

Liminal Men: Incarceration and Relationship Dissolution

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ABSTRACT

Incarceration, now a rite of passage for many economically disadvantaged minority men entailing an involuntary removal from families, places these marginal men in a liminal state where they are simultaneously members of families and isolated from families. Despite a burgeoning literature documenting the collateral consequences of incarceration for family life, as well as evidence that the deleterious consequences of incarceration for maternal and child well-being stem from resultant relationship dissolution, much less is known about the direct link between incarceration and relationship dissolution. I consider this association with data from the Fragile Families and Child Wellbeing Study, a longitudinal survey uniquely positioned to understand the consequences of incarceration for family life. Results show that paternal incarceration is associated with relatively immediate relationship dissolution among parents, the association is concentrated among parents living together prior to incarceration, and is explained by both incarceration duration and changes in relationship quality. And, for couples that survive this initial period, incarceration is inconsequential for relationship dissolution. Taken together, these findings link the literature on the collateral consequences of mass incarceration with the literature on demographic changes in family life, and, given the well-known deleterious consequences of parental relationship dissolution for children, have important implications for intergenerational inequality.

KEYWORDS: incarceration; inequality; propensity score matching; relationship dissolution; relationship quality.

Family instability in the United States has increased dramatically since the 1970s. Demographic changes in family life—including the postponing of marriage and the increasing number of short-term cohabiting unions—mean that considerable numbers of adults experience the dissolution of romantic relationships (Cherlin 2010). The consequences of relationship dissolution for adults are profound, as dissolution and the often resultant instability impedes parenting practices (Beck et al. 2010; Tach,

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Mincy, and Edin 2010), increases stress and mental health problems (Meadows, McLanahan, and Brooks-Gunn 2008; Osborne, Berger, and Magnuson 2012), reduces social support networks (McLanahan and Percheski 2008), and increases poverty and material hardship (Osborne et al. 2012). Further, in large part because of its negative consequences for adults, relationship dissolution is linked to a host of detrimental outcomes among offspring (Amato 2010), including behavioral problems (McLanahan, Tach, and Schneider 2013), reduced educational achievement and attainment (Kim 2011), and health deficiencies (Bzostek and Beck 2011). Some scholars have suggested that aspects of family instability, including relationship dissolution, may increase income inequality and contribute to the intergenerational transmission of poverty (McLanahan and Percheski 2008).

Another recent demographic change in the United States—the rapid and dramatic rise in incarceration—may contribute to relationship dissolution (Wakefield and Uggan 2010). About 2.3 million U.S. residents (1 in 134 individuals) are incarcerated in prisons or jails, and even larger numbers of individuals have been recently released back to their families and communities (Glaze 2011). There are compelling reasons to believe that incarceration, most often experienced by poorly educated minority men, is consequential for relationship dissolution (Wilson 1987). Indeed, most of these marginal men—prior to confinement, while behind bars, and after release—are connected to families as romantic partners and fathers (Mumola 2000).

Incarceration, which often involves an involuntary removal of men from families, places men in a state of *liminality* (Turner 1969), where they are simultaneously members of families and isolated from these families, and are, by and large, unable to perform their roles as romantic partners and fathers. Maintaining contact with incarcerated partners is difficult and costly and, upon release, men face a host of consequences including stigma and discrimination (Braman 2004), difficulty finding employment (Pager 2003; Western 2006), and increased physical and mental health problems (Schnittker and John 2007; Turney, Wildeman, and Schnittker 2012), all of which make reintegration into family life difficult.

Despite escalating attention to the collateral consequences of incarceration on family life more generally (e.g., Arditti 2012; Braman 2004; Comfort 2008; Geller 2013; Geller, Garfinkel, and Western 2011; Turney 2014a, 2014b, 2015; Turney, Schnittker, and Wildeman 2012; Wildeman, Schnittker, and Turney 2012), and a vast literature documenting how marriage leads to desistance from crime (e.g., King, Massoglia, and MacMillan 2007; Sampson and Laub 1993), much less research examines the consequences of incarceration for the dissolution of marital, cohabiting, and non-residential romantic relationships (though, for research on *divorce*, see Apel et al. 2010; Lopoo and Western 2005; Massoglia, Remster, and King 2011; Siennick, Stewart, and Staff 2014). This is an especially important oversight given that many of the deleterious consequences of incarceration on family life result from relationship dissolution (e.g., Schwartz-Soicher, Geller, and Garfinkel 2011; Turanovic, Rodriguez, and Pratt 2012; Turney and Wildeman 2013). Given the considerable number of families affected by incarceration, the unequal distribution of incarceration across the population, and the consequences of family instability for the intergenerational transmission of inequality, it is essential to understand how the penal system—and the resultant liminality—triggers a renegotiation of family life.

Therefore, in this article, I use data from the Fragile Families and Child Wellbeing Study, a longitudinal survey of parents who share children, to consider three research questions that extend our knowledge about the collateral consequences of incarceration for relationship dissolution. First, how is paternal incarceration associated with relationship dissolution among couples that share children? Second, does this association vary by parents' relationship status when their child was born? Third, to what extent do post-incarceration changes in family life (including relationship quality, economic well-being, and physical and mental health) explain the association between incarceration and relationship dissolution? The focus on relationship dissolution among incarcerated *fathers*—as opposed to all incarcerated men—is important given the negative consequences of dissolution for child well-being.

BACKGROUND

The Liminal Status of Incarcerated Men

The historically novel rise in incarceration, mostly resulting from increased harsh sentencing policies for nonviolent offenses, has had profound implications for the lives of American men (Wildeman and Western 2010). Incarceration, especially for poorly educated minority men, has become a normative life course period and a rite of passage that forcefully removes these men from mainstream society (Pettit and Western 2004). Incarcerated men experience a liminal stage that likely complicates the maintenance of romantic relationships. Liminality, which was initially developed to describe a stage in the ritual process (e.g., religious rituals, coming-of-age rituals) but has since been applied to other domains, refers to individuals who are “neither here nor there; they are betwixt and between the positions assigned and arrayed by law, custom, convention, and ceremony” (Turner 1969:95). Liminality, according to Victor Turner (1969), begins when individuals are removed and isolated from society, and ends with individuals reintegrating back into normal life and assuming their former roles. During the liminal stage, individuals’ roles become increasingly ambiguous, with their rights and obligations unclearly defined and aspects of their future uncertain (Turner 1969; for more recent applications of liminality, see Menjívar 2006; Murphy et al. 1988).¹ Liminal individuals have no fixed social role and are often sequestered. In such a conception, incarceration is liminality, par excellence.

Turner’s (1969) conception of liminality did not include predictions about the consequences of liminality and, therefore, it does not provide testable hypotheses about the association between incarceration and relationship dissolution. It is merely a framework for understanding the carceral period. For incarcerated men, their role in family life, in particular, becomes suspended between what they left behind and an unknown future. Despite the commonality of romantic relationships among incarcerated men (Mumola 2000), as well as some women’s commitment to maintaining relationships with incarcerated partners (Comfort 2008), sustaining a relationship while one partner is behind bars is complicated. Incarcerated individuals are essentially held captive and, as such, have limited, regulated, and institutionalized contact with romantic partners (Sykes [1958] 2007).

Mechanisms Linking Incarceration and Relationship Dissolution

The duration of incarceration may be one reason why relationships dissolve as a result of incarceration; longer incarceration stints are associated with a greater likelihood of dissolution (Massoglia et al. 2011). But there are at least three additional plausible intervening mechanisms that may explain the association between incarceration and relationship dissolution: changes in relationship quality, changes in economic well-being, and changes in physical and mental health resulting from the incarceration experience.

For one, the association between incarceration and relationship dissolution may operate through changes in relationship quality. Prisons are often located far from inmates’ communities, which can make visits time-consuming and expensive (Mumola 2000). The often inflexible visiting schedules and the expense of making long-distance calls from prisons complicates relationship maintenance (Braman 2004; Comfort 2008). The physical separation of partners may create deficits in emotional interactions or increased household labor for the partner left behind (for an excellent discussion of this, see Massoglia et al. 2011). Although men often return to their pre-incarceration families and communities after release, the isolating and regimented prison experience may alter their personalities in ways that make maintaining romantic relationships difficult. Even among couples with high-quality relationships prior to incarceration, the time spent apart may lead to poor communication, decreased supportiveness, and increased conflict (Comfort 2008; Edin and Kefalas 2005; Roy and Dyson 2005; Siennick et al. 2014; Turney 2015). Ethnographic work shows that the incarceration experience may

1. Individuals in a liminal state are eventually reintegrated into society (Turner 1969). Therefore, individuals incarcerated for life without possibility of parole would not be considered in a liminal state.

encourage men to engage in violent behavior (Nurse 2002) and that recently released men withdraw from their families to avoid interactions with the police (Goffman 2009). Romantic partners who experience a precipitous drop in relationship quality are likely to dissolve their union (Booth and Amato 1994).

In addition, incarceration may diminish economic well-being—among both the incarcerated and their romantic partners—and, therefore, initiate relationship dissolution. Incarcerated men have few opportunities to earn income and, upon release, their criminal record makes obtaining employment difficult (Pager 2003). Further, women attached to incarcerated men may have increased parenting and household responsibilities that force them to leave the paid labor force and impede their ability to maintain the family's economic standard of living (Arditti, Lambert-Shute, and Joest 2003). Indeed, perhaps because most men economically contribute to family life prior to incarceration, research shows that incarceration reduces family income, intensifies material hardship, and increases reliance on some forms of public assistance (Geller et al. 2011; Schwartz-Soicher et al. 2011; Sugie 2012). Incarceration also creates challenges for mothers living in public housing, as incarcerated men are often not allowed to return to these dwellings (Venkatesh 2002). The stress associated with economic insecurity may create family conflict and lead to dissolution (McLanahan 2009).

