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Redefining Relationships: Explaining the Countervailing Consequences of Paternal Incarceration for Parenting

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ABSTRACT

In response to dramatic increases in imprisonment, a burgeoning literature considers the consequences of incarceration for family life, almost always documenting negative consequences. But the effects of incarceration may be more complicated and nuanced and, in this paper, we consider the countervailing consequences of paternal incarceration for a host of family relationships, including fathers' parenting, mothers' parenting, and the relationship between parents. Using longitudinal data from the Fragile Families and Child Wellbeing Study, we find recent paternal incarceration sharply diminishes parenting behaviors among residential but not nonresidential fathers. Virtually all of the association between incarceration and parenting among residential fathers is explained by changes in fathers' relationships with their children's mothers. The consequences for mothers' parenting, however, are weak and inconsistent. Furthermore, our findings show recent paternal incarceration sharply increases the probability a mother repartners, potentially offsetting some losses in the involvement of the biological father while simultaneously leading to greater family complexity. Taken together, the collateral consequences of paternal incarceration for family life are complex and countervailing.

In response to dramatic increases in imprisonment, a burgeoning literature considers the consequences of incarceration for the economic wellbeing (Harris, Evans, and Beckett 2010; Pager 2003; Petitt and Western 2004; Western 2002, 2006), family life (Apel et al. 2010; Lopoo and Western 2005; Massoglia, Remster, and King 2011; Western 2006), health (Binswanger et al. 2007; Massoglia 2008a, 2008b; Patterson 2010; Schnittker and John 2007; Schnittker, Massoglia, and Uggen 2012; Turney, Lee, and Comfort forthcoming; Turney, Wildeman, and Schnittker 2012), and civic engagement (Uggen, Manza, and Thompson 2006) of formerly imprisoned men. Though challenges to causal inference are steep, given observational data and the non-random selection into incarceration, most studies document negative consequences (Wakefield and Uggen 2010; but see Loeffler 2013; Massoglia, Firebaugh, and Warner 2013).

Yet mass imprisonment may not be solely consequential for the men who churn through the criminal justice system. A new wave of research suggests it is also relevant—and mostly detrimental—for those connected to the incarcerated who experience the cycle of imprisonment and release with them (Braman 2004; Comfort 2008; Murray and Farrington 2008; Schwartz-Soicher, Geller, and Garfinkel 2011; Turney, Schnittker, and Wildeman 2012; Wakefield and Uggen 2010; Wildeman, Schnittker, and Turney 2012; Wildeman and Western 2010). For some families, incarceration is a new form of instability distinct from other demographic trends in family life (e.g., Cherlin 2009).

But the consequences of incarceration for family life may be more complicated than this existing literature suggests (Giordano 2010; Sampson 2011; Turanovic, Rodriguez, and Pratt 2012). Indeed, much qualitative research on the effects of incarceration presents a nuanced picture, likely because it often considers consequences for multiple family members simultaneously. In one of the most vivid accounts, Nurse (2002:52-54) documents how

incarceration socializes men to handle conflict rapidly and with extreme violence. Yet the same study also shows how the incarceration of a romantic partner gives some women the opportunity to form new unions with men who may be more engaged fathers and romantic partners than biological fathers (Nurse 2002:117). In a similar vein, Braman (2004:198) describes how a romantic partner's incarceration can lead to crushing depression for women left behind. Yet Comfort (2008:193) shows how, for individuals living in communities bereft of social services, the incarceration of an addicted romantic partner can lead to short-term improvements in relationship quality and may even curtail abuse for some women (Comfort 2008:162; Western 2006:159).

Existing research, thus, leaves us with a quandary. Though issues of causal inference often remain unresolved, much research points toward incarceration's deleterious effects on family life. But other research—often qualitative research considering broad aspects of family life—paints a nuanced portrait in which incarceration sometimes undermines family life, sometimes improves it, and sometimes is inconsequential for it (Giordano 2010; Sampson 2011; Turanovic et al. 2012). These seemingly disparate findings suggest that, to fully understand the likely complex and countervailing effects of incarceration on family life, it is important to consider the consequences of incarceration for all those involved.

In this study, we heed findings from qualitative research and add nuance and rigor to existing quantitative research by considering the consequences of paternal incarceration for one important aspect of family life, parenting. We first consider how paternal incarceration influences residential fathers' and nonresidential fathers' engagement, co-parenting, and parenting stress, as well as assess what changes in family life drive significant shifts in fathers' parenting, thereby both attending to some key causal inference obstacles and testing for specific

mechanisms. We also examine how paternal incarceration influences the parenting of mothers who share children with these men and the likelihood these mothers will form romantic relationships with new men, thereby leaving the biological father behind. By considering multiple aspects of family life, and multiple relationships between family members, we provide a thorough assessment of the complex and countervailing effects of incarceration, a task necessary for constructing an incarceration ledger (Sampson 2011).

The emphasis on parenting behaviors is ideal for three reasons. First, nearly all accounts of the harmful effects of paternal incarceration on children speculate changes in parenting partially mediate this association (e.g., Geller et al. 2012; Wildeman 2010). Second, both high-quality paternal (Furstenberg, Morgan, and Allison 1987; Hawkins, Amato, and King 2007) and maternal (Amato and Fowler 2002) parenting are more strongly associated with child wellbeing than parenting quantity (i.e., whether and how often the father sees the child). Third, although some research considers how incarceration affects parenting quantity (Geller forthcoming; Swisher and Waller 2008; Waller and Swisher 2006), none that utilizes a broadly representative longitudinal sample has considered parenting *quality* (though see Bronte-Tinkew and Horowitz 2010). Our measures of parenting are conceptually distinct but not exhaustive and, notably, do not measure concepts such as monitoring, communication, discipline, and maltreatment. The measures of parenting considered, though, have implications for fathers' relationships with children, mothers' relationships with children, and mothers' relationships with fathers and new partners.

We use data from the Fragile Families and Child Wellbeing Study, a longitudinal survey of 4,898 mostly unmarried parents of children born in urban areas between 1998 and 2000. These data provide a unique opportunity to examine how paternal incarceration is linked to

family life. First, because they were designed to examine the capabilities of unmarried parents, parents who have a disproportionate amount of contact with the criminal justice system, they include a large number of ever-incarcerated fathers. Second, they include repeated indicators of incarceration and parenting, making it possible to consider the time-ordering of the dependent, explanatory, and control variables and employ rigorous modeling strategies (including fixed-effects models) that more closely isolate the effects of incarceration than most prior research. Finally, these data include a wealth of information about multiple adults connected to the focal child, as well as information about the focal child, making it possible to adjust for pre-existing differences between families that have and have not experienced paternal incarceration. By using these data to consider how paternal incarceration shapes paternal and maternal parenting, and by considering the mechanisms underlying these relationships, our study provides the first quantitative evidence of the ways in which the incarceration of a biological father could diminish, enhance, or be inconsequential for the parenting contexts—and family life more broadly—of disadvantaged children.

BACKGROUND

Mass Imprisonment and the American Family

The American incarceration rate has risen dramatically since the mid-1970s, increasing the number of families affected by the criminal justice system. In 2009, 2.3 million U.S. residents were incarcerated in prisons or jails (West and Sabol 2010), and an additional 5.1 million adults were on probation or parole (Glaze and Bonzcar 2009). Incarceration, though, is not evenly distributed across the population, and this phenomenon has especially transformed the life course of minority men (Pettit and Western 2004) living in neighborhoods of concentrated

disadvantage (Sampson and Loeffler 2010). Thus, in an era where incarceration is both common and unequally distributed, mass imprisonment may have implications for inequality.

High incarceration rates among poor, minority men were initially seen as problematic through their exacerbation of earnings inequality, but recent research documents myriad consequences of incarceration, including consequences for family life. This new branch of research arrives at a number of confounding conclusions, however. On the one hand, much research considering the effects of incarceration on children links paternal incarceration with elevated mental health and behavioral problems (Geller et al. 2012; Wakefield and Wildeman 2011; Wildeman 2010), as well as higher risks of educational difficulties (Hagan and Foster 2012), delinquency (Roettger and Swisher 2011), obesity (Roettger and Boardman 2012), and additional problems in adulthood (Murray and Farrington 2008). Even absent findings showing negative effects on children, results suggest null effects for some outcomes but not others (e.g., Geller et al. 2012; Murray, Loeber, and Pardini 2012) or protective effects only for some groups of children (e.g., Wildeman 2010). Quantitative research on how paternal incarceration affects current and former romantic partners echoes these findings, as research finds women attached to previously incarcerated men have more mental health problems (Wildeman et al. 2012), increased financial hardships (Schwartz-Soicher et al. 2011), and less social support (Turney et al. 2012) than their counterparts.

But qualitative research paints a sometimes disparate picture of how paternal incarceration affects family life, possibly because it more often considers multiple family members simultaneously, for whom the consequences of incarceration may vary dramatically. Although most studies emphasize the overall negative effects of incarceration on family life (e.g., Braman 2004; Nurse 2002), some suggest few effects (Giordano 2010:147-150) and most

acknowledge incarceration produces complex and countervailing effects (see especially Comfort 2008; Turanovic et al. 2012; see also Braman 2004). Indeed, as Braman (2004:42) notes, for many families, incarceration is bittersweet, often providing short-term solace from a simultaneously destructive and beloved family member and weakening long-term damages to family life.

Effects of Paternal Incarceration on Fathers' Parenting

There are a number of channels through which incarceration might influence fathers' relationships with children. The *direct* effects of incarceration on fathers' parenting are perhaps most obvious. During incarceration, fathers are unable to engage with their children, potentially leading to long-term reductions in involvement as fathers and their children grow accustomed to this separation (Swisher and Waller 2008). Such effects are paradoxical since qualitative research on nonresident (Edin, Nelson, and Paranal 2004) and juvenile (Nurse 2002) fathers experiencing incarceration suggest time away from children often increases fathers' desire for involvement. Despite these intentions, time apart often reduces paternal involvement (Nurse 2002). In this regard, incarceration is comparable to other prolonged absences (such as military deployment [Massoglia et al. 2011]), as the extended time away from children may inhibit future paternal involvement even in the absence of other changes in family life.

Additionally, the relationship between paternal incarceration and fathers' parenting may operate through a number of indirect mechanisms. First, incarceration may diminish fathers' parenting behaviors by disrupting relationships with children's mothers. Although incarceration allows some couples to regroup, finding their relationship stride in ways they had been unable to outside of prison walls (Comfort 2008), the preponderance of evidence suggests changes in the structure and quality of romantic relationships are often negative. Incarceration, whether because

of associated stigma or time spent apart, dramatically increases the risk of divorce and separation (Apel et al. 2010; Lopoo and Western 2005; Massoglia et al. 2011).

