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Falling Behind? Children's Early Grade Retention after Paternal Incarceration

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Abstract

A growing literature documents the myriad penalties for children of incarcerated fathers, but relatively little is known about how paternal incarceration contributes to educational outcomes in early and middle childhood. In this article, we use data from the Fragile Families and Child Wellbeing Study to provide the first estimates of the relationship between paternal incarceration and children's grade retention in elementary school. Propensity score matching models indicate that children of incarcerated fathers are more likely to experience early grade retention than their counterparts. This relationship is not driven by test scores or behavior problems; preliminary evidence suggests this relationship may be driven by teachers' perceptions of children's academic proficiency. These findings suggest that elementary school teachers may play an important role in the lives of children experiencing paternal incarceration and, more generally, highlight yet another way in which the large-scale incarceration of men limits their children's potential.

Keywords

paternal incarceration, grade retention, elementary school, teachers, social inequality

Approximately 2.6 million children have a parent currently incarcerated in prison or jail in the United States (Pettit 2012). This number, combined with the number of children who have formerly incarcerated parents, constitutes nearly 10 percent of the U.S. population under age 18 (Travis, McBride, and Solomon 2005). The large number of children exposed to parental incarceration, especially *paternal* incarceration, has spawned a rapidly growing literature on its deleterious intergenerational consequences (for reviews, see Eddy and Poehlmann 2010; Johnson and Easterling 2012; Murray, Farrington, and Sekol 2012; see also Wakefield and Wildeman 2013). Moreover, paternal incarceration has wide-ranging consequences for families, including increased economic insecurity (Schwartz-Soicher, Geller, and Garfinkel 2011), family instability (Lopoo and Western 2005), and mental health problems (Wildeman, Schnittker, and Turney 2012), all of which may have cascading penalties for young children. However, despite burgeoning attention to incarceration's unintended and collateral consequences, relatively little research explores the consequences of paternal incarceration for children's educational outcomes or for the elementary school-aged children who comprise the majority of children affected by the penal system (Travis et al. 2005; but see Haskins 2013, 2014; Murray, Farrington, et al. 2012).

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In the United States, grade retention—not promoting a child to the next grade due to performance below a required academic or behavioral threshold—is a particularly critical educational outcome (Jimerson 1999). Often a decision made jointly by teachers and parents, grade retention is a common and long-used educational practice and is viewed as an indicator of children's progress throughout the educational system (Warren and saliba 2012). Given the cumulative nature of schooling in the United States, retention and promotion decisions that alter children's early educational trajectories have important implications for future criminal justice involvement, labor market success, and social mobility. The substantial role education plays in social mobility, in conjunction with the growing importance of the penal state and the long-standing importance of the family in structuring childhood inequality, underscores the need for both theoretical and empirical linkages between these three powerful social institutions. Therefore, understanding the link between paternal incarceration and grade retention can lend insight into intergenerational inequality.

There are a multitude of reasons to expect that paternal incarceration is consequential for grade retention among elementary school-aged children, and in this article, we examine three facets of this relationship with propensity score matching techniques and contemporary data from the Fragile Families and Child Wellbeing Study, a longitudinal birth cohort of children followed through age nine that is uniquely positioned to examine this relationship. First, we estimate the relationship between paternal incarceration and grade retention in elementary school. Second, we investigate the mechanisms underlying the relationship. Third, because paternal incarceration may differentially affect children, we estimate the relationship between paternal incarceration and grade retention separately by race/ethnic, gender, and family structure subgroups. This study provides the first examination of the relationship between paternal incarceration and early grade retention and, in doing so, contributes to the limited existing research on the intergenerational consequences of paternal incarceration for educational outcomes among elementary school children. By considering one way that families, schools, and the penal system interact, this study furthers our understanding of the life-altering collateral consequences among children of the incarcerated.

BACKGROUND

Understanding Grade Retention among Elementary School Children

Grade retention in the United States is concentrated among disadvantaged children (Byrd and Weitzman 1994). In general, public school retention rates are highest in the early elementary (first through third) grades and vary substantially by state (Warren and saliba 2012). Recent averages indicate that 3.5 percent of all first graders and 1.5 percent of all third graders are retained annually; however, state variation in these estimates ranges from less than 1 percent to 6 percent (Warren and saliba 2012). Early grade retention affects hundreds of thousands of children annually; understanding the predictors of this costly and widely used public policy intervention is essential.

Although grade retention is viewed as a means to improve school performance by giving children additional time to meet grade-level academic or behavioral expectations, existing research reaches decidedly conflicting conclusions about whether grade retention is associated with deleterious (e.g., Alexander et al. 2004; Byrd and Weitzman 1994; Jimerson 1999; Ou and Reynolds 2010; Stearns et al. 2007) or beneficial (e.g., Babcock and Bedard 2011; Mariano and Martorell 2013) consequences. Regardless, children who experience retention represent a group that has performed below a certain grade-level threshold and are perceived to require additional assistance in learning or discipline to advance to the next grade.

Theoretical Implications of Paternal Incarceration for Early Grade Retention

Theoretically, there are many reasons to expect a relationship between paternal incarceration and grade retention among elementary school children. The three main explanations for the negative intergenerational consequences of paternal incarceration—trauma, stigma, and strain—may be consequential for grade retention through their influence on children's cognitive and noncognitive skills. For example, trauma stemming from father-child separation can result in a variety of behavioral problems (Braman 2004; Comfort 2007). The stigma of paternal incarceration can produce isolation and shame, which impedes social ties,

reduces support systems, and challenges the social integration of already detached families and children, impairing child well-being (Braman 2004; Goffman 1963; Murray and Farrington 2008b). Paternal incarceration also induces strain—through family disruption, prolonged financial hardship, and parental mental health problems—that may impair child development and well-being (Hagan and Dinovitzer 1999).

Specifically, children of incarcerated fathers may be disadvantaged in their cognitive and noncognitive skills when they enter school, and these disadvantages may facilitate grade retention. Although challenges to causal inference are steep (Johnson and Easterling 2012), a burgeoning literature documents that paternal incarceration has deleterious consequences for children's school readiness, especially for behavioral measures including inattentiveness, aggression, disobedience, anxiety, and depression (Geller et al. 2012; Haskins 2014; Murray and Farrington 2008a; Wilbur et al. 2007; Wildeman 2010). The development of behavioral problems at school entry is particularly troubling because early childhood is considered a critical and foundational life course period when children acquire age-appropriate academic, emotional, and social competencies (Entwisle and Alexander 1989). Additionally, behavioral problems at school entry persist and can affect cognitive test scores (DiPrete and Jennings 2012), which may further increase the probability of grade retention.

