

ABSTRACT

MCDANIEL, CHRIS PATRICK. Parental Incarceration, Depression and Crime: An Examination of Incarceration Timing, Parental Closeness and Parent-Child Gender. (Under the direction of Dr. Patricia L. McCall and Dr. Toby L. Parcel.)

Extant literature indicates that parental incarceration has a deleterious impact on children of imprisoned parents. Parental imprisonment is associated with poor physical and mental health outcomes and decreased school performance. Children of imprisoned parents may struggle with stigma and social isolation, and are more likely to display aggressive behaviors.

Parental incarceration's impact may also be gendered, as maternal and paternal incarceration can differentially affect child outcomes. Sons and daughters of incarcerated parents may similarly exhibit different behaviors during and after a parental incarceration. Although parental imprisonment sometimes promote depression or aggressive behavior, children's age at the time of their parents' incarcerations may moderate imprisonment's effect. Finally the closeness of a parent-child relationship may aggravate or mitigate the negative consequences associated with parental incarceration.

This study uses data from the National Study of Adolescent to Adult Health (Add Health) to assess how various factors moderate parental incarceration's effects on criminal involvement and depression. Parent-child closeness and parent-child gender are examined. Separate analyses focus specifically on individuals reporting an incarceration before age 18 to assess the impact of maternal and paternal incarceration timing on children's adult antisocial behavior. This study uses a multilevel approach to account for the ways in which neighborhood disadvantage may account for depression and criminal involvement that are associated with parental incarceration.

Results indicate that respondents commit more crime and suffer more depression when they report poorer relationships with their parents. Paternal incarceration's impact on depression

was reduced when respondents reported closer relationships with their mothers, indicating that maternal closeness may provide a protective effect that mitigates some of the deleterious effects associated with paternal incarceration. Parental incarceration also exhibited gendered effects, as males' criminal involvement spiked at a much higher rate than females reporting both maternal and paternal incarcerations. Maternal incarceration also has a greater impact on males' depression symptoms than females' depression.

There was a gendered impact to maternal incarceration timing. Females were more likely to offend when incarceration occurred at an earlier age, and males were more likely to offend when experiencing later maternal imprisonment. The same gendered pattern held true for maternal incarceration's impact on depression, though the small sample sizes mean that substantive inferences should be approached with caution. Only females reported sensitivity to paternal incarceration's timing, with daughters reporting earlier paternal incarcerations reporting more crime and depression.

This study has implications for criminological research, further indicating that heterogeneous factors moderate parental incarceration's effect on child outcomes. The gender, parent-child relationships, and the developmental timing of a parental incarceration may all impact imprisonment's effect on crime and depression, even when controlling for neighborhood disadvantage.

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Parental Incarceration, Depression and Crime: An Examination of Incarceration Timing, Parental Closeness and Parent-Child Gender.

by
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A dissertation submitted to the Graduate Faculty of
North Carolina State University
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

Sociology

Raleigh, North Carolina
2019

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DEDICATION

To Katelan. Words cannot adequately describe the enormity of your contribution to my life. I likely would have ended my graduate career as a broken, withered and empty husk if not for your friendship, support and love. Thank you for everything.

BIOGRAPHY

Chris McDaniel was raised in Orlando, Florida. He spent years attempting to assuage his middle-class guilt by working various odd jobs and screaming uselessly into the void. Realizing that the development of tradeable skills would be beneficial to his personal and professional growth, he eventually returned to college. Chris received bachelor's and master's degrees in Sociology from the University of Central of Florida, before studying at North Carolina State University, where he received a Ph.D. in Sociology with a specialization in crime, deviance and social control. His current research and teaching interests include mass incarceration, criminological theory, deviance and social control. Chris recently joined Auburn University as a Visiting Assistant Professor of Sociology.

ACKNOWLEDGMENTS

A comprehensive list of acknowledgements is well beyond the scope of this page. However, I want to recognize those whose efforts were particularly fundamental to my professional growth. Thank you to Dr. David Gay for suggesting graduate school and a career in academia as an outlet for the “weird” stuff in my brain. Thank you to Dr. John Lynxwiler for your helpful guidance and support during trying times. Thank you to Dr. Bill Smith for the kindness and understanding buried beneath your gruff demeanor. Thank you to Dr. Steve McDonald for your patience throughout the dissertation process and my lengthy job search. Your meticulous nature is sincerely appreciated. Thank you to Dr. Maxine Atkinson for being my teaching mentor and, at times, a much-needed sounding board. Finally, thank you to my dissertation co-chairs, Dr. Toby Parcel and Dr. Patty McCall. Thank you to Dr. Parcel for your steadying influence and your firm but fair standards. You provided stability when I was legitimately concerned that this project was going off the rails. Finally, Dr. McCall’s impact on my success is incalculable: thank you for your tireless efforts throughout times of personal and professional upheaval. Steve was right: your impact goes far beyond what most will ever see. Thank you for providing more help than should ever reasonably be expected, and for being too stubborn to give up. I could not have completed this without all of you, and I am forever grateful.

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CHAPTER ONE: INTRODUCTION

Mass imprisonment is a term used to characterize the large numbers of persons incarcerated in the United States. These numbers exploded during the 1970s and continued to rise for decades, with 2010 marking the height of the prison boom (Garland 2001; Clear and Frost 2013). Recent years have seen a slight departure from climbing trends at the state level, with increases occurring at the federal level (Carson 2014; Mauer and Ghandnoosh 2014). The United States currently has one of the highest incarceration rates in the world (International Centre for Prison Studies: World Prison Brief).

Children of incarcerated parents have grown in number as the U.S. prison population has multiplied. In turn, the proportion of children with incarcerated parents has also increased along with mass incarceration. For example, Glaze and Maruschak (2008) estimate that 52 percent of state inmates and 63 percent of federal inmates are parents of children under the age of 18. They also find over 2 percent of children under age 18 have a parent in prison. Millions of children living in the United States will have a parent in prison at some point in their lifetime (Glaze and Maruschak 2008).

As incarceration rates have expanded, scholars have investigated the adverse ramifications of mass incarceration on the family and community. Toward that end, a growing body of interdisciplinary literature has emerged linking parental incarceration to various negative outcomes for children. History of parental incarceration is associated with increased risk of economic disadvantage, residential mobility, primary caregiver disruptions, a loss of social capital, and stigma (Bramen 2004, Johnson and Waldfogel 2002; Murray and Farrington 2006; Wakefield and Uggen 2010). Parental incarceration is also linked to negative childhood

outcomes including social isolation, antisocial behavior, drug abuse, school failure, unemployment, and mortality (Meyers et al. 1999; Murray and Farrington 2008a; Nesmith and Ruhland 2008; Roettger 2009; Murray, Phillips and Gates 2011; Farrington and Sekol 2012). Furthermore, adolescent children of incarcerated parents may display maladaptive and aggressive coping mechanisms that may increase the likelihood of dropout, delinquency, or adult criminal involvement (Johnston 1995; Poehlmann 2005; Dallaire 2007a; Dallaire 2007b). Children of incarcerated parents are also more likely to engage in criminal activity and are at increased risk for developmental and behavioral problems (Phillips et al. 2002; Wildeman 2009; Poehlmann et al. 2010; Murray, Loeber, and Pardini 2012; van de Rakt, Murray, and Nieuwbeerta 2012; Wildeman et al. 2014).

Scholars apply many different theories to examine parental incarceration. While socialization, strain, and stigma perspectives were initially popular among scholars (Hagan and Dinovitzer 1999), life-course perspectives provide a useful complementary approach. Life-course perspectives focus on the transitions, turning points, and trajectories of individuals' lives. Therefore, the life course perspective is used more recently in the literature to study both children and their incarcerated parents (Pettit and Western 2004) and is particularly applicable for examining how the collateral consequences of parental incarceration affect children due to its focus on cumulative development over time.

Recent empirical work suggests that parental incarceration adversely affects young children in numerous ways (Murray et al. 2012; Turney 2014; van de Rakt et al. 2012; Wakefield and Wildeman 2011). Parental incarceration is a potential turning point in a child's life with damaging effects that may last during and after the transition to adulthood (Uggen and McElrath 2014). This study assesses parental incarceration's impact on internalizing and externalizing

antisocial behaviors for children. Specifically, analyses consider how these antisocial behaviors are affected by: (1) both parent and child gender, (2) how close children feel to their incarcerated parents, and (3) the age at parents' first incarceration. Specific attention is paid to how gender moderates the effects of parental incarceration, and whether paternal incarceration and maternal incarceration affect children differently. The closeness of the parent-child relationship is examined to determine whether this relationship has a moderating effect on children's antisocial behaviors. Finally, the developmental timing of both maternal and paternal incarceration are considered.

A discussion of the proposed research is introduced below and is followed by an outline of the associated conceptual framework. Next, limitations in extant literature that provide the impetus for this research project are identified. Hypotheses derived from the literature that will be tested in these analyses are delineated in the following section. Then, the data set—The National Longitudinal Study of Adolescent to Adult Health (Add Health), is introduced along with the operationalization of concepts, and the analytical techniques used to test the hypotheses. Finally, the contributions and implications of this work are summarized and elaborated.

THE LIFE COURSE PERSPECTIVE

The life-course perspective provides a framework for studying individuals' lives over time. Elder defined the life course as a pathway through the life span (1985). This includes a sequence of culturally-defined, age-graded roles and social transitions occurring throughout an individual's life. "Trajectories" and "transitions" are two central concepts of the life-course perspective. Trajectories are long-term pathways of development throughout life. Examples include marriage, parenthood, or criminal behavior. Transitions are short-term events embedded

in trajectories. Examples include getting married, having a child, or being sentenced to prison (Elder 1985). Transitions may lead to turning points, which are changes in the life-course trajectory. For example, having a child may a turning point because it could significantly influence and change a person's life and behavior.

The life-course perspective links social history and social structure to human lives. Elder (1985) argues that social change shapes the life course of individuals and age groups. A historical or life event may have a different developmental impact, depending on when the event occurs in a person's life. The life-course perspective also links past events and experiences to the present to explain behavior over time. This perspective focuses on the continuity of behavior between different stages in the life-course, while also focusing attention on turning points that may alter life trajectories.

Sampson and Laub extend the life course-theory by proposing a theory of age-graded informal social control and crime (1992; 1993). The life-course perspective maintains a focus on the formative childhood years; however, it recognizes that individual behavior is mediated with age-graded institutions. Sampson and Laub presented an age-graded theory of informal social control that integrates the life-course perspective with social control theory. They argue that individuals with weakened social bonds are more likely to engage in crime or delinquency. Sampson and Laub present a perspective that is less static than Hirschi's social control (Hirschi 1969; Sampson and Laub 1993). Sampson and Laub focus on how social bonds change over the life course. Social ties provide resources that prove useful when moving through life transitions. Individuals with strong social bonds risk more by engaging in criminal or deviant behavior (1993) than do individuals who do not have close bonds with significant others.