Qualitative evidence also suggests incarceration poisons relationship dynamics. Nurse (2002) documents how prolonged father absence resulting from incarceration leads to changes in routines among fathers and mothers alike that damage their relationship. For fathers, prolonged exposure to the harsh prison environment socializes men to use violence to resolve problems (Nurse 2002:52-54; see also Carceral 2003), which could lead to a tumultuous transition from prison to home. With respect to mothers, Nurse (2002:109) highlights how many young women gain independence during their partner's incarceration (as we discuss in detail later), leading them to grow further apart after his release. Beyond this, for fathers on parole struggling to avoid imprisonment, this liminal status further shifts power dynamics toward mothers (Goffman 2009:348; Nurse 2002:110), potentially leading to greater instability in already strained romantic relationships. Given that much of fathers' involvement is contingent on relationships with children's mothers, such resulting relationship instability is likely associated with parenting difficulties.

Beyond changes in romantic relationships, fathers' parenting may be weakened by additional mechanisms. Incarceration limits men's abilities to garner employment (Pager 2003) and decreases their earnings (Western 2002, 2006). Thus, recently incarcerated fathers, compared to their counterparts, may be less able to prioritize involvement with their children, consistent with research documenting that economically marginalized fathers experience impediments to engaged fatherhood (e.g., Nelson 2004).

Finally, the association between paternal incarceration and fathers' parenting may operate indirectly through fathers' health and wellbeing. Incarceration takes a toll on men's health, as it

is associated with functional limitations (Schnittker and John 2007), infectious and stress-related diseases (Massoglia 2008a), poor self-rated health (Massoglia 2008b), and mental health problems (Schnittker et al. 2012; Turney et al. 2012). These resulting health problems may mean recently incarcerated fathers are less able than their counterparts to actively participate in their children's lives (e.g., Davis et al. 2011).

There are reasons to expect variation in the consequences of paternal incarceration for parenting by fathers' pre-incarceration residential status. For one, although the little existing quantitative research implies negative consequences for both residential and nonresidential fathers' involvement, the qualitative literature shows that, in most instances when paternal incarceration diminishes fathers' involvement, fathers are living with children prior to incarceration (Braman 2004; Nurse 2002). Speaking generally, research on residential fathers suggests incarceration may dramatically diminish fathers' parenting by increasing the probability of union dissolution (Apel et al. 2010; Lopoo and Western 2005; Massoglia et al. 2011), taxing the relationship between parents who stay together (Nurse 2002), and causing a rift between fathers and children (Braman 2004; Nurse 2002). To the degree fathers' relationships with children's mothers link paternal incarceration and involvement, associations will be concentrated among residential fathers.

Research on nonresidential fathers also suggests average negative effects, although some of this evidence is restricted to juveniles (Nurse 2002; though see Swisher and Waller 2008). However, of the few examples suggesting incarceration increases paternal involvement, most cases included fathers nonresidential prior to incarceration (Edin et al. 2004). On balance, though, average negative effects among this group are plausible, and it is likely that incarceration

decreases paternal involvement *somewhat* among nonresidential fathers. Nonetheless, in light of limited existing research, we expect the consequences to be largest for residential fathers.

Effects of Paternal Incarceration on Mothers' Parenting

Fathers do not exist in isolation. Like all fathers, ever-incarcerated fathers are embedded in social networks comprised of, among others, current and former romantic partners. But existing literature on paternal incarceration provides little guidance as to how this incarceration may affect maternal parenting. Existing research focuses mostly on parenting of fathers (Nurse 2002), romantic relationships between mothers and their incarcerated partners (Comfort 2008), and family life more broadly (Braman 2004) rather than maternal parenting. When women are the focus, emphasis is placed squarely on their relationships (e.g., Comfort 2008) and wellbeing (e.g., Wildeman et al. 2012) rather than their parenting. But there is mounting evidence that incarceration has spillover effects on romantic partners, and it is possible that these effects extend to maternal parenting. Mothers experience a multitude of hardships during and after the incarceration of a romantic partner. For example, paternal incarceration is linked to depression and life dissatisfaction among mothers (Wildeman et al. 2012), even if a loved one's incarceration may provide a respite for women whose partners are troubled or violent (Comfort 2008). Given that maternal mental health problems diminish aspects of parenting (Turney 2011), the relationship between paternal incarceration and maternal parenting may operate indirectly through mothers' health and wellbeing. Other changes resulting from paternal incarceration, such as decreases in fathers' financial contributions (Geller, Garfinkel, and Western 2011) and increases in mothers' material hardship (Schwartz-Soicher et al. 2011), may also lead to detrimental effects on mothers' parenting.

Despite the negative consequences of paternal incarceration for women left behind, there are multiple reasons to expect null—or even positive—effects on maternal parenting. For one, qualitative literature demonstrates the extensive familial and kin support in low-income black communities (e.g., Stack 1974), precisely the communities in which incarceration is so common (Sampson and Loeffler 2010; Wakefield and Uggen 2010), suggests this familial safety net may buffer mothers from negative effects (though see Turney et al. 2012). Similarly, the incarceration of a romantic partner, especially one struggling with addiction, may provide respite—albeit in only a fleeting way—for some women (e.g., Comfort 2008). Or, if they seek to offset the potentially harmful effects of paternal incarceration on their children, women may compensate by increasing the quantity and quality of time spent with children. Given the plausibility of negative, positive, or null effects, hypothesizing how paternal incarceration affects mothers' parenting is difficult.

Paternal Incarceration and the Emergence of a New (Non-biological) Father

Thus, much research on incarceration and family life suggests that paternal incarceration is likely associated with substantial declines in fathers' parenting, especially among resident fathers, and that its association with mothers' parenting is more uncertain. Therefore, children of incarcerated fathers likely experience a less favorable "package" of parenting (e.g., Carlson and Berger 2010), as the loss in fathers' parenting is unlikely offset by comparable improvements in mothers' parenting.

Yet for some children of incarcerated parents, paternal incarceration will result in the dissolution of their parents' relationships (Apel et al. 2010; Lopoo and Western 2005; Massoglia et al. 2011). As noted earlier, relationship dissolution may have severe consequences for biological fathers' parenting. Yet because relationship dissolution may increase mothers'

chances of repartnering (Nurse 2002), some of these children will also have a new, non-biological father (often called a "social father") added into their "package" of parenting. Such changes are relevant for the full parenting contexts children are exposed to because mothers who become involved in new romantic relationships after the birth of a child, on average, repartner with men who are more advantaged than their children's biological fathers, possibly improving their children's parenting contexts (Bzostek, McLanahan, and Carlson 2012). It is not clear, though, as to whether these repartnerships would benefit children, as relationship instability more broadly is associated with negative outcomes for mothers (Cooper et al. 2009) and children (Cooper et al. 2011). Despite the many reasons to expect the incarceration of a biological father would increase the likelihood the child has a social father, as well as the reasons to expect such a change to be relevant for the parenting contexts children experience, empirical evidence about these relationships is nonexistent.

Selection into Incarceration

Of course, it may also be that any statistical relationships between paternal incarceration and children's parenting contexts result from social selection processes rather than a causal effect of paternal incarceration. Fathers are not randomly selected into incarceration. For one, demographic factors such as race and social class are predictive of incarceration, with minority and poorly educated men more likely to experience incarceration than their counterparts (Pettit and Western 2004). But even within demographic groups, incarceration results from early and concurrent antisocial behavior, differential involvement in crime (Gottfredson and Hirschi 1990), and structural factors such as differential exposure to police surveillance (Beckett, Nyrop, and Pfingst 2006).

Differential selection into incarceration is almost certainly linked to differences in family life among families that do and do not experience paternal incarceration. Given the many economic, social, and behavioral obstacles incarcerated fathers encounter prior to their incarceration, these fathers, compared to non-incarcerated fathers, are almost certainly less involved with their children prior to their incarceration. Likewise, women who share children with these men confront a number of obstacles to effective parenting prior to fathers' incarceration, meaning they will likely experience more stress and less engagement with their children regardless of whether fathers are incarcerated. Finally, the portrait of relationships prior to incarceration is often one of instability (e.g., Giordano 2010:147-150), suggesting many mothers would leave their children's fathers and move on to new partners regardless of incarceration (e.g., Nurse 2002). These sources of social selection suggest that absent a dataset allowing us to adjust for extensive time-varying and fixed covariates, it is difficult to fully demonstrate any relationship shown here results from incarceration.

DATA, MEASURES, AND ANALYTIC STRATEGY

Data

To consider the complex consequences of paternal incarceration for fathers' parenting, mothers' parenting, and relationships between parents, we use data from the Fragile Families and Child Wellbeing Study, a longitudinal cohort survey of 4,898 children born in urban areas (Reichman et al. 2001). The sampling frame included hospitals in 20 U.S. cities with populations greater than 200,000, which were stratified by labor market conditions, welfare generosity, and child support policies. Unmarried mothers were oversampled. Between February 1998 and September 2000, biological mothers completed an in-person interview at the hospital after the birth of their child. Biological fathers were interviewed as soon as possible after the focal child's

birth. Mothers and fathers were re-interviewed when their children were about one, three, five, and nine years old. We use data from the first four survey waves and focus on parenting when children are five years old, given the critical importance of this life course stage (Entwisle and Alexander 1989). An additional advantage to examining parenting at the five-year survey is that it allows us to examine changes in incarceration and parenting over a short time span (between the three- and five-year surveys).[1] The baseline response rate was 86% for mothers and 78% for fathers. Interviews with mothers and fathers were attempted in all subsequent survey waves, meaning that mothers were followed even if fathers did not participate (and vice versa). Among mothers who completed a baseline survey, about 89%, 86%, and 85% completed the one-, three-, and five-year surveys, respectively. Therefore, attrition rates were 11%, 14%, and 15% at the one-, three-, and five-year surveys. Response rates for fathers were 69%, 67%, and 64%, respectively (or, conversely, attrition rates were 31%, 33%, and 36%) (see Bendheim-Thoman Center for Research on Child Wellbeing 2008).

The analytic sample comprises 3,567 of the 4,898 families in the baseline sample. We first dropped the 1,051 observations in which the mother did not participate in the three- or five-year surveys (292 did not complete the three-year survey, 384 did not complete the five-year survey, and 375 did not complete either the three- or five-year surveys), and we excluded an additional 276 observations missing data on any of our outcome variables and an additional 4 observations missing data on fathers' pre-incarceration residential status.[2] We used multiple imputation to preserve observations missing other values (Allison 2002). There are several observed differences between the analytic sample and the full sample, though the differences are small and rarely statistically significant. Compared to fathers in the full sample, fathers in the analytic sample are less likely to be non-Hispanic other race (3.5% compared to 4.4%) and

foreign-born (16.2% compared to 18.3%). Mothers in the analytic sample are less likely to be foreign born (14.9% compared to 17.0%) and to have less than a high school education (32.3% compared to 34.7%). Thus, this observed attrition should not substantially bias our results.

