UNINTENDED CONSEQUENCES OF PATERNAL INCARCERATION: EFFECTS ON CHILD SCHOOL READINESS

(with possible implications for the persistence of the Black-White achievement gap)

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ABSTRACT

This project links research on disparities in educational achievement with research on the stratification consequences of mass incarceration of African-American men. Using the Fragile Families and Child-Wellbeing Study and its rich paternal incarceration data, I ask whether there are harmful effects of having an imprisoned father on young children's school readiness, whether paternal incarceration explains all or part of the racial difference in children's school readiness and whether these effects persist after multivariate controls. I construct a school readiness scale from a variety of mother-reported socio-emotional and attention-related behaviors. OLS regression models are used to explore the relationship between paternal incarceration and child school readiness at age 5. Additionally, propensity score matching is employed to control for observed characteristics of fathers that are predictive of incarceration, thus gaining a more powerful test of the causal effect of incarceration on child school readiness. Lastly, I analyze racial differences to determine whether disparities in incarceration rates between blacks and whites can begin to account for the persistence of a portion of the black-white test score gap present in later academic achievement outcomes. OLS regression results show that experiencing paternal incarceration by age 5 is indeed highly correlated with lower child school readiness. Propensity score matching results are similar, adding strength to a causal argument that paternal incarceration has a deleterious effect on child school readiness.

INTRODUCTION

Educational stratification researchers have long documented and sought to understand an achievement gap between black and white children. At the same time, sociologists have paid increasing attention to the short and long-term social effects of incarceration rates among African-American males. Yet these two traditions of stratification research have produced seeming unrelated literatures, with a relative dearth of information in the fields of sociology or education on the effects of paternal incarceration on children's academic trajectories.

The prison industry is a major contributor to both the social and economic structure of the United States. The United States currently has the highest incarceration rate in the world (Oliver, 2001) and this rate has grown substantially over the past several decades along with the amount of money that has been invested in this uniquely American enterprise. With approximately 2.18 million people confined in prisons or jails on any given day (Harrison and Beck, 2006) and over 10 million Americans each year seeing the inside of a jail or prison (Mendez, 2000), the issue of the effects of imprisonment on our society is a salient one.

While prisons and prisoners have been subjects of research in the United States for centuries, only recently has social science research begun to look at the various ripple effects of incarceration, effects that go beyond the incarcerated individual and their cell walls and extend into the community and family. It seems that in the United States, sentences imposed on convicted individuals assume of them an amount of social isolation, not considering the social networks, relationships and kinship webs in which they may be embedded (Hagan and Dinovitzer, 1999; Comfort, 2007). Particularly ignored is incarceration's impact on the parent-child relationship. This assumption—that sentences imposed on lawbreakers affect

only a discrete individual, the criminal himself—creates unintended consequences for those family members, children, spouses, and communities that are socially connected to the alleged lawbreaker.

Of the over two million people currently in prison, a growing number are parents. Over half of state and federal inmates report having at least one minor child, these prisoners being parents to over 1.5 million children[1], with fathers predominantly (93%) being the incarcerated parent (Mumola, 2000; Parke and Clarke-Stewart, 2003; Travis and Waul, 2003; BJS, 2008). Moreover, if paroled and recently released parents are included in the estimates, the number of affected children as of 2001 skyrockets to 3.2 million nationwide (Mumola, 2002).

Additionally, social scientific researchers have consistently documented the growing prevalence of racial disparities visible in the criminal justice system with black men being imprisoned nationally at a ratio of 8:1[2] compared to their white counterparts. Two out of every five black men are or have been under the supervision of the criminal justice system (prison, jail, parole, or probation), and about 12% of all young (ages 20-30s) black men in the United States are incarcerated [3] (Oliver, 2001; Pattillo, Weiman and Western, 2004).

Nearly half of all parents in prison are black (with whites and Hispanics making up 29% and 19% respectively) (Travis and Waul, 2003). A snapshot taken by the Bureau of Justice Statistics in 2008 documenting the number of minor children in the United States with a parent in prison by race shows parental imprisonment disproportionately affecting black

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[1] This is an increase of more than half a million children in the last decade (Travis and Waul, 2003)

[2] This ratio either increases or decreases when aggregated at the state level. For example our state of Wisconsin has a 20:1 disparity ratio for blacks (Oliver, 2001).

[3] Incarcerated means in either prison or jail.

children (6.7 per cent) and Hispanic children (2.4 per cent) compared to their white counterparts (0.9 per cent), showing disparities consistent with what Murray (2005) documented several years earlier. Taking into account both gender and race disparities in the criminal justice system, at any given time, over 750,000 African-American children have fathers who are imprisoned (Mazza, 2002).

As one can see, researchers have increasingly paid attention to the short and long-term social effects of incarceration rates and their disproportionate prevalence for African-American males. In the field of education, a seemingly unrelated body of literature has consistently documented an achievement gap between black and white children. Efforts to close this gap between blacks and whites are a main focus of education researchers. The black-white test score gap had begun to diminish in past decades (Hedges and Nowell, 1998; Jencks and Phillips, 1998) and prominent education researchers were forecasting that in the 21st century the black-white achievement gap would continue to close as socioeconomic status (SES) superseded race as a salient predictor of achievement (Gamoran, 2001). Despite these optimistic predictions, and notwithstanding attempts to eliminate direct racial discrimination in public education, race continues to be a strong factor in the test-score gap.

While prisons, prisoners and inequalities in education, in general, have been prominent subjects of research in the United States, there is a relative dearth of information in the fields of sociology and education on the effects of paternal incarceration on children's academic achievement considering the race and gender disparities prevalent in the criminal justice system. My research aims to link and build on the educational inequalities and incarceration disparities literature, by asking whether paternal incarceration detrimentally affects young children's school readiness, and thus whether the effects of paternal

incarceration may account for some of the racial difference in children's school achievement. More specifically, given the nature of available data, I ask the following questions: Does paternal incarceration (anytime before year five of the child's life) directly and negatively affect young children's school readiness (by way of impacting certain socio-emotional and attention-focusing behaviors necessary for school entry success) independent of the other observed characteristics of incarcerated fathers that are predictive of incarceration, does paternal incarceration account for some or all of the racial difference in school readiness, and are there differences in the effect of paternal incarceration on school readiness by race? Through examining the impact of paternal incarceration on young children's school readiness, and keeping in the forefront racial differences in incarceration rates among young American men (many of whom are fathers), my goal is to begin to quantitatively address the deleterious effect of paternal incarceration on young children's academic lives and possibly illuminate whether disparities in incarceration rates between blacks and whites account for a portion of the black-white test score gap present in later academic achievement outcomes.

REVIEW OF THE LITERATURE

This project bridges two largely-unrelated bodies of literature in social stratification. On the one hand, there is the educational achievement and school readiness literature which partially focuses on differences in school readiness and inequalities in educational achievement and attainment for various demographic groups and societal situations. On the other hand, there is the incarceration literature that emphases race, SES and gender differences in arrest, conviction and the direct and indirect consequences (such as employment opportunities, political participation, health and educational outcomes) for the

lawbreakers and to some extent, although infrequently, their families and communities. However, very little quantitative sociological research to date has looked specifically at paternal incarceration in relation to child achievement outcomes (see Geller et. al., 2008; Wildeman, 2008 for the few exceptions), nor has anyone attempted to link paternal imprisonment—keeping in mind its disproportionate impact on black males and presumably their children—with the persistence of the black-white achievement gap.