In addition to the possibility that school readiness links paternal incarceration to grade retention, children's teachers—who play an active and often initiating role in decisions about retention—may be independently important. Experimental evidence, in which teachers were provided hypothetical scenarios of a parent-child separation (e.g., prison, rehab, school, or away), suggests that elementary teachers' knowledge of parental incarceration can lower their educational expectations for students (Dallaire, Ciccone, and Wilson 2010). In this experiment, children new to the teacher's classroom due to parental incarceration were rated by teachers as less behaviorally, academically, and socially competent than their counterparts, suggesting that these children—regardless of their actual skills—may be especially vulnerable to stigmatization and lowered expectations from teachers (Dallaire et al. 2010), which could influence educational decisions such as grade retention.

Finally, complicating any research on the collateral consequences of paternal incarceration is the fact that incarceration does not occur at random, and many of the same factors that predict paternal incarceration also predict children's grade retention. The incarcerated are disproportionally black, poorly educated, and in poverty (Pettit 2012). Thus, children of the incarcerated often suffer socio-structural disadvantages that may facilitate grade retention. Relatedly, incarcerated fathers often exhibit high levels of antisocial and deviant behavior—including domestic violence, impulsivity, and substance abuse—and these behaviors may also have consequences for children (Murray, Loeber, and Pardini 2012). Therefore, it is quite possible that paternal incarceration has no detectible independent effect on children's early grade retention.

Heterogeneity in the Consequences of Paternal Incarceration

Paternal incarceration may be equally associated with grade retention among all children, or the relationship may vary across demographic characteristics such as race/ethnicity. On the one hand, the negative consequences of paternal incarceration may be heightened among black children compared to white or Hispanic children. Seminal work on stigma suggests that both imprisonment and race, two distinct forms of stigma, extend to those connected to the stigmatized, and the stigmas of race and paternal incarceration may be compounding (Pager 2003; see also Goffman 1963). On the other hand, resilience hypotheses suggest that forms of disruption or environmental shocks are less stressful when the experience is more common and alternative support systems are in place (Mineka and Kihlstrom 1978; Swisher and Waller 2008). Given the high incarceration rates among black men (Pettit 2012) and the social support in black communities (Stack 1974), the relationship between paternal incarceration and early grade retention may be weaker for black children than for other children.

Additionally, the association between paternal incarceration and early grade retention may vary by children's gender. A growing literature shows that young boys—compared to young girls—are more sensitive to family disruptions across a range of outcomes (e.g., Cooper et al. 2011; DiPrete and Buchmann 2013). Young boys' vulnerability is

also found with respect to incarceration as mounting evidence suggests that—at least for contemporary urban children—paternal incarceration is especially detrimental for boys' early behavioral problems (Geller et al. 2012; Haskins 2014; Wildeman 2010; see also Foster and Hagan 2007). Thus, if teachers retain children who exhibit socio-emotional difficulties, and if boys are more likely than girls to be disadvantaged by instability and stress following paternal incarceration, then paternal incarceration will likely be more consequential for grade retention among boys (but see Friedman and Esselstyn 1965).

Finally, differences across father's coresidence with children prior to incarceration could produce varying consequences for grade retention. Given that residential fathers are more likely than nonresidential fathers to be involved in their children's lives, the negative effects on early grade retention may be strongest among these children. For example, recent research suggests that the negative effects of paternal incarceration on children's behavioral problems are stronger for children living with fathers prior to confinement (Geller et al. 2012), and these differences may translate into subgroup differences in the effects of grade retention.

Existing Evidence

Despite growing interest in the intergenerational consequences of paternal incarceration, as well as theoretical reasons to expect linkages between families, schools, and the criminal justice system, no research considers the relationship between paternal incarceration and early grade retention (for an examination of the relationship between *maternal* incarceration and grade retention, see Cho 2009, which compares the likelihood of grade retention for children of mothers incarcerated in prison to children of mothers incarcerated in jail for one week or less). Research on the intergenerational consequences of paternal incarceration for educational outcomes—among elementary school and older students—may be instructive. Among elementary school-aged children, an early study found teachers reported more school adjustment problems (e.g., poor attitudes toward schoolwork, poor self-concept, and underachievement) for children of incarcerated fathers compared to their peers (Friedman and Esselstyn 1965). More recent research suggests that paternal incarceration is not linked to children's verbal ability at ages three or five years (Geller et al. 2009, 2012), but first-time paternal incarceration is negatively associated with children's cognitive skills at age nine years (Haskins 2013; see also Murray and Farrington 2005) and with behavioral problems throughout childhood (Wakefield and Wildeman 2013). Consequences of paternal incarceration for educational outcomes also occur among older children as research suggests that paternal incarceration is negatively associated with adolescents' grade point average, high school graduation, and college completion (Foster and Hagan 2007, 2009; Hagan and Foster 2012; for broader research on household member incarceration and children's educational outcomes, see Nichols and Loper 2012). Taken together, these studies show the range of academic performance and schooling adjustment issues that manifest for children and young adults who experience paternal incarceration (for research on effects of maternal incarceration, see e.g., Siegel 2011).

Study Contributions

This study strengthens previous work on the intergenerational educational consequences of paternal incarceration in a number of ways. To our knowledge, it is the first to examine the relationship between paternal incarceration and early grade retention. Additionally, we move beyond solely estimating the direct effects to include an exploration of mechanisms underlying the relationship between paternal incarceration and grade retention. Finally, we address potential heterogeneity by estimating models separately by race/ethnic, gender, and family structure subgroups. These analyses contribute threefold to the limited existing research on the intergenerational consequences of mass incarceration for educational outcomes among elementary school children.

