factors, the impact of maternal incarceration remained substantial and significant,  $\exp(b) = 1.758, p < .01$ .

Finally, in the baseline adult incarceration model, age, sex, race, and education had significant effects. Involvement in delinquency and peer delinquency both increased the likelihood of adult incarceration, while parental supervision had a negative effect. Maternal absence significantly increased the likelihood of adult incarceration, and controlling for that, maternal incarceration also significantly increased the likelihood of incarceration,  $\exp(b) = 2.478, p < .01$ . In the full model, maternal smoking, maternal education, and paternal incarceration all significantly impacted the likelihood of an adult incarceration, but the impact of maternal incarceration remained statistically significant.

While these results are suggestive of a substantial effect of maternal incarceration on criminal justice outcomes for offspring, it is important to recognize that the analyses in question are nonexperimental. Children are not randomly assigned to a treatment condition in which their mother will be incarcerated. Thus, selection effects may be at work here. Propensity score matching (PSM) is a common approach to creating matched groups in an effort to account for selection processes (see Apel and Sweeten 2010). With few exceptions (see Murray et al. 2012), prior studies examining the impact of parental incarceration have generally not considered the role of selection (Hagan and Foster 2012a; Huebner and Gustafson 2007). In the current study, a logistic

regression predicting maternal incarceration was estimated using wave I indicators of mother's age, race, education, and smoking, along with two behavioral risk indicators (how often the mother wears a seat belt and how often she consumes alcohol), and a dichotomous variable indicating whether the respondent's biological father had been incarcerated. Predicted probabilities of maternal incarceration were calculated to represent the propensity score, and nearest-neighbor matching using a caliper of .01 was conducted using Stata 12. The PSM process resulted in 272 matched pairs, and balance between the two groups was achieved on nearly all variables (see Table 3). Despite being included in the propensity score calculation, differences in whether a respondent's biological father served time in prison remained significant and substantial after matching. Some respondent variables also differed significantly by groups after matching including wave I delinquency, peer delinquency, wave II parental supervision, and maternal absence. These variables will be controlled for in subsequent multivariate analyses.

Differences in the outcome variables remained large and statistically significant after matching (see Table 3). Respondents whose mothers had served time in prison were nearly twice as likely to report an adult arrest, an adult conviction, and an adult incarceration. The full multivariate models reported previously were reestimated with the matched samples, with the exception of wave II supervision, which had a sizable proportion of missing data (see Table 4). In the matched logistic regression model predicting adult arrest, the likelihood of arrest was significantly greater for respondents who were male,  $\exp(b) = 4.167$ ,  $p < .01$ , African American,  $\exp(b) = 2.036$ ,  $p < .05$ , and had a greater degree of delinquency at wave I,  $\exp(b) = 1.089$ ,  $p < .01$ . Furthermore, controlling for other relevant factors, the impact of maternal incarceration remained significant in the matched analysis,  $\exp(b) = 2.692$ ,  $p < .01$ . The odds of an adult arrest were more than two and a half times greater for those whose mother had served time in prison.



Table 3. Balance after PSM by Sample Group.

	Biological Mom Served Time in Prison		Test Statistic
Outcome Variables	No (n ¼ 272)	Yes (n ¼ 272)	
Matching variables			
Mother's age (wave I)	37.68 (4.73)	37.80 (4.94)	-0.301
Mother African American	30.9%	31.6%	0.034
Mother's frequency of seat belt use	3.99 (1.35)	3.89 (1.41)	0.901
Mother's frequency of alcohol use	2.32 (1.27)	2.38 (1.28)	-0.469
Mother ever smoked	80.5%	80.1%	0.012
Biological dad served time in prison	22.0%	48.9%	38.499**
Respondent variables			
Male	41.5%	40.8%	0.030
Age (wave I)	15.75 (1.70)	15.79 (1.78)	-0.271
Hispanic	12.9%	16.3%	1.279
African American	30.9%	34.7%	0.891
High school graduate	89.0%	84.6%	2.305
Adolescent mother	16.7%	14.1%	0.670
Maternal absence (wave I)	10.7%	23.2%	14.834**
Delinquency scale (wave I)	4.27 (5.51)	6.17 (6.84)	-3.550**
Self-control scale	0.20 (4.14)	-0.07 (4.05)	0.780
Peer delinquency	2.61 (2.64)	3.42 (3.02)	-3.317**
Parental supervision (wave II)	12.29 (2.42)	11.52 (2.89)	2.896**
Outcome variables			
Adult arrest (after 18)	15.8%	29.8%	15.083**
Adult conviction (after 18)	13.8%	25.6%	11.824**
Adult incarceration (after 18)	16.0%	33.1%	20.835**