Sampson and Laub propose three major themes. First, structural context is mediated by informal family and school social controls, which explain delinquency in childhood and adolescence. Second, there is strong continuity in antisocial behavior from childhood through adulthood in numerous domains. Finally, informal social control in adulthood explains changes in criminal behavior over the life span independent of prior individual differences in criminal propensity.

The age-graded theory combines structural and process variables into a single theoretical model. Antisocial behavior and delinquency is explained with both structural factors such as poverty, and process variables such as attachment to parents. Structural context influences the dimensions of informal social controls, which in turn explain variations in delinquency. The theory focuses on three components of social control in the family: consistent discipline, monitoring, and attachment to the family. Emotional bonds and direct control can both limit delinquency.

Social structural factors such as family disruption or socioeconomic status indirectly affect delinquency through social bonds. Factors related to socioeconomic disadvantage may also disrupt bonds of attachment between the child and school, leading to educational deficiencies. The effects of poverty on delinquency are transmitted through parenting and education. Therefore, the age-graded theory predicts that family and social bonds mediate the effects of structural factors on delinquency.

Weak social bonds explain continuity in antisocial behavior across the life course. Early antisocial behavior predicts adult antisocial behavior. Adolescent antisocial behavior predicts weak adult social bonds such as low educational attainment, erratic labor force participation, and poor quality marital attachment. These adult outcomes are independent of social class

background, ethnicity, IQ, and even family and school factors known to predict the onset of delinquency (Hagan and Foster 2015).

Age-graded theory emphasizes a developmental model suggesting that delinquency continues into adulthood because of its negative effect on future life chances (Sampson and Laub 1993, 1997). For example, arrest, conviction, incarceration, and other negative life events associated with delinquency may decrease future school and employment opportunities. Delinquent activities also weaken informal social bonds to school, friends and family. This further threatens the development of adult social bonds. Childhood delinquency has an indirect effect on adult criminal behavior through the weakening of social bonds. Thus, the theory proposes that crime, deviance, and informal social control are intimately linked over the life course.

Age-graded theory holds that salient life events and socialization experiences in adulthood can, to some extent, counteract the influence of early life experiences. The theory incorporates explanations for both continuity and change in the life course. In addition, the theory identifies turning points in the life course, such as marriage, work and service in the military, which can alter life trajectories. The theory suggests that social ties embedded in transitions can change an individual's path from a delinquent trajectory to a nondelinquent trajectory or vice versa. Pathways to both crime and conformity are modified by institutions of social control in the transition to adulthood, independent of prior differences in criminal propensity.

The theory proposes that bonds to family and school influence delinquency, and indirectly influence delinquency through these bonds. The theory also suggests that childhood delinquency and deviance will continue into adulthood through a process of cumulative

continuity, resulting in criminal behavior in adulthood and weakened adult social bonds. Finally, the theory predicts that those who develop strong adult social bonds will be less likely to engage in criminal or deviant behavior in adulthood, even when individuals have a previous criminal history.

It is evident that family relationships strongly influence delinquency. Children are more likely to be delinquent if they are poorly monitored by, supervised by, or less attached to their parents (Geller et al. 2009; Murphy and Cooper 2015). Overall, the empirical evidence is consistent with age-graded theory's first theoretical prediction that both structural factors and bonds to family and school predict childhood and adolescent delinquency and that the influence of structural factors is primarily mediated through social bonding (Sampson and Laub 1993; 1997).

The second theoretical prediction of the age-graded theory is that there is continuity in delinquent and antisocial behavior from childhood to adulthood. Research spanning several decades indicates a great deal of continuity in criminal behavior over time. Robins (1978) demonstrated that childhood delinquency is almost a prerequisite for adult offending. A review of several research studies revealed substantial stability between early aggressive behavior and later criminality (Olweus 1979). Caspi et al. (1993) noted that continuities in antisocial behavior have been replicated internationally and with multiple methods of assessment. Cernkovich and Giordano (2001) found that prior delinquency was a stable predictor of future delinquency.

Social controls, structured routine activities and purposeful human agency are the causal elements in explaining persistent offending and desistance from crime in adulthood (Laub and Sampson 2003). Weak informal social controls, minimal structured routine activities, and human agency explain persistence in criminal behavior, independent of earlier patterns of offending.

Conversely, strong informal social control, highly structured routine activities and human agency explain desistance in adulthood, independent of a history of antisocial behavior.

While acknowledging that there are multiple pathways to desistance, Laub and Sampson emphasize the general mechanisms whereby these institutions facilitate desistance. These institutional or structural turning points all involve, to varying degrees, new situations that 1) “knife off” the past from the present; 2) provide both supervision and monitoring as well as new opportunities of social support and growth; 3) change and structure routine activities; and/or 4) provide the opportunity for identity formation. Laub and Sampson believe that most offenders choose to desist in response to structurally-induced turning points that serve as a catalyst for sustaining long-term behavioral change. In the short term, these institutions reorder situational inducements to crime while in the long-term they enhance commitments to conformity (see Briar and Piliavin 1965).

Strong family support provides a foundation that allows children to properly achieve developmental maturity. Transitions to adulthood include developing: (1) competence in understanding prosocial attitudes and activities such as work and recreation, (2) interpersonal skills for maintaining intimate relationships with others, and (3) a positive self-definition and self-worth that contribute to achieving personal goals (H. L. Chung, Little, and Steinberg 2005).

Although many events require temporary adaptation, they may become turning points when: (1) they caused noticeable contextual changes, and (2) they affect opportunities for achievement, social relationships, or self-concepts (Elder and Giele 2009; Mortimer and Shanahan 2003; Rutter 1996; Sampson and Laub 1997). Parental incarceration shares these characteristics, meaning incarceration may be a turning point that produces a host of negative outcomes for children of imprisoned parents.

LINKED LIVES

Life course scholarship has been entrenched in incarceration literature for years (Huebner 2007; London and Myers 2006; Mears and Siennick 2016; Murray and Farrington 2005; Pettit and Western 2004). However, the concept of linked lives remains understudied. The linked lives perspective posits that individuals in salient relationships are reciprocally connected. Thus, parents and children occupy interlocking trajectories that extend throughout the life course (Elder, Johnson and Crosnoe 2003). Events in adult children's lives may impact their parents' wellbeing. Conversely, stressful events in parents' lives may prove especially impactful to children—even when those children are adults.

Stressful events may produce psychological distress (Doherty and Baptiste 1993), or they may promote resiliency (Elder 1998). Interlocking trajectories indicate that parents and children may follow similar paths through the life course. Such concepts are particularly relevant to incarceration literature.

Much extant literature focuses on parental incarceration that occurred during childhood (Arditti, Lambert-Schute, and Joest 2004; Murray and Farrington 2005; Cho 2010; Swisher and Shaw-Smith 2015; Tasca, Rodriguez and Zatz 2011). This is understandable because children of incarcerated parents are a vulnerable population. However, the linked lives perspective offers a theoretical framework for understanding how parental incarceration may prove impactful even to adult children.

According to the linked lives perspective, we may assume that parental incarceration will prove impactful at any age, as children and their parents' are on reciprocally-connected trajectories. The impact may prove even greater when respondents report closer relationships to their parents. The current study contributes to life course scholarship by assessing the impact of

parental incarceration on adult children, and by examining how parent-child closeness impacts criminal offending and depression of children of the incarcerated. Following respondents into adulthood—between the ages of 24 and 32—allow for a clearer picture of offending and depression over the life course.

CONTRIBUTIONS TO CRIMINOLOGY

This work contributes to scholarship by addressing a number of gaps in extant literature. The quality of the parent-child relationship is associated with health outcomes. Adolescents with incarcerated parents are at increased risk for mental health problems, although closer relationships with parents may buffer children from risk (Carroll et al. 2013; Davis and Shlafer 2017; Raudino, Fergusson and Horwood 2013). Others have found that parental imprisonment may be even more damaging when children cohabitated with a parent prior to that parent's incarceration (Swisher and Shaw-Smith 2015). Thus, closer relationships with parents may provide a protective effect against parental incarceration's deleterious effects on children's health outcomes, or they may actually increase the harmful impact of depression by causing an unexpected family disruption. Although preexisting household incarceration has been found to moderate the impact of parental incarceration on health outcomes, this fails to capture the quality of the parent-child relationship. Scholars have not yet used Add Health data to examine how close parent-child closeness moderates parental incarceration's impact on crime and depression. Recognizing mixed results in currently scholarly work, this work addresses an important gap in the literature by assessing how the quality of the parent-child relationship impacts adult children's criminal offending and depression symptoms.

Criminologists recognize that females are more likely to internalize behaviors, and males are more likely to exhibit externalizing antisocial behaviors. Scholars also recognize the gendered impact of parental incarceration. Previous research (Foster and Hagan 2013; Swisher and Shaw-Smith 2015) reveals a pattern of gendered loss, with paternal incarceration more likely to result in substance abuse, and maternal incarceration more likely to produce depression in children of incarcerated parents.

Korrup, Ganzeboom and Van Der Lippe. (2002) argue that children take the same-sex parent as role models. Others note that children are more likely to spend time with same-sex parents and to have stronger affection for these parents (Thornberry, Krohn and Freeman-Gallant 2006). Although evidence on the impact of parent-child gender remains mixed (see: Foster and Hagan 2013), Burgess-Proctor, Huebner and Durso (2016) found that parental incarceration was more likely to produce criminal justice system (CJS) involvement when adult children were the same sex as their incarcerated parent. In other words, they found that the deleterious effects of parental incarceration were especially pronounced on same-sex dyads. This work addresses scholars' calls for research that examines if this same-sex gendered pattern is consistent with other outcomes—specifically, adult crime and depression.

Extant literature also recognizes how age at parents' first incarceration affects poor outcomes (Murray and Farrington 2005; Cho 2010; Swisher and Shaw-Smith 2015). For example, early parental incarceration may ignite poor trajectories that remain consistent throughout the life course. Parental incarceration during adolescence may force older children to accept more adult responsibilities, potentially disrupting the transition to adulthood (Turney and Lanuza 2017). Adverse effects across varied life domains will arise to the extent that paternal incarceration is a turning point for children (Giordano 2010; Hagan and Dinovitzer 1999;

Osgood et al. 2005; Turney 2014). Children of incarcerated parents may experience different effects depending upon age and the strength of the social bond. In addition to examining the timing in the child's life of parental incarceration, this study uniquely contributes to this body of literature by examining how maternal and paternal incarceration timing impacts depression and criminal offending.