Parental Incarceration

The effect of incarceration on the specific incarcerated individual is probably the area most thoroughly covered in the incarceration literature. Various studies have examined incarceration and its effects on marriage (Western and Lopoo, 2006), education (Pettit and Western, 2004), employment opportunities (Pager, 2003), job mobility (Western, 2006), political participation (Manza and Uggen, 2004), and psychological and physical well-being (Grounds 2004; Maruschak, 2006) to briefly cover a few. While the experience of being incarcerated most definitely affects the person directly sentenced, the indirect effects of that sentence also stretch beyond the inmate—only relatively recently have studies begun to examine the ripple-like effects of imprisonment on families and communities.

Of the extant research on effects of incarceration that reach "beyond the legal offender," spouses have occupied most of the attention, wives being the main focus (Morris, 1965). Much of the research on families of the incarcerated is qualitative and conducted in fields outside of sociology—possibly due to the lack of longitudinal survey research designed to explore families and communities of offenders. Therefore, research on the impact of

parental incarceration on children's behavioral or academic outcomes has been slow to appear in social science or education literature.

The research that has appeared on this topic, mostly in social work, social psychology and criminal justice journals, identify a variety of plausible processes through which paternal incarceration can affect child outcomes. In a recent review of several studies dedicated to the exploration of parental imprisonment and its effects on children, Murray and Farrington (2008) summarize nicely the main moderators, mediators, and pre-existing risks researchers have identified as key in explaining the relationship between parental imprisonment and child outcomes. Of these are trauma theories (Myers, Smarsh, and Amlund-Hagen, 1999; Poehlmann, 2005) that focus on difficulties that result from the parent-child separation, social learning theories (Matsueda and Heimer, 1987) that propose a link between parent and child delinquent behavior via social modeling, strain theories (Hagan and Dinovitzer, 1999) that look at the social, mental and economic strains imposed on both child and single-parent by a lowered family income due to parental imprisonment, and lastly stigma and labeling theories (Goffman, 1968) that explore issues that arise due to having an incarcerated parent.

While considerable progress in understanding the immediate and long-term effects of types of family disruption such as parental divorce, death, or absence due to military service on children's psychological and academic outcomes has been made (see Astone and McLanahan, 1991; Pong et. al., 2003), the link between incarceration as a form of family disruption that negatively impacts the lives of children is sparse. In qualitative research done by Arditti, Lambert-Shute, and Joest (2003) using 56 interviews of caregivers visiting an incarcerated family member during children's visiting hours, psychological effects of imprisonment on children of the incarcerated are addressed. They find that lengthy absences,

related to imprisonment, create estrangement from families, among other negative outcomes such as "traumatic separation…poor academic performance, emotional suffering, alcohol and drug abuse, [and] involvement in the criminal justice system themselves" (Arditti et. al., 2003).

Furthermore, drawing from Goffman (1963), Arditti and her colleagues emphasize the possible deleterious psychological effects that parental incarceration can have on children associated with the shame extending from the stigma of having an incarcerated parent. Goffman, in his 1963 work titled *Stigma: Notes on the Management of Spoiled Identity*, explains stigma as such,

> While the stranger is present before us, evidence can arise of his possessing an attribute that makes him different from others in the category of person available for him to be, and of a less desirable kind—in the extreme, a person who is quite thoroughly bad, or dangerous, or weak. He is thus reduced in our minds from a whole and usual persona to a tainted, discounted one. Such an attribute is a stigma, especially when its discrediting effect is very extensive (p. 12)

and includes being a criminal on the list of attributes that can stigmatize an individual. While he identifies various types of stigma, Goffman specifically characterizes both imprisonment and race[4] as two distinct forms. Western and McLanahan (2000) have also addressed the issue of the stigma related to paternal incarceration on families which contributes to familial separation. Stigma is believed to spread from the stigmatized individual, in this case the incarcerated (African American) male, to those associated with him, specifically the incarcerated (black) male's family and particularly his children.

[4] Goffman (1963) categorizes race as a "tribal stigma," explaining "…these being stigma that can be transmitted through lineages and equally contaminate all members of a family " (p. 14). According to Goffman, race combined with imprisonment—two forms of stigma—have greater and more far-reaching effects.

Additionally, exploring the intergenerational implications of paternal incarceration, Foster and Hagan (2007), using the wave IV of the Add Health data, examine the effects of father's imprisonment on the social exclusion of children during their transition to adulthood. They stress that mass incarceration is a growing source of social exclusion for both parents and children and that "…while much is known about intergeneration educational and occupational attainment processes, less is known about processes of intergenerational detainment that we have analyzed as a socially reproduced form of exclusion" (p. 420). By identifying a cumulative process of intergenerational disadvantage that begins with father's incarceration and educational detainment, spreads to negatively effect their child's educational attainment, and results in forms of emerging adult social exclusion, such as homelessness, political disengagement, and lack of health care, Foster and Hagan's work begins to illuminate the intergenerational effects of paternal imprisonment not previously explored.

Moreover, researchers Oliver, Sandefur, Jakubowski, and Yocom (2006) have begun to take a quantitative look at how black male imprisonment effects overall black child poverty—thus following an indirect path in measuring an unanticipated effect of the increase in black male incarceration rates on life chances of African American children. In a related, but more direct nature, Raymond Swisher and Maureen Waller (2008) have examined the effects of incarceration on non-resident father involvement using the Fragile Families data. They find that non-resident fathers' current incarceration interferes with their ability to maintain contact with their child as well as with the informal (and to some extent formal) financial support systems for the mother and child(ren) put in place previous to incarceration.

Most recent research on the effects of imprisonment on children revolves around the impact of having an incarcerated mother (Myers, Smarsh and Amlund-Hagen 1999; Schram 1999; Bernstein, 2005). While a mother's incarceration is likely to be particularly devastating for a child, it is considerably less common than having a father incarcerated. Research done on incarcerated African-American fathers by Mendez (2000) speaks to the negative effects of being black, male and incarcerated. Instead of working with incarcerated black fathers, "most interventions tend to focus on supporting African American women" (Mendez, 2000, p. 89) and therefore do not directly address paternal incarceration[5].

Previous research on children of incarcerated fathers is predominantly qualitative or correlational and is often focused toward social workers, policy makers or psychologists. In a case-study of children of incarcerated fathers, Mazza (2002) discusses the anxiety and depression exhibited by the children in his analysis based on feeling of stigma, abandonment, and sadness due to the absence of their father. These negative feelings can manifest themselves in antisocial and possibly illegal behavior leading to the potential for a replication of their father's histories with criminal behavior and incarceration. In the previously mentioned case study on incarcerated African-American men and their children, Mendez (2000) found that the fathers in his study did report their children exhibiting antisocial behavior post their incarceration but the generalizabilty of these studies' results are low.

Scholars Becky Pettit and Bruce Western (2004) address the issue of American mass incarceration and speak to the "emergence of incarceration as a new stage in the life course of young, low-skill black men" (p. 151). In their article they emphasize that the risks of

[5] Some concerns (see Pattillo, Weiman, and Western, 2004) have been raised about the significance of studying the father-child relationship (as opposed to the mother-child relationship), especially among black fathers due to their overall low rates of marriage and lack of pre-incarceration involvement/contribution to their child's well-being.

incarceration are highly stratified by education, race, gender and economic mobility and that the racial and SES inequality in incarceration rates for young men has been widening. Incarceration is closely related to black-white wage inequality, family instability, and unemployment rates (Western, 2006) and therefore with the growing gap in racial and SES inequality in incarceration since the 1980-90s it is within reason to hypothesize that a variety of other social inequalities (such as the black-white achievement gap) may have been indirectly effected as well.