Measures

Dependent variables. Our key outcome variables include measures of fathers' and mothers' parenting at the five-year survey. We examine four indicators of fathers' parenting: engagement, shared responsibility in parenting, cooperation in parenting, and parenting stress. Both mothers and fathers reported on fathers' engagement (r = .44 for residential fathers, r = .48 for nonresidential fathers), only mothers reported on father's shared responsibility and cooperation, and only fathers reported on fathers' parenting stress. Consistent with other research on fathers' parenting (e.g., Berger et al. 2008; Tach, Mincy, and Edin 2010) and to avoid censoring by attrition of uninvolved fathers, we present results using maternal reports when possible. Supplemental analyses (described below) show findings are robust to using father-reported outcomes.

First, mothers were asked how often in a typical week fathers engaged in various activities with the focal child including singing songs, reading stories, or telling stories (0 = *never* to 7 = *seven days a week)*, and our final measure of engagement averages these responses. Shared responsibility comprises the average of mothers' responses to questions about how often the father does things such as look after the child (1 = *never* to 4 = *often)*. Cooperation comprises the average of mothers' responses to questions about how often the father does things such as respects the schedules and rules she makes for the child (1 = *never* to 4 = *always)*. Finally, parenting stress is measured by fathers' responses to questions about stresses associated with the parental role (1 = *strongly disagree* to 4 = *strongly agree*). We also examine two parallel

indicators of maternal parenting, engagement and parenting stress. In some multivariate models, we adjust for parenting at the three-year survey. See Table A1 for a description of all variables.

Explanatory variable. Our key explanatory variable is recent paternal incarceration. Fathers experienced recent incarceration if they were incarcerated between the three- and five-year surveys or at the five-year survey. We capture incarceration in the following three ways: (1) if the mother reports, at the five-year survey, the father was incarcerated in the past two years; (2) if the father's interview at the five-year survey occurred in prison or jail (7% of recently incarcerated fathers); and (3) from indirect mother or father reports at the five-year survey (i.e., reports incarceration as a reason the father was unable to find a job). The reliance on both maternal and paternal reports of incarceration, assuming the father was incarcerated if either report is affirmative, and the reliance on both direct and indirect reports of incarceration is consistent with other research (see, especially, Geller et al. 2012).

Though these data provide an exceptional opportunity to examine how incarceration affects family life, the measure of recent incarceration is limited. We have no information as to whether the father was incarcerated in jail or prison, and jail and prison incarceration may be differentially associated with parenting. We have information about incarceration offense type and incarceration duration for only 56% and 74%, respectively, of recently incarcerated fathers. We use this additional information to conduct supplemental analyses described below.

Table 1 compares demographic characteristics of recently incarcerated fathers in our sample to those of fathers of three-year-old children in local jails, state prisons, and federal prisons in the United States. And, in nearly all instances, the Fragile Families fathers are more disadvantaged than the national samples of fathers in jail or prison. Fragile Families fathers are more likely to be non-Hispanic Black and less likely to be non-Hispanic white. They are less

likely to have education beyond high school (except when compared to federal prisoners), less likely to have been employed, less likely to be married, and more likely to have been previously incarcerated. Overall, though, these basic descriptive statistics suggest the Fragile Families data are broadly representative not just of children born in cities at the turn of the century, but also of incarcerated contemporary fathers of young children.

[Table 1.]

Control variables. The multivariate analyses adjust for individual-level characteristics that may render the association between recent paternal incarceration and parenting spurious, all measured at or before the three-year survey and, thus, prior to recent paternal incarceration. We control for race, immigrant status, age, education, number of children, multi-partnered fertility, fathers' importance of childrearing tasks, fathers' parenthood beliefs, mothers' incarceration, mothers' residence in public housing, and mothers' receipt of Temporary Assistance for Needy Families (TANF). We control extensively for parents' relationship (relationship status, presence of a new partner, relationship quality, and mothers' trust in the father), economic wellbeing (employment, income-to-poverty ratio, and material hardship), and health and wellbeing (fair or poor health and major depression) at the three-year survey. Our multivariate models also adjust for paternal impulsivity, domestic violence, substance abuse, and prior incarceration. Finally, the multivariate analyses control for three child characteristics (gender, age, and temperament).

Mechanisms. In some analyses, we examine three sets of mechanisms that may explain the relationship between recent paternal incarceration and parenting: changes in parents' relationship (relationship status at the five-year survey, change in relationship quality between the three- and five-year surveys, change in mothers' trust in the father between the three- and five-year surveys, and a dummy variable indicating the mother refused to let the father see the

child in the past two years), changes in fathers' economic wellbeing (changes in employment, income-to-poverty ratio, and material hardship between the three- and five-year surveys), and changes in fathers' health (changes in fair/poor health and depression between the three- and five-year surveys).

Analytic Strategy

We consider the following: (1) the association between recent paternal incarceration and fathers' parenting; (2) the association between recent paternal incarceration and mothers' parenting; (3) the mechanisms underlying the association between recent paternal incarceration and fathers' parenting; and (4) the association between recent paternal incarceration and mothers' repartnering.

Recent paternal incarceration and fathers' parenting. In the first analytic stage, we use three methods, each which provides useful and distinct information, to estimate fathers' parenting as a function of recent paternal incarceration: (1) ordinary least squared (OLS) regression models with covariate adjustment; (2) fixed-effect models; and (3) propensity score models. Because residential and nonresidential fathers parent across vastly different contexts and we expect any consequences of incarceration to be most pronounced for residential fathers, we present analyses separately by pre-incarceration residential status (residential status at the three-year survey). Theoretically, pre-incarceration residential status is not affected by recent paternal incarceration.

The OLS models estimating fathers' parenting are an important first step because they provide a baseline estimate of how paternal incarceration is associated with parenting after adjusting for observed differences between individuals. Model 1 adjusts for a wide array of control variables that precede recent incarceration, including prior incarceration. Model 2

includes these controls and also adjusts for a lagged dependent variable. Model 3 is restricted to fathers who reported prior incarceration. By examining only those who experienced prior incarceration, we diminish unobserved heterogeneity and strengthen causal inference. Note that limiting the sample to previously incarcerated men necessitates estimating the link between an *additional* incarceration and parenting. These and all models include city fixed-effects.

Then, we take two additional steps to diminish unobserved and observed heterogeneity. In Model 4, we present fixed-effects models that estimate how entry into recent incarceration (n = 97 for residential fathers, n = 246 for nonresidential fathers) is associated with changes in fathers' parenting between the three- and five-year surveys, net of unobserved stable characteristics and observed time-varying characteristics. By examining within-person changes, we account for the possibility that some individuals may simply have a greater stable propensity for criminal activity or have other unobserved disadvantages associated with parenting, and we consider these our most robust estimates. Finally, in Model 5, we present results from propensity score matching models estimating *changes* in parenting between the three- and five-year survey (Rosenbaum and Rubin 1983). Propensity score matching, an alternative way of minimizing selection, approximates an experimental design by using observed variables to comprise a treatment group and a control group. Though this method does not eliminate unobserved heterogeneity, it makes the distribution of covariates between the treatment and control groups as similar as possible, which is especially beneficial given the stark differences between recently incarcerated fathers and not recently incarcerated fathers.[3]

Recent paternal incarceration and mothers' parenting. In the second analytic stage, we consider the association between recent paternal incarceration and mothers' parenting. We again use OLS regression models, fixed-effects models, and propensity score models to

triangulate the association between recent paternal incarceration and parenting. These models proceed in a similar fashion as those estimating fathers' parenting, though we generally adjust for mothers' characteristics instead of fathers' characteristics.

Explaining the association between recent paternal incarceration and fathers' parenting. In the third analytic stage, we explain the relationship between recent paternal incarceration and fathers' parenting. All OLS models adjust for the full set of control variables. In Model 1, we present the recent incarceration coefficient from these models as a starting point for understanding mechanisms. We individually add in three sets of mechanisms: changes in parents' relationship (Model 2), changes in fathers' economic wellbeing (Model 3), and changes in fathers' health (Model 4). Model 5 includes all mechanisms.

Recent paternal incarceration and mothers' repartnering. The fourth and final analytic stage, which is primarily descriptive, considers mothers' relationships with new partners. We use multinomial logistic regression models to estimate mothers' relationship status at the five-year survey as a function of fathers' recent incarceration. We consider the odds of both *separating from the father and remaining single* and *separating from the father and repartnering*, compared to staying with the father. These analyses are restricted to mothers living with the focal child's father at the three-year survey. Model 1 adjusts for a wide array of control variables. Model 2 includes these controls and restricts the sample to women attached to previously incarcerated biological fathers.

Sample Description

In Table 2, we present descriptive statistics of all variables by parents' residential status at the three-year survey. Consistent with expectations, fathers' parenting varies by residential status. For example, residential fathers spend an average of 3.2 days per week engaged in

activities with their five-year-old children, while nonresidential fathers spend an average of 1.0 day engaged in activities ($p < .001$). Compared to nonresidential fathers, residential fathers have greater shared responsibility ($p < .001$) and cooperation ($p < .001$) in parenting. Further, recent incarceration is common, particularly among nonresidential fathers. About 8% of residential and 30% of nonresidential fathers were recently incarcerated.

[Table 2.]

Residential and nonresidential parents also differ in other ways, with residential parents reporting more demographic, socioeconomic, and behavioral advantages. Among residential fathers, more than one-quarter (28%) are non-Hispanic White, about one-third (36%) are non-Hispanic Black, and about one-third (31.1%) are Hispanic. Among nonresidential fathers, only 9% are non-Hispanic White and 21% are Hispanic, and more than two-thirds (68%) are non-Hispanic Black. Educational attainment also varies across residential status. Although nearly half (48%) of residential fathers had education beyond high school, this was true of only one-quarter (27%) of nonresidential fathers. Residential fathers are also older, report higher relationship quality, are more likely to be employed, have higher income-to-poverty ratios, report less material hardship, and report less depression.

RESULTS

Bivariate Relationship between Recent Paternal Incarceration and Parenting

In Table 3, we present descriptive statistics of fathers' and mothers' parenting by recent paternal incarceration, separately by parents' residential status at the three-year survey. These descriptive statistics demonstrate substantial differences in parenting between residential fathers with and without recent incarceration. For example, recently incarcerated residential fathers report less engagement with their five-year old children. Recently incarcerated residential fathers

spend, on average, 1.8 days a week engaging in activities with their children, compared to their counterparts who spend an average of 3.3 days a week engaging in these activities ($p < .001$). Recently incarcerated residential fathers also have less shared responsibility (2.318, compared to 3.326, $p < .001$) and less cooperation (3.140, compared to 3.691, $p < .001$). The descriptive differences by recent incarceration also exist among nonresidential fathers. Recently incarcerated nonresidential fathers have significantly less engagement ($p < .001$), less shared responsibility ($p < .001$), less cooperation ($p < .001$), and more parenting stress ($p < .001$).