Extant scholarship has used Add Health data to assess how paternal incarceration timing impacts delinquency and depression (Swisher and Shaw-Smith 2015). This study extends previous work by using Wave 4 data to examine whether these patterns hold true into adulthood. For example, one may ask: Are previous studies capturing individuals who eventually 'aged out' of crime, or do they illustrate crime across the life course? Using Wave 4 data similarly allows for an examination of depression well into adulthood. Finally, this research contributes to a gap in the literature by using Add Health data to assess whether maternal incarceration timing moderates criminal offending and depression in a similar fashion to paternal incarceration timing. Finally, this study contributes a multilevel approach to account for neighborhood disadvantage selection effects—that is, controlling for neighborhood disadvantage at level 2 in the multilevel model. For example, children of incarcerated parents may share similar demographic characteristics, family configurations, and neighborhood contexts. These children may be at increased risk for poor outcomes, separate from the effects of parental incarceration. Thus, it is necessary to determine whether parental incarceration—and not other factors associated with parental incarceration such as neighborhood disadvantage—is truly responsible for outcomes (Hagan and Dinovitzer 1999; Johnson and Easterling 2012; Phillips et al. 2006). Multilevel controls help address spuriousness by dealing with clustering of observations—i.e., shared variance due to non-independence that results from growing up in similar environments.

This helps account for a) non-independence of units (respondents) due to shared spatial variation, and b) spurious association between parental incarceration and child antisocial behavior due to neighborhood conditions (disadvantage). This study's multilevel approach allows for an examination of how neighborhood disadvantage may partially account for negative outcomes associated with parental incarceration. Including neighborhood disadvantage in the analyses provides another method of identifying the unique effects that parental incarceration has on antisocial behaviors of their children. I now present my research questions, an explanation of my data and an outline of the current study.

RESEARCH QUESTIONS

Considering the aforementioned gaps in the literature, I propose the following research questions:

1. Does parental closeness moderate the effects of parental incarceration on crime and depression among offspring of incarcerated parents?
2. How does the constellation of parent-child-gender affect crime and depression among children of the incarcerated?
3. Does timing of parental incarceration moderate imprisonment's effect on crime and depression of their children?

THE NATIONAL LONGITUDINAL STUDY OF ADOLESCENT TO ADULT HEALTH

Data for this study must include detailed information regarding family contexts, parental incarceration status and timing. An appropriate dataset must also include measures for a variety of antisocial outcomes, including internalizing behaviors—like depression—and externalizing

behaviors—like crime. The National Study of Adolescent to Adult Health (Add Health) satisfies this goal.

Add Health is a nationally representative longitudinal sample following a cohort of United States adolescents into adulthood. The cohort was first surveyed in 1994-1995, when respondents were between grades 7 to 12. Presently, five waves of Add Health data have been collected. My analyses focus on Wave 4 data, which were collected when respondents were 24 to 32 years old. I also include control measures collected at Wave 1.

Add Health combines survey data on respondents' economic, psychological and physical well-being with contextual data on the family, neighborhood, community, school, friendships, peer groups, and romantic relationships, providing unique opportunities to study how social environments and behaviors in adolescence are linked to health and achievement outcomes in young adulthood.

Add Health's longitudinal design allows for a variety of demographic controls during respondents' adolescence. Specifically, Add Health's measures of parental closeness and parental incarceration timing are particularly relevant to my research questions. The parental closeness measure allows me to capture the quality of the parent-child relationship, while the incarceration timing measure allows me to assess how respondents are differentially impacted by the age at which their parents are first imprisoned. Finally, the use of block-group level measures of neighborhood characteristics that allow for multilevel analyses that address gaps in extant literature, addressing selection effects that have been identified in extant related studies and are often problematic in parental incarceration research.

THE CURRENT STUDY

The following three chapters each focus on different factors: the interaction of parental incarceration and parent-child gender (chapter two), the interaction of parent-child closeness (chapter four), and the timing of first parental incarceration (chapter four). Each chapter includes a review of extant literature in reference to the theoretical framework: age-graded theory. Within each chapter, the data, measures and analytic techniques are outlined before presenting results and conclusions.

Chapter two focuses on how gender moderates parental incarceration's effect on crime and depression. Extant research has established a gendered component to parental incarceration, so analyses focus on the interaction of parent-child gender. Specifically, the chapter assesses whether children are more or less likely to offend or suffer depression if they are of the same gender as their incarcerated parent. The use of multilevel mixed-effects linear regression account for selection effects associated with neighborhood disadvantage. Once again, separate analyses are provided for both maternal and paternal incarceration.

In Chapter three, multilevel mixed-effects linear regression is used to examine how closeness to an incarcerated parent moderates the effects of parental incarceration. Life-course theorists contend that closeness to parents structures the transition to adulthood, while extant literature recognizes that incarceration may be more damaging to children who regularly cohabitate with the incarcerated parent (Swisher and Shaw-Smith 2015). Thus, the study investigates how closeness to parents affects criminal offending and depression. Parent-child closeness' moderating effect on crime and depression are also examined. Finally, the study assesses how closeness to another, non-incarcerated parent moderates parental incarceration's impact on crime and depression. In other words, it tests whether closeness to a non-incarcerated

parent can mitigate the negative outcomes associated with parental incarceration. Separate analyses are presented for incarcerated mothers and fathers.

Chapter four focuses on how the timing of parental incarceration differentially impacts minors. Consequences of life events vary by the age at which they occur. Thus, the timing of parental incarceration may affect how it impacts children (Elder 1998). Parental incarceration occurring in early childhood may produce long-lasting consequences that linger throughout the life course. In contrast, later parental incarceration may produce different stressors, as adolescents and adults may be expected to assume more responsibilities. As such, the study examines individuals whose parents were incarcerated before the respondents' 18th birthdays to assess the impact of parental incarceration timing on crime and depression. These analyses are again separated by maternal and paternal incarceration, and multilevel mixed effects linear regression is used control for neighborhood disadvantage

Chapter five presents a synthesis of findings from the previous three chapters. Findings are connected to the life course perspective, specifically age graded theory. This chapter also includes policy implications and directions for future research

CHAPTER TWO: THE MODERATING EFFECTS OF PARENT-CHILD CLOSENESS ON CRIMINAL ACTIVITY AND DEPRESSION

Mass incarceration refers to the elevated imprisonment rates in the United States (Garland 2001). The U.S. prison population tripled between 1980 and 2000 (Maruschak, Glaze and Mumola 2010). Despite a slight decline in recent years, the U.S. incarceration rate in 2018 remains at 655 inmates per 100,000 adults—well above the rates of other Western industrialized nations (International Centre for Prison Studies 2018).

Parental incarceration rates spiked in recent decades. The number of children with a mother in prison rose 131% between 1991 and 2007, while the rate of paternal incarceration rose 76% (Glaze and Maruschak 2008). The majority of prisoners at both the federal and state levels have children (Maruschak, Glaze and Mumola 2010), and over two million children have a parent in prison. Parental incarceration promotes primary caregiver disruption, the rupturing of parental relationships, and decreased school performance (Cho 2010; Haskins 2015). Parental incarceration is also associated with increased social stigma and delinquency. Children of incarcerated parents also suffer poorer physical and mental health than children of non-incarcerated parents. Therefore, it is important to better understand the influence parental incarceration has on children's behavioral problems.

Parental incarceration impacts the relationships between imprisoned parents and their children. Even maintaining contact may be difficult, as parents may be incarcerated at locations far from their children. This is compounded by the fact that these institutions may be inadequate to accommodate children of incarcerated parents (Nesmuth and Ruhland 2008; Schlafer, Loper and Schillmoeller 2015).

This is particularly problematic for children, because close relationships with parents are found to have a protective effect against poor mental health outcomes. For example, Kandel and Davies (1982) found that adolescents reporting closer relationships with their parents reported fewer symptoms of depression. Amato (1994) later found that close relationships to fathers reduced psychological distress in adolescents. Zweig, Phillips and Lindberg (2002) similarly found that parent-child closeness reduced high-risk adolescents' depression and suicide attempts. More recently, Davis and Schlafer (2017) used Minnesota Student Survey (MSS) data to assess how parent-child closeness impacted adolescents of present or formerly incarcerated parents. They concluded that strong parent-child relationships provided a potential buffer against certain mental health problems.

A growing body of literature focuses on the different effects of maternal and paternal incarceration. Maternal incarceration limits mothers' ability to "mother" their children. Maternal incarceration disrupts parent-child relationships (Turney and Wildeman 2013). This may be especially problematic for children in cases where the mother is the primary caregiver. Thus, maternal incarceration may produce more family instability than paternal incarceration. In contrast, paternal incarceration may have a greater direct impact on children's wellbeing (Turney and Goodsell 2018). Prior literature also establishes gendered differences among children of incarcerated parents, with maternal and paternal incarceration impacting children differently (Foster and Hagan 2013; Turney and Lanuza 2017).

Related to the importance of the closeness between the child and incarcerated parent, Swisher and Shaw-Smith (2015) used Add Health data to examine different aspects of paternal incarceration. They conclude that a child's gender and history of coresidence with an incarcerated father moderate the effects of delinquency and depression. Daughters who

previously lived with incarcerated fathers reported higher levels of depression in delinquency, although this effect did not hold for sons of incarcerated fathers. They also concluded that a child's gender and coresidence with a biological father moderated the effects of different aspects of paternal incarceration. However, they do not address the closeness of the relationship between the child and parent. Furthermore, their primary focus on paternal incarceration fails to account for maternal incarceration, and the potential moderating differing effects of paternal and maternal incarceration. This research addresses this gap in the literature by comparing the effect of maternal and paternal incarceration on child internalizing and externalizing antisocial behaviors. Prior household configuration alone is insufficient to capture the quality of the parent-child relationship. Thus, my analyses focus on parent-child closeness as reported by the children of incarcerated parents. Swisher and Shaw (2015) also noted scholars' calls for more rigorous methods to address selection effects (Hagan and Dinovitzer 1999, Johnson and Easterling 2012; Phillips et al. 2006; see also Mears and Siennick 2016). Therefore, a multilevel approach is used to address potential neighborhood selection effects that may partially account for differences in criminal offending and depression among children of incarcerated parents. A systematic review of research related to maternal vs paternal incarceration along with that of research related to the closeness of the relationship between incarcerated parent and child follows.