Very recent work using Fragile Families data done by both Chris Wildeman (forthcoming; 2008) and Amanda Geller (2008) have begun to place focus on the impact of increased parental imprisonment (due in part to the increase in mass incarceration) on a variety of child outcomes. Building on research done by Bruce Western and colleagues (2004) on how imprisonment has become a stage in the life-course for disadvantaged black men and the implications that follow, Wildeman (forthcoming) finds that "…growing race and class inequality in the risk of parent imprisonment contributes to growing race and class inequality in the social experience of childhood" (p. 18), education being one major experience that spans childhood. In a second paper, Wildeman (2008) explores the connection between paternal incarceration and children's physically aggressive behaviors finding that indeed children (boys in particular) of incarcerated fathers do have increased levels of physical aggression. He concludes that this increase in physical aggression in boys who experience paternal incarceration might "…contribute to a system of stratification in which crime and incarceration are passed down from fathers to sons" (p. 2).

Amanda Geller, Irwin Garfinkel, Carey Cooper, and Ronald Mincy's (2008) work using the Fragile Families data is similar in that they explore the overall impact of parental

imprisonment on various aspects of child wellbeing. They find that urban children in the Fragile Families who experience parental incarceration suffer from a variety of unmet material needs, behavior problems and residential instability. Both Wildeman and Geller and colleagues' research are beginning to bridge sociological research on the societal effects of imprisonment with efforts to look beyond the prisoner and measure the unanticipated effects of mass incarceration and their societal implications for children and their overall wellbeing.

School Readiness and the Achievement Gap

There are three veins of literature in the realm of educational achievement inequalities with components relevant to this study. First there is research on the existence and persistence of the black-white achievement gap for school-aged children, secondly, there is research on school readiness and its implications for successful transition to formal schooling, and lastly, there is the research focused on understanding the impact that family disruption such as parental military deployment, single-parenthood, divorce or death have on children's academic development and achievement.

In terms of the achievement gap data, empirical evidence shows that the black-white test score gap continues to be substantial and, in fact, widens as children move through the educational system (Fryer and Levitt, 2004; Neal, 2006). Moreover, this persistent gap remains partially unexplained by conventionally used characteristics—like family SES, WIC participation, and mother's age at first birth—creating serious long-term consequences for black students in terms of later schooling, occupational attainment and wage earnings compared to their white counterparts (Jencks and Phillips, 1998; Fryer and Levitt, 2004; Magnuson and Duncan, 2006; Neal, 2006).

Secondly, the school readiness literature focuses on pre-school aged children in attempting to identify the factors (behavioral, social, and cognitive) needed for successful transition to formal schooling. Researcher studying school readiness have found that a variety of attention skills, socio-emotional behaviors and early academic/cognitive knowledge can be linked to later academic achievement (Duncan et. al., 2007). In essence, school readiness measures developmental outcomes necessary for successful entry into formal schooling, a key transition of the early life course. The behavioral, social and cognitive skills children enter school with potentially affect their later educational achievement and attainment. Therefore, if achievement at older ages is the product of a sequential process of skill and knowledge acquisition, then differences in children's early cognitive knowledge and social and emotional behavior may illuminate differences found in later life educational outcomes.

In an overview of research on school readiness, scholars Rouse, Brooks-Gunn and McLanahan (2005) emphasize that "children who enter school not yet ready to learn, whether because of academic or social and emotional deficits, continue to have difficulties later in life" (p. 7). Research on school readiness identifies a number of factors that can effect or lead to differences in school readiness, such as parental income, education and occupation (Duncan and Magnuson, 2005), parenting behavior (Brooks-Gunn and Markman, 2005), child health (Currie, 2005; Reichman, 2005), and access to and participation in early childhood education programs prior to entry into elementary school (Magnuson and Waldfogel, 2005). Differences in school readiness may therefore help to explain the black-white achievement gap observed upon school entry as well as its widening as children move through the educational system (Phillips, Crouse, and Ralph, 1998; Fryer and Levitt 2004).

And thirdly, in the family disruption literature, there have been clear demonstrations of the detrimental impact of parental divorce or non-traditional family structures such as single-parent and stepparent families on children's academic performance and future success in school. Compared to their "stable family" counterparts, children who experience a form of family disruption are likely to perform less well on standardized tests and have lower educational aspirations (Astone and McLanahan, 1991; McLanahan and Sandefur, 1994; Sun and Li, 2001; McLanahan and Percheski, 2008). Few would deny the incarceration of a parent as a legitimate form of family disruption, creating similar detrimental impacts to achievement for kids, and in much of the psychological literature it is grouped together with divorce or parental death when discussing ways to help children manage stress or behavioral issues after challenging life-altering circumstances (Bradley, 2007).

As one can see, the variety of literature presented here is somewhat broad and underdeveloped on the subject of paternal incarceration's effects on children's early academic outcomes. Murray (2005) in a review of research on the effects of imprisonment on prisoners' partners states, "[t]he effects of imprisonment on families and children of prisoners are almost entirely neglected in academic research, prison statistics, public policy and media coverage" (p. 442). Only very recently have researchers such as Wildeman (forthcoming; 2008), Geller and colleagues (2008), and Foster and Hagan (2007) begun to develop this literature. There is a strong need to explore the far-reaching effects of imprisonment, effects that go beyond that of the incarcerated individual and the prison walls and extend into the community and family.

DATA, MEASURES, AND METHODS

Description of the Fragile Families and Child Wellbeing Study

The data I am using is the Fragile Families and Child Wellbeing Study from the Center for Research on Child Wellbeing at Princeton University. It is a longitudinal birth-cohort study that follows 4,898 new parents[6] and their children (for a complete description of the sample and design see Reichman et. al., 2001). Collected from 20 U.S. cites between the years of 1998-2000, the weighted data are representative of all non-marital births to parents residing in large cities with populations of 200,000 or more. Data include both core questionnaire interviews of mothers and fathers and in-home assessments of children and their home environments (beginning at wave 3). Initial baseline interviews of mothers were conduced in the hospital within 48 hours after the birth of their child and then follow-up interviews were conducted by phone approximately 1 year, 3 years, 5 years and 9 years[7] following the focal child's birth. Father baseline and follow-up interviews were conducted around the same time as mothers, but response rates for fathers are lower and decrease over waves. Baseline response rates for the nationally representative sample of unmarried mothers are 87% and 82% for married mothers. For fathers (only selected if their child's mother was part of the study), the response rates are 76% and 89% respectively for unmarried and married fathers.

In the Fragile Families, data is collected for mothers and fathers separately. Mothers are asked questions about themselves and about their child's father and reciprocally, fathers about themselves and the mothers. This component of the survey design helps both validate the reliability of some child and parent measures, given that there are two reports, and also

[6] Near three-quarters the parents in the study are unmarried (n= 3,712) and 1,186 are married at the initial baseline interview in wave one.

[7] The 9-year follow up interviews are currently being conducted.

provides information (via maternal reports) about fathers otherwise unavailable in other data sets since disadvantaged fathers are usually underrepresented in surveys (Reichman et. al., 2001). Additionally, attrition rates for both married and unmarried mothers are quite low (see Appendix A), providing more strength to any plausible claims made than would be possible using cross-sectional data or data with a large amount of non-response due to a variety of reasons. The Fragile Families study also has several benefits for directly studying the effects of fathers' incarceration on the family because it follows fathers and mothers across time as their child grows. Since disadvantaged (low SES) men are disproportionally more likely to enter the criminal justice system (Western, 2006) many of the fathers in the Fragile Families have been incarcerated. At wave two, when the focal child is one, 30% of the full sample experience having an ever incarcerated father and this increases to 38% by age three (wave 3) and 41% by age five (wave 4)—totaling approximately 2,039 dads.