Finally, the association between incarceration and relationship dissolution may work through changes in physical and mental health patterns among both partners. Stress theory suggests that incarceration is a stressful event associated with deleterious health consequences both throughout confinement and after release (Pearlin 1989; Turney et al. 2012) and, indeed, empirical research documents these consequences (Schnitter and John 2007). But the health consequences of incarceration may extend beyond the offender (Lee and Wildeman 2013). Qualitative research documents the incarceration of a romantic partner is accompanied with anxiety, uncertainty, and loneliness (Daniel and Barrett 1981; Fishman 1990; Goffman 2009; also see Wildeman et al. 2012). These feelings may persist after release, as women worry about their partners violating parole (Goffman 2009) and their children's adjustment to their father's return (Turnaovic et al. 2012). Given that physical and mental health are linked to union dissolution (Wade and Pevalin 2004), post-incarceration changes in health may explain the relationship between incarceration and relationship dissolution.

Existing Evidence on the Consequences of Incarceration for Relationship Dissolution

What does existing literature say about the consequences of incarceration for relationship dissolution in the United States? By and large, quantitative research suggests that incarceration is negatively associated with marital dissolution. For example, data from the National Longitudinal Study of Youth 1979 (NLSY79), a longitudinal study uniquely positioned to study the consequences of incarceration, finds that incarcerated men have a higher probability of divorce or separation than their non-incarcerated counterparts (Lopoo and Western 2005; also see Apel et al. 2010 for an examination of the association between incarceration and divorce in The Netherlands). Other research shows this association between incarceration and divorce increases as incarceration duration increases (Massoglia et al. 2011; also see Pavalko and Elder 1990; Rindfuss and Stephen 1990; Western, Lopoo, and McLanahan 2004). Although very little research considers the mechanisms linking incarceration to divorce, recent research finds that relationship problems—especially low marital love and extramarital sex—are intervening processes linking incarceration to divorce (Siennick et al. 2014).

Though quantitative research finds that incarceration unequivocally destroys marital relationships, qualitative research, which most often but not exclusively examines non-marital relationships, documents a more complicated and nuanced portrait of family life during and after a partner's incarceration. These qualitative portraits show that relationship stability and instability result from a complex interplay of both men's and women's reactions to the incarceration. Some men, for example, use incarceration as a time to reflect on their familial roles. Their liminal status may lead to internal confusion, but often times men return to families ready to reprise their roles as romantic partners and fathers (Edin, Nelson, and Paranal 2004; Roy and Dyson 2005). Qualitative research shows that

women's perspectives are equally nuanced. Some women are committed to maintaining relationships with incarcerated partners (Comfort 2008), yet others use the incarceration as an excuse to hasten an inevitable breakup (Edin and Kefalas 2005; Edin et al. 2004).

Variation by Relationship Status

The association between incarceration and relationship dissolution may vary by relationship type, and research has yet to examine this possibility.² There are three possibilities for this variation. One possibility is that incarceration is more consequential for marital or cohabiting unions. The high bar associated with marital unions among low-income individuals may mean that relationship difficulties may be more strongly felt (Tach and Edin 2013; also see Edin and Kefalas 2005). Relatedly, couples in residential unions have more advantages than their counterparts in non-residential unions, and these compositional differences may mean that selectivity into incarceration may be less consequential for those in residential unions. Another possibility is that incarceration is more consequential for non-residential unions, as these relationships are weaker and more prone to disruption (Tach and Edin 2013). A final possibility is that incarceration equally disrupts marital, cohabiting, and non-residential romantic relationships. Many features of incarceration—including the removal of men from families and communities and the liminality associated with incarceration—may be difficult for all types of couples. Similarly, the mechanisms linking incarceration to relationship dissolution—changes in relationship quality, changes in economic well-being, and changes in physical and mental health—may equally affect marital, cohabiting, and non-residential romantic relationships.

Threats to Causal Inference

Taken together, theory and existing evidence provide strong support that paternal incarceration increases the likelihood of relationship dissolution. But another possibility is that any observed association between incarceration and relationship dissolution reflects formidable selection forces. Incarceration is unequally distributed across the population, with individuals experiencing incarceration (or the incarceration of a romantic partner) being more disadvantaged than their counterparts. There are a number of men's and women's characteristics that might render the relationship between incarceration and relationship dissolution spurious. These include demographic characteristics such as race/ethnicity, nativity, childhood family structure, and religiosity (e.g., Amato 2000; Wakefield and Uggen 2010); relationship characteristics such as duration, quality, and co-parenting (e.g., Brown and Booth 1996; Tach and Edin 2013); socioeconomic characteristics such as education, income, and residence in public housing (e.g., Amato 2000; Wakefield and Uggen 2010; Wildeman et al. 2012); and behavioral characteristics such as depression, substance abuse, impulsivity, and prior incarceration (e.g., Wildeman et al. 2012).

Contributions of This Research

There are several opportunities to advance research on the consequences of incarceration for relationship dissolution. Importantly, though qualitative research considers the consequences of incarceration for both married and unmarried couples, little research systematically examines how incarceration affects relationship dissolution among married, cohabiting, and non-residential romantic partners. The nearly exclusive focus on divorce—as opposed to relationship dissolution more broadly—is often necessary given data constraints, but unfortunate given that the majority of prisoners are in non-marital romantic relationships and that many of these relationships involve children (Mumola 2000).

2. Indeed, demographic changes in the United States mean that children are increasingly growing up in diverse family structures. Non-marital childbearing has risen steadily in recent years, and children born to unmarried parents now account for 41 percent of all births in the United States, including 72 percent of births to African Americans and 53 percent of births to Hispanics (Hamilton et al. 2014). About half of unmarried parents are cohabiting when their child is born (Martinez, Daniels, and Chandra 2012).

There are additional ways to extend the literature on incarceration and family instability in the United States, all of which I address in this article. First, little research adjudicates between the direct and indirect association between incarceration and relationship dissolution. There is evidence that incarceration duration explains the association between incarceration and divorce (Massoglia et al. 2011), but this research does not consider the more proximal family processes that may underlie this relationship (such as changes in relationship quality, economic well-being, or physical and mental health; though see Siennick et al. 2014). Additionally, the most comprehensive studies of incarceration and dissolution in the United States use data from the NLSY79 (Lopoo and Western 2005; Massoglia et al. 2011), which only captures incarceration lasting at least one year (though, for research on relatively short incarceration spells, see Siennick et al. 2014). Understanding whether and how short-lived jail incarceration, in addition to long-term prison incarceration, affects family life is important because cycling through jail is more commonly experienced than long-term prison spells (e.g., Minton 2012:4) and it is plausible that short-term incarceration is a sufficiently weak treatment that it is not associated with relationship dissolution.

DATA, MEASURES, AND ANALYTIC STRATEGY

Data Source

Data come from the Fragile Families and Child Wellbeing survey, a longitudinal study of 4,898 new parents in 20 large U.S. cities (Reichman et al. 2001). Between 1998 and 2000, mothers completed a 30- to 40-minute interview at the hospital after their child was born and fathers were interviewed as soon as possible after the birth (often in the hospital). Mothers and fathers were interviewed by telephone when their children were approximately one, three, five, and nine years old. Of mothers who responded to the baseline interview, 89 percent, 86 percent, 85 percent, and 76 percent completed the one-, three-, five-, and nine-year surveys, respectively. About 78 percent, 69 percent, 67 percent, 64 percent, and 59 percent of fathers completed the baseline, one-, three-, five-, and nine-year surveys.

These data are ideal for considering the consequences of incarceration for relationship dissolution among parents. First, they comprise a large number of incarcerated men who, prior to incarceration, are in marital, cohabiting, and non-residential romantic relationships with mothers of their children. The demographic characteristics of these incarcerated fathers are comparable to those of men with young children in local jails, state prisons, and federal prisons (Turney and Wildeman 2013:957). Second, these data include an array of information about *both* partners, making it possible to rigorously adjust for preexisting differences between couples that have and have not experienced incarceration. This includes characteristics strongly associated with selection into incarceration (e.g., substance abuse, domestic violence, impulsivity, prior incarceration) and characteristics strongly associated with relationship dissolution (e.g., relationship duration, relationship commitment). Given that both partners' characteristics independently predict relationship dissolution (Tach and Edin 2013), not adjusting for both mothers' and fathers' characteristics could result in omitted variable bias (Western and Muller 2013). Finally, the longitudinal data allow for a careful consideration of time ordering to ensure incarceration precedes relationship dissolution.

Measures

Relationship Dissolution

The dependent variables include two dummy variables: (1) immediate dissolution, measured between the three- and five-year surveys; and (2) delayed dissolution, measured between the five- and nine-year surveys. Relationship dissolution is measured when the mother reports being in a marital, cohabiting, or non-residential romantic relationship with the focal child's father at the three-year survey and subsequently reports being in no relationship with the father at the five- or nine-year surveys,

respectively. These measures come from mothers' reports of relationship status with the father, opposed to fathers' reports of relationship status, as mothers have lower attrition rates.³

Of the currently incarcerated (see below), 23.6 percent are married, 27.8 percent are in a cohabiting relationship, and 48.6 percent are in a non-residential romantic relationship (compared to 57.0 percent, 34.4 percent, and 8.6 percent of not currently incarcerated fathers, respectively). This, of course, raises the question: How can one be in a cohabiting relationship with a father who is incarcerated? Indeed, the measurement of cohabitation can be quite ambiguous (e.g., [Nepomnyaschy and Teitler 2013](#); [Waller and Jones 2014](#)). One of two things is likely going on. First, it is important to note that mothers are considered to be cohabiting if they report living with the father "all or most" of the time and, accordingly, it is possible that a mother living with the father prior to his incarceration considers herself living with the father *most* of the time. Second, it is possible that, when asked this question, mothers reference their living situation prior to incarceration, perhaps because they expect the father to move back in after his incarceration stint ends (see, especially, [Comfort 2008](#)). Furthermore, for mothers who were cohabiting with the father prior to his incarceration but do *not* report they are cohabiting with the father when he is incarcerated, there is no reason to expect them to report not being in a (non-residential) romantic relationship. The data do not allow me to test this possibility, but qualitative research convincingly shows that unmarried women are in relationships with incarcerated men and consider themselves to be involved with these men (see, especially, [Comfort 2008](#); also see [Edin et al. 2004](#)).