[Table 3.]

With respect to mothers' parenting, mothers attached to recently incarcerated residential fathers, compared to their counterparts, report more parenting stress ($p < .001$), and these patterns are similar for mothers attached to nonresidential fathers. With respect to mothers' engagement, though, there are no descriptive differences by fathers' recent incarceration.

Estimating Fathers' Parenting as a Function of Recent Paternal Incarceration

Residential fathers. In Table 4, we present multivariate results estimating fathers' parenting as a function of recent paternal incarceration. We turn first to residential fathers (Panel A). In this and subsequent tables, each row represents a different regression model and we only present the recent incarceration coefficients. In Model 1, which adjusts for a wide array of control variables, recent paternal incarceration is associated with about 1.4 fewer days of engagement ($p < .001$). When we adjust for a lagged dependent variable in Model 2, the size of the recent incarceration coefficient decreases slightly and remains statistically significant (-1.283, $p < .001$). In Model 3, which includes all covariates from Model 3 but restricts the sample to fathers with prior incarceration, recent paternal incarceration is associated with about one fewer day of engagement (-.995, $p < .001$).

In the remaining models, we use two additional modeling strategies—fixed-effects and propensity score models—that employ more rigorous tests of selection. The coefficient from the fixed-effects model (Model 4) is smaller in magnitude than the coefficient from the most conservative OLS model (Model 3), suggesting the importance of time-invariant unobserved characteristics and time-varying observed characteristics. This coefficient, though, is substantively meaningful, as it translates into more than two-fifths of a standard deviation (-.732, $p < .001$). Propensity score models (Model 5) also suggest that recent incarceration is associated with less engagement, and this coefficient translates into more than two-thirds of a standard deviation (-1.136, $p < .001$).

[Table 4.]

We next estimate shared responsibility among residential fathers. Model 1 shows a statistically significant association between recent paternal incarceration and shared responsibility (-.801, $p < .001$), and this association persists in Model 2 (when we adjust for a lagged dependent variable [-.752, $p < .001$]) and in Model 3 (when we limit the sample to previously incarcerated fathers [-.629, $p < .001$]). The coefficients from the fixed-effects model (Model 4) and the propensity score model (Model 5) are slightly smaller in magnitude, translating, respectively, into nearly half of a standard deviation (-.405, $p < .001$) and more than three-quarters of a standard deviation (-.659, $p < .001$).

The estimates of residential fathers' cooperation are consistent with those of engagement and shared responsibility. The association between recent paternal incarceration and cooperation persists in the most conservative OLS model (Model 3) (-.318, $p < .01$). These findings also persist across different modeling strategies. The coefficient from the fixed-effects model (Model 4) translates into nearly one-third of a standard deviation (-.194, $p < .001$), and the coefficient

from the propensity score model (Model 5) translates into more than one-half of a standard deviation (-.295, $p < .001$).

Parenting stress comprises our final outcome. The OLS models (Models 1 through 3), the fixed-effects model (Model 4), and the propensity score model (Model 5) show no statistically significant association between recent incarceration and fathers' parenting stress.

Prior research finds race/ethnic differences in the association between incarceration and fathers' contact with children (Swisher and Waller 2008). In supplemental analyses, we tested interactions between recent incarceration and race/ethnicity. There is no evidence the association between fathers' incarceration and parenting vary by race/ethnicity, as these interactions are statistically insignificant across nearly all models.[4]

Nonresidential fathers. We next turn to nonresidential fathers (Panel B). For the first outcome, engagement, the OLS models show recent paternal incarceration is associated with less engagement. According to the most conservative OLS model (Model 3), recently incarcerated fathers engage with their children nearly one-half of a day less than their counterparts (-.426, $p < .001$). This translates to about one-quarter of a standard deviation. Contrary to results for residential fathers, the recent incarceration coefficient falls from statistical significance and substantially decreases in magnitude in Model 4, suggesting nearly all of the association between recent paternal incarceration and engagement among nonresidential fathers results from unobserved time-invariant characteristics. The coefficient from the propensity score model (Model 5; -0.288, $p < .01$) is smaller in magnitude than the OLS models and larger in magnitude than the fixed-effects model. Recent paternal incarceration is similarly associated with shared responsibility and cooperation, with the associations persisting in the OLS models (Models 1 through 3) and propensity score model (Model 5), but falling to statistical insignificance in the

fixed-effects model (Model 4). With respect to the final outcome, all models show recent incarceration is not associated with parenting stress among nonresidential fathers.

Alternative specifications. We consider the robustness of our results with four alternative specifications. We first restrict the sample to observations in which the father had any contact with the focal child in the past 30 days at the five-year survey. This specification allows us to examine how recent paternal incarceration is associated with parenting, conditional on *any* involvement, as even fathers residential at the three-year survey may not see their child at the five-year survey. Across most models for residential fathers, this alternative specification produced substantively similar, though smaller in magnitude, findings.

In the second alternative specification, we replace mothers' reports of engagement with fathers' reports of engagement. This specification shows that, in the most conservative OLS model for residential fathers (Panel A, Model 3 of Table 4), the recent incarceration coefficient for father-reported engagement was -.789 and statistically significant (compared to -.995 for mother-reported engagement). In the most conservative OLS models for nonresidential fathers (Panel B, Model 3 of Table 4), the recent incarceration coefficient for father-reported engagement was -.714 and statistically significant (compared to -.426 for mother-reported engagement). Therefore, for the outcome with available mothers' and fathers' reports, engagement, results are robust to using fathers' reports, suggesting the findings are not driven by mothers' reporting bias.

In the third and fourth alternative specifications, we consider how incarceration offense type (violent offense (4%), nonviolent offense (6%), offense type missing (8%), no recent incarceration (82%)) and incarceration duration (less than three months (5%), three months or greater (9%), duration missing (5%), no recent incarceration (82%)) are associated with fathers'

parenting. We find some evidence that effects on residential fathers' parenting is stronger for fathers arrested for violent offenses than fathers arrested for nonviolent offenses and no evidence that incarceration offense type differentially influences nonresidential fathers' parenting. In addition, though no differences exist between incarceration lasting less than three months and three months or greater among residential fathers, we find that incarceration spells lasting three months or longer (compared to spells less than three months) are more strongly associated with reductions in nonresidential fathers' engagement, shared responsibility, and cooperation. For example, in the final model estimating engagement among nonresidential fathers, the coefficient for incarceration lasting less than three months is .017 and the coefficient for incarceration lasting three months or longer is -.532, and these coefficients are statistically different from one another ($p = .002$). We consider these findings preliminary given the large amount of observations missing data on offense type and duration, the nonrandom nature of the missing data, and our inability to employ fixed-effects models.

Estimating Mothers' Parenting as a Function of Recent Paternal Incarceration

Mothers with residential fathers. We examine the association between recent paternal incarceration and mothers' parenting in Table 5, first among mothers living with the child's father at the three-year survey (Panel A). Consistent with descriptives, recent paternal incarceration is not associated with mothers' engagement in any of the three OLS models or the propensity score model. However, in the fixed-effects model (Model 4), recent incarceration is associated with an *increase* in mothers' engagement (.273, $p < .01$). This coefficient translates into about one-fourth of a standard deviation and suggests mothers who share children with recently incarcerated men may increase time spent with children.

[Table 5.]

We next estimate mothers' parenting stress. The OLS models suggest recent paternal incarceration is associated with more parenting stress among mothers and fathers living together at the three-year survey. The fixed-effects (Model 4) and propensity score (Model 5) models show no association between recent incarceration and parenting stress. Given the relatively small magnitude of the OLS coefficients (Model 3 translates to one-fifth of a standard deviation) and the statistical insignificance of the more rigorous modeling strategies, we conclude this relationship is not robust.

Mothers with nonresidential fathers. We next consider the association between recent paternal incarceration and mothers' parenting among mothers not living with the child's father at the three-year survey (Panel B). Across both outcomes and models, there is no association between recent paternal incarceration and mothers' parenting.

Explaining the Relationship between Recent Paternal Incarceration and Fathers' Parenting

The results presented above suggest recent paternal incarceration is robustly associated with fathers' engagement, shared responsibility, and cooperation among residential—but not nonresidential—fathers. In the next analytic stage, we focus on explaining the relationship between recent paternal incarceration and these three aspects of residential fathers' parenting. The first model of Table 6, the equivalent of Model 2 from Table 4, provides a baseline estimate for the subsequent models.

[Table 6.]

Residential fathers. We turn first to estimates of engagement among residential fathers. We adjust for changes in the parents' relationship between the three- and five-year surveys in Model 2. We include all four indicators of parents' relationship simultaneously in the model, as a

chi-square test revealed joint significance (F = 303.91, $p < .001$). The recent incarceration coefficient falls by 69% from Model 1, though the coefficient remains statistically significant (-.399, $p < .01$). When we enter each mechanism individually, we find 58% of the association is explained by parents' relationship status and 33% is explained by change in mothers' trust in the father. Mothers' refusal to let the father see the child and decline in relationship quality explain less of the association (10% and 15%, respectively). We adjust for changes in fathers' economic wellbeing in Model 3 and changes in fathers' health in Model 4, neither of which substantially reduce the magnitude of the recent incarceration coefficient. In the final model, which includes all potential mechanisms, recent paternal incarceration is reduced but still associated with engagement among residential fathers (-.417, $p < .01$).

We next turn to explaining the association between recent paternal incarceration and shared responsibility. Similar to our estimates of engagement, adjusting for changes in parents' relationship explains a substantial portion—80%—of the association between recent incarceration and shared responsibility, and the recent incarceration coefficient falls to statistical insignificance. Again, entering in each of the four measures individually shows that relationship status and change in mothers' trust in the father are responsible for much of the decrease in the recent incarceration coefficient (explaining 67% and 38%, respectively). Changes in fathers' economic wellbeing (Model 3) and changes in fathers' health (Model 4) explain 1% and 5%, respectively. In the final model, the association between recent incarceration and shared responsibility is small and statistically insignificant.

The estimates of cooperation are similar to those of shared responsibility, with changes in parents' relationship explaining 94% of the association (and to statistical insignificance) and with changes in fathers' economic wellbeing and health explaining little of this association. Taken

together, these findings suggest much of the negative association between incarceration and parenting among fathers results from changes in his relationship with children's mothers.[6]

Alternative specifications. The above analyses use mothers' reports of fathers' parenting. It is possible mothers experiencing substantial changes in relationships with fathers are simply more likely to report lower father engagement, regardless of fathers' actual engagement. In supplemental analyses, we estimate fathers' reports of engagement and find that changes in the parents' relationship substantially reduces the association between recent paternal incarceration and engagement. For example, including indicators of change in the parents' relationship reduces the recent incarceration coefficient by 52%, which is less than the 69% explained when using mother-reported engagement but still substantial. Including changes in economic wellbeing and health explain very little (2% and 5%, respectively) of the relationship between recent incarceration and father-reported engagement, consistent with findings from mother-reported engagement.