My analytical sample includes both married and unmarried couples and uses the mother and father data from the public-use files of the first four waves (covering focal child's birth through age 5) of the core survey questionnaires as well as information from the first in-home assessment that took place at wave 3 (year 3). To maximize the use of available information and minimize bias, multiple imputation procedures were used to impute missing data values in a variety of relevant variables allowing me to conduct analysis on the full sample of children with available information on school readiness (N=3521)[8].

Multiple Imputation—

[8] Although one could further restrict the analytical sample to cases that were also not missing information on paternal incarceration at year 5 prior to imputation, I delete only cases that have imputed values for the outcome (von Hippel, 2007). In either case, the results are robust to including or excluding the 97 children with observed school readiness but missing on paternal incarceration.

The imputed values for my missing data were derived in STATA using the multiple imputation technique of ICE (Imputation by Chained Equations) (Rubin 1987; Royston, 2005). Multiple imputation strategies create multiple imputed data sets for an original set of data containing missing values while maintaining the data set's original variability. Imputations of missing data values are based on each included variable's likelihood of being missing and the non-missing values of the other variables in the equation. Statistical analysis is then done on each individual data set and then, in a sense, averaged to yield a final single set of results. Given that multiple imputation carries an assumption that the missing observations are missing at random, I acknowledge that some degree of uncertainty is possible in the subsequent analysis though my results were not sensitive to multiple imputation.

Description of Measures

School Readiness—

My dependent variable is child school readiness measured at age five (wave 4). Based on a scale composed of a variety of mother-reported items at wave four, it represents a range of attention and socio-emotional skills—two of the major components of school readiness and arguably the most important[9]. Admittedly, my outcome variable is missing the third component of school readiness—a measure of school-entry cognitive ability/academic knowledge—a decision I have consciously made due to difficulties with finding a satisfactory proxy in the Fragile Families data. Children's PPVT scores (a measure of

[9] Rouse, Brooks-Gunn, and McLanahan (2005) cite a 1993 National Center on Education Statistics poll of kindergarten teachers that rates knowledge of letters and numbers as "less important readiness skills than being physically healthy, able to communicate verbally, curious and enthusiastic, and able to take turns and share" (pg. 6).

receptive vocabulary) would ideally serve as this third school readiness component but I currently do not have access to those data. Exploratory factor analysis was used to construct my school readiness scale. Reports from 17 total items from subscales derived from the Child Behavioral Checklist (Achenbach & Rescorla, 2000) were used, these items being asked at both waves 3 and 4 of the study. Cronbach alphas of 0.796 (for wave 3) and 0.835 (for wave 4) are reported. The socio-emotional behaviors used in the scale include measures of both internalizing (anxiety, depression, social withdrawal) and externalizing behaviors (aggression, disobedience), in addition to measures of attention (hyperactivity, concentration). To compute school readiness scores, responses to each of the 17 items (0=not true; 1=somewhat or sometimes true; 2= very true or often true) were summed, averaged and then reversed scaled so that higher numbers would indicate higher school readiness. See Appendix B for the list of questions that compose the school readiness scale and relevant descriptive statistics.

Paternal Incarceration—

Paternal incarceration, my main independent/treatment variable, is measured from a combination of both mother and father reports asked at year 5 (wave 4). Paternal incarceration is reported as *never* or *ever* and is also measured at year 1 (wave 2) and year 3 (wave 3). At each respective wave, mothers are asked, in a variety of ways, if their baby's father ever spent time in jail or prison and fathers are asked if they have ever been incarcerated. If either mother or father answer yes to any question related to paternal imprisonment, then the father is indicated as *ever* incarcerated for that and subsequent waves. A large number of children in the Fragile Families experience paternal incarceration by age 5, yielding sufficient variation to examine its potential effects (see Graph 1). By wave three

of the study, approximately 38% of the full sample have a father who has *ever* been incarcerated. By year five (wave 4), that number increased to nearly 41%, affecting around 2 out of every 5 children participating in the study.

Controls—

Given the wealth of background, demographic, environmental, health and economic information present in the Fragile Families, I include a number of controls in my analysis. Descriptive statistics (weighted to be nationally representative) for all included variables both by paternal incarceration and by paternal incarceration and race are provided in Tables 1 and 2 respectively. Control variables can be grouped into four substantive subsets. First are background control variables such as child gender, low birth weight, child's race, parental education, parental marital status, mother's age at 1st birth, and number of total kids and biological kids in the home at year 1. Secondly, considering the importance of parental characteristics and in particular those related to behavior, paternal psycho-social behavior variables such as paternal drug and alcohol dependence, mental health measures of anxiety and depression, paternal self-control (based on father reports of whether they (1) strongly agreed, (2) agreed, (3) disagreed, and (4) strongly disagreed with six questions asking about their impulsive behaviors—see Appendix B for the list of questions—higher numbers indicate more self-control and therefore *less* impulsivity), and paternal multi-partner fertility are added. Thirdly, home and neighborhood characteristics such as poverty status (presented here in the from of family income as a % of the poverty line) and perceptions of neighborhood safety as reported by mothers at wave 4 are included. And lastly, variables for parent relationship status at wave 4/year 5 are include to control for whether the mother is cohabiting or married the child's biological father as well as a measure to account for if there

is a “social father” (mother cohabiting or married to a man who is not the child’s biological father) all at year 5/wave 4.

Description of Methods

Data analysis for this paper is two-staged and includes two method types, both relying on observed characteristics of parents and their children. The first stage makes use of OLS regression models to test the relationship between paternal incarceration and child school readiness and the second involves propensity score matching (Rosenbaum and Rubin, 1983; Rosenbaum, 2002; Caliendo and Kopeinig, 2008) allowing me to better explore issues of causality related to my research question. For both methods, all analyses were done in STATA and multiple imputed data sets (see above data section for explanation of the multiple imputation procedure) were used to conduct the statistical analysis.

OLS Regression—

Ordinary least squares regression models (see Tables 3, 4 and 5) were used to test the association between child race, paternal incarceration (measured as ever or never by year 5) and child school readiness (measured at age/year 5). Table 3 begins by testing to see if there is a race difference in school readiness and if this relationship holds once paternal incarceration is controlled for. Following this assessment, included in my five remaining models were the above mentioned control variables, separated into four substantive categories—background characteristics, paternal psycho-social behavior, neighborhood & economic indicators, and finally parental relationship status. First, I regress my outcome, child school readiness, on paternal ever incarceration by year five to establish their zero-order relationship. Next, I introduce a set of background characteristics that include

variables that account for child gender, race, low birth weight, mother's age at first birth, number of biological kids in the home, total number of kids in the home, and the mother and father's baseline education and marital status. My third model adds measures of paternal psycho-social behavior such as drug and alcohol dependence, mental health disorders, self-control, and multi-partner fertility in order to account for some selection issues linked to behaviors of fathers that could be predictive of incarceration. The penultimate model, model four, introduces neighborhood and economic variables to control for poverty status and possible environmental influences that could affect school readiness. Lastly, my fifth and final model includes parental relationship status measures such as whether the mother was cohabiting or married to the child's father at year 5 in addition to a social dad variable to account for whether there was a non-biological "father figure" present at year 5.

As a final point, in order to analyze racial differences to determine whether disparities in incarceration rates between blacks and whites can begin to account for the persistence of a portion of the black-white test score gap present in later academic achievement outcomes, I build upon Table 3 and include variables that take into account race*paternal incarceration interactions in each of the previously mentioned regression models.