Note: PSM ¼ propensity score matching.

\* $p < .05$ . \*\* $p < .01$ .

Table 4. Matched Samples Logistic Regression of Demographic Factors, Correlates of Criminal Behavior, and Maternal Characteristics on Offspring Involvement with the Criminal Justice System.

	Adult Arrest (n ¼ 544)		Adult Conviction (n ¼ 544)		Adult Incarceration (n ¼ 544)	
	<i>b</i>	Exp ( <i>b</i> )	<i>b</i>	Exp ( <i>b</i> )	<i>b</i>	Exp ( <i>b</i> )
Constant	-2.012 (1.395)	0.134	-0.225 (1.380)	0.798	-2.774 (1.349)	0.062*
Individual characteristics						
Age (wave I)	-0.070 (0.082)	0.932	-0.168 (0.083)	0.845*	0.047 (0.080)	1.048
Male	1.427 (0.280)	4.167**	1.437 (0.284)	4.210**	1.048 (0.270)	2.851**
African American	0.711 (0.301)	2.036*	0.287 (0.308)	1.333	0.405 (0.297)	1.499
Hispanic	-0.166 (0.412)	0.847	-0.273 (0.425)	0.761	-0.066 (0.403)	0.937
High school graduate	-0.408 (0.379)	0.665	-0.189 (0.388)	0.828	-1.055 (0.364)	0.348**
Delinquency scale (wave I)	0.085 (0.024)	1.089**	0.059 (0.023)	1.060*	0.086 (0.025)	1.090**
Maternal absence (wave I)	-0.032 (0.399)	0.968	-0.014 (0.408)	0.986	-0.159 (0.396)	0.853
Self-control scale (wave I)	0.037 (0.037)	1.038	0.022 (0.037)	1.022	0.024 (0.036)	1.025
Peer delinquency (wave I)	0.063 (0.052)	1.065	0.098 (0.052)	1.102	0.096 (0.050)	1.101
Maternal characteristics						
Mother ever incarcerated	0.990 (0.293)	2.692**	0.660 (0.296)	1.936*	0.714 (0.285)	2.041*
Adolescent mother	-0.741 (0.424)	0.477	-0.337 (0.407)	0.714	-0.145 (0.373)	0.865
Mother ever smoked	0.728 (0.393)	2.072	0.469 (0.384)	1.598	0.206 (0.352)	1.228
Mother's education	-0.091 (0.067)	0.913	-0.128 (0.069)	0.880	-0.061 (0.066)	0.941
Father ever incarcerated	-0.396 (0.296)	0.673	0.034 (0.294)	1.035	0.025 (0.285)	1.025
Nagelkerke <i>R</i> <sup>2</sup>	.287		.235		.275	

\**p* < .05. \*\**p* < .01.

Additional logistic regression models were estimated to predict the remaining outcome variables, adult conviction and adult incarceration (see Table 4). In both of these models, being male and having a greater degree of delinquent involvement significantly increased the likelihood of a reported conviction and adult incarceration. Age significantly impacted the likelihood of conviction. In the incarceration model, being a high school graduate significantly reduced the odds of incarceration as an adult. Controlling for other relevant factors, maternal incarceration significantly increased the likelihood of both an adult conviction,  $\exp(b) = 1.936$ ,  $p < .05$ , and an adult incarceration,  $\exp(b) = 2.041$ ,  $p < .05$ .