Incarceration

The primary explanatory variable is paternal incarceration, measured at the three-year survey. Fathers are considered incarcerated if (1) the father is interviewed in prison or jail at the three-year survey or (2) the father did not participate in the three-year survey but the mother reports he is in prison or jail. The reliance on both parents' reports of incarceration is consistent with other research showing the effectiveness of this approach ([Geller et al. 2012](#)).

Measuring incarceration at the three-year survey, as opposed to a more expansive indicator capturing incarceration between survey waves, is necessary for establishing appropriate time ordering between incarceration and relationship dissolution. Though it is possible to construct a measure that captures incarceration between the three- and five-year surveys, it is impossible to determine if incarceration preceded or followed relationship dissolution (and theory suggests either is possible).⁴ Additionally, though measuring incarceration between the one- and three-year surveys would ensure appropriate time ordering, it is not possible to precisely measure incarceration during this time period. Only first-time incarceration is captured between the one- and three-year surveys, which means that the comparison group would include fathers not incarcerated during this time period and fathers who experienced a second or higher order incarceration during this time period. The data do include measures of current paternal incarceration at the baseline and one-year surveys, but I focus on incarceration at the three-year survey because this is the only wave where enough fathers are incarcerated to conduct meaningful analyses. Importantly, though the measure of current incarceration necessitates a relatively small number of incarcerated men, descriptive statistics comparing currently and recently incarcerated men (defined as men incarcerated after the three-year survey and up to and including the five-year survey, a common way of operationalizing fathers' incarceration with these

3. The majority of parents agree about their relationship status. At the five-year survey, for example, 96 percent of mothers and fathers agree on marriage reports and 92 percent agree on cohabitation reports. At the nine-year survey, this was true of 97 percent and 96 percent of mothers and fathers, respectively. Some of the small number of disagreements may result from time differences between the mothers' and fathers' interviews ([Knab and McLanahan 2006](#)). Supplemental analyses adjusted for this time difference but they did not substantively alter the results and, therefore, are not included in the final analyses.
4. Only nine observations in the analytic sample have non-missing data on the date of incarceration entry and the date of relationship dissolution (between the three- and five-year surveys), making it impossible to ascertain appropriate time ordering.

data [e.g., Geller et al. 2012; Sugie 2012; Turney and Wildeman 2013]) shows few statistically or substantively significant differences between these two groups (see Appendix Table A1).

The incarceration measure is advantageous because it relies on both parents' reports, is measured prior to relationship dissolution, and captures both jail and prison spells. The measure is limited, though, because it does not take into account incarceration duration and offense type. Mothers were asked questions about fathers' incarceration duration and offense type. But these questions contain too much missing data—in the analytic sample, 45 percent of incarcerated fathers are missing data about incarceration duration and 32 percent are missing data about offense type—to conduct meaningful analyses. As previous research documents that both duration (Massoglia et al. 2011) and offense type (Apel et al. 2010) influence dissolution, I address the implications of this limitation in the discussion section.

Additional Covariates

Given that selection into incarceration is a key threat to causal inference, the multivariate analyses adjust for a host of demographic, relationship, economic, and behavioral characteristics that may alter the association between incarceration and relationship dissolution. Importantly, unless otherwise noted, all variables are measured at the baseline or one-year surveys and, thus, prior to the measure of incarceration. To begin with, demographic factors include the following: mother's race (non-Hispanic white, non-Hispanic black, Hispanic, non-Hispanic other race); a dummy variable indicating the mother and father are a mixed-race couple; dummy variables indicating mother's and father's immigrant status; continuous variables measuring mother's and father's age; dummy variables indicating mother's and father's family structure at age 15; and mother's frequency of attendance at religious services (weekly, occasionally, never).

Additionally, analyses adjust for relationship characteristics prior to incarceration. Dummy variables indicate the couple's relationship status at the focal child's birth (married, cohabiting, non-residential romantic relationship, separated). Continuous variables indicate relationship duration (measured by mothers' reports of how long the couple knew each other before she became pregnant with the focal child) and the mother's and father's reports of overall relationship quality (1 = *poor* to 5 = *excellent*). Mother's reports of father's shared responsibility in parenting averages responses to how often the father does the following (1 = *never* to 4 = *often*): (1) looks after child when you need to do things; (2) runs errands like picking things up from the store; (3) fixes things around the home, paints, or helps make it look nicer in other ways; and (4) takes the child places he/she needs to go such as to daycare or the doctor ($\alpha = .73$). Mother's reports of father's cooperation in parenting averages the following (1 = *never* to 4 = *always*): (1) when father is with child, he acts like the kind of parent you want for your child; (2) you can trust father to take good care of child; (3) father respects the schedules and rules you make for child; (4) father supports you in the way you want to raise child; (5) you and father talk about problems that come up with raising child; and (6) you can count on father for help when you need someone to look after child for a few hours ($\alpha = .84$). Dummy variables indicate the couple has additional children together, the mother has children with a different partner, and the father has children with a different partner. Following prior research (Tach and Edin 2013), relationship commitment is measured as a sum of mother's baseline reports of the following: (1) father provided financial support during pregnancy; (2) the child will have father's last name; and (3) the father visited the mother in the hospital (range: 0 to 3). Mother's pro-marriage attitudes averages the following (1 = *strongly disagree* to 4 = *strongly agree*): (1) the main advantage of marriage is that it gives financial security; (2) there are more advantages to being single than to being married (reverse coded); (3) a mother living alone can bring up her child as well as a married couple (reverse coded); (4) it is better for a couple to get married than to just live together; (5) it is better for children if their parents are married; and (6) living together is just the same as being married (reverse coded) ($\alpha = .58$). Mother's traditional attitudes is an average of the following (1 = *strongly disagree* to 4 = *strongly agree*): (1) the important decisions in the family should be made by the man of

the house and (2) it is much better for everyone if the man earns the main living and the woman takes care of the home and family ($\alpha = .59$). Mother's gender distrust is an average of the following (1 = *strongly disagree* to 4 = *strongly agree*): (1) in a dating relationship, a man is largely out to take advantage of a woman and (2) men cannot be trusted to be faithful ($\alpha = .62$).

Mother's and father's economic characteristics, all measured prior to incarceration, include education, employment, income-to-poverty ratio, welfare receipt, and residence in public housing. Educational attainment is measured with a series of dummy variables (less than high school, high school diploma or GED, post-secondary education). Dummy variables indicate the mother and father worked in the last week. The income-to-poverty ratio, based on reports of household size and composition, is the ratio of the total household income to the official poverty thresholds established by the U.S. Census Bureau. A dummy variable indicates the mother received Temporary Assistance for Needy Families (TANF) in the past year.

Finally, analyses adjust for mother's and father's physical and mental health prior to incarceration. Mother's and father's major depression is measured by responses to the Composite International Diagnostic Interview Short Form (CIDI-SF) Version 1.0 (Kessler et al. 1998). Parenting stress is measured by averaging the following responses (1 = *strongly disagree* to 4 = *strongly agree*): (1) being a parent is harder than I thought it would be; (2) I feel trapped by my responsibilities as a parent; (3) taking care of my children is much more work than pleasure; (4) I often feel tired, worn out, or exhausted from raising a family ($\alpha = .60$ for mothers, $\alpha = .58$ for fathers). Dummy variables indicate the mother and father report fair or poor health. Dummy variables indicate heavy drinking (the mother or father reports having four or more drinks in one sitting) and illicit drug use in the past month. Domestic violence is a dummy variable indicating the mother reported the father hit, slapped, or kicked her. Father's impulsivity is an average of the following (1 = *strongly disagree* to 4 = *strongly agree*): (1) I will often say whatever comes into my head without thinking first; (2) often, I don't spend enough time thinking over a situation before I act; (3) I often say and do things without considering the consequences; (4) I often get into trouble because I don't think before I act; (5) many times, the plans I make don't work out because I haven't gone over them carefully enough in advance; (6) I often make up my mind without taking the time to consider the situation from all angles ($\alpha = .84$). A dummy variable indicates the father was ever incarcerated at or prior to the one-year survey (including prior to baseline).⁵

Mechanisms

In some analyses, I examine four sets of mechanisms that may explain the relationship between incarceration and relationship dissolution: (1) extended incarceration, a dummy variable indicating the father was incarcerated at the five-year survey; (2) relationship quality after incarceration entry, measured by mother and father overall relationship quality, father shared responsibility in parenting, father cooperation in parenting, and reports of domestic violence at the three-year survey; (3) economic well-being after incarceration entry, measured by mother and father employment and income-to-poverty ratio at the three-year survey; and (4) health after incarceration entry, measured by mother and father depression, mother and father fair or poor health, and father heavy drinking and illicit drug use at the three-year survey.