Propensity Score Matching—

In this second part of my analysis, I employ propensity score matching (using nearest neighbor, radius, and kernel techniques[10]) to further explore the relationship between paternal incarceration and child school readiness. Propensity score matching has the advantage over previous largely qualitative or correlational studies on children of the incarcerated in that it

[10] Results for all three techniques were similar, so only matching using the kernel technique is discussed and reported.

allows me to explore causal links between paternal incarceration and child school readiness, net of selection effects. When considering paternal incarceration as a type of treatment, group assignment to the treatment within a population is far from random. There are potentially many existing differences between fathers who become incarcerated and those who do not that could quite easily produce the observed differences in a child's school readiness. What propensity score matching allows me to do is contrast the outcomes to two like-groups matched on a variety of observable characteristics, some of whom experience the treatment and others who do not. Thus, propensity score matching permits causal inference to be drawn from comparisons of proper groups, focusing on the population of interest and alleviating the dimensionality problems present in other forms of group comparisons.

The final outcome of propensity score matching are estimates of the average effect of a treatment (in my case, paternal incarceration by year 5) on an outcome (child school readiness) after adjusting for pre-treatment observable differences that exist between my treatment and control groups via matching. Following the assumption that relevant differences between the two groups are captured by their included observables, propensity score matching, in general, selects from the non-treated pool of individuals/observations a control group in which the distribution of observed variables is as comparable as possible to the distribution in the treated group. These propensities are generated via a probit regression model predicting the treatment (paternal incarceration). Using software/programming created by Leuven and Sianesi (2003), the model I used to estimate my propensity scores included the following variables—paternal alcohol and drug dependence (wave 3), paternal anxiety and depression measures (wave 3), paternal multi-partner fertility (wave 2), paternal cognitive ability (wave 3), paternal self-control (wave 2), father age (baseline), whether

father only finished high school, whether father didn't finish high school, whether father cohabited with baby's mother, whether father was married to baby's mother (both at baseline), whether father is black or Hispanic and finally, whether father had a job (baseline)[11].

After propensity scores are estimated, covariate balance (which is necessary for replicating a natural experiment) is tested for, and in my model, achieved. Restricting estimation of the average effect of the treatment to the region of common support is additionally essential for avoiding comparing incomparable groups and this is also done in my model (see Graph 2 for treatment and control group distributions within the region of common support). Finally, I employ the kernel matching technique[12] using a Gaussian kernel and a bandwidth of 0.06 to estimate the average treatment effect. Kernel matching, as opposed to nearest neighbor and radius matching which do not use all the available cases, uses weighted averages of all cases in the control group to construct the outcome estimate, creating lower variance due to maximum use of information (Caliendo and Kopeinig, 2008). These weights depend on the distance a control observation is from the treated cases based on the outcome being estimated.

While the upcoming results from both my OLS regression and propensity score models are quite compelling, it is important for me to note one limitation shared by both OLS

[11] Specifically and intentionally excluded from my propensity score model predicting paternal incarceration at year 5 are any previous measures of paternal incarceration (even though observable measures exist in the data). This is because theoretically I am interested in the effect of having an ever-incarcerated father or not by year 5 on a child's school readiness and including measures of previous incarceration would change my comparison group of interest. The comparison group of interest would therefore become fathers incarcerated between years 3 and 5 and what I want my group of interest to be are fathers not incarcerated by year 5 but could have been.

[12] As mentioned previously, nearest neighbor and radius matching were also performed and results were very similar.

regression and propensity score models. Since both methods depend heavily on observed characteristics and neither can completely correct for unobserved heterogeneity—a plausible problem when considering paternal incarceration and a child's school readiness,—strong causal evidence regarding the direct effect of paternal incarceration on a child's school readiness remains somewhat elusive.

RESULTS

OLS Regression Models

Tables 3, 4 and 5 present all OLS regression results[13] related to my exploration of the relationships between race, paternal incarceration and child school readiness by age 5. Table 3 begins by demonstrating that there is indeed a (zero-order) race difference in school readiness between black, Hispanic and white children, with white children scoring significantly higher than both groups on the school readiness scale. It is important to remember that this racial difference occurs within the Fragile Families, who are disproportionately poor, and is smaller than the gross racial different in the wider population. Model 2 in Table 3 shows what happens to the race differences in school readiness when you control for paternal incarceration. The inclusion of paternal incarceration reduces the school readiness gap between blacks and whites (but not Hispanics) to statistical insignificance (although it does remain negative). This suggests that paternal incarceration may account for the black-white achievement gap in school readiness among low income children.

The remaining tables, Tables 4 and 5 develop the relationship between paternal incarceration and school readiness. Beginning with Table 4 and looking at model 1, I show

[13] Unweighted results are reported.

the zero-order relationship between paternal incarceration and child school readiness. A negative school readiness coefficient indicates that children whose fathers have ever been incarcerated by year 5 are less school ready compared to children who don't experience an incarcerated father by age 5. In this first model, children with ever incarcerated fathers scored 0.08 points lower on the school readiness scale, or in terms of effect sizes, .45 standard deviations lower in the school readiness distribution. Although the coefficient of -0.08 is numerically small, this is a highly significant difference (at the 0.001 level).

The second model adds background controls to begin to test this association. Adding variables that account for child gender, race, low birth weight, mother's age at first birth, number of biological children in the home, total number of children in the home, and the mother and father's baseline education and marital status decrease the size of the school readiness coefficient, but the association still remains highly significant. Moreover, looking at Table 4, the coefficients on the other factors indicate that being a boy has a strong negative impact on school readiness and that maternal education, if greater than or equal to high school completion, and having parents married at your birth have significant positive impacts on school readiness.

My third model attempts to take account of some selection issues into the treatment by introducing measures of behaviors of fathers that could be predictive of incarceration. These measures of paternal psycho-social behavior such as drug and alcohol dependence, mental health disorders, self-control, and multi-partner fertility once added, again reduce the coefficient but the size of the effect continues to remain highly significant. Higher levels of parental education, particularly mothers' continue to be positively associated to a child's school readiness as does the measure of paternal self-control.

Following the inclusion of measures of paternal psycho-social behavior, I next add variables to account for possible environmental or neighborhood influences that could affect school readiness. As with the previous three models, the addition of these variables continues to reduce the size of the effect of paternal incarceration but it remains significant at the 0.001 level. Particularly of note is that paternal depression enters as an indicator of lower school readiness and also that gender and mother's perception of neighborhood (lack of) safety are both strongly associated with lower school readiness. Moreover, income (as measured by family income as percent of poverty level) seems to greatly affect school readiness. The omitted category (0-49%) represents children living in extreme poverty: as income increases, so does school readiness. Notably, after controls for poverty and environment influences, black children appear to be more school ready than whites and Hispanics living under similar conditions.

Finally, my fifth and last model accounts for parental relationship status by including measures for whether the child's mother was cohabiting or married to the child's father at year 5 and whether there was a non-biological "social father" present in the home at year 5. As the table shows, none of these controls eliminated the negative effect of paternal incarceration. Results from these five regression models suggest that even when controlling for a host of variables associated to both lower school readiness and paternal incarceration, children that experience an ever incarcerated father by age 5 are significantly less ready for school than their counterparts whose fathers have not been incarcerated. As many of the control variables are factors that can be affected by prior paternal incarceration, the continued statistical significance of paternal incarceration despite these controls points to its potential importance as a factor.

Table 5 shows how the impact of paternal incarceration varies with the race of the child. The omitted category is white children who did not experience an ever incarcerated father by age 5. Paternal incarceration seems to have a greater deleterious effect on the white children in Fragile Families than the black and Hispanic, but effects of paternal incarceration for black and Hispanic children remain significant in Models 1, 2 and 3 when parental education and paternal behaviors are controlled.

Controlling for poverty status and neighborhood safely, Model 4 reduces the effect of paternal incarceration to non-significance for black and Hispanic children, while the effect for white children remains strong and even increases slightly. This last finding could support a few different interpretations. It could suggest (given that incarceration is more proportionally prevalent for blacks and therefore more visible in minority communities) that black and possibly Hispanic families and communities are more resilient, supportive and less sensitive to the effects of paternal incarceration than whites (and white communities) represented in the Fragile Families. Another interpretation could be that the white incarcerated fathers in the Fragile Families are in some way "worse" (e.g. committed a more severe crime, spend longer time away from home in jail) than the black fathers thus affecting white children differentially.