## Discussion

The current study used Add Health data to advance Huebner and Gustafson's (2007) initial work examining the impact of maternal incarceration on offspring's adult offending. Since the Add Health 1979 data were collected (and subsequently analyzed in Huebner and Gustafson 2007's study), sentencing practices and incarceration patterns in the United States, especially pertaining to incarceration of mothers, have changed considerably. Consistent with the previous study, results presented here demonstrated that maternal incarceration has a statistically significant and substantial effect on the offspring's adult involvement in the criminal justice system, as measured by arrest, conviction, and incarceration.

The current findings serve to bolster the contentions regarding the unintended consequences of maternal incarceration that include collateral damage to the children these mothers are forced to leave behind during their imprisonment. Specifically, this study provides updated analyses that focus on a more recent time period when maternal incarceration impacts a larger proportion of youth. In fact, while Huebner and Gustafson identify about 2 percent of their nationally representative sample as having experienced maternal incarceration, data presented here indicate over 4 percent of the Add Health respondents were affected by maternal incarceration.

Another significant contribution of the current study to this body of literature is the consideration of the selection processes that may be driving maternal incarceration. Characteristics of the mother may be impacting both her own involvement in offending,



resulting in incarceration and the parenting available to her offspring. Prior research examining this relationship has not considered the role of selection. Through PSM, current analyses model this selection effect to produce a sample of respondents whose mothers had been incarcerated, statistically matched to those whose mothers had not served time in prison. Following the matching process, analyses are reestimated and continued to provide evidence of a unique impact of maternal incarceration on offspring criminal justice system involvement.

Contributions to advancing knowledge in this area are twofold. First, robust conclusions from a second, more recently studied, nationally representative sample producing similar results provides a stronger basis upon which program and policy recommendations can be formulated. Second, PSM offers statistical controls for group selection. Finding continued significance of maternal incarceration on offspring criminal behavior subsequent to matching bolsters the merit of our findings and offers an indication of the robust nature of this effect.

That being said, this study is not without limitations. Although PSM reduces selection bias, even with the use of alternative matching techniques (see Dooley, Seals, and Skarbek 2014, for a discussion of coarsened exact matching), capturing all confounding influences remains an imperfect science. As such, important correlates remain unmeasured in our study. With further study, additional knowledge can be gained that will help to better shape our understanding of the best approach to take in reducing deleterious effects of incarceration on offspring and generational transmission of criminal behavior.

Although incarceration rates as a whole have stabilized in recent years, nonviolent female offender incarceration rates continue to rise. As noted earlier, researchers often attribute the growth of incarcerated females to changes in sentencing policies targeting the reduction of race and class disparities. Based on two studies with nationally representative samples, it is increasingly evident that the increased maternal incarceration resulting from these policies has also resulted in unintended consequences that perpetuate the generational transmission of criminal behavior and subsequent system involvement of offspring. The absence of mothers significantly increases the likelihood that offspring are actively involved with the criminal justice

system in the future. Maternal incarceration, above and beyond maternal absence, demonstrated a unique impact on offspring that may be due to the offspring's extended displacement from the home, increased attachment disruption, or other negative psychosocial effects.

Priority should be given to studies that identify mechanisms and dynamics contributing to generational continuity in criminal behavior within families. First, research should establish whether maternal incarceration differentially impacts male and female offspring. While the effect of maternal incarceration on offspring is robust in general, the relative influence of parental incarceration may vary by sex pairing (maternal incarceration–female offspring; paternal incarceration–male offspring; cross-gender pairing). Findings of sex-specific effects could have distinct implications for programs aiming to combat the unintended consequences of parental incarceration and spur new initiatives to increase parent–child contact during periods of incarceration. Second, a child's development progresses through many different stages with varying levels of parental dependence and independence (Koepke and Denissen 2012). Researchers need to consider the extent to which parental absence due to incarceration, specifically maternal absence, varies across developmental periods.

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