Analytic Sample

The primary analytic sample comprises 2,201 observations. I first deleted the 2,488 observations in which the mother did not report being in a relationship with the focal child's father at the three-year

5. Ideally, I would measure prior incarceration by considering a father as being previously incarcerated if he experienced any incarceration through the three-year survey (but was not incarcerated at the three-year survey). However, measuring prior incarceration in this manner would mean that all previously incarcerated men are coded as not currently incarcerated. This lack of variation makes it impossible to match on previous incarceration and, therefore, I consider prior incarceration through the one-year survey.

survey, as these observations are not at risk of relationship dissolution. I then deleted the additional 209 observations in which the mother did not complete the five-year survey.⁶ Importantly, it is probable this analytic sample excludes men incarcerated at the three-year survey who already experienced dissolution prior to the three-year survey (but after their incarceration). Given that it is likely that the proportion of incarcerated men whose relationships dissolved exceeds the proportion of non-incarcerated men whose relationships dissolved, estimates should be considered *conservative* consequences of incarceration. This analytic sample also excludes couples that already dissolved their union and, therefore, is selective of more advantaged and stable couples, again suggesting *conservative* estimates.

The vast majority of variables are missing data for fewer than 2 percent of observations. Exceptions include several variables that come from fathers' interviews (father's reports of relationship quality [missing 25 percent of observations], father's parenting stress [24 percent], and father's impulsivity [24 percent]), as attrition was higher among fathers than mothers (though, when fathers did not participate and when possible, I use mothers' reports of fathers' information (e.g., father's race/ethnicity, father's education)). I preserve missing values with multiple imputation, producing 25 imputed data sets and averaging results across data sets.

Analytic Strategy

The analytic strategy contains three stages. In the first analytic stage (Tables 2, 3, and 4), propensity score models estimate the consequences of incarceration for immediate relationship dissolution (between the three- and five-year surveys) and delayed relationship dissolution (between the five- and nine-year surveys, conditional on not experiencing immediate relationship dissolution). Propensity score matching is one way to diminish concerns about *observed* heterogeneity between groups, and, indeed, there are important pre-incarceration differences between couples that do and do not experience paternal incarceration. Propensity score matching is also useful given the relatively small number of men incarcerated at the three-year survey. This method approximates an experimental design by using observed variables to comprise a treatment group (incarcerated fathers) and a control group (not incarcerated fathers) that have a similar distribution of covariates (and vary only by incarceration). However, propensity score matching is limited because it cannot account for *unobserved* characteristics of individuals, a point I return to in the discussion.

A logistic regression model generates a propensity score, which signifies the probability of incarceration, as a function of 50 pre-incarceration covariates for each observation in each of the 25 imputed data sets. I match observations on propensity scores, restrict the analyses to regions of common support, check the balance of the covariates to ensure that the treatment and control groups have similar values on observed covariates (Morgan and Harding 2006), and estimate relationship dissolution as a function of incarceration. The analyses presented use kernel matching (treatment $N = 69$, control $N = 2,124$), comparing each treatment observation with all control observations that are weighted according to their distance from treatment cases (bandwidth = .006; kernel = epanechnikov), though supplemental analyses using alternative matching strategies (e.g., nearest neighbor with five neighbors, nearest neighbor with ten neighbors, radius) produce similar estimates. I average logistic regression results estimating relationship dissolution across the 25 imputed data sets.

In additional analyses, I take three steps to consider the robustness of the findings. First, because there may be subtle differences between the treatment and control groups after matching, I conduct doubly robust propensity score analyses by further adjusting for all covariates (Schafer and Kang 2008). Second, I minimize (though do not eliminate) unobserved heterogeneity by restricting the sample to a potentially more appropriate comparison group, observations where the father

6. Fathers did not have to be interviewed at the five-year survey to be included in the analytic sample. Also, the analytic sample used to estimate relationship dissolution between the five- and nine-year surveys is smaller ($n = 1,770$) because it excludes parents who did not participate in the nine-year survey.

experienced previous incarceration (LaLonde 1986). Third, I estimate Mantel-Haenszel bounds to evaluate how sensitive the propensity score results are to such unmeasured characteristics (Becker and Caliendo 2007). The Mantel-Haenszel bounds quantify how large unobserved factors would have to be to render the association between incarceration and relationship dissolution statistically insignificant.

In the second analytic stage (Table 5), propensity score models estimate the association between incarceration and relationship dissolution for two subgroups: couples living together at baseline and couples not living together at baseline. I consider variation by relationship status at baseline because it is an important predictor of both union formation and dissolution (Carlson, McLanahan, and England 2008; Tach and Edin 2013) and to ensure that I am measuring relationship status *prior* to incarceration. There are a small number of fathers incarcerated at the baseline survey. In the analyses presented, these fathers are considered to be not living together at baseline; however, supplemental analyses that instead consider them to be living together at baseline produce substantively similar results.

In the final analytic stage (Table 6), I adjudicate between the direct and indirect association between incarceration and dissolution by considering four sets of mechanisms that may explain the association between incarceration and relationship dissolution: extended incarceration, relationship quality after incarceration entry, economic well-being after incarceration entry, and physical and mental health after incarceration entry. Logistic regression models estimate relationship dissolution as a function of the mechanisms, controlling for the treatment and the propensity for the treatment (Kirk and Sampson 2013). Model 1 presents the baseline estimate for the association between incarceration and relationship dissolution. Model 2 includes an indicator of extended incarceration. Model 3 includes relationship quality, Model 4 includes economic characteristics, and Model 5 includes physical and mental health.⁷ Model 6 adjusts for all possible mechanisms. I compare Model 1 to Models 2, 3, 4, 5, and 6 to examine what percentage of the association between incarceration and relationship dissolution can be explained by these mechanisms. Because comparing coefficients across logistic regression models is not recommended (Mood 2010), I also estimate linear probability models and compare the results from the logistic and linear probability models. Further, I conduct formal Sobel-Goodman tests of mediation. The Sobel-Goodman tests the following: (1) the relationship between incarceration and each proposed mediator; (2) the relationship between each proposed mediator and relationship dissolution; (3) the relationship between incarceration and relationship dissolution without the mediator; and (4) the relationship between incarceration and relationship dissolution without the mediator (and the difference in the relationship with and without the mediator) (Baron and Kenny 1986; Sobel 1986).⁸

Sample Description

Table 1 presents descriptive statistics of all variables. In the analytic sample, which includes parents in a relationship when their children are three years old, almost two-fifths of relationships dissolved between the three- and nine-year surveys. About 21 percent of relationships dissolved within two years (between the three- and five-year surveys), and an additional 16 percent dissolved between the five- and nine-year surveys. With respect to the key explanatory variable, about 3 percent of fathers are incarcerated at the three-year survey.

With respect to demographic characteristics, more than one-quarter (28 percent) of the mothers are non-Hispanic white, nearly two-fifths (38 percent) are non-Hispanic black, and nearly one-third

7. Father's and, especially, mother's repartnering may be another relationship characteristic that links incarceration to relationship dissolution. Unfortunately, it is impossible to establish time ordering between repartnering and dissolution and, as such, I cannot consider this mechanism in my analyses.

8. These tests were performed with the *sgmediation* command in Stata. However, because this command does not handle binary outcomes or multiply imputed data, I conducted the analyses with linear probability models and one imputed data set.

Table 1. Descriptive Statistics of All Variables Included in Analyses

	Full Sample	
	Mean or Percent	SD
Dependent variables		
Immediate relationship dissolution (between three- and five-year surveys) (%)	20.9	
Delayed relationship dissolution (between five- and nine-year surveys) (%)	16.1	
Key explanatory variable		
Father incarceration (y3) (%)	3.3	
Control variables		
Mother race/ethnicity (b)		
Non-Hispanic white (%)	27.8	
Non-Hispanic black (%)	38.1	
Hispanic (%)	29.9	
Non-Hispanic other race (%)	4.2	
Mother and father mixed-race couple (b) (%)	12.9	
Mother immigrant (b) (%)	19.8	
Father immigrant (b) (%)	20.7	
Mother age (b)	26.337	(6.175)
Father age (b)	28.798	(7.145)
Mother lived with both parents at 15 (b) (%)	50.9	
Father lived with both parents at 15 (b) (%)	51.3	
Mother frequency of religious services (b)		
Attends weekly (%)	32.1	
Attends occasionally (%)	52.7	
Attends never (%)	15.2	
Mother and father relationship status (b)		
Married (%)	39.2	
Cohabiting (%)	40.7	
Non-residential romantic (%)	17.6	
Separated (%)	2.5	
Relationship duration in years (b)	5.529	(4.832)
Mother relationship quality (y1)	3.943	(1.055)
Father relationship quality (y1)	4.046	(.979)
Father shared responsibility in parenting (y1)	3.385	(.697)
Father cooperation in parenting (y1)	3.777	(.411)
Mother and father have additional children (y1) (%)	44.6	
Mother multi-partnered fertility (y1) (%)	30.0	
Father multi-partnered fertility (y1) (%)	27.9	
Relationship commitment (b)	2.453	(.578)
Mother pro-marriage attitudes (b)	2.648	(.415)
Mother traditional attitudes (b)	2.081	(.635)
Mother distrust (b)	1.956	(.550)
Mother education (y1)		
Less than high school (%)	26.8	
High school diploma or GED (%)	25.4	
More than high school (%)	47.9	

(continued)

Table 1. Descriptive Statistics of All Variables Included in Analyses (continued)