Propensity Score Matching Models

The OLS regression models suggest that paternal incarceration is associated with statistically significant decreases in child school readiness, even after adjusting for observed covariates. While these estimates provide preliminary evidence for a correlation or association between school readiness and paternal incarceration, I next employ propensity

score matching to my hypothesis in order to see if these gross differences hold up under more careful analysis.

Table 6 displays results from my propensity score analysis of the relationship between paternal incarceration and child school readiness by year/age 5. Presented are estimates from kernel matching only (although two other matching techniques—nearest neighbor and radius—were also employed as a check and produced similar results). Due to my use of multiple imputed data sets, I produced average estimates of standard errors and the affect of the treatment on the treated using Rubin's procedure for combining estimates across imputed data sets (Allison, 2002). The t-statistic of -3.2475 produced by my propensity score matching model provides strong evidence that "treated children" (children who have an ever incarcerated father by year 5) have significantly lower school readiness than their matched controls thus, corroborating the previous OLS regression results.

DISCUSSION

There is a growing need for the extending of research on the effects of paternal imprisonment. This research currently adds to the bourgeoning literature in sociology (from scholars such as Pager, Pettit, and Western) looking at broadening impacts of incarceration. The implications of this study are far-reaching in that they further illuminate the effects of imprisonment on children of the incarcerated extending the concern onto the fields of education and sociology. Results from both OLS regression and propensity score models demonstrate a strong and statistically significant negative association between paternal incarceration and child school readiness. Further, they indicate that paternal incarceration appears to account for at least some of the black-white difference in school readiness. While

my analysis hasn't directly addressed the question of which mechanisms (mediating, moderating or pre-existing) play the greatest role in the effect of paternal incarceration on school readiness, it does begin to causally examine the relationship between paternal incarceration and child school readiness. Studying this growing, yet largely ignored, issue can shed light on important social processes related to imprisonment effects as well as provide opportunities to make policy changes, craft successful interventions, and implement support programs for these "forgotten victims" (Murray, 2005).

There are methodological limitations to this work. The use of propensity score matching allows for more closely aligned causal claims to be made, than in past research, but can't go so far as an actual randomized field experiment since paternal incarceration is not (and should not be) randomly assigned. Additionally, data in the Fragile Families is only nationally representative (once weighted) for children born in large cities between the years of 1998-2000. Oversamples of non-married low income mothers and minorities were selected. Generalizations to rural areas or smaller American cities cannot be made. Moreover, the Fragile Families isn't usually used to make claims of the married populations with children. Additionally, further difficulties lie in both the measurement of paternal incarceration and child school readiness since both are based (partially or fully, respectively) on secondary retrospective maternal reports which could contain sizeable bias.

Despite these limitations, the implications of this study are far-reaching in that they can begin to further illuminate the effects of imprisonment on children of the incarcerated and thus better explain differences in school readiness and therefore possibly the persistence of the black-white achievement gap in later schooling.

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TABLES

Table One

Weighted Means and Standard Deviations (when appropriate) for Dependent and Independent Variables by Paternal Incarceration Status at Year 5

Variable Names	Father Not Incarcerated		Father Incarcerated	
School Readiness (0-2)	1.639	(0.294)	1.494	(0.349)
Mother's Age at 1st Birth	24.779	(5.798)	20.384	(4.449)
Child Race				
Black	0.182		0.480	
White	0.493		0.207	
Hispanic	0.323		0.312	
Number of Biological Kids at 1	2.023	(1.089)	2.078	(1.244)
Number of Total Kids at 1	2.102	(1.153)	2.387	(1.327)
Paternal Education (1-4)	2.675	(1.046)	1.792	(0.785)
Maternal Education (1-4)	2.603	(1.162)	1.718	(0.834)
Low Birth Weight	0.054		0.076	
Boy	0.551		0.537	
Married to Father at Baseline	0.739		0.289	
Paternal Alcohol Dependence at 3	0.023		0.050	
Paternal Drug Dependence at 3	0.005		0.044	
Paternal Anxiety at 3	0.014		0.082	
Paternal Depression at 3	0.063		0.140	
Paternal Multi-Partner Fertility at 1	0.178		0.419	
Paternal Self-Control (6-24) at 1	18.602	(3.502)	16.453	(4.355)
Poverty Status (1-5) at 5	3.687	(1.329)	2.549	(1.254)
Neighborhood Unsafe at 5	0.109		0.205	
Social Father in Home at 5	0.063		0.237	
Mother Cohabiting with Father at 5	0.063		0.114	
Mother Married to Father at 5	0.696		0.194	
N=3521				

Source: Fragile Families and Child Wellbeing Study
Note: National Weights are used

Table Two

Weighted Means and Standard Deviations (when appropriate) for Dependent and Independent Variables by Paternal Incarceration Status and Race at Year 5

Variable Names	Father Not Incarcerated			Father Incarcerated		
	White	**Black**	**Hispanic**	**White**	**Black**	**Hispanic**
School Readiness (0-2)	1.659 (0.282)	1.629 (0.302)	1.614 (0.305)	1.588 (0.275)	1.507 (0.324)	1.410 (0.407)
Mother's Age at 1st Birth	27.010 (5.571)	22.552 (5.131)	22.638 (5.168)	22.319 (6.155)	19.563 (3.805)	20.35 (3.532)
Number of Biological Kids at 1	1.913 (1.042)	2.134 (1.224)	2.129 (1.063)	1.672 (0.851)	2.117 (1.369)	2.28 (1.195)
Number of Total Kids at 1	1.952 (1.047)	2.398 (1.403)	2.165 (1.112)	1.916 (1.271)	2.514 (1.386)	2.502 (1.195)
Paternal Education (1-4)	3.178 (0.834)	2.304 (0.891)	2.116 (1.048)	1.948 (0.912)	1.846 (0.716)	1.602 (0.761)
Maternal Education (1-4)	3.154 (1.033)	2.289 (0.958)	1.941 (1.033)	2.068 (0.934)	1.666 (0.796)	1.568 (0.753)
Low Birth Weight	0.039	0.091	0.056	0.101	0.103	0.019
Boy	0.563	0.546	0.538	0.544	0.565	0.489
Married to Father at Baseline	0.914	0.420	0.654	0.334	0.231	0.352
Paternal Alcohol Dependence at 3	0.033	0.024	0.009	0.052	0.034	0.075
Paternal Drug Dependence at 3	0.006	0.011	0.001	0.069	0.038	0.036
Paternal Anxiety at 3	0.009	0.015	0.021	0.082	0.092	0.067
Paternal Depression at 3	0.068	0.048	0.063	0.177	0.128	0.135
Paternal Multi-Partner Fertility at 1	0.069	0.503	0.162	0.247	0.521	0.378
Paternal Self-Control (6-24) at 1	18.353 (3.314)	19.131 (3.532)	18.684 (3.724)	16.756 (4.017)	16.570 (4.918)	16.058 (3.559)
Poverty Status (1-5) at 5	4.371 (0.928)	3.040 (1.324)	3.016 (1.323)	3.218 (1.056)	2.486 (1.273)	2.194 (1.172)
Neighborhood Unsafe at 5	0.041	0.176	0.176	0.057	0.178	0.346
Social Father in Home at 5	0.039	0.109	0.072	0.256	0.265	0.181
Mother Cohabiting with Father at 5	0.012	0.116	0.109	0.087	0.108	0.142
Mother Married to Father at 5	0.856	0.393	0.624	0.275	0.130	0.236
N=3521						