Estimating Mothers' Repartnership as a Function of Recent Paternal Incarceration

The above analyses show recent paternal incarceration is robustly associated with fathers' parenting, especially among residential fathers, and also show much of the relationship between recent paternal incarceration and mothers' parenting results from social selection processes. But mothers' lives are affected in other ways and, for some, the incarceration of a child's father may give mothers an opportunity to repartner, which we consider in Table 7. These analyses are restricted to mothers living with the child's biological father at the three-year survey (n = 1,894). The first set of results estimates the odds of separating from the father and remaining single, compared to staying with the father. In Model 1, which adjusts for a wide array of control variables, we find recent incarceration is associated with a greater likelihood of separating from

the father and remaining single (1.457, $p < .001$ [OR = 4.29]). This association persists in Model 2, which restricts the sample to couples in which the father was previously incarcerated, with mothers attached to recently incarcerated fathers having 3.23 times the odds of separating from the father and remaining single, compared to staying with the father (1.171, $p < .01$).

[Table 7.]

The second set of results estimate the odds of separating from the father and repartnering, compared to staying with the biological father. Again, recent incarceration is associated with a greater likelihood of separating from the father and repartnering, and this association persists across both models. In the most conservative model (Model 2), the coefficient shows mothers attached to recently incarcerated men have 7.01 times the odds of separating from the father and repartnering (1.947, $p < .001$). In this most conservative model, the coefficients for remaining single and for repartnering are not statistically different from one another. Supplemental analyses (Table A2) show social fathers are more involved in parenting than biological fathers.[7]

DISCUSSION

A burgeoning literature suggests incarceration may exacerbate social inequalities among adult men and those attached to them, including their children and the women with whom they share children (Wakefield and Uggen 2010; Wildeman and Western 2010). When this exacerbation of social inequalities is combined with the fact that the crime-fighting benefits of imprisonment have declined substantially since the early 1990s (Johnson and Raphael 2012), much research points toward an incarceration ledger (Sampson 2011) suggesting mass imprisonment exacerbates social problems while reducing crime only a small amount.

We add to this growing literature on the collateral consequences of incarceration by considering the consequences of paternal incarceration for family relationships. We use

longitudinal data from the Fragile Families and Child Wellbeing Study, a data source uniquely positioned to examine the consequences of incarceration for family life, and a rigorous, multi-method research design. Our findings suggest a complicated picture about how paternal incarceration influences the parenting contexts children experience, as well as relationships between family members, and thereby lend novel insight into how mass imprisonment enhances, hinders, and has no effect on family relationships.

Our results yield five conclusions about how recent paternal incarceration affects family life. First, we find that when parents live together prior to incarceration, paternal incarceration is robustly and negatively associated with fathers' relationships with their children (engagement) and their children's mothers (co-parenting). This is consistent with qualitative (Braman 2004; Edin et al. 2004; Nurse 2002) and quantitative (Geller forthcoming; Swisher and Waller 2008) research documenting how incarceration disrupts family relationships and extends this research by considering parenting, a consequential and distinct aspect of family life. We find no evidence that paternal incarceration is linked to fathers' parenting stress, consistent with the notion that recently incarcerated fathers no longer participate in the rigors of parenting in ways that increase their stress. Importantly, in documenting these associations, we exclusively consider the *average* effects of incarceration on residential and nonresidential fathers, though considering variation in effects is an important direction for future research.

Second, and relatedly, we find that recent paternal incarceration is not consequential for fathers' relationships with children and children's mothers when parents are not living together prior to incarceration. Fixed-effects models show that, for nonresidential fathers, these findings result from stable unobserved characteristics. Though existing quantitative research provides little guide for the differential effects on residential and nonresidential fathers, our findings are

consistent with evidence provided by qualitative studies (Braman 2004; Edin et al. 2004; Nurse 2002). The fact that effects are concentrated among residential fathers is consistent with a broader literature that shows the intergenerational transmission of antisocial behavior is strongest when children live with their biological fathers (Jaffee et al. 2003) and, as such, fits both within the sociological and criminological literature on this topic.

Third, virtually the entire association between paternal incarceration and fathers' parenting is explained by changes in fathers' relationships with mothers. Among parents living together prior to incarceration, changes in the parents' relationship explain 69% of the effect on engagement, 80% of the effect on shared responsibility, and 94% of the effect on cooperation. These findings are consistent with existing literature showing that incarceration dramatically increases the risk of divorce and separation (Apel et al. 2010; Lopoo and Western 2005; Massoglia et al. 2011) and leads to changes in relationship quality (Nurse 2002), all of which may decrease father involvement given the "package deal" of fatherhood (Tach et al. 2010; Townsend 2002). Similarly, research suggests that mothers, based on their assessments of fathers' suitability as parents, have the power to control fathers' involvement by restricting fathers' access to children (Waller and Swisher 2006). We advance this literature by showing that relationship dissolution and changes in mothers' trust following incarceration are the most important mechanisms and that other features of the relationship (changes in relationship quality or mother's refusal to let the father see the child) matter less. This suggests that, at least when accounting for the association between paternal incarceration and fathers' parenting, the maternal gatekeeping vividly described in qualitative research is perhaps more a function of relationship dissolution and trust than active gatekeeping (i.e. refusal). Interestingly, changes in fathers'

economic wellbeing and health explain far less of these associations than changes in relationships, suggesting our findings are indicative of familial rather than individual changes.

Fourth, we find no consistent evidence that paternal incarceration is associated with mothers' parenting. For example, OLS models find no association between paternal incarceration and engagement among residential mothers, but fixed-effects models provides evidence that paternal incarceration *increases* engagement. Similarly, among residential mothers, the OLS models suggest paternal incarceration is associated with more parenting stress, consistent with expectations (e.g., Wildeman et al. 2012), but these findings fall from statistical significance when we consider within-person changes. Since much existing research on the consequences of parental imprisonment for child wellbeing speculates that changes in both paternal and maternal parenting behaviors explain negative associations, these findings suggest that paternal behaviors may be most consequential. Future research on the consequences of paternal incarceration for children should consider this. And, given that parents and children are embedded in larger family networks, future research should consider the extent to which grandparents and other family members compensate for fathers' reduced parenting.

Finally, although paternal incarceration is not particularly salient for mothers' parenting, it is indeed consequential for mothers in that it dramatically alters their relationships with fathers. This is consistent with the fact that changes in the parents' relationship drives the association between incarceration and fathers' parenting. The repartnering side of the story is especially new to the quantitative literature. On the one hand, the incarceration of a biological father may improve child wellbeing, as supplemental analyses show social fathers are more involved in parenting, and an emerging literature documents that women repartner with more advantaged partners and fathers (e.g., Bzostek et al. 2012). On the other hand, repartnership is a form of

family instability, which often has negative consequences for both mothers (Cooper et al. 2009) and their children (Cooper et al. 2011). Future research should further consider the consequences of this repartnering.

Limitations

Several limitations exist. First, incarceration experiences are sufficiently complex that we cannot disentangle them all. We do not have measures of incarceration type (prison versus jail), and we have only limited information about incarceration offense type or incarceration duration. Other features of the incarceration experience—such as experiences surrounding the arrest, visitation from family members, or distance incarcerated from family—remain unmeasured. The data are also limited because they do not include information about fathers' criminal history (aside from violence toward partners). Given that criminal activity varies tremendously over the life course and even over relatively short periods of time (Horney, Osgood, and Marshall 1995), this information is unobserved even in the fixed-effect models, and it is possible that the measure of recent incarceration also picks up unmeasured criminal activity. Given the complexity of criminal records, future research may especially benefit from using administrative data to disentangle the potentially differential effects of various characteristics of incarceration.

Our nearly exclusive focus on parenting precludes us from considering all positive or negative consequences of incarceration on family life. To the extent that incarceration reduces domestic violence against women (Western 2006), we may underestimate the benefits of paternal incarceration for mothers, but we may also overestimate the benefits of paternal incarceration for mothers given that partner incarceration decreases mental health (e.g., Wildeman et al. 2012). Additionally, our measures of parenting are limited in several ways. First, we consider mostly positive dimensions of parenting. This is a data limitation, as information about negative aspects

of parenting—such as neglect or more detailed questions about physical assault—only exists for a smaller, select sample of mothers and for no fathers. Similarly, we do not consider feedback loops between our measures of parenting, and the data do not allow us to rule out the possibility that changes in fathers' parenting leads to relationship dissolution. We also do not consider feedback loops between the parenting of biological fathers, biological mothers, and social fathers. For example, it is possible that increases in involvement among social fathers—or the mere presence of a social father—increases or decreases engagement of biological fathers (Nurse 2002:115).

Other features of the Fragile Families design may have implications for our results. For example, only children's biological fathers were followed over time (although mothers were asked about nonbiological fathers). Prior research using these data find that nonbiological fathers have equal or more involved parenting than biological fathers (Berger et al. 2008), but it is possible that incarceration differentially affects the parenting of biological and nonbiological fathers. Finally, our analytic sample comprises only 73% of the original sample and parents lost to follow-up may differ in unmeasured ways than parents in our analytic sample. Importantly, though, they differ in few measurable ways, as described earlier, and response rates are higher than in another highly regarded data source commonly used to study inequalities in family life, the National Survey of Families and Households (NSFH) (Sassler and McNally 2003). Taken together, attrition is a small limitation that is outweighed by the numerous strengths of these data (namely, they are the only existing data that allow for a longitudinal examination of the effect of incarceration on family dynamics).

Conclusions

Our findings suggest a nuanced relationship between paternal incarceration and the parenting of mothers and fathers who share children together, consistent with what richly textured qualitative literature has suggested for years. Several policy implications result from our findings. First, policymakers must be aware that for incarcerated men living with their children prior to their incarceration, incarceration represents a substantial barrier to involvement in parenting after release. This has implications for child wellbeing, of course, but also has implications for recently released men, as family member contact is a vital deterrent of recidivism (Visher and Travis 2003). Increased visiting opportunities (e.g., flexibility in visiting hours) and decreased barriers to visiting (e.g., affordable transportation to prisons) may benefit fathers and their family members. Additionally, policymakers must be acutely attentive to the fact that incarceration may affect different individuals in the family in complex—and often countervailing—ways. There is significant heterogeneity in the effects of incarceration by relationship status, suggesting that programs targeting residential parents may most enhance father involvement and that programs targeting nonresidential parents may be less viable. Further, even within this group of parents living together prior to incarceration, many women move on to additional partners, suggesting that a policy focus on women and children may be especially important. Without paying significantly more attention to how incarceration affects the full spectrum of characters involved in family life, our understanding of the consequences of mass imprisonment for inequality in family life will remain limited, as will our ability to construct an incarceration ledger (Sampson 2011).