PAST RESEARCH: THE EFFECTS OF PARENTAL INCARCERATION

Parental Incarceration as a Unique Type of Loss

The actual act of incarceration is only one factor that influences children of incarcerated parents. Children of incarcerated parents experience myriad hardships during the extended process of parental incarceration. They struggle with stigma and social isolation, and are at

increased risk for psychopathology (Nestmith and Ruhland 2008; Phillips and Gates 2011). Some scholars argue that other types of parental loss such as divorce or death have similar effects on child outcomes, although the extent and shape of the effect is debatable (Cook and Eliot 1980; Amato 1993, 2000; Umberson 2003). Others counter that parental incarceration differs from other forms of separation such as divorce or death, and that parental incarceration has a causal influence on health, antisocial behavior, lower educational attainment, social exclusion, depression, and internalizing symptoms (Hagan and Foster 2012a; Huebner and Gustafson 2007; Lee and Luo 2013; Massoglia and Pridemore 2015; Wildeman and Turney 2014).

Preexisting disadvantage and insecure attachment to parents may contribute to negative outcomes for children. Although parental incarceration may actually prove beneficial when home life is chaotic (Murray and Murray 2010) and children's risks may be mediated by the quality of the family environment (Poehlmann 2005), many scholars agree that parental incarceration has an independent causal effect that increases the likelihood of negative child outcomes (Foster and Hagan 2007, 2015; Bussell 2013; Mears and Siennick 2016).

Other factors may moderate the effects of parental incarceration. Pre-incarceration family configuration is an important consideration (Johnson and Waldfogel 2004). Children who suffer from previous emotional, physical, or sexual abuse within the home will likely react differently than will children whose parents are abruptly torn from otherwise healthier environments. Parental incarceration may actually reduce the likelihood of negative child outcomes when the home life is particularly chaotic (Murray and Murray 2010). Similarly, high-quality caregiver relationships may potentially alleviate risk factors for children after the parent is incarcerated. Children who express higher degrees of perceived support from caregivers exhibit fewer

behavioral problems (Jones, Cauffman, and Piquero 2006), and these caregivers report healthier child outcomes. Children who perceive lower levels of warmth and acceptance experienced higher levels of stress, thereby engaging in more problem behaviors.

Internalizing vs. Externalizing Behaviors

Both internalizing and externalizing behaviors result from negative responses to stress (Achenbach 1978; Murray and Farrington 2005; Murray and Farrington 2008b; Wildeman 2010). These maladaptive behaviors are associated with negative outcomes such as delinquency, adult crime, and violence (Farrington 1989; Moffitt 1993). Parental incarceration is a stressful life event that has been associated with both internalizing and externalizing behaviors among children of the incarcerated parent. While boys are likely to exhibit internalizing and externalizing behavior problems, girls are more likely to exhibit internalizing problems (Leadbeater et al. 1999).

Internalizing behaviors are behaviors where negativity is focused on the self. These problematic behaviors are directed inward. Internalizing behaviors damage the individual sufferer rather than others. Social withdrawal, depression, and feeling unloved are all examples of internalizing behaviors. These behaviors and their effects may not be visible to others though they may result in individuals harming themselves.

Murray and Farrington (2008) used a sample of English boys who experienced different types of loss and found that boys who were separated from their parents due to imprisonment exhibited more evidence of internalizing problems than boys separated from their parents for other reasons. These results indicate that parental incarceration affects child outcomes above and beyond parental criminality, separation from parents, and sociodemographic characteristics.

However, these studies focus on small samples of boys who came of age during a time and place that is far different from the contemporary United States. I address this limitation by using a large, longitudinal, contemporary data set.

Externalizing behaviors are behaviors where negativity is focused outward from the self (Eisenberg et al. 2001). Individuals exhibiting these behaviors act in ways that may harm others through physical aggression, delinquency or criminal behavior (Liu 2004).

Murray and Farrington (2005) draw from longitudinal data to examine the effects of parental incarceration. They use the Cambridge Study in Delinquent Development (CSDD), a prospective longitudinal study of 411 boys born in 1953 and living in South London (Farrington 2003). They compared outcomes between 23 boys who experienced parental separation before age 10 due to parental incarceration and four separate control groups, including: (1) boys with no history of parental separation; (2) boys separated from their parents by hospitalization or death; (3) boys separated for other reasons such as divorce; and (4) boys whose parents were only incarcerated before their birth. Fifty-five percent of boys who had a parent incarcerated before age 10 reported chronic internalizing behaviors well into adulthood vs. 18 percent of boys with no history of parental incarceration. Boys who reported an incarcerated parent before age 10 were also more likely to exhibit externalizing behaviors. Effects remained even after controlling for preexisting risk factors. These conclusions are consistent with Huebner and Gustafson (2007), who conclude that parental incarceration may have a causal influence on internalizing and externalizing behaviors even into adulthood.

Parental incarceration also increases the risk of externalizing behaviors such as antisocial behavior, drug abuse, school failure, unemployment, and mortality (Meyers et al. 1999; Murray and Farrington 2008a; Murray, Farrington and Sekol 2012; Roettger 2009). Children of

incarcerated parents—particularly incarcerated fathers—are more likely to engage in criminal activity themselves (Murray, Loeber, and Pardini 2012; Van de Rakt, Murray, and Nieuwebeerta 2012; Wildeman et al. 2014).

Children of incarcerated parents struggle with various internalizing and externalizing problems, especially when they are uncertain about family roles, and who is “in” or “out” of the family (Murray and Farrington 2008b; Wildeman 2010). When children are confused over their family members’ roles, they may experience rage, guilt, depression, and even exhibit characteristics of posttraumatic stress disorder (PTSD), although symptoms may be lessened when children feel support from family caregivers (Bockneck, Sanderson, and Britner 2009; Kampfner 2008; Mackintosh, Meyers, and Kennon 2006).

Maternal Incarceration Effects

Scholars disagree over whether maternal and paternal incarceration affects children differently. Some argue that maternal incarceration is more damaging to children, while others argue that paternal incarceration is more damaging than maternal incarceration (Glaze and Maruschak 2008; Tasca et al. 2014).

Maternal incarceration has doubled in recent decades, and estimates from the National Longitudinal Study of Adolescent Health (Add Health) indicate that between 1% and 3% of children report having a mother in prison (Glaze and Maruschak 2008; Foster and Hagan 2012a; Lee and Luo 2013). While incarceration incapacitates and thus prohibits criminals from committing crime against society (Nagin 1988), maternal imprisonment severely restricts the incarcerated mother’s ability to “mother” her children (Enos 2001). This may reduce the children’s social support and adult supervision that are generally associated with positive child

outcomes (Hagen, Myers & Mackintosh 2005). In addition, maternal incarceration may cause residential instability (Tasca et al. 2011) and also financial instability if the imprisoned mother contributed household income (Cho and Lalonde 2008; Glaze and Maruschak 2008). Such issues are relevant to life-course perspectives that focus on the importance of caregiver supervision as a means of informal social control.

Huebner and Gustafson (2007) use National Longitudinal Survey of Youth (NLSY) data to compare the rates of adult criminal offending between 31 children of incarcerated mothers and 1666 children whose mothers had not been incarcerated. They found that 26 percent of children of incarcerated mothers were convicted themselves in adulthood, versus only 10 percent of children of nonincarcerated mothers. Maternal incarceration significantly predicted adult convictions even when controlling for background risk variables (Huebner and Gustafson 2007).

Cho (2009a) examines the association between maternal imprisonment and school retention. Her sample consists of children between grade levels kindergarten and eighth grade in the Chicago Public School system between the years 1991-2004. The decision to retain (i.e. “hold back”) or advance a student is dependent upon various factors such as standardized test scores, class grades, and behavioral components such as classroom conduct and attendance. Retained children are deemed to have performed below a particular threshold, and are prohibited from advancing to the next grade level. Since it is difficult to establish casual relationships between maternal imprisonment and grade retention, Cho uses propensity score matching between children whose mothers are imprisoned in state prison (i.e. prison group) and children whose mothers are not imprisoned but are instead incarcerated for no more than one week (i.e. the comparison group). She then controls for changes in policies across years and grade levels before comparing the difference in retention rates between the two groups to ascertain the effect

of maternal imprisonment. She finds that having a mother in prison does not decrease the probability of promotion; however, it does modestly reduce retention rates. Maternal imprisonment may be helpful to school children in the short-term. Children between kindergarten and eighth grade experience declines in retention rates immediately following their mothers' imprisonment; however, these effects only last for three years after prison entry before retention rates return to expected levels.

Cho (2009b) also examines how maternal incarceration affected the cognitive skills of elementary school-aged children. She draws from panel data on roughly 7,000 children for 12 years. She compares changes in tests scores of children whose mothers entered prison with a comparison group, controlling for unobserved and fixed characteristics. She concludes that children with prior maternal contact do not experience a decrease in standardized test scores following their mothers' imprisonment. While children with imprisoned mothers do have lower test scores than average children, this does not appear to be the result of maternal imprisonment. In sum, Cho (2009a; 2009b) proposes that this decrease in retention rate and the lack of negative effect on grades after maternal incarceration may be the result of sympathetic teachers promoting these children, or through the improvement of other outcomes.

Cho (2010) analyzed Fragile Families data to examine how maternal incarceration timing and length influenced the likelihood of child high school dropout and risk of incarceration. She found that only adolescent boys were sensitive to the timing of maternal incarceration, and that adolescent boys who experienced maternal incarceration during early adolescence were more likely to drop out of high school than those who experienced maternal incarcerations when they were older. She also found that boys were more sensitive to frequent maternal incarcerations, while girls were more sensitive to lengthier incarcerations.

A mother's incarceration may be particularly problematic when it involves a change in legal guardian. Although some families may voluntarily rely on informal kin networks (Anderson and Righton 2001) to help rear children of incarcerated parents, recent ethnographic studies have shown that, the intervention of child-welfare authorities may result in the mother's total loss of custody over the children in the case of maternal incarceration. In some cases, state agencies may officially place children in homes through judicial determination (Anderson and Righton 2001). Recent years have seen an increasing number of incarcerated mothers' rights terminated by decree of the government (Lee, Gentry, and Laver 2005).

The literature surrounding the effects of change in child guardianship after maternal imprisonment remains unclear. Although children may benefit from the permanence associated with more stable home environments, children who are placed under the legal guardianship of other family members may experience a number of hardships. Children of incarcerated mothers experience an increased likelihood of living in homes with unmarried adults with lower educational levels, poorer health, and numerous financial constraints (Lawlor, Nicholls, and Sanfilippo 2008; Massoglia and Pridemore 2015). The greater the risk factors associated with parental incarceration, the more likely that children of incarcerated mothers will be placed with non-parent caregivers (Johnson and Waldfogel 2002).