Source: Fragile Families and Child Wellbeing Study

Note: National Weights are used

Table Three

Results from *Main* OLS Regression Models Predicting Child School Readiness at age 5 (controlling only for child race and paternal incarceration)

Variable Names	Model 1	Model 2
Child Race		
Black	-0.032 (0.013)*	-0.010 (0.014)
Hispanic	-0.052 (0.015)***	-0.043 (0.015)**
Paternal Incarceration at 5		-0.082 (0.011)***
N=3521		

Source: Fragile Families and Child Wellbeing Study
Notes: Omitted category is White
Significance levels are the following: *** p<.001; ** p<.01; * p<.05

Table Four

Results from *Main* OLS Regression Models Predicting Child School Readiness at age 5

Variable Names	Model 1	Model 2	Model 3	Model 4	Model 5
Paternal Incarceration at 5	-0.08 (0.01)***	-0.054 (0.01)***	-0.043 (0.01)***	-0.039 (0.012)***	-0.039 (0.01)***
Mother's Age at 1st Birth		-0.002 (0.001)	-0.002 (0.001)	-0.002 (0.001)	-0.002 (0.001)
Child Race					
Black		0.019 (0.015)	0.012 (0.016)	0.032 (0.016)*	0.033 (0.016)*
Hispanic		-0.001 (0.017)	-0.005 (0.017)	0.007 (0.017)	0.007 (0.017)
Number of Biological Kids		-0.002 (0.005)	-0.002 (0.01)	0.002 (0.01)	0.002 (0.01)
Number of Total Kids		0.002 (0.006)	0.003 (0.006)	0.004 (0.006)	0.004 (0.006)
Paternal Education					
High school diploma		0.023 (0.014)	0.020 (0.014)	0.016 (0.014)	0.016 (0.014)
Some college, tech		0.04 (0.017)*	0.030 (0.017)	0.024 (0.017)	0.024 (0.017)
College degree+		0.049 (0.025)	0.034 (0.025)	0.032 (0.025)	0.03 (0.025)
Maternal Education					
High school diploma		0.05 (0.014)***	0.048 (0.013)***	0.033 (0.013)*	0.033 (0.013)*
Some college, tech		0.081 (0.015)***	0.076 (0.015)***	0.052 (0.015)***	0.052 (0.015)***
College degree+		0.075 (0.025)**	0.068 (0.025)**	0.042 (0.025)	0.042 (0.025)
Low Birth Weight		-0.029 (0.018)	-0.027 (0.018)	-0.024 (0.02)	-0.023 (0.02)
Boy		-0.041 (0.01)***	-0.041 (0.01)***	-0.042 (0.01)***	-0.042 (0.01)***
Married to Father at Baseline		0.04 (0.015)**	0.036 (0.015)*	0.027 (0.015)	0.017 (0.016)
Paternal Alcohol Dependence			-0.002 (0.051)	-0.008 (0.052)	-0.007 (0.05)
Paternal Drug Dependence			0.012 (0.037)	0.016 (0.037)	0.016 (0.036)
Paternal Depression			-0.043 (0.023)	-0.046 (0.022)*	-0.045 (0.02)*
Paternal Anxiety			0.052 (0.045)	0.059 (0.043)	0.059 (0.043)
Paternal Multi-Partner Fertility			-0.006 (0.012)	-0.002 (0.012)	-0.001 (0.01)
Paternal Self-Control			0.008 (0.002)***	0.007 (0.002)***	0.007 (0.002)***
Poverty Status at 5					
50-99%				0.052 (0.016)***	0.051(0.016)***
100-199%				0.044(0.015)**	0.043 (0.015)**
200-299%				0.078 (0.018)***	0.076 (0.019)***
300%+				0.062 (0.019)**	0.059 (0.019)**
Neighborhood Unsafe				-0.114 (0.014)***	-0.114 (0.014)***
Social Father in Home					-0.002 (0.015)
Mother Cohabiting with Father					-0.006 (0.016)
Mother Married to Father					0.017 (0.016)
N=3521					

Source: Fragile Families and Child Wellbeing Study
Notes: Omitted categories are White; Less than high school; Poverty 0-49% category
Significance levels are the following: *** p<.001; ** p<.01; * p<.05

Table Five

Results from *Interaction* OLS Regression Models Predicting Child School Readiness at age 5

Variable Names	Model 1	Model 2	Model 3	Model 4	Model 5
White Incarcerated	-0.148 (0.026)***	-0.099 (0.028)***	-0.088 (0.028)**	-0.093 (0.028)***	-0.091 (0.028)***
Black Incarcerated	-0.105 (0.016)***	-0.047 (0.021)*	-0.043 (0.021)*	-0.022 (0.021)	-0.019 (0.021)
Hispanic Incarcerated	-0.126 (0.022)***	-0.062 (0.025)*	-0.056 (0.025)*	-0.046 (0.025)	-0.044 (0.025)
Black Not Incarcerated	-0.031 (0.017)	0.002 (0.019)	-0.005 (0.019)	0.009 (0.019)	0.011 (0.019)
Hispanic Not Incarcerated	-0.069 (0.019)***	-0.021 (0.021)	-0.024 (0.021)	-0.014 (0.021)	-0.013 (0.021)
Mother's Age at 1st Birth		-0.002 (0.001)	-0.002 (0.001)	-0.002 (0.001)	-0.002 (0.001)
Number of Biological Kids		-0.002 (0.006)	-0.002 (0.006)	0.001 (0.006)	0.001 (0.006)
Number of Total Kids		0.002 (0.006)	0.003 (0.006)	0.004 (0.006)	0.004 (0.006)
Paternal Education					
High school diploma		0.023 (0.014)	0.019 (0.014)	0.016 (0.014)	0.016 (0.014)
Some college, tech		0.04 (0.017)*	0.03 (0.017)	0.024 (0.016)	0.024 (0.016)
College degree+		0.045 (0.025)	0.031 (0.025)	0.028 (0.025)	0.026 (0.025)
Maternal Education					
High school diploma		0.051 (0.014)***	0.048 (0.013)***	0.034 (0.013)*	0.034 (0.013)*
Some college, tech		0.081 (0.015)***	0.077 (0.015)***	0.052 (0.015)***	0.053 (0.015)***
College degree+		0.071 (0.025)**	0.065 (0.025)**	0.038 (0.025)	0.038 (0.025)
Low Birth Weight		-0.029 (0.018)	-0.026 (0.018)	-0.023 (0.018)	-0.022 (0.018)
Boy		-0.041 (0.01)***	-0.041 (0.01)***	-0.042 (0.01)***	-0.042 (0.01)***
Married to Father at Baseline		0.038 (0.015)*	0.034 (0.015)*	0.024 (0.015)	0.015 (0.017)
Paternal Alc. Dependence			-0.003 (0.052)	-0.009 (0.052)	-0.008 (0.052)
Paternal Drug Dependence			0.013 (0.037)	0.017 (0.036)	0.018 (0.037)
Paternal Depression			-0.043 (0.023)	-0.045 (0.022)*	-0.045 (0.022)
Paternal Anxiety			0.052 (0.045)	0.059 (0.042)	0.059 (0.043)
Paternal Multi-Partner Fert.			-0.006 (0.012)	-0.002 (0.012)	-0.001 (0.012)
Paternal Self-Control			.008 (0.002)***	0.007 (0.002)***	0.007 (0.002)***
Poverty Status at 5					
50-99%				0.052 (0.016)***	0.052 (0.016)***
100-199%				0.046 (0.015)**	0.044 (0.015)**
200-299%				0.079 (0.018)***	0.078 (0.019)***
300%+				0.062 (0.019)**	0.059 (0.019)**
Neighborhood Unsafe				-0.115 (0.014)***	-0.115 (0.014)***
Social Father in Home					-0.001 (0.015)
Mother Cohabiting w/ Father					-0.006 (0.016)
Mother Married to Father					0.015 (0.016)
N=3521					