Our findings also parallel a discrete literature that considers the consequences of incarceration for health. Indeed, this research shows a complex combination of positive, negative, and null effects on health. For instance, during the imprisonment period, prisoners

experience fewer severe functional limitations (Schnittker and John 2007) and lower mortality risks than they did on the outside, both of which suggest some positive effects especially for young Black men (Patterson 2010). There are also a multitude of negative effects, including elevated post-release mortality rates (Binswanger et al. 2007), worse self-rated health (Massoglia 2008b), more infectious and stress-related diseases (Massoglia 2008a), and more mental health problems both during and after incarceration (Schnittker et al. 2012; Turney et al. 2012). Yet other research documents null effects, especially for diseases not intimately tied to infectious disease or acute stress exposure (Massoglia 2008a). As we now see these complex and countervailing consequences of incarceration across two entirely different domains—family life and health—future research must actively interrogate whether virtually all effects of mass imprisonment for society have such complex, nuanced consequences.

ENDNOTES

[1] We cannot accurately consider incarceration that occurred between the five- and nine-year surveys. The wording of mothers' questions at the nine-year survey do not allow for an accurate assessment of whether the father was incarcerated since the five-year survey and, importantly, fathers were not interviewed in prison or jail at the nine-year survey.

[2] Our examination of fathers' parenting stress includes only 2,334 observations, as this outcome was only reported by fathers (as opposed to other measures of fathers' parenting that were reported by mothers). Because a relatively large percentage of fathers (36%) did not complete the five-year survey, we did not want to restrict all outcomes to this limited sample. However, in supplemental analyses, findings for other parenting outcomes are robust to dropping observations in which the father did not participate in the five-year survey.

[3] After generating propensity scores for each observation and ensuring the treatment and control groups are balanced, we match observations on the probability of experiencing recent incarceration. We restrict the analysis to regions of common support and use three types of matching procedures: nearest neighbor matching (matching with replacement), radius matching (caliper = .005), and kernel matching (bandwidth = .006; kernel = Gaussian). We estimate these models for the first imputed data set. Though we only present results from kernel matching in Table 4, results from additional matching procedures are presented in Table A2.

[4] The one exception is that, among resident non-Hispanic other race fathers, compared to resident non-Hispanic White fathers, the effect of recent paternal incarceration on parenting is smaller. However, these statistically significant interaction terms are not meaningful, as only 18 observations fall into this cell. There are also no statistically significant interactions between recent paternal incarceration and race/ethnicity when estimating mothers' parenting.

[5] Percentages do not sum to 100 because of rounding.

[6] In additional analyses, we considered change in domestic violence (between the three- and five-year surveys), but found this explains little of the recent incarceration coefficient (and virtually nothing beyond what is explained by the other mechanisms).

[7] Though we find strong evidence that incarceration is associated with relationship dissolution and that some women go on to repartner, the above analyses tell us nothing about the men with whom these women repartner. Examining the parenting among these new partners may provide an especially insightful portrait of these social fathers and, in Table A3, we present descriptive statistics of biological father and social father parenting at the five-year survey, by biological fathers' recent incarceration status. We turn first to descriptive statistics when the biological father was recently incarcerated. Social fathers, compared to biological fathers, have more

favorable engagement and shared responsibility, though they have comparable cooperation. For example, social fathers are engaged in activities with the focal child nearly four days a week, compared to biological fathers who are engaged less than half a day per week ($p < .001$). These differences between biological and social fathers are similar when biological fathers were not recently incarcerated. Importantly, there are no statistically significant differences in social fathers' parenting based on the biological fathers' recent incarceration. Taken together, these supplemental analyses suggest mothers, regardless of the biological fathers' recent incarceration experiences, go on to find new partners who are involved fathers.

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Table 1. Descriptives of Recently Incarcerated Fathers in Fragile Families, Compared to Fathers with Comparably Aged Children in Jails, State Prisons, and Federal Prisons

	Fragile Families fathers (2001-2002)		Fathers in jail (2002)			Fathers in state prison (2004)			Fathers in federal prison (2004)		
	Mean or %	S.D.	Mean or %	S.D.		Mean or %	S.D.		Mean or %	S.D.	
Race											
Non-Hispanic White	8.4%		29.0%		***	24.2%		***	13.6%		
Non-Hispanic Black	66.7%		45.4%		***	48.4%		***	44.9%		***
Hispanic	22.3%		20.0%			21.0%		***	32.6%		*
Non-Hispanic other race	2.6%		5.6%		*	6.4%		***	9.0%		**
Foreign-born	6.8%		10.7%		*	8.7%			29.1%		***
Age	28.252	(6.461)	27.394	(6.035)	**	28.570	(6.920)		30.270	(6.852)	**
Education											
Less than high school	43.2%		47.0%			44.0%			36.2%		
High school diploma or GED	38.6%		43.3%			44.9%		*	41.9%		
More than high school	18.2%		9.6%		***	11.1%		***	21.9%		
Married	9.2%		23.8%		***	23.5%		***	37.2%		***
Employed	54.6%		67.9%		***	71.4%		***	75.7%		***
Prior incarceration	85.5%		57.1%		***	59.1%		***	40.9%		***
N	645		382			686			164		

Notes: Descriptives for Fragile Families fathers taken from the three-year survey (e.g., when their children were approximately three years old). Descriptives for fathers in jail come from the Survey of Inmates in Local Jails (2002) and restricted to fathers with three-year-old children. Descriptives for fathers in state prison come from the Survey of Inmates in State Correctional Facilities (2004) and restricted to fathers with three-year-old children. Descriptives for fathers in federal prison come from the Survey of Inmates in Federal Correctional Facilities (2004) and restricted to fathers with three-year-old children. Asterisks indicate statistically significant differences between Fragile Families fathers and fathers in jail, fathers in state prison, and fathers in federal prison. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 2. Descriptive Statistics of All Variables Included in Analyses, by Fathers' Residential Status at Three-Year Survey

	Fathers					Mothers				
	Residential fathers[a]		Nonresidential fathers			Residential fathers		Nonresidential fathers		
	Mean or %	S.D.	Mean or %	S.D.		Mean or %	S.D.	Mean or %	S.D.	
Dependent variables										
Engagement (range: 0-7; y3)	4.021	(1.260)	1.185	(1.688)	***	4.996	(0.884)	4.980	(0.942)	
Engagement (range: 0-7; y5)	3.223	(1.667)	1.033	(1.645)	***	4.634	(1.161)	4.665	(1.165)	
Shared responsibility in parenting (range: 1-4; y3)	3.461	(0.547)	1.777	(0.999)	***	---		---		
Shared responsibility in parenting (range: 1-4; y5)	3.247	(0.876)	1.695	(0.989)	***	---		---		
Cooperation in parenting (range: 1-4; y3)	3.780	(0.313)	2.546	(1.140)	***	---		---		
Cooperation in parenting (range: 1-4; y5)	3.648	(0.598)	2.445	(1.185)	***	---		---		
Parenting stress (range: 1-4; y3)	2.061	(0.677)	2.148	(0.708)	***	2.211	(0.645)	2.295	(0.697)	***
Parenting stress (range: 1-4; y5)	2.013	(0.686)	2.059	(0.737)		2.138	(0.656)	2.230	(0.710)	***
Repartnership (y5)										
Break up with father and remain single	---		---			24.8%		---		
Break up with father and repartner	---		---			24.7%		---		
Stay with father	---		---			50.5%		---		
Explanatory variable										
Recent incarceration (y5)[b]	7.8%		29.7%		***	---		---		
Control variables										
Race (b)					***					***
Non-Hispanic White	28.3%		8.6%			30.0%		12.1%		
Non-Hispanic Black	36.4%		67.6%			34.0%		65.6%		
Hispanic	31.1%		21.0%			31.4%		20.0%		
Non-Hispanic other race	4.2%		2.8%			4.6%		2.3%		
Foreign-born (b)	21.7%		9.5%		***	21.5%		7.4%		***
Age (y3)	31.923	(7.000)	29.618	(7.121)	***	29.560	(6.162)	26.701	(5.537)	***
Education (y3)					***					***
Less than high school	25.4%		31.7%			23.6%		31.8%		
High school diploma or GED	27.0%		41.4%			23.3%		27.2%		
More than high school	47.6%		26.9%			53.1%		41.0%		
Number of children (y3)	1.874	(1.394)	0.929	(1.384)	***	2.307	(1.254)	2.320	(1.401)	
Multipartnered fertility (y3)	28.7%		61.4%		***	29.1%		55.8%		***
Importance of childrearing tasks (range: 1-3; b)	2.948	(0.131)	2.942	(0.145)		---		---		
Beliefs about fatherhood (range: 1-4; b)	3.758	(0.403)	3.637	(0.482)	***	---		---		
Relationship status (y3)					***					***
Married	62.5%		0.0%			62.5%		0.0%		
Cohabiting	37.5%		0.0%			37.5%		0.0%		
Nonresidential romantic relationship	0.0%		12.2%			0.0%		12.2%		
Separated	0.0%		87.8%			0.0%		87.8%		
In a new relationship (y3)	0.0%		38.5%		***	0.0%		37.6%		***

Relationship quality (y3)	4.115	(0.920)	2.723	(1.349)	***	4.028	(0.920)	2.181	(1.282) ***
Mother trusts father (y3)	---		---			92.3%		41.1%	***
Employed (y3)	86.3%		68.2%		***	55.2%		58.6%	*
Income-to-poverty ratio (y3)	2.894	(3.250)	2.288	(2.772)	***	2.639	(3.106)	1.207	(1.244) ***
Material hardship (y3)	1.140	(1.390)	1.607	(1.519)	***	1.293	(1.466)	1.968	(1.751) ***
Depression (y3)	10.6%		19.4%		***	15.8%		24.3%	***
Fair or poor health (y3)	7.9%		9.8%		**	9.9%		15.9%	***
Impulsivity (y1)	1.935	(0.638)	2.127	(0.697)	***	---		---	
Domestic violence (y3)	1.4%		14.9%		***	---		---	
Substance abuse (y3)	3.3%		18.1%		***	---		---	
Prior incarceration (b, y1, y3)	26.4%		60.8%		***	3.3%		7.7%	***
Lives in public housing	---		---			8.6%		19.4%	***
Receives TANF	---		---			10.6%		34.7%	***
Child is male (b)	---		---			51.5%		52.9%	
Age of child in months (y5)	---		---			61.587	(2.824)	61.755	(2.647)
Child temperament (range: 1-5; y1)	3.336	(0.734)	3.139	(0.767)	***	3.460	(0.744)	3.329	(0.770) ***
Mechanisms									
Mother refuses to let child see father (y5)	---		---			1.8%		6.3%	***
Change in trust in father (y3, y5)	---		---			-0.071	(0.372)	-0.011	(0.502) ***
Relationship status (y5)					***				
Married	60.8%		2.2%			---		---	
Cohabiting	20.6%		5.7%			---		---	
Nonresidential romantic relationship	2.3%		4.9%			---		---	
Separated	16.3%		87.2%			---		---	
Change in relationship quality (y3, y5)	-0.187	(1.071)	0.088	(1.342)	***	---		---	
Change in employment (y3, y5)	0.003	(0.397)	-0.007	(0.533)		---		---	
Change in income-to-poverty ratio (y3, y5)	0.218	(2.576)	-0.063	(2.710)	***	---		---	
Change in material hardship (y3, y5)	0.285	(1.829)	0.345	(2.051)		---		---	
Change in depression (y3, y5)	-0.015	(0.362)	-0.031	(0.466)		---		---	
Change in fair or poor health (y3, y5)	0.013	(0.315)	0.034	(0.365)		---		---	
N	1,894		1,673			1,894		1,673	

Notes: b: measured at baseline; y1: measured at one-year survey; y3: measured at three-year survey; y5: measured at five-year survey. With the exception of father's parenting stress, all parenting variables are reported by mothers. N is for all variables except fathers' parenting stress (where N = 1,592 for residential fathers and 742 for nonresidential fathers). Asterisks indicate statistically significant differences between residential and non-residential parents. * $p < .05$, ** $p < .01$, *** $p < .001$.