DATA, MEASURES, AND ANALYTIC STRATEGY

Data Source

We estimate the relationship between paternal incarceration and children's early grade retention with data from the Fragile Families and Child Wellbeing Study (FFCWB), a population-based longitudinal cohort study of 4,898 children born

to mostly unmarried parents. Parents were sampled from 20 cities in large urban areas that were stratified by labor market conditions, welfare generosity, and child support policies. Mothers and fathers (regardless of whether they were living with mothers) were interviewed in person almost immediately after their children were born, between 1998 and 2000, and were interviewed by telephone when children were one, three, five, and nine years old.[1] Additionally, beginning with the three-year survey, children's caregivers (in the majority of cases, mothers) were interviewed in children's homes, and beginning with the five-year survey, children's elementary school teachers were interviewed (for more information, see Reichman et al. 2001).

The FFCWB data are perhaps the best broadly representative data for considering the relationship between paternal incarceration and children's early grade retention. For one, unlike other longitudinal data sources that track children's progression through school—such as the Early Childhood Longitudinal Study–Kindergarten Cohort (ECLS-K)—these data include information about paternal incarceration. Indeed, because unmarried parents, a disproportionately disadvantaged group, are overrepresented in the FFCWB data, many fathers in the study were incarcerated after their child's birth. The demographic characteristics of these incarcerated fathers are comparable to those of men with young children in jails and prisons (Turney and Wildeman 2013). Additionally, these longitudinal data include detailed measures of individual- and family-level characteristics associated with incarceration (e.g., cognitive skills, substance abuse, and impulsivity) measured *prior* to incarceration.

The analyses use information from all five waves. The main analytic sample (N = 3,621) excludes the 1,270 observations missing a primary caregiver interview at the nine-year survey, when grade retention was measured, and an additional seven observations missing information on grade retention. There are some statistically significant, although small, differences between the analytic and baseline samples that suggest the analytic sample is slightly more advantaged. Children in the analytic sample, compared to children in the baseline sample, are more likely to be black, less likely to be Hispanic, and less likely to have foreign-born parents. Mothers, but not fathers, are more likely to have graduated from high school.

Additionally, for a portion of our mechanism analyses, we use information from interviews with children's kindergarten teachers at the five-year survey. After receiving permission from both the child's primary caregiver and the school district, kindergarten teachers were mailed surveys to complete and return. Of the 1,223 children in kindergarten at the five-year survey, 85 percent have completed teacher interviews. Our teacher survey subsample includes children in the main analytic sample with a completed kindergarten teacher survey (N = 947). There are some statistically significant differences between the main analytic sample and the teacher survey subsample that suggest children in the subsample are more advantaged. For example, children in the teacher survey subsample are more likely to be white, more likely to have married parents, and more likely to have mothers and fathers with some postsecondary education (see Online Appendix Table A at soe.sagepub.com). We preserve missing covariates across both analytic samples with 20 multiply imputed data sets.[2]

Measures

Grade Retention. The dependent variable is a dummy indicator of early grade retention. When children were nine years old, their caregivers (mothers, in 93 percent of observations) reported whether the child ever repeated a grade. About 16 percent of children experienced grade retention between kindergarten and third grade (which maps on to, approximately, between the five- and nine-year surveys).[3] The prevalence of grade retention in the FFCWB is larger than national estimates, which show about 8 percent of children are retained between kindergarten and third grade (Warren and saliba 2012), but comparable to estimates in urban samples (Alexander et al. 2004).

Paternal Incarceration. A dummy variable indicates a child's father experienced incarceration for the first time between the one- and five-year surveys.[4] Fathers are considered to experience first-time incarceration if they were never incarcerated at the one-year survey and met one of the following four conditions: (1) The mother or father reports at the three-year survey that the father was ever incarcerated, (2) the mother reports at the five-year survey that the father was incarcerated since the previous survey, (3) the mother or father reports the father is currently incarcerated at the three- or five-year surveys, or

(4) the mother's or father's three- or five-year surveys contain indirect information about paternal incarceration (e.g., the couple separated because the father was incarcerated). We rely on both maternal and paternal reports of paternal incarceration and consider fathers to be incarcerated in cases of disagreement, which is consistent with other research (see especially, Geller et al. 2012). About 11 percent of children experienced first-time paternal incarceration between the one- and five-year surveys.

We measure first-time incarceration, as opposed to any incarceration, between the one- and five-year surveys for theoretical and substantive reasons. Theoretically, considering first-time incarceration allows us to establish appropriate time order between grade retention (occurring between the five- and nine-year surveys), paternal incarceration (occurring between the one- and five-year surveys), and covariates (measured almost entirely at the baseline and one-year surveys). If we were to instead consider *any* incarceration between the one- and five-year surveys, the sample might include fathers who also experienced incarceration prior to the one-year survey, which could affect some of our control variables (e.g., parents' relationship status or economic hardship) and produce biased estimates. Also, analytically, it is possible to measure first-time incarceration only between the one- and three-year surveys (at the three-year survey, parents were asked about paternal incarceration only if fathers had never been incarcerated). This approach is consistent with other research (e.g., Haskins 2014).

Covariates. The analyses use propensity score matching to match children with and without incarcerated fathers on an array of characteristics measured, unless otherwise noted, prior to paternal incarceration. Child characteristics include the following: race, gender, born low birth weight, fair or poor health, and age at the nine-year survey. Also, because children who are young for their grade level are more likely to be retained (Verachtert et al. 2010), we include a series of dummy variables indicating birth month: June through August (children likely young for their grade level), September through February (children likely old for their grade level), and March through May.[5] Dummy variables indicate the relationship of the caregiver (who participated in the nine-year survey) to the child.

We also match on parental demographic, socioeconomic, and health characteristics as reported by mothers and fathers. Demographic characteristics indicate both parents' immigrant status, mother's childhood family structure, mother's age at first birth, number of children in the mother's household, mother's and father's relationship status, and mother's and father's multipartner fertility. Socioeconomic characteristics include parental education, mother's residence in public housing, mother's income-to-poverty ratio (based on thresholds established by the U.S. Census Bureau), and mother's neighborhood disadvantage index.[6] Health characteristics include mother's and father's depression and parenting stress, an average of four questions (e.g., "taking care of my children is much more work than pleasure") that range from 1 (*strongly disagree*) to 4 (*strongly agree*) (α = .61 for mothers, α = .56 for fathers). Furthermore, because of regional variation in incarceration (Mauer and King 2007) and grade retention (Warren and saliba 2012), we match on dummy variables indicating baseline city of residence.