	Full Sample	
	Mean or Percent	SD
Father education (y1)		
Less than high school (%)	28.4	
High school diploma or GED (%)	29.6	
More than high school (%)	42.1	
Mother employment (y1) (%)	52.8	
Father employment (y1) (%)	82.5	
Mother income-to-poverty ratio (y1)	2.300	(2.439)
Father income-to-poverty ratio (y1)	2.733	(3.475)
Mother welfare (y1) (%)	16.7	
Mother public housing (y1) (%)	10.0	
Mother depression (y1) (%)	12.4	
Father depression (y1) (%)	7.4	
Mother parenting stress (y1)	2.122	(.643)
Father parenting stress (y1)	2.052	(.685)
Mother fair or poor health (y1) (%)	11.4	
Father fair or poor health (y1) (%)	9.2	
Mother heavy drinking (y1) (%)	5.4	
Father heavy drinking (y1) (%)	25.7	
Mother illicit drug use (y1) (%)	1.5	
Father illicit drug use (y1) (%)	6.8	
Mother reports domestic violence (y1) (%)	2.4	
Father impulsivity (y1)	1.948	(.662)
Father prior incarceration (y1) (%)	20.7	
Mechanisms explaining immediate relationship dissolution		
Current incarceration (y5) (%)	3.9	
Mother relationship quality (y3)	3.963	(.963)
Father relationship quality (y3)	4.057	(.953)
Father shared responsibility in parenting (y3)	3.408	(.616)
Father cooperation in parenting (y3)	3.761	(.336)
Mother reports domestic violence (y3) (%)	1.9	
Mother employment (y3) (%)	55.7	
Father employment (y3) (%)	83.6	
Mother income-to-poverty ratio (y3)	2.479	(2.992)
Father income-to-poverty ratio (y3)	2.778	(3.126)
Mother depression (y3) (%)	16.7	
Father depression (y3) (%)	11.4	
Mother fair or poor health (y3) (%)	11.0	
Father fair or poor health (y3) (%)	8.0	
Father heavy drinking (y3) (%)	5.0	
Father illicit drug use (y3) (%)	8.2	
<i>N</i>	2,201	

Notes: Entire sample limited to couples at risk of relationship dissolution, those in a romantic relationship at the three-year survey. *Ns* for relationship dissolution between the five- and nine-year surveys only include couples where the mother participated in the nine-year survey ($n = 1,770$). Timing of variable measurement in parentheses (b = baseline survey, y1 = one-year survey, y3 = three-year survey, y5 = five-year survey, y9 = nine-year survey).

(30 percent) are Hispanic. About 13 percent of couples are mixed-race couples. One-fifth of respondents (20 percent of mothers and 21 percent of fathers) are foreign born. Mothers and fathers were, on average, 26 and 29 years old when the focal child was born, respectively. Nearly two-fifths (39 percent) of couples were married, two-fifths (41 percent) were cohabiting, and one-fifth (18 percent) were in a non-residential romantic relationship at the birth. More than two-fifths (45 percent) of parents have an additional child together, though many parents (30 percent of mothers and 28 percent of fathers) have children with other partners. More than half (52 percent) of mothers and nearly three-fifths (58 percent) of fathers did not have education beyond a high school diploma or GED. More than one-fifth (21 percent) of fathers were incarcerated prior to the three-year survey.

RESULTS

Descriptive Differences in Relationship Dissolution by Incarceration

Descriptive statistics, presented in [Figure 1](#), show dramatic differences in relationship dissolution by fathers' incarceration. For example, nearly three-fifths (58 percent) of incarcerated fathers, compared to just one-fifth (20 percent) of not incarcerated fathers, experienced relatively immediate relationship dissolution (i.e., dissolution that occurred between the three- and five-year surveys). Further, after restricting the sample to couples that did not experience immediate dissolution, there are large descriptive differences in delayed relationship dissolution (i.e., dissolution that occurred between the five- and nine-year surveys). About 54 percent of incarcerated fathers and 20 percent of not incarcerated fathers experienced dissolution.

Propensity Score Models Estimating Relationship Dissolution

Pre- and Post-Match Differences

The first step of propensity score matching involves generating propensity scores of incarceration as a function of the covariates in [Table 1](#). These analyses, not presented but available upon request, are consistent with expectations. For example, non-Hispanic black mothers, compared to non-Hispanic white mothers, have about 2.78 times the odds of sharing a child with an incarcerated father. Employed fathers have a lower likelihood of incarceration than their non-employed counterparts, and fathers' reports of relationship quality are negatively correlated with incarceration. This model fits the data well, explaining about two-fifths (41 percent) of the variance in incarceration.

Next, I present descriptive differences between the treatment and control groups, both prior to matching and after matching. The first three columns of [Table 2](#) show that, as expected, there are substantial descriptive differences between couples that did and did not experience the fathers' incarceration. For example, incarcerated fathers and their partners are more likely to be racial/ethnic minorities, have lower educational attainment, lower income-to-poverty ratios, and more multi-partnered fertility. Incarcerated fathers also have more impulsive behaviors and are more likely to have been previously incarcerated. The remaining columns in [Table 2](#) present descriptive differences between the treatment and control group after matching. These columns show that, after matching, the differences between the treatment and control group are small and, across all imputed data sets, statistically insignificant.

Estimating Relationship Dissolution

[Table 3](#) presents estimates from propensity score matching that document differences in relationship dissolution by incarceration. The unmatched estimates show that incarceration is associated with a greater likelihood of immediate dissolution ($b = 1.743$; $OR = 5.71$, $p < .001$) and, among those couples who remain together through the five-year survey, a greater likelihood of delayed dissolution ($b = 1.550$, $OR = 4.71$, $p < .001$). Although the matched differences are smaller in magnitude than the unmatched differences, the link between paternal incarceration and immediate relationship

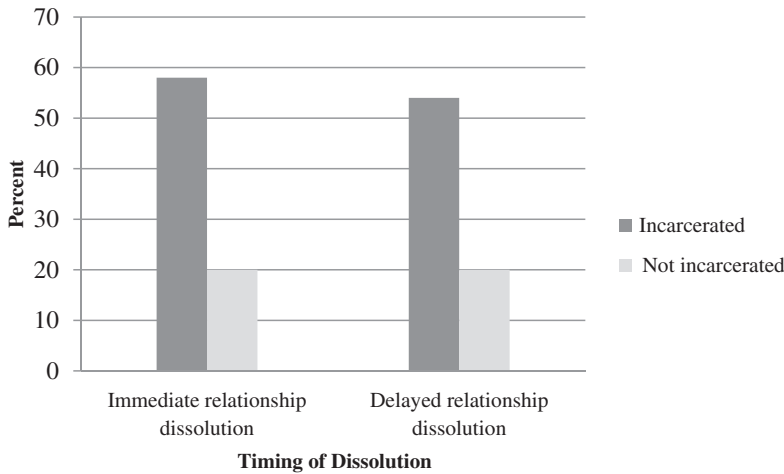


Figure 1. Relationship Dissolution, by Father Incarceration

Notes: Immediate relationship dissolution refers to dissolution between the three- and five-year surveys. Delayed relationship dissolution refers to dissolution between the five- and nine-year surveys and is restricted to couples that did not experience immediate relationship dissolution.

dissolution remains robust. Incarcerated fathers, compared to their counterparts, have more than two times the odds of experiencing immediate relationship dissolution ($b = .820$, $OR = 2.27$, $p < .01$). However, the matched estimates show no differences in delayed dissolution between incarcerated and not incarcerated men, suggesting that, when partners manage to survive the initial period, incarceration has no lasting consequences for dissolution.⁹

Table 3 also presents results from two strategies used to consider the robustness of the findings. The first strategy, the estimation of doubly robust propensity scores, further adjusts for all covariates included in the matching equation. These findings, which are consistent with the results that do not adjust for these covariates, show that incarceration is associated with a greater likelihood of immediate dissolution ($b = 1.063$, $OR = 2.90$, $p < .01$) but not delayed dissolution ($b = -.124$, $OR = .88$, *n.s.*). The second strategy compares incarcerated men to a potentially more appropriate comparison group, men who experienced prior incarceration but were not currently incarcerated. These results show that incarcerated men, compared to their previously but not currently incarcerated counterparts, have a greater likelihood of immediate dissolution ($b = 1.318$, $OR = 3.74$, $p < .05$).¹⁰ Finally, Table 4 presents results from the Mantel-Haenszel bounds sensitivity analyses, another strategy used to document the robustness of the findings. Given the propensity score matching results show incarceration is only significantly associated with immediate relationship dissolution, I restrict this table to that outcome. These findings show that any unobserved characteristics not included in the propensity score would

9. Readers should exercise caution when interpreting these results, as the null findings may result from the small number of cases in the treatment group instead of a lack of differences between the two groups, and future research with a larger sample should investigate this possibility. I conducted two robustness checks (not presented but available upon request). First, I restricted the sample estimating immediate relationship dissolution to the smaller sample used to estimate delayed relationship dissolution (which is smaller because of higher attrition at the nine-year survey than the five-year survey). Results are consistent, suggesting the differential findings for immediate and delayed dissolution do not result from different samples. Second, given the relatively frequent relationship churning among couples in the Fragile Families data, I considered a more stringent measure of relationship dissolution, considering couples to have dissolved their union if the mother reported not being in a relationship with the father at the five- and nine-year surveys. Indeed, a nontrivial number of couples (16 percent) reported dissolution at the five-year survey and a romantic relationship with the father at the nine-year survey. Results are even larger in magnitude when using this more stringent dependent variable.

10. In estimates of delayed relationship dissolution, too few incarcerated men experienced previous incarceration to make meaningful comparisons.