"Maternal salience" may also be an important factor for predicting child outcomes. The maternal salience hypothesis posits that more women live with their children than do men before incarceration (Glaze and Maruschak 2008), and thus, maternal incarceration is deemed to be particularly damaging for children of imprisoned parents. Tasca et al. (2014) examined cross-sectional data from parents confined in the Arizona Department of Corrections. They found that

children of incarcerated mothers were much more likely than children of incarcerated fathers to experience parent-reported mental health services.

Maternal incarceration may actually be beneficial for children when their caregiver scenario is improved. For example, children may report more short-term benefits when removed from harmful or dangerous home environments. The effects of maternal incarceration may also be limited if children were already under the supervision of caregivers other than their mother (Turanovic, Rodriguez, and Pratt 2012). Finally, disadvantaged children may be better “prepared” for maternal incarceration due to their upbringing.

Arditti (2015) points to a number of studies suggesting lasting negative effects of maternal incarceration (see: Arditti 2012; Murray, et al. 2009; Wildeman and Wakefield 2014), while arguing that the effects of parental incarceration are heterogeneous. Thus, the effects of maternal incarceration are not necessarily uniform or similar for all children. For example, Turney and Wildeman (2015) draw again from the Fragile Families data set, concluding that maternal incarceration is less impactful to children whose mothers displayed characteristics such as emotional instability, or severe substance abuse, and more harmful to children whose mothers did not display such characteristics. Arditti (2015) draws from research proposing that children from high-conflict homes may actually experience higher levels of wellbeing when their parents are separated (see Amato 1993).

Arditti (2015) suggests that the differences in behavioral outcomes among children of incarcerated mothers may result from differences in family functioning between advantaged and disadvantaged children. Thus, it is possible that children with more stable caregivers will see different effects than will those from less stable households. Meanwhile, positive relationships between children and primary caregivers can mediate the effects of trauma (Parke and Clarke-

Stewart 2001). Maternal incarceration may have a more limited effect if it does not disrupt a child's primary family relationships.

Findings remain mixed as to whether the effects of maternal incarceration are contingent upon race and ethnicity. Cho (2011) finds that risk of student dropout from school among children of incarcerated mothers is higher among Whites and Hispanics than among African Americans, arguing that strong kin networks in African American communities make them particularly resilient to maternal incarceration. She also found that girls are more likely than boys to drop out of school. In contrast, Wildeman and Turney (2014) used Fragile Families data to study the effects of maternal incarceration on caregiver and teacher-reported behavioral problems of 9-year-old children. They found an association between maternal incarceration and child behavioral problems; however, they argue that preexisting disadvantage explains many of these differences. They found the effects of maternal incarceration to be largely null, rather than positive or negative (see also: Wildeman 2009). However, they did find that a lower incidence of behavioral problems among non-Hispanic White children compared to other children.

Based on this review, children are affected in a number of adverse ways by their mothers' incarceration, such as reduced caregiver supervision, residential instability, financial instability, change in legal guardian and poor cognitive skills. On the other hand, the situation for the child may improve when the mother is incarcerated if the child is removed from a disadvantaged household or disruptive home life. Maternal incarceration may have varying impact with regard to gender or race/ethnicity of the child. Turning the discussion to paternal incarceration, scholars also have identified problem behavioral outcomes particularly among children of incarcerated fathers.

Paternal Incarceration Effects

Paternal incarceration impacts children differently than maternal incarceration (Thornberry et al. 2003; Wildeman and Turney 2014). Paternal incarceration is widely associated with antisocial behavior (Murray et al. 2012; Roettger and Swisher 2011), internalizing and externalizing outcomes (Murray and Farrington 2005, 2008b) and placement of children into foster care (Anderson and Wildeman 2014). However, other findings remain inconsistent. Paternal incarceration has also been found to harm the mental health of nonincarcerated mothers and their children (Massoglia and Pridemore 2015; Wildeman, Schnittker, and Turney 2012). Results are mixed regarding the effect of paternal incarceration on adolescent substance abuse and child education (Kinner et al. 2007; Hagan and Foster 2012a; Nebbit et al. 2014); thus, some scholars continue to question the generality of the harmful effects of paternal incarceration.

Anderson and Wildeman (2014) propose a rigorous analytical model focusing on how paternal incarceration affected the likelihood of foster care placement for Danish children. They conclude that, relative to the sanction of community service, paternal incarceration has a statistically significant and substantially large effect on the risk of foster care placement for Danish children up to three years after the date of incarceration. However, this effect is limited to children who did not live with their fathers at the time of the fathers' incarceration, indicating that intact families may be more resilient to the negative effects of paternal imprisonment. They conclude that paternal incarceration—rather than the less punitive alternative of community service—causes higher rates of foster care placement for children not living with their fathers. Wildeman and Turney (2014) examine data from the Fragile Families and Child Wellbeing Survey to ascertain the effects of parental incarceration on teacher- and caregiver-reported behavioral problems. Children of incarcerated parents were much more likely to have teachers or

caregivers report behavioral problems among these children relative to children whose parents were not incarcerated; however, these effects were limited when adjusting for selection effects. This suggests that the negative behavioral outcomes are the result of other factors preceding these parents' incarceration. Finally, Wildeman and Turney noted that these effects varied across race and ethnicity, and that paternal incarceration was associated with a greater number of reported behavioral problems than was maternal incarceration.

Still others argue that paternal incarceration may be more harmful to children than maternal incarceration. Wildeman (2010) examined Fragile Families data and found that boys of incarcerated fathers were more likely to display aggression at age 5 than were girls. He argues that incarceration may be passed down to sons, but not to daughters. Wildeman (2014) also determined that recent paternal incarceration—but not maternal incarceration—substantially increased the risk of child homelessness, particularly for African American children. He argued that this relationship can be partially explained by increases in familial hardship, combined with a decrease in access to institutional and social support such public housing and government assistance. Thus, he concluded that the prison boom was likely a key contributor to the vast racial disparities in child homelessness.

Paternal incarceration may negatively impact schoolchildren, promoting antisocial traits and reducing schooled preparedness. Haskins (2014) used the Fragile Families and Child Wellbeing Study to assess how paternal incarceration before age five impacted school readiness. She concluded that the main effect of incarceration did not vary by race. However, sons of incarcerated fathers showed less school preparedness and were more likely to experience special education placement than sons whose fathers were never incarcerated.

Paternal incarceration may promote antisocial behaviors in young children. Haskins (2015) used self-report data from the Fragile Families and Child Wellbeing Study to assess how paternal incarceration impacted nine-year-old children's development. She used a longitudinal data set to assess how paternal incarceration affected self-reported emotional and behavioral capacities of children. Parents were also asked about their children's behaviors. Children's self-reports were compared with their parents' responses. Haskins concluded that paternal incarceration did not impact prosocial skills such as task completion. However, paternal incarceration did promote antisocial behaviors. Paternal incarceration's impact on antisocial behaviors was consequential, with many of the 9-year-old respondents suffering some form of setback at school within two months of a paternal incarceration. Paternal incarceration's differing impact on prosocial and antisocial behaviors indicated that paternal incarceration may affect some skills more than others.

Finally, paternal incarceration may promote food insecurity among families dealing with an imprisoned father. Davison et al. (2019) conducted a two year ethnographic study assessing the correlation between paternal incarceration and family food insecurity in Canada. Observations were combined with in-depth interviews of 63 formerly incarcerated fathers, their romantic partners and others. Although pre-incarceration factors contributed to food insecurity, these issues were compounded by stigma, health, and economic factors. Overall, they concluded that paternal incarceration contributed to family food insecurity.

Meanwhile, Swisher and Shaw-Smith (2015) report that a child's gender and history of coresidence with an incarcerated father moderate the effects of delinquency and depression. Daughters who previously lived with incarcerated fathers reported higher levels of depression in delinquency, although this effect did not hold for sons of incarcerated fathers.

There is substantial evidence of the deleterious influence of paternal incarceration on their children's wellbeing and growing evidence of such resulting from maternal incarceration. To address the main focus of this research question, the moderating influence of parent-child closeness on the impact of parental incarceration on childhood antisocial behavior, this discussion now turns to the theoretical perspective that underlies this subject: the life course perspective.

THE LIFE COURSE PERSPECTIVE: PARENTAL INCARCERATION AS A TURNING POINT

Many life events require people to adapt temporarily. These events become turning points when they spark discontinuities in prior adjustment that then persist or are amplified through dynamic processes of accumulating and self-reinforcing consequences (Elder and Giele 2009; Mortimer and Shanahan 2003; Sampson and Laub 1997). These events often have two features: they cause marked changes in contexts or circumstances, and they create or close off opportunities for achievement, social networks and relationships, and new self-concepts (Rutter 1996). Criminal justice system involvement has many of these qualities, as it can create or amplify social and economic marginalization of families and, for ex-prisoners, can result in collateral effects on opportunities for their relationships with their families as well as access to housing, employment, treatment, and services (Petersilia 2003; Travis 2005).

Viewed from a life-course theoretical perspective, then, parental incarceration constitutes a turning point for children if it creates disruptions in their social, psychological, and emotional development at the point of their parents' incarceration and as they transition into adulthood (Foster and Hagan 2007). Evidence to date suggests that youths' own offending, arrest, and incarceration can result in long-term effects on later educational attainment (Tanner, Davies, and

O'Grady 1999), income (Kerley et al. 2004), and mental health (Hagan 1997). However, the long-term effects of parental incarceration on children remain largely unknown. On the one hand, children may view entry into adulthood as an opportunity for them to differentiate themselves from their stigmatized parents and to redirect maladaptive behavioral, psychological, and social trajectories (Giordano 2010). On the other hand, experiencing a parent's incarceration during formative years of development could leave these children socially isolated; exposed to family instability; and without the skills, resources, and foundations needed for successful adjustment in adulthood (Foster and Hagan 2007; E. I. Johnson and Easterling 2015; Sampson and Laub 2005; Uggen and McElrath 2014). In this way, parental incarceration could resemble other disruptive family events like parental divorce. Even as young adults, children from divorced households have lower socioeconomic attainment, lower quality romantic relationships, and lower subjective well-being than do children from biological two-parent families (Amato 1999). Parental incarceration, too, could adversely affect children during and after the transition to adulthood by impeding parents' ability to provide resources, support, and social capital to enable grown children to complete school; regain emotional and physical health; find employment; and negotiate such crises as unemployment, divorce, or homelessness (Arditti 2012; M. K. Johnson and Benson 2012; Siennick 2014; Swartz 2009; Uggen and McElrath 2014).