[a] Residential fathers include all fathers living with the mother and focal child at the three-year survey. Nonresidential fathers include all fathers not living with the mother and focal child at the three-year survey.

[b] Recent incarceration includes any paternal incarceration taking place after the three-year survey and up to and including the five-year survey.

Table 3. Means of Fathers' and Mothers' Parenting at Five-Year Survey, by Recent Paternal Incarceration

Panel A. Residential Fathers[a]

	Fathers		Mothers	
	Recent incarceration[b]	No recent incarceration	Recent incarceration	No recent incarceration
Engagement	1.819	3.342 ***	4.606	4.636
Shared responsibility in parenting	2.318	3.326 ***	---	---
Cooperation in parenting	3.140	3.691 ***	---	---
Parenting stress	2.120	2.006	2.261	2.127 ***
N	148	1,746	148	1,746

Panel B. Nonresidential Fathers

	Fathers		Mothers	
	Recent incarceration	No recent incarceration	Recent incarceration	No recent incarceration
	Mean or %	Mean or %	Mean or %	Mean or %
Engagement	0.588	1.221 ***	4.673	4.661
Shared responsibility in parenting	1.474	1.789 ***	---	---
Cooperation in parenting	2.152	2.569 ***	---	---
Parenting stress	2.205	2.015 ***	2.302	2.200 **
N	494	1,179	494	1,179

Note: For fathers, asterisks indicate statistically significant differences between recently incarcerated fathers andnot recently incarcerated fathers. For mothers, asterisks indicate statistically significant differences between mothers who share children with recently incarcerated fathers and mothers who do not share children with recently incarcerated fathers. ** $p < .01$, *** $p < .001$.

[a] Residential fathers include all fathers living with the mother and focal child at the three-year survey. Nonresidential fathers include all fathers not living with the mother and focal child at the three-year survey.

[b] Recent incarceration includes any paternal incarceration taking place after the three-year survey and up to and including the five-year survey.

Table 4. Estimating Fathers' Parenting at Five-Year Survey as a Function of Recent Paternal Incarceration

Panel A. Residential Fathers[a]

	OLS models			Fixed-effect models	Propensity score models (change)
	Model 1	Model 2	Model 3	Model 4	Model 5
	+ controls	*+ lagged DV*	*Prior incarceration*	*+ controls*	*Kernel matching*
Engagement	-1.359 ***	-1.283 ***	-0.995 **	-0.732 ***	-1.136 ***
	(0.177)	(0.184)	(0.249)	(0.132)	(0.218)
Shared responsibility in parenting	-0.801 ***	-0.752 ***	-0.629 **	-0.405 ***	-0.659 ***
	(0.112)	(0.122)	(0.144)	(0.066)	(0.124)
Cooperation in parenting	-0.400 ***	-0.372 ***	-0.318 **	-0.194 ***	-0.295 ***
	(0.077)	(0.079)	(0.103)	(0.050)	(0.078)
Parenting stress	-0.022	-0.087	-0.067	0.138	-0.130
	(0.058)	(0.052)	(0.099)	(0.073)	(0.113)
N[b]	1,894	1,894	499	97	1,894
Person-year observations	---	---	---	194	---

Panel B. Nonresidential Fathers

	OLS models			Fixed-effect models	Propensity score models (change)
	Model 1	Model 2	Model 3	Model 4	Model 5
	+ controls	*+ lagged DV*	*Prior incarceration*	*+ controls*	*Kernel matching*
Engagement	-0.500 ***	-0.419 ***	-0.426 ***	-0.070	-0.288 **
	(0.072)	(0.071)	(0.079)	(0.086)	(0.106)
Shared responsibility in parenting	-0.213 ***	-0.175 **	-0.182 **	-0.017	-0.138 *
	(0.042)	(0.042)	(0.047)	(0.045)	(0.058)
Cooperation in parenting	-0.247 ***	-0.180 **	-0.188 **	-0.080	-0.135 *
	(0.056)	(0.058)	(0.062)	(0.060)	(0.067)
Parenting stress	0.084	0.063	0.030	0.020	0.080
	(0.098)	(0.091)	(0.091)	(0.084)	(0.095)
N[b]	1,673	1,673	1,007	246	1,673
Person-year observations	---	---	---	492	---

Note: Coefficients for recent incarceration shown. All models include city fixed-effects. Standard errors in parentheses. Model 1 adjusts for the following paternal characteristics (unless otherwise noted): race, immigrant status, age, education, number of children, multipartnered fertility, importance of childrearing tasks, beliefs about fatherhood, relationship status with child's mother, new partner, relationship quality with child's mother, mother trusts father to look after child (reported by mother), employment, income-to-poverty ratio, material hardship, depression, fair or poor health, impulsivity, domestic violence (reported by mother), substance abuse (reported by mother and father), prior incarceration (reported by mother and father), maternal incarceration (reported by mother and father), maternal public housing, maternal TANF receipt, child gender (reported by mother), child age (reported by mother), and child temperament. Model 2 includes all variables from Model 1 and a lagged dependent variable. Model 3 includes all variables from Model 2 and restricts the sample to fathers previously incarcerated. Model 4 includes all time-invariant and time-varying controls from Model 2. * $p < .05$, ** $p < .01$, *** $p < .001$.

[a] Residential fathers include all fathers living with the mother and focal child at the three-year survey. Nonresidential fathers include all fathers not living with the mother and focal child at the three-year survey.

[b] For residential parents, Ns for parenting stress include 1,592 (Models 1, 2, 4 and 5) and 395 (Model 3). For nonresidential parents, Ns for parenting stress include 742 (Models 1, 2, 4, and 5) and 417 (Model 3).

Table 5. Estimating Mothers' Parenting at Five-Year Survey as a Function of Recent Paternal Incarceration

Panel A. Mothers with Residential Fathers[a]

	OLS models			Fixed-effect models	Propensity score models (change)
	Model 1	Model 2	Model 3	Model 4	Model 5
	+ controls	*+ lagged DV*	*Prior incarceration*	*+ controls*	*Kernel matching*
Engagement	-0.018	0.090	-0.015	0.273 **	0.187
	(0.138)	(0.108)	(0.078)	(0.092)	(0.115)
Parenting stress	0.094	0.083 *	0.118 *	0.012	0.064
	(0.047)	(0.035)	(0.045)	(0.053)	(0.062)
N	1,894	1,894	499	97	1,894
Person-year observations	---	---	---	194	---

Panel B. Mothers with Nonresidential Fathers

	OLS models			Fixed-effect models	Propensity score models (change)
	Model 1	Model 2	Model 3	Model 4	Model 5
	+ controls	*+ lagged DV*	*Prior incarceration*	*+ controls*	*Kernel matching*
Engagement	0.005	0.023	-0.016	0.061	0.001
	(0.062)	(0.059)	(0.062)	(0.067)	(0.073)
Parenting stress	0.005	0.033	0.029	0.051	0.062
	(0.039)	(0.035)	(0.039)	(0.038)	(0.041)
N	1,673	1,673	1,007	246	1,673
Person-year observations	---	---	---	492	---

Note: Coefficients for recent incarceration shown. All models include city fixed-effects. Robust standard errors in parentheses. Model 1 adjusts for the following maternal characteristics (unless otherwise noted): race, immigrant status, age, education, number of children, multipartnered fertility, relationship status with child's mother, new partner, relationship quality with child's father, mother trusts father to look after child, employment, income-to-poverty ratio, material hardship, depression, fair or poor health, father impulsivity (reported by father), father domestic violence, father substance abuse (reported by mother and father), father prior incarceration (reported by mother and father), incarceration (reported by mother and father), public housing, TANF receipt, child gender, child age, and child temperament. Model 2 includes all variables from Model 1 and a lagged dependent variable. Model 3 includes all variables from Model 2 and restricts the sample to fathers previously incarcerated. Model 4 includes all time-invariant and time-varying controls from Model 2. * $p < .05$, ** $p < .01$.

[a] Mothers with residential fathers include all mothers living with the father and focal child at the three-year survey. Mothers with nonresidential fathers include all mothers not living with the father and focal child at the three-year survey.

Table 6. OLS Regression Models Estimating Fathers' Parenting at Five-Year Survey as a Function of Recent Paternal Incarceration with Mechanisms, Residential Fathers

	Model 1 *baseline*	Model 2 *+ relationship with mother*	Model 3 *+ economic wellbeing*	Model 4 *+ health and wellbeing*	Model 5 *+ all mechanisms*
Engagement	-1.283 ***	-0.399 **	-1.299 ***	-1.238 ***	-0.417 **
	(0.184)	(0.130)	(0.192)	(0.189)	(0.139)
Shared responsibility in parenting	-0.752 ***	-0.151	-0.748 ***	-0.716 ***	-0.146
	(0.122)	(0.077)	(0.122)	(0.123)	(0.077)
Cooperation in parenting	-0.372 ***	-0.023	-0.371 ***	-0.352 ***	0.021
	(0.079)	(0.045)	(0.081)	(0.078)	(0.043)
N	1,894	1,894	1,894	1,894	1,894

Note: Coefficients for recent incarceration shown. All models include city fixed-effects. Robust standard errors in parentheses. Model 1 includes all covariates from Model 2 of Table 3. Model 2 includes all variables from Model 1 and the following: mother refuses to let father see child, change in mother's trust in father, relationship status at five-year survey, change in relationship quality between father and mother. Model 3 includes all variables from Model 1 and the following: change in father's employment status, change in father's income-to-poverty ratio, change in father's material hardship. Model 4 includes all variables from Model 1 and the following: change in father's depression and change in father's fair or poor health. Model 5 includes all mechanisms ** $p < .01$, *** $p < .001$.