Table 2. Covariate Balance, Before and After Matching

	Imputed Data Set = 1										
	Unmatched Mean					Matched Mean					
	$E(X) d = 1$	$E(X) d = 0$	p	$E(X) d = 1$	$E(X) d = 0$	Percent bias reduction	p	= 2	= 3	= 4	= 5
Mother race/ethnicity											
Non-Hispanic white	.069	.285	.000	.075	.117	80.5	.412	.447	.362	.517	.350
Non-Hispanic black	.750	.369	.000	.731	.686	88.2	.569	.500	.370	.536	.574
Hispanic	.167	.303	.013	.179	.178	99.4	.991	.921	.788	.820	.918
Non-Hispanic other race	.014	.043	.224	.015	.019	87.0	.865	.920	.833	.958	.897
Mother and father mixed-race couple	.097	.130	.419	.104	.100	86.2	.932	.921	.948	.730	.912
Mother immigrant	.028	.204	.000	.030	.067	79.2	.326	.353	.306	.381	.280
Father immigrant	.042	.212	.000	.045	.078	80.5	.427	.518	.436	.574	.458
Mother age	22.597	26.464	.000	22.627	23.323	82.0	.462	.574	.375	.415	.526
Father age	24.798	28.934	.000	24.923	25.629	82.9	.530	.635	.456	.532	.437
Mother lived with both parents at 15	.222	.519	.000	.239	.298	80.1	.445	.512	.515	.400	.507
Father lived with both parents at 15	.278	.521	.000	.284	.332	80.0	.545	.785	.396	.732	.465
Mother frequency of religious services											
Attends weekly	.222	.324	.069	.224	.244	80.0	.782	.983	.771	.866	.897
Attends occasionally	.528	.527	.996	.552	.550	-729.0	.977	.684	.832	.719	.679
Attends never	.250	.148	.018	.224	.206	82.4	.802	.614	.967	.795	.538
Mother and father relationship status											
Married	.069	.403	.000	.075	.145	78.8	.194	.217	.184	.302	.159
Cohabiting	.361	.408	.424	.388	.368	57.2	.812	.998	.719	.820	.785
Non-residential romantic	.528	.164	.000	.493	.455	89.7	.666	.530	.694	.705	.668
Separated	.042	.025	.374	.045	.032	23.2	.700	.732	.742	.958	.605
Relationship duration in years	3.933	5.582	.004	4.037	4.365	80.1	.631	.680	.427	.390	.470
Mother relationship quality	3.466	3.956	.000	3.504	3.542	92.4	.855	.814	.992	.888	.761
Father relationship quality	3.544	4.063	.000	3.514	3.594	84.6	.675	.908	.904	.980	.815

(continued)

Table 2. Covariate Balance, Before and After Matching (continued)

	Imputed Data Set = 1										
	Unmatched Mean					Matched Mean					
	$E(X) d=1$	$E(X) d=0$	p	$E(X) d=1$	$E(X) d=0$	Percent bias reduction	p	p	p	p	
Father shared responsibility in parenting	2.946	3.400	.000	2.996	3.063	85.3	.695	.521	.974	.937	.745
Father cooperation in parenting	3.539	3.785	.000	3.582	3.612	87.8	.776	.585	.906	.809	.858
Mother and father have additional children	.375	.449	.217	.388	.414	64.3	.758	.817	.772	.971	.396
Mother multi-partnered fertility	.500	.293	.000	.478	.432	77.9	.598	.575	.801	.592	.633
Father multi-partnered fertility	.361	.276	.112	.343	.328	81.8	.850	.757	.866	.960	.987
Relationship commitment	2.368	2.455	.205	2.411	2.411	99.8	.999	.794	.713	.808	.799
Mother pro-marriage attitudes	2.466	2.654	.000	2.478	2.503	87.1	.688	.754	.931	.811	.407
Mother traditional attitudes	2.071	2.081	.888	2.083	2.078	54.3	.963	.906	.757	.942	.906
Mother distrust	2.132	1.950	.006	2.112	2.084	84.1	.786	.549	.631	.721	.498
Mother education											
Less than high school	.500	.260	.000	.507	.480	88.6	.753	.982	.805	.891	.779
High school diploma or GED	.250	.254	.944	.224	.213	-191.2	.883	.632	.819	.587	.500
More than high school	.250	.487	.000	.269	.307	83.9	.629	.672	.624	.506	.751
Father education											
Less than high school	.403	.279	.022	.403	.393	91.8	.906	.941	.831	.764	.762
High school diploma or GED	.403	.292	.043	.403	.376	75.9	.753	.892	.617	.775	.473
More than high school	.194	.428	.000	.194	.231	84.3	.606	.806	.385	.483	.623
Mother employment	.292	.536	.000	.313	.326	94.9	.878	.800	.832	.812	.805
Father employment	.417	.839	.000	.448	.497	88.4	.573	.481	.698	.671	.451
Mother income-to-poverty ratio	.970	2.345	.000	.998	1.251	81.6	.354	.315	.256	.346	.451
Father income-to-poverty ratio	1.888	2.762	.036	1.827	2.068	72.4	.706	.578	.664	.802	.853
Mother welfare	.583	.153	.000	.552	.503	88.6	.572	.580	.700	.905	.762
Mother public housing	.153	.098	.129	.149	.146	93.5	.955	.814	.571	.996	.946
Mother depression	.139	.124	.698	.134	.135	97.2	.994	.949	.862	.933	.906

(continued)

Table 2. Covariate Balance, Before and After Matching (continued)

	Imputed Data Set = 1										
	Unmatched Mean					Matched Mean					
	$E(X) d = 1$	$E(X) d = 0$	p	$E(X) d = 1$	$E(X) d = 0$	Percent bias reduction	p	= 2	= 3	= 4	= 5
Father depression	.139	.071	.031	.134	.142	89.2	.903	.878	.879	.876	.413
Mother parenting stress	2.260	2.117	.063	2.235	2.241	95.5	.956	.748	.840	.951	.491
Father parenting stress	2.166	2.049	.154	2.163	2.195	72.6	.798	.872	.914	.735	.546
Mother fair or poor health	.056	.116	.110	.060	.070	82.6	.805	.841	.905	.756	.911
Father fair or poor health	.028	.094	.055	.030	.046	75.3	.622	.662	.591	.526	.586
Mother heavy drinking	.028	.055	.323	.030	.034	83.3	.884	.892	.863	.880	.907
Mother illicit drug use	.014	.015	.938	.015	.016	34.0	.972	.903	.946	.737	.951
Father heavy drinking	.181	.259	.133	.179	.193	82.9	.842	.817	.918	.831	.718
Father illicit drug use	.097	.067	.311	.104	.098	80.0	.908	.611	.765	.879	.977
Mother reports domestic violence	.028	.023	.814	.030	.025	-19.7	.856	.972	.879	.907	.843
Father impulsivity	2.164	1.940	.005	2.106	2.131	89.1	.845	.993	.997	.939	.933
Father prior incarceration	.333	.202	.007	.343	.343	99.6	.995	.972	.569	.913	.821
N	72	2,129		69	2,124						

Notes: $E(X) | d = 1$ indicates means for treatment group (incarcerated fathers), $E(X) | d = 0$ indicates means for control group (not incarcerated fathers). P -value for difference in mean shown for first 5 of 25 imputed data sets. Post-match estimates based on kernel matching.

Table 3. Propensity Score Models Estimating the Association between Father Incarceration and Relationship Dissolution

	<i>Treatment N</i>	<i>Control N</i>	<i>Unmatched Difference</i>	<i>Matched Difference</i>
Immediate relationship dissolution (between three- and five-year surveys)				
Kernel matching	69	2,124	1.743*** (.245)	.820** (.312)
Kernel matching, doubly robust	69	2,124	1.743*** (.245)	1.063** (.318)
Kernel matching, restricted to previously incarcerated fathers	27	396	1.934*** (.462)	1.318* (.669)
Delayed relationship dissolution (between five- and nine-year surveys)				
Kernel matching	28	1,373	1.550*** (.385)	.553 (.586)
Kernel matching, doubly robust	28	1,373	1.550*** (.385)	.765 (.430)

Notes: All estimates are restricted to the region of common support. Estimates for delayed relationship dissolution are restricted to couples who did not dissolve their relationship between the three- and five-year surveys. Standard errors are in parentheses.

* $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)

have to increase the odds of being incarcerated by 370 percent ($\Gamma = 3.7$) for the full sample and by 140 percent ($\Gamma = 2.4$) for the previously incarcerated sample. Thus, although it is possible that unobserved characteristics could render the relationship between incarceration and relationship dissolution statistically insignificant, these unobserved selection forces would need to be substantial.

Incarceration and Relationship Dissolution, by Relationship Status

In Table 5, I consider the possibility that the association between incarceration and relationship dissolution varies by relationship status prior to incarceration. Given that results for the full sample show no association between incarceration and delayed relationship dissolution, I only consider immediate relationship dissolution here. The first row considers the association between incarceration and relationship dissolution among couples living together at baseline. The findings are consistent with results for the full sample, with the matched estimates showing that incarceration is associated with a greater likelihood of dissolution within two years ($b = 1.603$, $OR = 4.97$, $p < .001$). The second set of models considers the association between incarceration and dissolution among couples not living together at baseline, and the matched estimates show no association between incarceration and relationship dissolution ($b = .126$, $OR = 1.13$, *n.s.*). Tests for differences across the two groups (Paternoster et al. 1998) show the differences are statistically significant ($z = 2.378$), suggesting that results are concentrated among co-residential couples.¹¹ See Figure 2 for predicted probabilities of relationship dissolution by residential status prior to incarceration.

Mechanisms Underlying the Association between Incarceration and Relationship Dissolution

The association between incarceration and relationship dissolution may result directly from incarceration or may result from a number of pathways, and I consider these possibilities in Table 6. The baseline estimate, a logistic regression model estimating relationship dissolution as a function of incarceration and the propensity for incarceration, is presented in Model 1. In Model 2, I adjust for extended incarceration, a dummy variable indicating that the father is incarcerated at the five-year

11. Supplemental analyses using linear probability models produced coefficients that were comparable to the average marginal effects from the logistic regression models.