The few empirical studies that have followed children of incarcerated parents into young adulthood provide suggestive evidence that parental incarceration exerts long-term effects on children's well-being. Analyses of data from the Cambridge Study in Delinquent Development, as well as the Dutch Criminal Career and Life Course Study, have linked parental incarceration with adult convictions and criminal records among offspring (Besemer et al. 2011; Murray,

Janson, and Farrington 2007; van de Rakt et al. 2012). For example, Murray and Farrington (2005, 2008) found that the 23 boys in the Cambridge study who experienced parental incarceration before age 10 had more internalizing and antisocial problems at midlife than did other boys. Other studies suggest the potential for such long-term effects. Roettger and colleagues (2011) linked fathers' incarcerations with higher levels of children's marijuana and other drug use throughout adolescence and into the early 20s, while Foster and Hagan (2007) found that young adult children of incarcerated fathers had higher rates of homelessness and political disengagement. Finally, Mears and Siennick (2016) found that parental incarceration had detrimental effects across multiple life domains such as education, earnings and intimate relationships. In short, studies to date suggest the potential for parental incarceration to constitute a significant turning point in the lives of children, one that may exact penalties upon these children in their youth and as they progress into adulthood.

Extant literature indicates differences in maternal and paternal incarceration (Turney and Goodsell 2018). Household configuration and neighborhood characteristics also impact these outcomes (Arditti 2015). Informed by life-course theory, this study build upon previous literature by assessing how the quality of the parent-child relationship affects poor outcomes associated with parental incarceration. Parental incarceration is hypothesized to be particularly impactful for children who report closer relationships with their incarcerated parents. However, closeness to another parent may potentially mitigate poor outcomes. Analyses test the following hypotheses.

The first set of hypotheses deal with how close relationships with mothers and fathers moderate maternal incarceration's effect on crime.

H1a. Individuals with incarcerated mothers will experience more externalizing antisocial behaviors than children whose mothers are not incarcerated.

H1b. Individuals reporting closer relationships with their mothers will experience fewer externalizing antisocial behaviors than children who are not as close to their mothers.

H2. Individuals reporting closer relationships with incarcerated mothers will experience more externalizing antisocial behaviors than children who are not as close to their incarcerated mothers.

H3: Individuals reporting maternal incarceration and closer relationships with their fathers will experience fewer externalizing antisocial behaviors than individuals reporting maternal incarceration and who are not as close to their fathers.

The following hypotheses consider how close relationships with mothers and fathers moderate paternal incarceration's effect on crime.

H4a. Individuals with incarcerated fathers will experience more externalizing antisocial behaviors than children whose fathers are not incarcerated.

H4b. Individuals reporting closer relationships with their fathers will experience fewer externalizing antisocial behaviors than children who are not as close to their fathers.

H5. Individuals reporting closer relationships with incarcerated fathers will experience more externalizing antisocial behaviors than children who are not as close to their incarcerated fathers.

H6: Individuals reporting paternal incarceration and closer relationships with their mothers will experience fewer externalizing antisocial behaviors than individuals reporting paternal incarceration and who are not as close to their mothers.

These hypotheses consider how close relationships with mothers and fathers moderate maternal incarceration's effect on depression.

H7a. Individuals with incarcerated mothers will experience more internalizing antisocial behaviors than children whose mothers are not incarcerated.

H7b. Individuals reporting closer relationships with their mothers will experience fewer internalizing antisocial behaviors than children who are not as close to their mothers.

H8. Individuals reporting closer relationships with incarcerated mothers will experience more internalizing behaviors than children who are not as close to their incarcerated mothers.

H9: Individuals reporting maternal incarceration and closer relationships with their fathers will experience fewer internalizing behaviors than individuals reporting maternal incarceration and who are not as close to their fathers.

Finally, the last set of hypotheses deal with how close relationships with mothers and fathers moderate paternal incarceration's effect on crime.

H10a. Individuals with incarcerated fathers will experience more internalizing antisocial behaviors than children whose fathers are not incarcerated.

H10b. Individuals reporting closer relationships with their fathers will experience fewer internalizing antisocial behaviors than children who are not as close to their fathers.

H11. Individuals reporting closer relationships with incarcerated fathers will experience more internalizing behaviors than children who are not as close to their incarcerated fathers.

H12: Individuals reporting paternal incarceration and closer relationships with their mothers will experience fewer internalizing behaviors than individuals reporting paternal incarceration and who are not as close to their mothers.

The data and methods employed to test these hypotheses are discussed in the following section.

DATA

Sample

Data are from the National Longitudinal Study of Adolescent to Adult Health (Add Health). Data for my analyses must include detailed information regarding family contexts, parental incarceration timing and status, as well as negative outcomes including internalizing and externalizing antisocial behaviors. The National Study of Adolescent to Adult Health (Add Health) satisfies this goal.

Add Health is a nationally representative longitudinal study following a cohort of United States youth between the 1994-1995 school year to the present. The cohort—between grades 7 to 12 in the 1994-1995 school year—has been followed into young adulthood with four in-home interviews. The most recent wave was Wave 5 in 2016-2018, when the sample was aged 34 to 42. Add Health combines survey data on respondents' economic, psychological and physical well-being with contextual data on the family, neighborhood, community, school, friendships, peer groups, and romantic relationships, providing unique opportunities to study how social environments and behaviors in adolescence are linked to health and achievement outcomes in young adulthood.

Add Health data were collected from adolescents, their fellow students, school administrators, parents, siblings, friends, and romantic partners through multiple data collection components, including four respondent in-home interviews. In addition, existing databases with information about respondents' neighborhoods and communities have been merged with Add Health data, including variables on income and poverty, unemployment, availability and utilization of health services, crime, church membership, and social programs and policies. Wave 1 (1994-1995) included both in-school (N=90,118) and in-home (N=20,745) components for adolescents. Parents (N=17,670) and school administrators (N=144) were also sampled in Wave 1. Wave 3 included data from romantic partners (N=1,507). The original cohort is aged 24 to 32 in Wave 4 (N=15,701).

Variables and Measures

Dependent Variables

Criminal Offending

To operationalize one form of externalized antisocial behavior, I measure adult criminal offending with a scale derived from Wave 4. Items and scales are summarized in Table 1. First, I create a scale containing 11 continuous-measure items assessing how often in the past year respondents report criminal offending. Each item response is measured "0" for never, "1" for one or two offenses, "2" for three or four offenses, and "3" for five or more offenses. The items in this scale include: (1) damaging property, (2) stealing something valued over \$50, (3) stealing something valued under \$50, (4) entering a house or building to steal something, (5) using or threatening to use a weapon to get something from someone, (6) selling marijuana or other drugs, (7) holding or using stolen property, (8) using someone else's bank card without their

knowledge or permission, (9) taking part in a physical fight as an individual or (10) in a group and (11) harming someone in a fight badly enough to require medical care. The general criminal involvement scale potentially ranges from zero, indicating no criminal activity, to 33, indicating high levels of criminal activity. Factor analysis suggests that all 11 items load on one factor, with a Cronbach's alpha of .705 indicating a moderate level of reliability.

Depression

For testing the influence of parental incarceration on internalized antisocial behavior, I measure depression using Add Health's constructed Center for Epidemiologic Studies Depression Scale (CESD) variable collected during Wave 4. Created in 1977 and revised in 2004, the CESD remains one of the most widely-used instruments in psychiatric epidemiology. It measures depression symptoms using 15 different items across nine groups including: (1) feelings of disproportionate sadness, (2) loss of interest in activities (3) loss of appetite, (4) insomnia, (5) inability to think clearly or concentrate, (5) disproportionate feelings of guilt, (7) extreme fatigue, (8) agitation, and (9) suicidal thoughts. Add Health's Wave 4 data include a continuous variable that measures respondents' CESD symptoms.

Natural Logarithm of Depression and Crime

Preliminary analyses reveal that all continuous measures of dependent variables are skewed which is typical because these behaviors are rare events in the population and many respondents report zero incidents of antisocial behaviors. Use of these measures in ordinary least squares regression violates the assumption that the dependent variables are normally distributed. Therefore, the residuals from initial regression analyses are examined for evidence of

heterogeneity in the error term, an indication of the violation of the normally distributed dependent variable. The dependent variables are transformed using a natural logarithmic transformation, which is typical in studies of deviance and criminality. Since many cases of the dependent variable contain zeros, I add one to the quantity to avoid taking the log of zero. The Stata command is *gen new variable = ln(y_i + 1)*.

Independent Variables

Paternal and Maternal Incarceration

My primary independent variables involve parental incarceration. Add Health includes these retrospective measures in Wave 4 interview data. Although Add Health also includes measures for mother figure and father figure incarceration, I focus my analysis on biological parents. I include measures for both biological mothers' and biological fathers' incarcerations to examine how these types of incarceration affect children differently.¹ Wave 4 respondents were asked: "Has/did your biological mother spent/spend time in jail or prison?" Respondents were asked the same question regarding biological fathers. These dichotomous measures indicate whether respondents' mothers and/or fathers have ever been incarcerated.

Age at Parent's First Incarceration

Wave 4 includes questions asking a respondent's age at the time of their biological mother's first incarceration. Values range from "0" for Not yet born to 31 years old. Again, there is an equivalent measure for respondent's age at biological father's first incarceration.

¹ Add Health data include measures for mother figure and father figure incarceration. Less than one percent of respondents report a mother figure incarceration and roughly two percent report a father figure incarceration. I include these cases, although my analyses focus only on biological parents' incarceration(s). This is consistent with related studies of parental incarceration (see: Mears and Siennick 2016; Swisher and Shaw-Smith 2015).

Parental Closeness

Add Health includes measures used to operationalize the concept of parental-child closeness. Wave 1 includes the following question: “How close do you feel to your biological mother?” Responses include: (1) not close at all, (2) not very close, (3) somewhat close, (4) quite close, and (5) extremely close. A similar measure is included asking respondents “How close do you feel to your biological father?” I reverse code these variables, so their values are: (1) extremely close, (2) quite close; (3) somewhat close, (4) not very close, and (5) not close at all. I reverse-code these measures, so higher values indicate poorer relationships with parents. Thus, a positive relationship is hypothesized for parent-child closeness measures with the antisocial behavior outcome measures.