Finally, and importantly, we match children on indicators highly associated with selection into incarceration. Dummy variables include domestic violence (measured by mother's reports of whether the father hit, slapped, or kicked her) and father's substance abuse (measured affirmatively if the father reports having five or more drinks in one sitting in the past month or illicit drug use in the past month). Parental impulsivity is an average of six questions (e.g., "I often say and do things without considering the consequences"; α = .84 for mothers, α = .86 for fathers) that range from 1 (*strongly disagree*) to 4 (*strongly agree*), and cognitive ability is measured with the Wechsler Adult Intelligence Scale (WAIS) (Wechsler 1981).[7]

Mechanisms. Our first set of mechanisms includes measures of children's school readiness from the five-year survey. Cognitive skills are measured with the Peabody Picture Vocabulary Test (PPVT) and the Woodcock-Johnson Letter-Word Recognition Test (Dunn and Dunn 1997; Woodcock, McGrew, and Mather 2001). Noncognitive skills are measured by three subscales (internalizing behaviors [α = .76], externalizing behaviors [α = .86], and attention problems [α = .85]) of the mother-reported Child Behavior

Checklist (CBCL), an established measure of behaviors in children (Achenbach 1992). The second set of mechanisms includes family strain (dummy variables indicating the parents separated, the mother repartnered, mother's and father's multipartner fertility, and a continuous measure of mother-reported relationship quality) and economic strain (a continuous measure of household income to poverty ratio and dummy variables indicating the mother is employed and if she resides in public housing). Finally, among children in kindergarten at the five-year survey, we also consider teachers' reports of behavior (aggressive behaviors [α = .96], attention problems [α = .90], and social problems [α = .84], also measured by the CBCL) and academic proficiency. Academic proficiency is measured by an average of teachers' responses to the following items (1 = *not yet*, 2 = *beginning*, 3 = *in progress*, 4 = *intermediate*, 5 = *proficient*): (1) understands and interprets a story or other text read to the child; (2) easily and quickly names all upper- and lower-case letters of the alphabet; (3) reads simple books independently; (4) demonstrates an understanding of some of the conventions of print; (5) recognizes distinct differences in habits and living patterns between oneself and other groups of people the child knows; (6) forms explanations based on observations and explorations; (7) sorts, classifies, and compares math materials by various rules and attributes; (8) shows an understanding of the relationship between quantities; and (9) uses a variety of strategies to solve math problems (α = .95). All mechanisms are measured at the five-year survey and therefore after the measure of incarceration but before grade retention.

Analytic Strategy

Our analytic approach uses propensity score matching, one strategy for minimizing heterogeneity between children with and without incarcerated fathers. Propensity score matching allows us to approximate an experimental design with observational data by creating treatment and control groups and comparing children's outcomes across these groups (Rosenbaum and Rubin 1983). The treatment group includes children of fathers who experienced a first-time incarceration between the one- and five-year surveys, and the control group includes children of fathers who have never been incarcerated by the five-year survey. Children of fathers incarcerated between the one- and five-year surveys but not incarcerated for the first time are dropped from the analyses (N = 460). The treatment and control groups have a similar distribution of covariates—and a similar profile of risk factors associated with paternal incarceration—and their observed characteristics vary only by whether they experienced first-time paternal incarceration. These propensity score analyses proceed under the assumption that no unobserved covariates would confound the relationship between paternal incarceration and early grade retention (Morgan and Harding 2006; Shadish 2013).

The analyses ensue in three stages. First, we estimate the average relationship between paternal incarceration and early grade retention. Across each of the 20 imputed data sets, we estimate a logistic regression model, as a function of the covariates described earlier, to produce a propensity score for each observation (see Online Appendix Table B). We ensure that across the treatment and control groups, the 58 covariates are statistically indistinguishable from one another (see Online Appendix Table C) and use three matching strategies to match treatment and control observations: kernel, nearest neighbor, and radius.[8]

Second, we consider the mechanisms underlying the relationship between paternal incarceration and early grade retention. We first consider two measures of cognitive skills (PPVT scores and Woodcock-Johnson scores) and three measures of noncognitive skills (mother-reported internalizing behaviors, externalizing behaviors, and attention problems). Next we consider eight measures of family and economic strain. Finally, among children in kindergarten at the five-year survey, we consider teacher-reported proficiency and three measures of noncognitive skills (teacher-reported aggressive behaviors, attention problems, and social problems). Because not all children were in kindergarten at the five-year survey, these analyses rely on the teacher survey subsample and should be considered preliminary. Like the analyses using the full sample, we drop children of fathers experiencing a second- or higher-order incarceration (N = 117) from the analyses. Similar to Kirk and Sampson (2013), we use logistic regression models to estimate the outcome as a function of the mechanism, controlling for the treatment and the propensity for the treatment.[9]

Finally, we consider variation by race/ethnicity (whites, blacks, and Hispanics), gender (boys and

girls), and family structure (fathers living with children prior to incarceration and fathers not living with children prior to incarceration). We match treatment and control observations separately within subgroups (and therefore achieve covariate balance within subgroups).

Sample Description

Table 1 presents descriptive statistics for all variables included in the analyses. The vast majority of children are race/ethnic minorities. More than half (55 percent) of children are black and more than one-quarter (26 percent) are Hispanic. About 14 percent of children's mothers and 15 percent of children's fathers were born outside the United States. Mothers were, on average, 21 years old when they had their first child. The majority of children's parents are in romantic relationships with one another; about 29 percent are married, 27 percent are cohabiting, and 10 percent are in nonresidential romantic relationships at the one-year survey. About one-third of mothers (30 percent) and fathers (31 percent) do not have a high school diploma or GED.

RESULTS

Estimating the Average Relationship between Paternal Incarceration and Grade Retention

Descriptive statistics indicate that about 23 percent of children with incarcerated parents and 14 percent of children without incarcerated parents were retained between kindergarten and third grade ($p < .001$, descriptives not shown). Table 2 presents results from unmatched and matched estimates of the relationship between paternal incarceration and children's early grade retention. The unmatched estimates show that paternal incarceration is associated with a greater likelihood of children's early grade retention ($b = .597$, OR = 1.82, $p < .001$). This relationship remains statistically significant across all three types of matched estimates. Kernel matching, for example, suggests that children of incarcerated fathers, compared to their counterparts, have 1.47 times the odds of experiencing grade retention ($b = .384$, $p < .01$). These estimates persist across radius and nearest neighbor matching strategies, suggesting effect sizes (ES) between .19 and .21 (Chinn 2000; Sánchez-Meca, Marín-Martínez, and Chacón-Moscoso 2003).