[a] Residential fathers include all fathers living with the mother and focal child at the three-year survey.

Table 7. Multinomial Logistic Regression Models Estimating Mothers' Relationship Status with Father at Five-Year Survey by Recent Paternal Incarceration, Conditional on Father Being Residential at Three-Year Survey

	Break up with father and remain single vs. stay with father		Break up with father and repartner vs. stay with father	
	Model 1	Model 2	Model 1	Model 2
	+ controls	*Prior incarceration*	*+ controls*	*Prior incarceration*
Recent incarceration	1.457 ***	1.171 **	1.919 ***	1.947 ***
	(0.211)	(0.405)	(0.328)	(0.386)
Constant	-7.159	-8.561	-13.419	-13.262
R-squared	0.202	0.258	0.202	0.258
N	1,894	499	1,894	499

Note: Coefficients for recent incarceration shown. All models include city fixed-effects. Standard errors in parentheses. Model 1 adjusts for the following maternal characteristics (unless otherwise noted): race, immigrant status, age, education, number of children, multipartnered fertility, relationship status with child's father, relationship quality with child's father, mother trusts father to look after child, employment, income-to-poverty ratio, material hardship, depression, fair or poor health, father impulsivity (reported by father), father domestic violence, father substance abuse (reported by mother and father), father prior incarceration (reported by mother and father), incarceration (reported by mother and father), public housing, TANF receipt, child gender, child age, and child temperament. Model 2 includes all variables from Model 1 and restricts the sample to mothers attached to previously incarcerated fathers. ** $p < .01$, *** $p < .001$.

APPENDIX

Table A1. Description of Variables Included in Analyses

DEPENDENT VARIABLES	
Engagement (α = .94 for fathers, α = .69 for mothers)	0 = *0 days per week* to 7 = *7 days per week*[a] Sing songs or nursery rhymes with child; read stories to child; tell stories to child; play inside with toys such as blocks or legos with child; tell child he appreciated something he/she did; play outside in the yard, park or playground with child; take child on an outing, such as shopping, or to a restaurant, church, museum, or special activity or event; watch TV or a video together
Shared responsibility in parenting (α = .94)	1 = *never* to 4 = *often*[b] How often the father looks after child when you need to do things; how often the father runs errands like picking things up from the store; how often the father fixes things around the home, paints, or helps make it look nicer in other ways; how often the father takes the child places he/she needs to go such as to daycare or the doctor
Cooperation in parenting (α = .96)	1 = *never* to 4 = *always*[b] When father is with child, he acts like the kind of parent you want for your child; you can trust father to take good care of child; father respects the schedules and rules you make for child; father supports you in the way you want to raise child; you and father talk about problems that come up with raising child; you can count on father for help when you need someone to look after child for a few hours
Parenting stress (α = .65 for fathers, α = .66 for mothers)	1 = *strongly disagree* to 4 = *strongly agree* Being a parent is harder than I thought it would be; I feel trapped by my responsibilities as a parent; taking care of my children is much more work than pleasure; I often feel tired, worn out, or exhausted from raising a family
EXPLANATORY VARIABLE	
Recent paternal incarceration	Dummy variable indicating the father was incarcerated between the three- and five-year surveys or at the five-year survey
CONTROL VARIABLES	
Race/ethnicity	Mutually exclusive variables indicating respondent's race/ethnicity: non-Hispanic white, non-Hispanic Black, Hispanic, non-Hispanic other race
Immigrant status	Dummy variable indicating respondent born outside of United States
Age	Continuous variable
Education	Mutually exclusive variables indicating respondent's educational

	attainment: less than high school degree, high school diploma or GED, more than high school
Number of children	Continuous variable
Multipartnered fertility	Dummy variable indicating respondent has biological children with more than one partner
Importance of childrearing tasks (α = .55)	1 = *not important* to 3 = *very important* Provide regular financial support; teach child about life; provide direct care, such as feeding, dressing, and child care; show love and affection to the child; provide protection for the child; serve as an authority figure and discipline the child
Beliefs about fatherhood (α = .72)	1 = *strongly disagree* to 4 = *strongly agree* Being a father and raising children is one of the most fulfilling experiences a man can have; I want people to know that I have a new child; not being a part of my child's life would be one of the worst things that could happen to me
Maternal incarceration	Dummy variable indicating the mother was incarcerated between the baseline and three-year interview (including at the three-year interview)
Public housing	Mother resides in public housing
TANF receipt	Mother received Temporary Assistance for Needy Families in the past year
Relationship status	Mutually exclusive variables indicating respondent's relationship with child's other biological parent: married, cohabiting, nonresidential romantic relationship, separated
In a new relationship	Dummy variable indicating respondent has repartnered
Relationship quality	1 = *poor* to 5 = *excellent*[c]
Mother trusts father	Dummy variable indicating mother trusts the father to take care of the child for one week[d]
Employed	Dummy variable indicating the respondent worked in the past week
Income-to-poverty ratio	Continuous variable indicating the ratio of total household income to official poverty threshold established by the U.S. Census Bureau
Material hardship	1 = *yes*, 0 = *no* Respondent received free food or meals; child was hungry but couldn't afford enough food; respondent was hungry but didn't eat because he/she couldn't afford enough food; did not pay full amount of rent or mortgage payments; evicted from home or apartment for not paying rent or mortgage; did not pay full amount of a gas, oil, or electricity bill; the gas or electric service

	was turned off, or the heating oil company did not deliver oil, because there wasn't enough money to pay the bills; borrowed money from friends or family to help pay the bills; moved in with other people even for a little while because of financial problems; stayed at a shelter, in an abandoned building, an automobile, or any other place not meant for regular housing, even for one night; anyone in household who needed to see a doctor or go to the hospital but couldn't go because of the cost; cut back on buying clothes for yourself; worked overtime or taken a second job; telephone service was disconnected by the telephone company because there wasn't enough money to pay the bill
Major depression	Dummy variable indicating respondent experienced major depression, as measured by the Composite International Diagnostic Interview-Short Form (CIDI-SF)
Fair or poor health	Dummy variable indicating respondent reported fair or poor health, compared to excellent, very good, or good health
Impulsivity (α = .84)	1 = *strongly disagree* to 4 = *strongly agree* I will often say whatever comes into my head without thinking first; often, I don't spend enough time thinking over a situation before I act; I often say and do things without considering the consequences; I often get into trouble because I don't think before I act; many times, the plans I make don't work out because I haven't gone over them carefully enough in advance; I often make up my mind without taking the time to consider the situation from all angles
Domestic violence	Dummy variable indicating the mother reported the father hit, slapped, or kicked her
Substance abuse	Dummy variable indicating the father or mother reported drugs or alcohol interfered with the father's work or made it difficult to get a job or get along with friends or family
Prior paternal incarceration	Dummy variable indicating the father was incarcerated at or prior to the three-year survey
Child is male	Dummy variable indicating the child is male
Age of child	Continuous variable
Child temperament (α = .48 for fathers, α = .51 for mothers)	1 = *not at all like my child* to 5 = *very much like my child* Child tends to be shy (reverse coded); child often fusses and cries (reverse coded); child is very sociable; child gets upset easily (reverse coded); child reacts strongly when upset (reverse coded); child is very friendly with strangers

[a] Fathers who did not see their child in the past month are coded as 0.
[b] Fathers who did not see their child in the past month are coded as 1.
[c] Parents were asked about relationship quality if they had *ever* been in a relationship with the child's other parent.

The few parents never in a romantic relationship are coded as 1.

[d] A similar item, mother's report that she can trust the father to take good care of the child, is included in the cooperation in parenting measure. Consistent with prior research (Berger et al. 2008), we consider this measure to be a distinct and more stringent indicator of trust than that included in the cooperation in parenting measure.

Table A2. Propensity Score Matching Models Predicting the Effect of Recent Paternal Incarceration on Change in Fathers' Parenting Between the Three- and Five-Year Surveys

Panel A. Residential Fathers[a]

	Treatment N	Control N	Change in engagement	Change in shared responsibility in parenting	Change in cooperation in parenting	Change in parenting stress
Nearest neighbor	132	1,746	-1.126 ***	-0.637 ***	-0.322 ***	-0.130
			(0.237)	(0.136)	(0.090)	(0.113)
Radius	132	1,746	-1.102 ***	-0.667 ***	-0.314 ***	-0.156
			(0.228)	(0.130)	(0.086)	(0.110)
Kernel	144	1,746	-1.136 ***	-0.659 ***	-0.295 ***	-0.130 ***
			(0.218)	(0.124)	(0.078)	(0.113)

Panel B. Nonresidential Fathers

	Treatment N	Control N	Change in engagement	Change in shared responsibility in parenting	Change in cooperation in parenting	Change in parenting stress
Nearest neighbor	480	1,174	-0.282 *	-0.135 *	-0.095	0.080
			(0.116)	(0.064)	(0.074)	(0.095)
Radius	480	1,174	-0.291 **	-0.139 *	-0.089	0.078
			(0.119)	(0.062)	(0.072)	(0.094)
Kernel	499	1,174	-0.288 **	-0.138 *	-0.135 *	0.080
			(0.106)	(0.058)	(0.067)	(0.095)

Note: Ns for parenting stress are smaller. For analyses of residential fathers, treatment N = 76, control N = 1,499 for nearest neighbor matching; treatment N = 76, control N = 1,499 for radius matching; treatment N = 91, control N = 1,499 for kernel matching. For analyses of nonresidential fathers, treatment N = 154, control N = 573 for nearest neighbor matching; treatment N = 154, control N = 573 for radius matching; treatment N = 168, control N = 573 for kernel matching. * $p < .05$, ** $p < .01$, *** $p < .001$.

[a] Residential fathers include all fathers living with the mother and focal child at the three-year survey. Nonresidential fathers include all fathers not living with the mother and focal child at the three-year survey.

Table A3. Descriptive Statistics of Biological and Social Fathers' Parenting at Five-Year Survey, by Biological Father Recent Incarceration

	Biological father recently incarcerated		Biological father not recently incarcerated	
	Biological father	Social father	Biological father	Social father
Engagement	0.478	3.654 ***	1.046	3.670 ***
Shared responsibility in parenting	1.452	3.750 ***	1.674	3.583 ***
Cooperation in parenting	2.705	2.814	2.738	2.861
N	26	26	36	36

Note: Sample restricted to observations in which mothers are living with the child's biological father at the three-year survey, have broken up with the biological father at the five-year survey, and are living with a social father at the five-year survey. Asterisks for statistical significance compare biological father parenting and social father parenting when biological father was and was not recently incarcerated. *** $p < .001$.