Control Variables

Demographics: Race/Ethnicity and Sex

Several sociodemographic factors collected during Wave 1 of Add Health are commonly known to be associated with crime and are included to control for potential confounders (Blau and Blau 1982; Butcher and Piehl 1999). I use Wave 1 adolescent self-reports to measure race/ethnicity, recoding four separate categories into three dichotomous measures, coding “1” for each representing: White, African-American, and other race, and coding “0”, otherwise.

I include sex as a dummy variable with males as the reference group, coded “1”. Finally, I include a dummy variable indicating whether respondents are foreign-born or born in the United States with foreign-born as the reference category, coded “1”.

Household Composition

Wave 1 includes a measure of each adolescent respondent's household composition: (1) living with two biological parents, (2) living with two parents, (3) living with a single mother, (4) living with a single father, and (5) living with another caregiver. I separated these variables into five separate dichotomous measures. However, preliminary analyses indicate a high degree of multicollinearity between the following: (1) living with two biological parents and (2) living with two parents. Meanwhile, the other categories consistently failed to impact outcome measures with any statistical significance. Thus, I recode the measure into one dichotomous variable with "1" indicating a two-parent household and "0" indicating another household configuration.

Respondent's Education

Although the relationship between social class and crime is a source of debate, many scholars still argue that low income is related to conventional (or "street") crime (Costello and Michalowski 2009), so I include respondents' education as a proxy for socio-economic status. Wave 4 includes the question: "What is the highest grade or year of regular school you completed?" Responses include: (6) 6th grade, (7) 7th grade, (8) 8th grade, (9) 9th grade, (10) 10th grade, (11) 11th grade, (12) 12th grade, (13) one year of college, (14) two years of college, (15) three years of college, (16) four years of college; (17) five or more years of college, (18) one year of graduate school, (19) two years of graduate school, (20) three years of graduate school, (21) four years of graduate school and (22) five or more years of graduate school.

Parents' Education

I also control for parents' education. Wave 1 includes the questions "How far in school did your biological mother go?" and "How far in school did your biological father go?" Responses include: (1) eighth grade or less, (2) more than eighth grade, but did not graduate high school, (3) went to a business, trade or vocational school instead of high school, (4) high school graduate, (5) completed a GED, (6) went to a business, trade, or vocational school after high school, (7) went to college, but did not graduate, (8) graduated from a college or university, (9) professional training beyond a four year college or university, (10) never went to school, (11) went to school, but respondent does not know what level. I recode values of 10 to zero, so a zero indicates that a respondent's parent did not go to school. I recode "went to school, but respondent does not know what level" as missing. Since preliminary analyses failed to consistently indicate a statistically significant relationship between mothers' education and depression or crime, my final analyses include only measures for fathers' education.

Mistreatment by Adults

Parental or any adult abuse of a child is important to include when assessing the influence of parental incarceration on antisocial outcomes for children. Its effect is difficult to determine, though, when also estimating the impact of parental incarceration. If the abusive parent is the one incarcerated, then the incarceration may have a positive effect on the outcome for those children. Unfortunately, there is no information in the Add Health dataset regarding which parent or adult is abusive. Nevertheless, three continuous measures are included for the number of times the respondent experienced physical, emotional, and sexual abuse by adults. Emotional abuse is measured by how often adults or caregivers said something that made their children feel unloved.

Physical abuse is measured by the following item: “Before your 18th birthday, how often did an adult or caregiver hit you with a fist, kick you, or throw you down on the floor, into a wall, or down the stairs?” Finally, sexual abuse is measured by the following item: “How often did an adult or caregiver touch you in a sexual way, force you to touch him or her in a sexual way, or force you to have sexual relations?” Wave 4 measures are also included asking respondents how often an adult or caregiver (1) made them feel unloved, (2) punched or kicked them or threw them down the stairs, or (3) touched them in a sexual way before age 18.

Self-Control

An individual’s level of self-control has been found to be a predictor of involvement in deviant or criminal behavior (Grasmick et al. 1993; Pratt and Cullen 2006). Fourteen items from Wave 4 are used to create a scale to control for the effects of low self-control on internalized and externalized antisocial behavior. Respondents indicated whether they (1) sympathized with others, (2) experienced frequent mood swings, (3) were quick to anger, (4) were uninterested in the problems of others, (5) were easily bothered, (6) were rarely irritated (7) felt empathy for others emotions, (8) were easily upset, (9) lost their temper easily, (10) were uninterested in others (11) kept their cool, (12) made decisions based on gut instinct rather than rational thinking, (13) enjoyed taking risks and (14) lived for the present without thinking of future consequences. Responses vary from one “Strongly Agree” to five “Strongly Disagree.” In the initial dataset, some of these measures are coded in a counterintuitive fashion. For some measures, higher values indicate higher levels of self-control. For others, higher values actually indicate lower levels of self-control. Variables are recoded so all measures are consistent. In these analyses, higher values indicate higher levels of self-control. Factor analysis suggests that

all 14 items load on one factor, with a Cronbach's alpha of .757 indicating a high level of reliability.

Prior Delinquency

Since prior delinquency is associated with adult criminal offending (Nagin and Paternoster 1991), I include a scale to measure delinquent involvement at Wave 1. I operationalize externalized antisocial behavior with three separate delinquency scales derived from Wave 1 measures. Items and scales are summarized in Table 1. First, I create a scale containing 15 continuous-measure items assessing how often in the past year respondents report engaging in delinquent activity. Each response is measured "0" for never, "1" for one or two offenses, "2" for three or four offenses, and "3" for five or more offenses. The items in the index include: (1) painting graffiti, (2) damaging another person's property, (3) lying to parents about where they were or whom they were with, (4) taking something from a store without paying for it, (5) getting into a serious physical fight, (6) harming someone badly enough that they required medical attention, (7) running away from home, (8) driving a car without the owner's permission, (9) stealing something worth more than \$50 (10) entering a house to steal something, (11) using or threatening to use a weapon, (12) selling marijuana or other drugs, (13) stealing something worth less than \$50, (14) taking part in a group fight, and (15) acting rowdy, loud or unruly in a public place. The general delinquency scale ranges from zero, indicating no delinquent behavior, to 45, indicating high levels of delinquency. Factor analysis indicates that all 15 items load on one factor, with a Cronbach's alpha of .829 indicating a high level of reliability.

Neighborhood Disadvantage

Wave 1 includes community contextual variables based on state, county, tract, and block group levels. This information is based on respondents' addresses during Wave 1. I use a level two neighborhood disadvantage variable adding the components weighted by their factor loadings to control for selection effects. This corrects for violations of the OLS assumption of uncorrelated error terms.

The measure that contains the following items: (1) the proportion of households in the block group with annual income less than \$15,000, (2) the proportion of female-headed households in the block group, (3) the unemployment rate in the block group, (4) the proportion of black individuals in the block group, and (5) the proportion of households receiving public assistance income. Factor analysis suggests that all five items load on one factor, with a Cronbach's alpha of .785 indicating a high level of reliability. The variable ranges from 0 to 3.29, with higher values indicating a more disadvantaged block group.

Missing Data

Preliminary analyses reveal missing data. Retention rate is not a suitable statistic to describe Add Health study participation because Wave I high school seniors were not interviewed at Wave II; therefore, any reported retention rate would be misleading. Rather, Add Health reports the response rate of each wave. The Wave I response rate is 79%, the Wave II response rate is 88.6% and the Wave III response rate is 77.4%. Finally, the Wave IV response rate is 80.3%.

Although missing data is not a problem for many items included in this analysis, some variables have relatively large percentages of missing data. I use multiple imputation to account

for missingness on all variables. I use a series of five imputations to predict missing values across variables. Multiple imputation analyzes the estimates using standard regression procedures and combines the results from values generated in the five imputation analyses. Missing values are imputed using an appropriate model that incorporates random variation (Rubin 1977, 1987). Appealing features of multiple imputation include: (1) introduction of appropriate random error, making it possible to achieve approximately unbiased parameter estimates, and (2) good estimates of standard errors that are achieved through repeated imputation (Allison 2002).

I use Stata's *mi impute* chained command for multiple imputation. This procedure estimates values iteratively by using chained equations, sequencing univariate imputation methods with fully conditional specification (FCS). This technique uses univariate models for each variable that has missing values, using imputed values to impute values on other variables with missingness. Truncated linear regression is used for continuous variables, with left- and right-truncation values consistent with the unimputed values' minimum and maximum values. Logistic regression is used for categorical variables (Enders 2010).

The average missing data is roughly four percent, although this number was skewed by high levels of missing values on three variables: father ever incarcerated (seven percent missing), close to mother (five percent missing), and close to father (28% missing). All other variables had fewer than two percent missing values. I conducted analyses using original unimputed data. I also conducted separate analyses on each of the five imputations. Substantive results were consistent across all models and imputations. The results presented reflect the average of the five imputations.

Multicollinearity and Weighting Data

I examine that data for evidence of multicollinearity. Bivariate correlations of all variables range from 0.00 to 0.47. I follow preliminary regression analyses with Stata's *vce* option to determine the comparability of estimated coefficients using robust standard errors and those estimated without robust standard errors. The results were substantively the same. Finally, variance inflation factor (VIF) scores range from 1.03 to 1.22. Multicollinearity does not appear to be an issue with the findings.

Add Health includes longitudinal sample weights to adjust for varying probabilities of initial sampling and longitudinal retention. When researchers omit sample weights from their analyses, parameter estimates are biased. Also, findings cannot be generalized to the larger population unless sampling weights are used. Add Health's sampling weights are available for respondents who are members of the Add Health probability sample. These weights and variables identify clustering of adolescents in schools. Using sampling weights allows researchers to obtain unbiased estimates and standard errors in their analyses.²

Although Add Health collects data over multiple waves, my analyses are cross-sectional. Thus, I use Add Health's cross-sectional sampling weight for Wave 4 respondents who were also interviewed at Wave 1. This produces a sample of (N=14,800). Siblings may be included in these data, even if they share the same household. Because this violates the OLS regression assumption that data represent a random sample and that error terms are not correlated, I include only one sibling case from each household. A unique family identifier indicates households with multiple siblings. I use Stata's random number generator to randomize the order of the cases

² Data from a randomly selected sample may be projected onto a larger population. However, survey non-response must be considered. Non-response bias occurs when respondents who fail to participate are not independent from the variables being studied. In other words, this bias occurs when those who fail to respond are uniquely different from those who do respond.

before I drop any duplicate family identifiers. I include only one randomly-selected case from each household. Removing these cases produces a final sample of (N=14,584).