Sensitivity Analyses. Table 2 suggests a positive, statistically significant relationship between paternal incarceration and children's early grade retention. But because our analytic strategy only takes into account observed characteristics, and not unobserved characteristics, it is possible that unmeasured characteristics (e.g., father's criminal activity) could render the relationship statistically insignificant. Therefore, we consider Mantel-Haenszel sensitivity analyses to estimate the amount of unobserved heterogeneity that would need to exist to render the relationship statistically insignificant (see Online Appendix Table D). These analyses, which are best performed under nearest neighbor matching, show that any unobserved characteristics not included in the propensity score would have to increase the odds of being incarcerated by about 25 percent ($\Gamma = 1.25$). Only relationship status is associated with a greater likelihood of incarceration in the model estimating the propensity for incarceration. Therefore, it is unlikely that an unobserved characteristic—not correlated with 1 of the 58 covariates—would render the relationship between paternal incarceration and retention spurious.

Considering Mechanisms

Given that the results presented previously show that children of incarcerated fathers, compared to their counterparts, are more likely to experience grade retention in elementary school, we now investigate possible explanations for this relationship. In the interest of parsimony, we present only kernel matching estimates in this and the subsequent table, but other matching strategies produce similar estimates. In Panel A of Table 3, we use logistic regression models to estimate these relationships for the full analytic sample. Model 1 provides a baseline association for the relationship between paternal incarceration and retention (consistent with the kernel matching results presented in Table 2). This paternal incarceration coefficient is reduced by only 5 percent when adjusting for test scores (Model 2), by 2 percent when adjusting for mother-reported behavioral problems (Model 3), and by 9 percent when adjusting for family and economic characteristics (Model 4). This

Table 1. Means and Standard Deviations of Variables Used in Analyses

	Mean	*SD*
Key variables		
Early grade retention	0.159	
Paternal incarceration	0.107	
Covariates		
Child race		
Non-Hispanic white	0.171	
Non-Hispanic black	0.551	
Hispanic	0.257	
Other race	0.021	
Mother foreign-born	0.141	
Father foreign-born	0.157	
Mother age at first birth (range, 13-45)	21.449	5.207
Mother lived with both biological parents at age 15	0.419	
Mother relationship status with father		
Married	0.290	
Cohabiting	0.273	
Nonresidential romantic	0.099	
No romantic relationship	0.337	
Mother number of children in household (range, 0-10)	2.306	1.326
Mother multipartnered fertility	0.374	
Father multipartnered fertility	0.407	
Mother education		
Less than high school	0.301	
High school diploma or GED	0.283	
Postsecondary education	0.416	
Father education		
Less than high school	0.308	
High school diploma or GED	0.358	
Postsecondary education	0.334	
Mother employment	0.548	
Father employment	0.765	
Mother income to poverty ratio (range, 0-36)	1.828	2.204
Mother public housing	0.141	
Mother neighborhood disadvantage index (range, –11 to 17)	0.027	3.464
Mother depression	0.159	
Father depression	0.110	
Mother parenting stress (range, 1-4)	2.178	0.668
Child is male	0.525	
Child age in months (range, 104-132)	112.665	4.546
Child born low birth weight	0.095	
Child in fair or poor health	0.027	
Caregiver relationship to child		
Mother	0.924	
Father	0.040	
Other	0.036	
Child birth month		
June through August	0.544	
September through February	0.067	
March through May	0.388	
Father engaged in domestic violence	0.043	

(continued)

Table 1. (continued)

	Mean	*SD*
Father substance use	0.229	
Mother impulsivity (range, 1-4)	1.525	0.485
Father impulsivity (range, 1-4)	2.008	0.666
Mother cognitive ability (range, 0-15)	6.781	2.680
Father cognitive ability (range, 0-15)	6.512	2.740
Mechanisms		
Peabody Picture Vocabulary Test (range, 40-139)	93.092	16.071
Woodcock-Johnson Letter-Word Identification Test (range, 46-186)	99.507	15.211
Mother-reported internalizing behaviors (range, 0-2)	0.241	0.222
Mother-reported externalizing behaviors (range, 0-2)	0.447	0.292
Mother-reported attention problems (range, 0-2)	0.270	0.286
Mother and father separated	0.528	
Mother repartnered	0.267	
Mother relationship quality	2.945	1.452
Mother multipartnered fertility	0.466	
Father multipartnered fertility	0.480	
Mother income to poverty ratio	1.954	2.348
Mother employment	0.597	
Mother lives in public housing	0.050	
Teacher-reported proficiency (range, 1-5)	3.759	1.015
Teacher-reported aggressive behaviors (range, 0-2)	0.230	0.339
Teacher-reported attention problems (range, 0-2)	0.362	0.406
Teacher-reported social problems (range, 0-2)	0.205	0.277
N	3,621	

Note: Analyses conducted with data from the Fragile Families and Child Wellbeing Study (FFCWB). Analytic sample restricted to observations with a completed primary caregiver interview at the nine-year survey and non-missing data on children's grade retention. Descriptive statistics for teacher-reported proficiency, aggressive behaviors, attention problems, and social problems rely on data from the teacher survey sample (N = 947), observations in the analytic sample that include a completed kindergarten teacher survey. We preserve missing covariates with 20 multiply imputed data sets and the analyses are unweighted. Descriptive statistics are presented for the first imputed data set. Early grade retention was ascertained at the nine-year interview. Paternal incarceration is coded affirmatively if a father experienced first-time incarceration between the one- and five-year surveys. Control variables are measured at the baseline or one-year surveys and thus prior to paternal incarceration. Exceptions include child age (measured at the nine-year survey), mother impulsivity (measured at the five-year survey), mother cognitive ability (measured at the three-year survey), and father cognitive ability (measured at the three-year survey). Mechanisms are measured at five-year survey. City dummy variables are not presented in the interest of parsimony.

suggests these measures explain only a small part of this relationship.