Table 4. Results from Sensitivity Analysis for the Association between Father Incarceration and Immediate Relationship Dissolution (assuming overestimation of father incarceration)

<i>Full Sample</i>		<i>Previously Incarcerated Fathers</i>	
<i>Gamma (Γ)</i>	<i>p</i>	<i>Gamma (Γ)</i>	<i>p</i>
1.0	<.000	1.0	<.000
1.1	<.000	1.1	<.000
1.2	<.000	1.2	.001
1.3	<.000	1.3	.001
1.4	<.000	1.4	.002
1.5	<.000	1.5	.004
1.6	<.000	1.6	.006
1.7	<.000	1.7	.009
1.8	<.000	1.8	.012
1.9	<.000	1.9	.017
2.0	<.000	2.0	.023
2.1	<.000	2.1	.029
2.2	<.000	2.2	.037
2.3	<.000	2.3	.046
2.4	<.000	2.4	.056
2.5	.001	2.5	
2.6	.001	2.6	
2.7	.002	2.7	
2.8	.003	2.8	
2.9	.005	2.9	
3.0	.008	3.0	
3.1	.011	3.1	
3.2	.015	3.2	
3.3	.021	3.3	
3.4	.027	3.4	
3.5	.036	3.5	
3.6	.046	3.6	
3.7	.057	3.7	
3.8		3.8	
3.9		3.9	
4.0		4.0	

Note: P-values exceeding .05 are omitted (unless they were the point where the relationship became statistically insignificant at the .05 level), which shows where the relationships become statistically insignificant.

survey, which reduces both the magnitude (by 41 percent) and statistical significance of the association. These results, especially, should be interpreted with caution, as fathers incarcerated at the three- and five-year surveys were not necessarily continuously incarcerated and dissolution could have preceded incarceration.

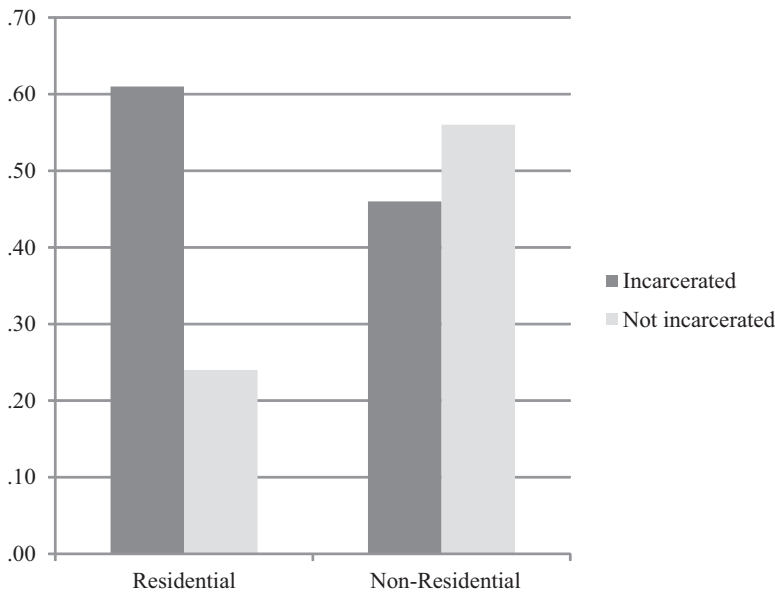
The next three models consider relationship quality, economic well-being, and health as mechanisms. In Model 3, which adjusts for post-incarceration and pre-dissolution relationship quality, the association between paternal incarceration is reduced by 61 percent and to statistical insignificance.

Table 5. Propensity Score Models Estimating the Association between Father Incarceration and Relationship Dissolution, by Residential Status at Baseline

	Treatment N	Control N	Unmatched Difference	Matched Difference
Immediate relationship dissolution (between three- and five-year surveys)				
Kernel matching, restricted to parents living together at baseline	31	1,726	2.118*** (.375)	1.603*** (.431)
Kernel matching, restricted to parents not living together at baseline	39	403	.841* (.332)	.126 (.447)

Notes: All estimates are restricted to the region of common support. Standard errors are in parentheses. Supplemental analyses using linear probability models produced coefficients that were comparable to the average marginal effects from the logistic regression models. Tests for differences across the two groups show the differences are statistically significant ($z = 2.378$).

* $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)

**Figure 2.** Predicted Probabilities of Immediate Relationship Dissolution, by Baseline Relationship Status

Considering each of the five indicators of relationship quality separately shows that shared responsibility in parenting and cooperation in parenting are the most important mediators, explaining, respectively, 67 percent and 22 percent of the association. Economic well-being (Model 4) and health (Model 5) explain 3 percent and 10 percent, respectively, of the association between incarceration and relationship dissolution. The model that includes all potential mechanisms, Model 6, shows no statistically significant association between incarceration and relationship dissolution. In fact, in this model even extended incarceration is not significantly associated with relationship dissolution.¹²

- Given the perils of comparing coefficients across logistic regression models (Mood 2010), I conducted auxiliary linear probability models estimating relationship dissolution as a function of incarceration and the mechanisms. These linear probability models produced results consistent with those from the logistic regression models. Extended incarceration, relationship quality, economic well-being, and health explain, respectively, 42 percent, 75 percent, 1 percent, and 13 percent of the association between paternal incarceration and relationship dissolution. Furthermore, the salience of relationship quality—and, in particular, shared responsibility in parenting and co-parenting—as a mediator is confirmed with formal Sobel-Goodman tests of mediation.

Table 6. Estimating Immediate Relationship Dissolution as a Function of Incarceration, Considering Alternative Explanations

	<i>Immediate Relationship Dissolution (between three- and five-year surveys)</i>					
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>	<i>Model 6</i>
	<i>Baseline</i>	<i>+ Current Incarceration</i>	<i>+ Change in Relationship Quality</i>	<i>+ Change in Economic Wellbeing</i>	<i>+ Change in Health</i>	<i>+ All Mechanisms</i>
Incarceration	.826** (.314)	.491 (.373)	.323 (.424)	.851* (.367)	.746 (.329)	.389 (.570)
Propensity for incarceration	1.783 (1.064)	1.611 (1.113)	.826 (1.447)	1.578 (1.088)	1.909 (1.066)	.375 (1.577)
Incarceration at five-year survey		.833* (.411)				.366 (.608)
Mother overall relationship quality			.102 (.195)			.034 (.194)
Father overall relationship quality			-.497* (.199)			-.513* (.213)**
Father shared responsibility in parenting			-.902*** (.254)			-.838* (.263)
Father cooperation in parenting			-.733* (.347)			-.933 (.447)
Mother reports domestic violence			.139 (.896)			-.228 (.974)
Mother employment				.367 (.322)		.178 (.432)
Father employment				.129 (.369)		.552 (.538)
Mother income-to-poverty ratio				-.186 (.166)		-.218 (.243)
Father income-to-poverty ratio				.011 (.137)		.081 (.189)
Mother depression					-.102 (.410)	-.051 (.522)
Father depression					.092 (.459)	.229 (.615)
Mother fair or poor health					.074 (.500)	-.073 (.770)
Father fair or poor health					1.421* (.559)	.717 (.793)
Father heavy drinking					.007 (.850)	-1.369 (.971)
Father illicit drug use					.412 (.450)	.917 (.718)
Constant	-.847	-.883	5.839	-.861	-1.029	6.184
Log likelihood	-87	-86	-60	-87	-85	-57
Observations	2,193	2,193	2,193	2,193	2,193	2,193

Notes: Logistic regression models estimate relationship dissolution as a function of the mechanisms, controlling for father incarceration and the propensity for father incarceration (from the kernel matching models presented in Table 3). Standard errors in parentheses. Supplemental analyses using linear probability models to estimate relationship dissolution produced results consistent with those from the logistic regression models.

* $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)

DISCUSSION

A growing literature investigates the collateral consequences of mass incarceration for family life, documenting negative consequences for the women (Braman 2004; Comfort 2008; Geller et al. 2011; Geller and Franklin 2014; Schwartz-Soicher et al. 2011; Sugie 2012; Turney 2014a; Turney et al. 2012; Wildeman et al. 2012) and children (Geller et al. 2012; Murray and Farrington 2008; Turney and Haskins 2014; Wakefield and Wildeman 2013) connected to incarcerated and formerly incarcerated men. But despite this burgeoning literature, and despite the fact that much research on the deleterious consequences of incarceration for women and children suggest these associations operate through relationship dissolution (e.g., Geller et al. 2012; Schwartz-Soicher et al. 2011; Turney and Wildeman 2013; Wildeman et al. 2012), little research considers how the liminal carceral period affects relationship dissolution among parents with young children. This is an important oversight given the large number of already disadvantaged children affected by both incarceration and the dissolution of parental relationships.

In this article, I use longitudinal data from the Fragile Families and Child Wellbeing Study, a data source distinctively positioned to examine the collateral consequences of incarceration for relationship dissolution. The results yield three main conclusions. Perhaps most consequentially, results show that among couples with children, incarceration leads to a greater likelihood of relatively immediate relationship dissolution (dissolution that occurs between the three- and five-year surveys). The findings are consistent across a variety of specifications, all of which match incarcerated fathers to their non-incarcerated counterparts. Importantly, given that couples dissolving their union *before* their child was three years old are excluded from the analytic sample, these results are almost certainly conservative. Though I consider dissolution to be an undesirable outcome, primarily because of its harmful consequences for children, it is also possible that incarceration has positive, liberating consequences for women. Incarceration provides women with the freedom to reorganize family life to exclude their incarcerated partner, perhaps paradoxically given the lack of freedom afforded to incarcerated and recently released men.

Second, I find that incarceration is associated with dissolution among couples living together prior to incarceration but not among non-residential couples. Considering this variation by residential status is important, as it bridges the quantitative research on the association between incarceration and divorce (Lopoo and Western 2005; Massoglia et al. 2011; Siennick et al. 2014; Western 2006) and the qualitative literature on mostly unmarried couples (Edin et al. 2004; Nurse 2002; Waller and Swisher 2006; though see Arditti 2012; Comfort 2008). Couples in non-residential relationships face an array of challenges to maintaining relationships (Tach and Edin 2010) and, accordingly, incarceration is not independently associated with the dissolution of these relationships. Importantly, by showing that incarceration is consequential for both marital and cohabiting unions, these results also suggest that previous quantitative research, which has nearly exclusively considered *marital* dissolution, may underestimate the consequences of incarceration for family life.