Source: Fragile Families and Child Wellbeing Study
Notes: Omitted categories are White-Not Incarcerated; Less than high school; Poverty 0-49% category. Significance levels are the following: *** p<.001; ** p<.01; * p<.05

Table Six

Results from Propensity Score Matching Predicting Child School Readiness at age 5

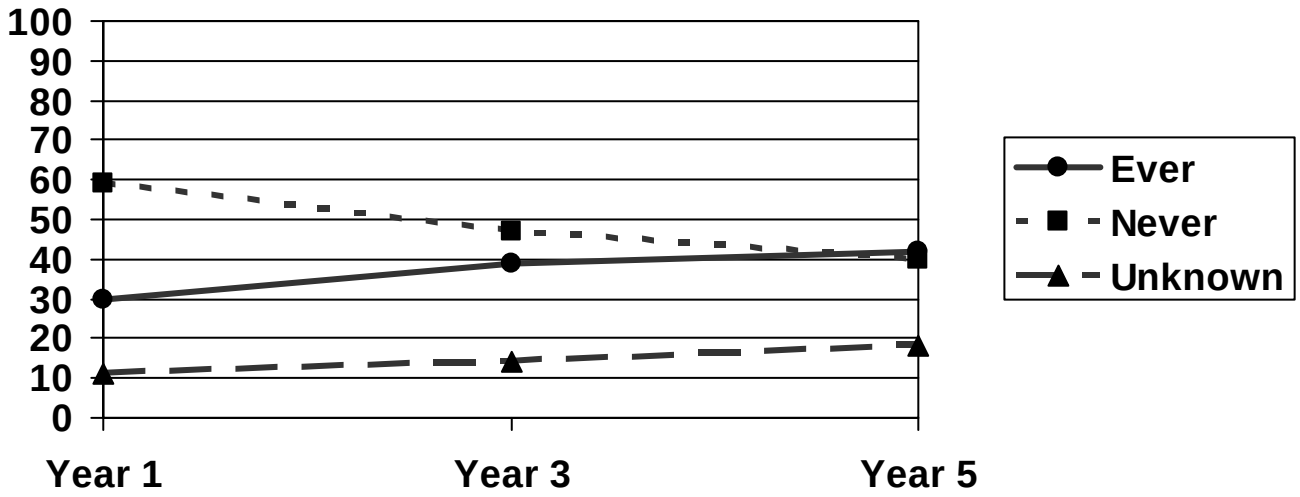
	School Readiness at age 5		
	Difference	(S.E.)	T-statistic
Paternal Incarceration	-0.0484**	(0.0149)	-3.2475
N	3521		

Source: Fragile Families and Child Wellbeing Study

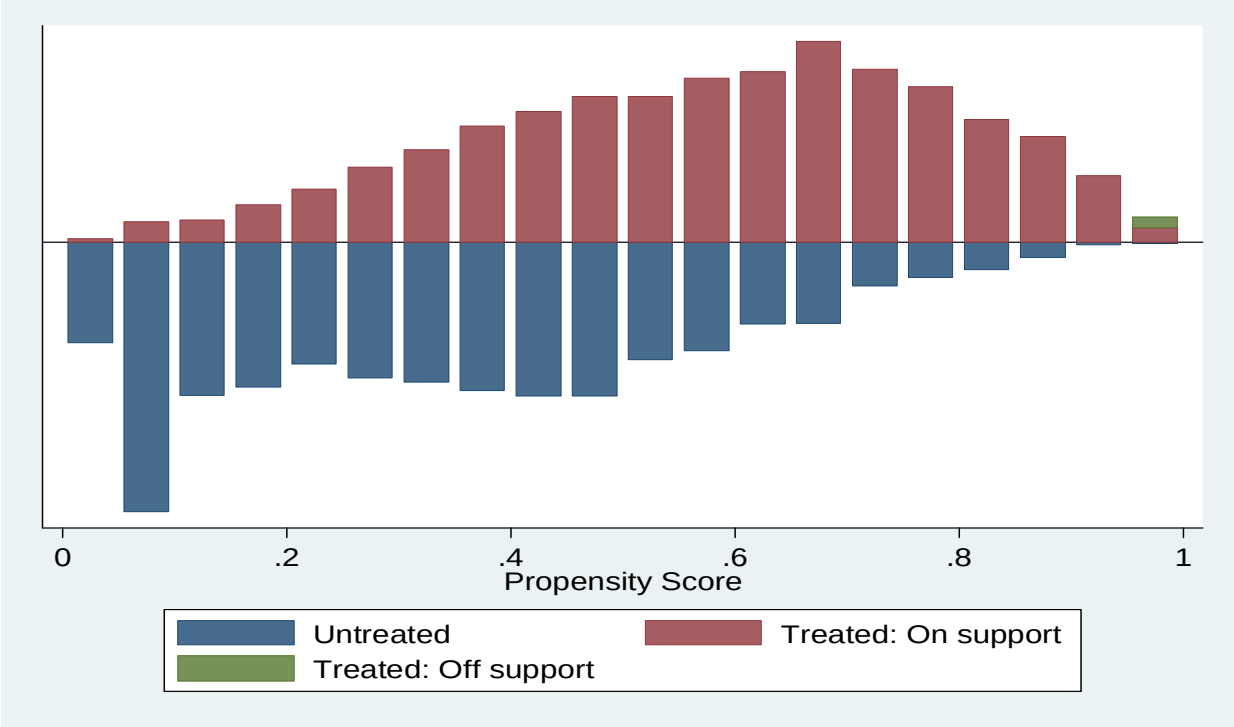
Notes: Kernel matching models include 1579 (on average) treated cases and 1931 matched/control (on average) cases. See propensity score matching part of Methods section for a complete list of variables used in the model predicting the treatment. Significance levels are the following: *** p<.001; ** p<.01; * p<.05.

GRAPHS

Graph One
Prevalence of Paternal Incarceration in the Fragile Families over Waves (in percents)



Graph Two
Distribution of Propensity Scores by Treatment and Region of Common Support



APPENDICES

Appendix A

Response Rates for Fragile Families and Child Wellbeing Study[14]

	Mothers		Fathers	
	Unmarried	**Married**	**Unmarried**	**Married**
Baseline	87%	82%	75%	89%
1 year	90%	91%	71%	82%
3 year	88%	89%	69%	82%
5 year	87%	86%	67%	78%
Ever			86%	96%

[14] See Reichman et. al. (2001) for more details. Fathers and mothers numbers for years 1-5 are percentages of eligible baseline mothers.

Appendix B

Scaled Variables, Their Components and Respective Cronbach's Alphas

Scale Name (alpha)	**Components**
School Readiness (.835)	can't concentrate, can't pay attention can't sit still, is restless or hyperactive clings to adults or is too dependent cries a lot is disobedient doesn't get along with other children doesn't seem to feel guilty after misbehaving has trouble getting to sleep nervous, high strung, or tense is stubborn, sullen, or irritable has sudden changes in mood or feelings has temper tantrums or a hot temper is too fearful or anxious is unhappy, sad, depressed wants a lot of attention is withdrawn, doesn't get involved acts too young for their age
Paternal Self-Control (.842)	often say whatever comes into head w/o thinking don't think enough before I act often say/do things w/o considering consequences often get into trouble b/c I don't think before I act my plans fail b/c I fail to think them through first often make up mind w/o considering the situation