In Panel B of Table 3, to consider teachers' perceptions of children's academic proficiency and behavior, we estimate these relationships for the teacher survey subsample. For the sake of comparison, the first four models are identical to the full analytic sample models (with Model 1 presenting the baseline association, Model 2 adjusting for test scores, Model 3 adjusting for mother-reported behavioral problems, and Model 4 adjusting for family and economic strain). Note that in Model 1, the paternal incarceration coefficient is not statistically significant, potentially due to the more advantaged nature of this subsample or the small sample size (N = 108 for the treatment group and 722 for the control group) and corresponding increased standard error. Models 2, 3, and 4 also produce estimates consistent with estimates from the full analytic sample, as test scores, mother-reported behavioral problems, and family and economic characteristics do little to alter the

Table 2. Propensity Score Matching Estimates of the Average Effect of First-time Paternal Incarceration on Children's Early Grade Retention

	Unmatched			Matched				
	Estimates			Treatment *N*	Control *N*	Estimates		
Kernel matching	0.597	(0.133)	***	385	2,775	0.384	(0.138)	**
Radius matching	0.597	(0.133)	***	382	2,707	0.350	(0.148)	*
Nearest neighbor matching	0.597	(0.133)	***	383	1,691	0.353	(0.158)	*

Note: Analyses conducted with data from the Fragile Families and Child Wellbeing Study (FFCWB). Analytic sample restricted to observations with a completed primary caregiver interview at the nine-year survey and non-missing data on children's grade retention. Additionally, children of fathers experiencing a second or higher-order incarceration between the one- and five-year surveys are dropped from the analyses. We preserve missing covariates with 20 multiply imputed data sets, and the analyses are unweighted (except for the kernel matching estimates, which matches all treatment observations to controls by weighting control observations by their distance from treatment cases). Propensity scores are estimated with a logistic regression model estimating paternal incarceration as a function of pre-incarceration covariates. Coefficients are presented and standard errors are in parentheses.
*$p < .05$. **$p < .01$. ***$p < .001$ (two-tailed tests).

paternal incarceration coefficient. However, in Model 5, which adjusts for teacher-reported academic proficiency, the treatment coefficient is reduced by 59 percent. Furthermore, the coefficient (not shown) for teacher-reported proficiency is negatively associated with grade retention (–1.132, OR = .32, $p < .001$). Teacher-reported behavioral problems, which are adjusted for in Model 6, explain only 10 percent of the treatment coefficient. Therefore, these results, although considered preliminary because of the reduced sample size and statistically nonsignificant association in Model 1, provide suggestive evidence that paternal incarceration affects children's progression through elementary school through teacher perceptions of children's academic capabilities.[10]

Estimating Heterogeneity

Table 4 presents estimates of the relationship between paternal incarceration and early grade retention for race/ethnic, gender, and father's residential status subgroups. Panel A considers race-specific estimates. The unmatched estimates show an effect of paternal incarceration for black children ($b = .576$, OR = 1.78, $p < .001$) but not for white or Hispanic children. For white children, the marginally statistically significant unmatched estimate falls to statistical insignificance (and switches direction, suggesting a negative relationship between paternal incarceration and retention). But for black children, the matched estimate remains statistically significant. Paternal incarceration is associated with 1.66 times the odds of early grade retention ($b = .507$, $p < .01$, ES = .28). Importantly, although these subgroup models show that paternal incarceration is detrimental only for black children, comparing the coefficients across models suggests that these race/ethnic differences in coefficients are not statistically different from one another (Paternoster et al. 1998). This is true when comparing coefficients across white and Hispanic children ($z = –1.181$), black and Hispanic children ($z = .521$), and white and black children ($z = –1.632$). However, the relatively few number of white and Hispanic children in the retrospective treatment groups means these results should be considered preliminary.

Panels B and C of Table 4 present subgroup estimates by gender and father's residential status prior to incarceration, respectively. The matched estimates show no effect of paternal incarceration ($b = .290$, OR = 1.34, *ns*) for boys but a positive effect for girls ($b = .570$, OR = 1.77, $p < .05$, ES = .31), increasing girls' likelihood of grade retention. Despite the coefficients suggesting that the relationship between paternal incarceration and grade retention is stronger—and larger in magnitude—for girls compared to boys, the coefficients are not statistically different from one another ($z = –.959$). Additionally, the matched estimates show an effect of paternal incarceration for children living with fathers prior to incarceration ($b = .308$, OR = 1.36, $p < .05$, ES = .17) but not among children not living with fathers prior to

Table 3. Mediators of the Average Effect of First-time Paternal Incarceration on Children's Early Grade Retention

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
	Baseline	*+ test scores*	*+ mother-reported behaviors*	*+ family and economic strain*	*+ teacher-reported proficiency*	*+ teacher-reported behaviors*	*+ all mechanisms*
Panel A. Analytic sample (N = 3,161)							
Paternal incarceration	0.367 **	0.347 *	0.358 *	0.334 *	—	—	0.325 *
	(0.140)	(0.144)	(0.141)	(0.142)			(0.146)
Propensity for paternal incarceration	3.635 ***	2.987 ***	3.440 ***	2.305 **	—	—	2.095 **
	(0.616)	(0.636)	(0.633)	(0.685)			(0.711)
Intercept	–2.262	1.815	–2.496	–2.158	—	—	0.945
Panel B. Teacher survey subsample (N = 830)							
Paternal incarceration	0.315	0.341	0.345	0.341	0.129	0.283	0.192
	(0.272)	(0.289)	(0.278)	(0.279)	(0.304)	(0.300)	(0.337)
Propensity for paternal incarceration	3.077 **	1.359	2.411	1.046	0.992	1.783	–0.274
	(1.185)	(1.313)	(1.239)	(1.367)	(1.359)	(1.322)	(1.679)
Intercept	–2.208	5.347	–2.691	–1.975	1.939	–2.805	3.068

Note: Analyses conducted with data from the Fragile Families and Child Wellbeing Study (FFCWB). Main analytic sample restricted to observations with a completed primary caregiver interview at the nine-year survey and non-missing data on children's grade retention. Teacher survey subsample restricted to observations in the main analytic sample that include a completed kindergarten teacher survey. Additionally, children of fathers experiencing a second- or higher-order incarceration between the one- and five-year surveys are dropped from the analyses. We preserve missing covariates with 20 multiply imputed data sets, and the analyses are unweighted. Logistic regression models estimate children's early grade retention as a function of the mechanisms, controlling for paternal incarceration and the propensity for paternal incarceration (from the kernel matching models presented in Table 2). Model 2 includes Peabody Picture Vocabulary Test and Woodcock Johnson test scores. Model 3 includes mother-reported internalizing and externalizing behaviors. Model 4 includes parents separated, mother repartnered, mother relationship quality, mother multipartnered fertility, father multipartnered fertility, mother income to poverty ratio, mother employment, and mother resides in public housing. Model 5 includes teacher-reported proficiency. Model 6 includes teacher-reported aggressive behaviors, attention problems, and social problems. Model 7 includes all mechanisms. Coefficients are presented and standard errors are in parentheses.
*$p < .05$. **$p < .01$. ***$p < .001$ (two-tailed tests).