Third, I find that two plausible mechanisms—including extended incarceration and relationship quality (especially mothers' relationship quality)—explain a rather substantial portion of the association between incarceration and relationship dissolution. The findings about extended incarceration are consistent with other research (Massoglia et al. 2011). And the findings about relationship quality are consistent with other research finding that relationship problems (especially low marital love and extra-marital sex) are important intervening mechanisms linking incarceration to divorce (Siennick et al. 2014). Importantly, though, fathers' shared responsibility in parenting and cooperation in parenting are the most substantial intervening mechanisms. The fact that these parenting behaviors are so important is broadly consistent with qualitative research on incarceration (Braman 2004), research suggesting incarceration destroys co-parental relationships (Turney and Wildeman 2013), and research on the "package deal" of marriage and parenthood (Tach et al. 2010).

Taken together, these findings make several important theoretical and empirical contributions. Theoretically, I draw on the work of Turner (1969), who first put forth the idea of liminality

(primarily to describe rites of passage), to suggest that incarceration embodies a liminal experience. Incarcerated men are “betwixt and between” (Turner 1969:95). They are currently separated and isolated from their families. But, at the same time, they are members of families and eventually will be reintegrated into society and at least some of their family roles. Unfortunately, these data are not designed to test the concept of liminality and, accordingly, this is merely a framework for understanding the conditions of incarcerated men as family members. Future research, especially qualitative research that may be especially suited to examine this (e.g., Menjivar 2006), should conceptualize and measure the liminality experienced by the incarcerated, test hypotheses about the consequences of liminality for family life, and compare and contrast consider additional types of liminal states (e.g., undocumented immigrants, military personnel).

Empirically, these findings advance our knowledge about incarceration and relationship dissolution in several ways. First, I consider dissolution among married, cohabiting, and non-residential romantic couples. The consideration of multiple relationship types is important because the modal prisoner is in a romantic relationship but not a marital one. This is also important because children—especially children in disadvantaged communities where incarceration is common—are increasingly born to unmarried parents and experience deleterious outcomes when these unions dissolve. I also consider both short-term jail spells, the most common type of incarceration, and long-term prison spells, although future data collection efforts should distinguish between jail and prison experiences.

There are additional contributions of this research. I consider the family-level mechanisms linking incarceration to relationship dissolution and adjust for characteristics of both partners, thereby assuaging some threats to causal inference. Also, the longitudinal data allows for a consideration of both immediate and delayed relationship dissolution. This distinction is important, as findings show that relationships surviving the initial post-incarceration period suffer no deleterious consequences, at least with respect to dissolution, consistent with qualitative research showing that some relationships thrive during incarceration (Comfort 2008). Finally, I consider men with children, an especially important demographic group given the consequences of father absence for child well-being (Sigle-Rushton and McLanahan 2004).¹³

Limitations

Though these data provide an exceptional opportunity to examine the consequences of incarceration for family life, and are commonly used to answer such questions, there are several data limitations, many of which have already been discussed. First, these observational data, coupled with the non-random selection of individuals into incarceration, preclude causal conclusions. Although I take great strides to reduce unobserved heterogeneity—via propensity score matching, further adjusting for observed covariates, restricting the sample to fathers at risk of incarceration, and considering how large unobserved factors would have to be to render the association spurious—the analyses do not rule out all possible unobserved heterogeneity, and future research should strive to employ creative research designs situated in a counterfactual, or causal, framework.

Additionally, the incarceration measure is limited. It is possible that incarceration lasting one month is likely differentially associated with relationship dissolution than incarceration lasting one year, and prison incarceration and jail incarceration may differentially affect relationship dissolution. Similarly, the association between incarceration and relationship dissolution may vary by the father’s distance from home or the frequency of mother’s visits. These data provide inadequate opportunities to consider such nuances. The data also do not include the precise timing of relationship dissolution, and is instead limited to broad time periods (between the three- and five-year surveys and between

13. Importantly, results would likely be even stronger if I were to consider both men with and without children, as research suggests that the association between incarceration and relationship dissolution is stronger for men without children (Apel et al. 2010).

the five-and nine-year surveys). Future quantitative research should collect data at more regular intervals (e.g., weekly, monthly) to both more precisely identify the timing of dissolution and further unravel the familial and decision-making processes leading to dissolution. Future qualitative research should investigate how incarcerated men and their partners define and describe their relationships, as cohabitation can be difficult to measure and the survey data shown here suggest that women report living together with men who are incarcerated (Knab and McLanahan 2006).

Finally, a consideration of time ordering (e.g., ensuring incarceration precedes dissolution) necessitates an examination of current incarceration—as opposed to incarceration that occurred in the recent past—and, as such, the number of incarcerated fathers is small (even though the full Fragile Families sample includes a relatively large number of incarcerated men). This is especially true because the sample is further limited by fathers at risk of relationship dissolution (those in a romantic relationship at the three-year survey). However, descriptive analyses show few differences between currently incarcerated men and recently incarcerated men and the careful consideration of time ordering is necessary to most rigorously estimate the relationship between incarceration and dissolution. The relatively small number of incarcerated men plagues most existing research on incarceration and relationship dissolution (e.g., Massoglia et al. 2011; Siennick et al. 2014) and researchers should consider designing a longitudinal survey of incarcerated men and their family members.

Conclusions

This article documents that paternal incarceration is associated with relatively immediate relationship dissolution among parents and that this association is explained by both extended incarceration and post-incarceration changes in relationship quality. Broadly, these findings add to a rapidly growing literature on the consequences of paternal incarceration for family life and family inequality. Similar to the recent demographic changes that have transformed family life—such as trends in non-marital childbearing—incarceration rates have increased rapidly over the past four decades. Incarcerated individuals, though, do not exist in isolation. Instead, while incarcerated, they experience a period of liminality where they are both connected to and disconnected from families. By documenting how and under what conditions the collateral consequences of incarceration extend beyond the offender, and spill over to the families of offenders, this research highlights the considerable influence and unintended consequences of the penal system.

APPENDIX

Table A1. Descriptive Statistics of All Variables, Comparing Current Incarceration to Recent Incarceration

	<i>Current Incarceration</i>	<i>Recent Incarceration</i>
	<i>Mean or Percent</i>	<i>Mean or Percent</i>
Mother race/ethnicity (b)		
Non-Hispanic white (%)	8.2	14.3**
Non-Hispanic black (%)	72.1	63.7**
Hispanic (%)	18.2	19.7
Non-Hispanic other race (%)	1.5	2.3
Mother and father mixed-race couple (b) (%)	15.4	16.6
Mother immigrant (b) (%)	2.1	4.5*
Father immigrant (b) (%)	3.9	7.0
Mother age (b)	22.6	22.8
Father age (b)	25.2	24.9
Mother lived with both parents at 15 (b) (%)	26.5	29.1
Father lived with both parents at 15 (b) (%)	30.5	32.1
Mother frequency of religious services (b)		
Attends weekly (%)	25.3	23.0
Attends occasionally (%)	49.7	54.5
Attends never (%)	25.0	22.5
Mother and father relationship status (b)		
Married (%)	6.9	9.5
Cohabiting (%)	19.2	25.2*
Non-residential romantic (%)	19.2	15.4
Separated (%)	54.6	49.9
Relationship duration in years (b)	3.7	3.6
Mother relationship quality (y1)	2.7	2.8
Father relationship quality (y1)	3.2	3.4
Father shared responsibility in parenting (y1)	2.4	2.5
Father cooperation in parenting (y1)	3.0	3.1
Mother and father have additional children (y1) (%)	36.6	33.5
Mother multi-partnered fertility (y1) (%)	43.3	42.6
Father multi-partnered fertility (y1) (%)	55.7	50.7
Relationship commitment (b)	2.1	2.2
Mother pro-marriage attitudes (b)	2.5	2.5
Mother traditional attitudes (b)	2.0	2.0
Mother distrust (b)	2.2	2.1
Mother education (y1)		
Less than high school (%)	45.0	41.7
High school diploma or GED (%)	28.7	30.1
More than high school (%)	26.3	28.2
Father education (y1)		
Less than high school (%)	50.8	47.8
High school diploma or GED (%)	37.6	36.2
More than high school (%)	11.6	16.0
Mother employment (y1) (%)	46.9	48.7

(continued)

Table A1. Descriptive Statistics of All Variables, Comparing Current Incarceration to Recent Incarceration (continued)

	Current Incarceration	Recent Incarceration
	Mean or Percent	Mean or Percent
Father employment (y1) (%)	44.4	54.6*
Mother income-to-poverty ratio (y1)	1.0	1.1
Father income-to-poverty ratio (y1)	1.6	1.6
Mother welfare (y1) (%)	49.0	44.3
Mother public housing (y1) (%)	20.7	18.0
Mother depression (y1) (%)	17.8	21.6
Father depression (y1) (%)	19.3	15.8
Mother parenting stress (y1)	2.3	2.3
Father parenting stress (y1)	2.1	2.1
Mother fair or poor health (y1) (%)	15.8	14.5
Father fair or poor health (y1) (%)	13.2	12.3
Mother heavy drinking (y1) (%)	8.9	9.3
Father heavy drinking (y1) (%)	16.9	22.8
Mother illicit drug use (y1) (%)	2.7	3.6
Father illicit drug use (y1) (%)	11.2	11.9
Mother reports domestic violence (y1) (%)	6.2	8.1
Father impulsivity (y1)	2.3	2.2
<i>N</i>	331	737

Notes: Current incarceration indicates the father was incarcerated at the three-year survey. Recent incarceration indicates the father was incarcerated at any point after the three-year survey and up to and including the five-year survey. Timing of variable measurement in parentheses (b = baseline survey, y1 = one-year survey). Ns for individual variables vary depending on number of observations missing data. Asterisks indicate statistical significance between groups.

* $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)

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