Table 4. Propensity Score Matching Estimates of the Average Effect of First-time Paternal Incarceration on Children's Early Grade Retention, by Race/Ethnicity, Gender, and Father's Residential Status

	Unmatched			Matched				
				Treatment *N*	Control *N*	Estimates		
Panel A. Race/ethnicity								
Non-Hispanic whites	0.686	(0.396)		46	410	–0.381	(0.515)	
Non-Hispanic blacks	0.576	(0.165)	***	250	1,400	0.507	(0.177)	**
Hispanics	0.444	(0.284)		85	722	0.324	(0.303)	
Panel B. Gender								
Boys	0.450	(0.174)	**	205	1,443	0.290	(0.187)	
Girls	0.746	(0.209)	***	180	1,307	0.570	(0.224)	*
Panel C. Father's residential status								
Co-residential	0.711	(0.193)	***	174	1,623	0.308	(0.205)	*
Not co-residential	0.351	(0.201)		176	964	0.336	(0.225)	

Note: Analyses conducted with data from the Fragile Families and Child Wellbeing Study (FFCWB). Analytic sample restricted to observations with a completed primary caregiver interview at the nine-year survey and non-missing data on children's grade retention. Additionally, children of fathers experiencing a second- or higher-order incarceration between the one- and five-year surveys are dropped from the analyses. We preserve missing covariates with 20 multiply imputed data sets. Estimates presented are from kernel matching, which matches all treatment observations to controls by weighting control observations by their distance from treatment cases. Propensity scores are estimated with a logistic regression model estimating paternal incarceration as a function of pre-incarceration covariates. We match treatment and control observations separately within subgroups. Coefficients are presented and standard errors are in parentheses. Coefficients across subgroups are not statistically different from one another ($z = -1.632$, comparing non-Hispanic whites to blacks, $z = -1.181$ comparing non-Hispanic whites to Hispanics, $z = 0.521$ comparing non-Hispanic blacks to Hispanics, $z = -0.959$ comparing boys to girls, and $z = -0.092$ comparing co-residential fathers to not co-residential fathers).
*$p < .05$. **$p < .01$. ***$p < .001$ (two-tailed tests).

incarceration ($b = .336$, OR = 1.40, *ns*). The coefficients by residential status are also not statistically different from one another ($z = -.092$). Results from Mantel-Haenszel bounds sensitivity analyses show that unobserved selection forces would have to increase the odds of experiencing paternal incarceration by 135 percent for blacks, 130 percent for girls, and 110 percent for children living with their fathers prior to incarceration.

DISCUSSION

In the United States, early educational experiences have profound implications for later life course trajectories. Accordingly, understanding inequalities in these early educational experiences can be critical for recognizing broad processes of social mobility. Paternal incarceration, a quite common phenomenon among marginalized children in the United States, is an understudied aspect of family life that may be critical for understanding how children's early educational experiences are structured. In this article, we use contemporary data from the Fragile Families and Child Wellbeing Study, a population-based longitudinal study of children born to mostly unmarried parents in the United States, to provide the first examination of how paternal incarceration is linked to children's early grade retention, a meaningful indicator of young children's progression throughout the educational system.

The results suggest three main conclusions. First, we find that children of fathers who experience first-time incarceration when children are between the ages of one and five years, compared to children with never incarcerated fathers, have a greater likelihood of being retained between kindergarten and third grade. Our estimated effect sizes, which hover around .20, are not inconsequential, indicating a magnitude similar in size to about one-quarter of the black-white achievement gap in reading for elementary-aged children (Lipsey et al. 2012). These findings are consistent

with existing research that suggests paternal incarceration has deleterious consequences for school readiness, measured by test scores and behavior problems, in early childhood (Geller et al. 2012; Haskins 2014; Wildeman 2010) and for educational attainment in young adulthood (Foster and Hagan 2007).

Second, we find preliminary evidence that teacher-reported proficiency—but not children's test scores or behavioral problems—explains more than half of the relationship between paternal incarceration and children's early grade retention. This suggests teachers play a unique role in the educational outcomes of children of incarcerated parents. The idea that teachers are crucial to young children's progression through the school system is certainly not novel (e.g., Downey and Pribesh 2004; Ready and Wright 2011), but this is, to our knowledge, the first study to consider the role of teachers in explaining differences between children with and without incarcerated fathers. There are at least two possible explanations for these findings. One explanation is that teachers stigmatize children of incarcerated parents (Dallaire et al. 2010; Mineka and Kihlstrom 1978). Another explanation is that teachers' perceptions of children's academic proficiency are more accurate measures of children's capabilities than test scores, and it is these capabilities that underlie the relationship between paternal incarceration and children's grade retention. These analyses are necessarily preliminary, as not all FFCWB children were in kindergarten at the time of the five-year survey, and therefore these analyses rely on a smaller and more advantaged subsample than our main analyses. However, we hope future research will rigorously consider the role of teachers in structuring the educational trajectories of children with incarcerated fathers and, in doing so, adjudicate between these and other explanations.

Third, although we expected the consequences of paternal incarceration for children's early grade retention to vary across population subgroups, we found no evidence of variation across race/ethnicity, gender, or father's residential status. To the contrary, we found that paternal incarceration is a marker of disadvantage for children regardless of race/ethnicity, gender, or father's residential status. However, the differences in the magnitude of the coefficients between whites and blacks and between boys and girls—in conjunction with the relatively small number of children in the treatment group of these subgroup analyses—do raise a number of questions and suggests the necessity of additional work and potentially more powerful data in this area. Although the FFCWB are perhaps the best broadly representative and contemporary data available to investigate the overall intergenerational consequences of paternal incarceration, the subgroup analyses necessitated reductions in sample size that likely increase the imprecision of our estimates due to inadequate statistical power. Although the differences in our race/ethnic and gender subgroup estimates appear meaningful when comparing the magnitude across point estimates, the smaller analytic samples make it difficult to detect with certainty whether differences are truly meaningful. Future research with larger samples is needed before definitive conclusions on subgroup differences can be drawn. Regardless, even if the consequences of paternal incarceration are homogenous among white and black children, the racial disparities in incarceration at the population level present some evidence that at the individual level, black children have a high risk of experiencing negative intergenerational educational consequences of paternal incarceration via grade retention.

Limitations

Additional limitations exist aside from the ones discussed earlier. First, because the FFCWB is not a nationally representative sample of children, we cannot generalize our findings to all children. However, because this contemporary study oversamples children of unmarried parents living in urban areas—the children especially affected by the prison boom—these analyses speak to the population of children most likely to experience paternal incarceration. Second, we do not have any direct indicator that teachers were aware of the incarceration status of children's fathers, making it difficult to draw conclusions about the motives (e.g., stigmatization) through which this mechanism operates. Moreover, the measures of paternal incarceration and grade retention are limited. We only consider children who experience first-time paternal incarceration; it is possible that higher-order incarcerations are more strongly associated with grade retention than first-time incarcerations. If that is the case, our results are underestimated. Relatedly, these data do not allow for an examination of heterogeneity in incarceration experiences,

which may be instructive. For example, children of fathers incarcerated in prisons located far from their origin neighborhood may be unlikely to see their fathers frequently, which may be especially consequential for children's educational experiences. The retention measure is also limited because it is reported by children's mothers. Finally, although we go to great lengths to find comparable counterparts (via matching) for children of incarcerated fathers, the nature of these data means we cannot conduct fixed-effects models that would allow us to parse out time-invariant unobserved heterogeneity. Results from sensitivity analyses suggest it is unlikely we are omitting a variable that may render the relationship between paternal incarceration and early grade retention spurious, but research should continue to rigorously interrogate these questions.

Conclusions

The incarceration rate in the United States has increased dramatically in the past four decades, disproportionately affecting poor and minority men and producing collateral consequences for the families and children connected to them. Understanding implications of paternal incarceration for children's educational outcomes is increasingly necessary for understanding the role incarceration plays in producing intergenerational inequality. This article provides the first estimates of the relationship between paternal incarceration and children's grade retention in elementary school. Our findings indicate that children of incarcerated fathers, compared to their counterparts, are more likely to experience grade retention in elementary school. Given that early schooling experiences are consequential for a host of later life course outcomes, our findings not only highlight another way in which the large-scale incarceration of men limits the potential of their children but also draw attention to the interconnected nature of three of America's most powerful social institutions—the family, the educational system, and the penal system. Individuals embedded in the educational system (including teachers, counselors, and practitioners) may benefit from training that increases their awareness, support, and sensitivity toward the challenges faced by children of incarcerated fathers. Individuals embedded in the penal system may benefit from knowing that incarceration has unintended spillover effects for children's educational experiences. More generally, our findings suggest the need for holistic social policies—policies that acknowledge the ways families, schools, and prisons are linked—to prevent the cyclical reproduction of inequality across generations.

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NOTES

1. About 86 percent of mothers and 79 percent of fathers participated in the baseline interview. Of these, about 91, 88, 87, and 76 percent of mothers and 74, 72, 70, and 59 percent of fathers participated in the one-, three-, five-, and nine-year surveys.
2. For most covariates, less than 10 percent of observations are missing data. Exceptions include fathers' employment (missing 26 percent of observations), depression (26 percent), cognitive ability (20 percent), and impulsivity (35 percent).
3. If a child's caregiver reported that the child had ever been retained, the caregiver was asked to report the grades in which the child was retained. About 4 percent of children in the analytic sample repeated kindergarten, 8 percent repeated first grade, 5 percent repeated second grade, and 2 percent repeated third grade. Because of the small number of children who repeated any specific grade, the relatively large number of observations missing this information (between 9 and 16 percent, depending on the year), and no theoretical reason to suspect paternal incarceration would differentially affect children at different grades, we do not utilize this information in our analyses.
4. Although it is possible to estimate first-time paternal incarceration between the one- and nine-year surveys, our independent variable measures incarceration between the one- and five-year surveys to ensure that incarceration occurs temporally prior to grade retention. Examining paternal incarceration between the one- and five-year surveys also allows us to consider the school readiness mechanisms.

5. Ideally, we would include separate dummy variables for children born September through November and children born December through February. But only 11 children have birthdays in September, October, or November, so we combine these two categories.
6. The neighborhood disadvantage index comprises the following four census tract characteristics: percentage unemployed in the civilian labor force, percentage living below the poverty line, percentage receiving public assistance, and percentage over 25 years old without a high school degree. We standardize each of the four variables and sum them ($\alpha = .90$).
7. Mother's and father's cognitive ability is measured at the three-year survey, and mother's impulsivity is measured at the five-year survey because these characteristics were not measured at the baseline or one-year surveys. Cognitive ability and impulsivity are considered stable characteristics (Conley 1984; Gottfredson and Hirschi 1990); accordingly, this should not bias our results.
8. Kernel matching matches all treatment observations to controls by weighting control observations by their distance from treatment cases (kernel = Epanechnikov; bandwidth = .06). Nearest neighbor matching matches treatment observations to controls with the closest propensity score (neighbors = 10). Radius matching matches treatment observations to controls within a particular distance of the propensity score (caliper = .005).
9. Because it is not advisable to compare coefficients across logistic regression models (Winship and Mare 1984), we conduct supplemental analyses that instead use linear probability models, which display a similar pattern of results.
10. Furthermore, we conducted additional supplemental analyses that estimated the relationship between paternal incarceration, the hypothesized mechanisms, and children's grade retention in a basic logistic regression framework. This model documented a relationship between paternal incarceration and children's grade retention, both in the main analytic sample and in the kindergarten teacher sample. Again, teacher-reported proficiency—but not the other measures—explained a substantial portion (33 percent) of the association.

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