PRELIMINARY FINDINGS

Descriptive Statistics

Table 2a shows descriptive statistics and bivariate correlations of all variables with the outcome measures for the full sample (N=14,584). The metric measures of crime and depression are both skewed. The crime scale mean is 0.40, with a range of 0-27 and a standard deviation of 1.35. The metric measure for depression has a mean of 2.62, with a range of 0-15 and a standard deviation of 2.55.

The crime scale (*ln*) ranges from 0-3.34, and the average crime score was 0.17 with a standard deviation of 0.44. The depression scale (*ln*) ranges from 0-2.79, and the average depression level was 1.05, with a standard deviation of 0.70. The results follow classic patterns of offending and depression with small mean values characterizing these relatively rare events.

Four percent of the sample had mothers who were incarcerated at some point and 14 percent had incarcerated fathers. Children were older when mothers were incarcerated than when fathers were incarcerated, with the average age at mother's first incarceration at almost 13 and age at father's first incarceration at roughly eight years old. The average maternal closeness score was 1.17 with a standard deviation of 0.49. The paternal closeness mean was 1.46, with a standard deviation of 0.81.. Lack of parental closeness is statistically significantly and positively correlated with crime and depression ($p \leq 0.05$, two-tailed), suggesting that children reporting closer relationships with their parents are less likely to commit crime or suffer depression.

Forty-seven percent of respondents were male, 69 percent were white, 22 percent were African American and 8 percent are foreign born. Seventy percent of respondents were in two parent households during Wave 1, while 30 percent were raised by single parents or others.

Almost fifty percent of respondents reported a history of emotional abuse before age 18. Physical and sexual abuse were less common, with 20 percent of respondents reporting physical abuse and five percent reporting being sexually abuse as minors. Respondents averaged a self-control scale score of 48, with the measure ranging from 14 to 70. Relatively few individuals committed delinquency as minors, with an average score of 4.21 on a scale ranging from 0 to 45.

Characteristics of home life for these youth are depicted in the three percent who lived in homes with drugs present. As expected, the small mean values indicate that abuse is also a rare event among this sample, with only three percent of respondents reporting the presence of drugs in their childhood homes. The average respondent's education score was 13.17, with a standard deviation of 2.07. The father's education mean was 4.45, with a standard deviation of 2.34. Finally, the average neighborhood disadvantage score was 0.58, with a range of 0 to 3.29.

ANALYTIC STRATEGY

Negative binomial regression is commonly used when count outcome variables are skewed. Since Stata's *mi estimate* command does not support negative binomial regression, I use multilevel mixed-effects linear regression for the continuous outcome variables, crime and depression. I perform a natural logarithmic transformation on the skewed outcome variables. The equation is expressed as follows:

$$y_{ij} = \beta_0 + \beta_1 X_{ij} + u_j + \varepsilon_{ij}$$

In the above equation, $i = 1, \dots, n_i$, the number of respondents, and $j = 1, \dots, n_j$ block groups. u_j is a random effect at the block group level and ε_{ij} is the random effect at the individual level. For example, students may be sampled within classrooms—or, in this study, from similar block groups. When considering multiple levels, variability in outcomes may be either within groups or between groups. Units sampled at the highest level—in this study, individuals residing on similar block groups at Wave 1—are independent. Observations at the lowest level—the grown children of incarcerated parents—are not independent, since they may be similar to others within the same group. Using mixed effects linear regression, data and parameters are random at the lowest (individual) level, but fixed at the highest (block) level.

The neighborhood disadvantage variable includes five separate measures at the block-group level. This variable has been found to be related to both crime and depression (Sampson, Raudenbush and Earls 1997; Ross 2000), and serves as a proxy measure to account for neighborhood effects. I conduct a multilevel analysis of 14,584 individuals nested within 3,861 different block groups.³ In other words, 14,584 individuals (at level 1) nested within 3,861 “neighborhoods” (at level 2) comprised the multilevel data structure considered in this analysis. In this study, multilevel analyses allow for estimation of (1) the associations between compositional factors and the outcome measures (“fixed parameters”) and (2) the variation in the outcome measures between neighborhoods (“random parameters”). I present the results of multilevel regression models.

³ Although a vast body of criminological literature uses census tract data for neighborhood effects (see: Krivo and Peterson 1996; Hipp 2007; Ranson, Baumer and Arnio 2018); other studies have presented block-group data as an appropriate measure of neighborhood effects (McNulty and Holloway 2000; Messer et al. 2006; McDonald 2008).

RESULTS

Multilevel Regression Analyses

Maternal Incarceration, Parental Closeness and Crime

Table 4 presents the parameter coefficients indicating the effects of maternal incarceration and parental closeness on crime. Model 1 is a null model, including only the outcome variable—crime—and the level two variable—neighborhood disadvantage. Variation in offending was partitioned across individuals (within block groups) and between block groups. The null model with no predictors revealed a significant variation in crime between neighborhoods ($\sigma^2_{u0} = 0.05$). This indicates that neighborhood effects partially accounted for differences in criminal offending.

Model 2 adds individual-level variables (parental closeness, history of abuse, history of delinquency, self-control, drugs in childhood home, childhood household composition, respondents' and respondents' parents' education, and other demographic controls) to Model 1. Individuals reporting incarcerated mothers were more likely to commit crime indicating support for Hypothesis 1a. Individuals reporting poorer relationships with their mothers committed more crime, indicating support for hypothesis 1b. This relationship is approaching statistical significance ($.01, p \leq .10$). History of emotional, physical and sexual abuse all increased the likelihood of offending, as did a history of delinquency and the presence of drugs in the childhood home. Males and African Americans committed more crime, while foreign-born respondents were less likely to offend.

Model three introduces the interaction term of maternal closeness and maternal incarceration. The coefficient for the interaction term is not statistically significant. I find no support for Hypotheses 2, that individuals reporting poorer relationships with incarcerated

mothers will experience more externalizing antisocial behaviors than children who are not as close to incarcerated mothers.

Model 4 introduces the interaction term of maternal incarceration and paternal closeness. The coefficient for the interaction term is not statistically significant; therefore, I find no support for Hypothesis 3, that closeness to one's father reduces the likelihood of criminal offending for the child of the incarcerated mother.

Paternal Incarceration, Parental Closeness and Crime

Table 5 displays parameter coefficients for testing the effects of paternal incarceration and parental closeness on crime. Model 1 is the same null model from Table 4, including only the outcome variable and level two variable, neighborhood disadvantage. Neighborhood disadvantage has a statistically significant impact on crime.

Model 2 once again introduces main effects variables. Respondents reporting an incarcerated father were more likely to offend (0.04, $p \leq .001$), indicating support for Hypothesis 4a. Individuals reporting poorer relationships to their fathers were more likely to offend, indicating support for Hypothesis 4b. Those who were closer to their mothers were less likely to offend. This relationship is approaching statistical significance (0.02, $p \leq 0.10$).

Model 3 introduces the interaction term for father-child closeness, but this relationship is not statistically significant. Thus, paternal closeness does not moderate paternal incarceration's impact on their children's criminal offending. Hypothesis 5 is not supported. Model 4 introduces the interaction term for mother-child closeness and paternal incarceration. This relationship is not statistically significant. There is no support for Hypothesis 6, that individuals reporting

paternal incarceration and closer relationships with their mothers will commit more crime than individuals reporting paternal incarcerations and those who are not as close to their mothers

As with Table 4, neighborhoods' effect on crime remained statistically significant, although the strength of the effect diminished with the introduction of main effects. Once again, physical, emotional or sexual abuse all increase the likelihood of offending. Drugs in the home, a history of delinquency and having a college-educated parent all increased the likelihood of offending. In contrast, respondents with college degrees committed less crime, as did individuals reporting higher levels of self-control. Males were more likely to offend than females, and African Americans were more likely to offend than whites. Foreign-born individuals were less likely to offend than individuals born in the United States.

Maternal Incarceration, Parental Closeness and Depression

Table 6 shows the parameter coefficients for the effects of maternal incarceration and parental closeness on depression. Model 1 is a null model, including only the outcome variable (depression) and the level two variable, neighborhood disadvantage. The null model with no predictors revealed a significant variation in depression between neighborhoods ($\sigma^2_{u0} = 0.05$).

Model 2 introduces main effects to Model 1. Maternal incarceration was statistically significantly and positively associated with depression (0.04, $p \leq 0.05$). Respondents reporting poorer relationships with mothers experienced more depression symptoms (0.03, $p \leq 0.01$), illustrating support for Hypotheses 7a and 7b. Respondents reporting poorer relationships with fathers similarly reported more depression symptoms (.02, $p \leq 0.02$). Emotional, physical and sexual abuse were all associated with an increase in depression. Individuals reporting prior delinquency were more likely to suffer depression. Individuals raised in two-parent households

were less likely to suffer depression than those who were raised in single-parent or other households. Males and individuals with college degrees reported fewer symptoms of depression. African Americans and members of other races suffered more depression than whites did.

Model 3 introduces the interaction effect for maternal incarceration and maternal closeness. Model 4 introduces the interaction effect for maternal incarceration and paternal closeness. Inconsistent with Hypotheses 8 and 9, neither maternal nor paternal closeness moderated the effect of depression for children of incarcerated mothers.

Paternal Incarceration, Parental Closeness and Depression

Table 7 presents the parameter coefficients indicating the effects of paternal incarceration and parental closeness on depression. Once again, Model 1 is a null model containing only the outcome variable and the level two variable. Unlike previous models, neighborhood disadvantage is not statistically significant in the null model.

Model 2 introduces the main effects. Paternal incarceration was statistically significantly and positively associated with depression (0.06, $p \leq .001$)—supporting Hypothesis 10a. Lack of maternal closeness was similarly associated with depression (0.03, $p \leq .01$). Paternal closeness also impacted depression symptoms, suggesting support for Hypothesis 10b. Individuals reporting poorer relationships with their fathers were more likely to suffer depression; this relationship is approaching statistical significance (0.02, $p < .10$).

Once again, abuse and delinquency were positively associated with depression. Individuals raised in alternatives to two-parent houses experienced higher levels of depression than children from two-parent homes. Respondents with college degrees and higher levels of self-control reported fewer depression symptoms. Males experienced fewer depression

symptoms than females, and African Americans and other races suffered more depression than whites did.

Model 3 introduces the interaction term of paternal incarceration and paternal closeness. Contrary to Hypothesis 11, this relationship is not statistically significant. Closeness to one's father did not moderate the effects of paternal incarceration on depression.

Finally, Model 4 introduces the interaction term of paternal incarceration and maternal closeness. Consistent with Hypothesis 12, maternal closeness moderated the effect of paternal incarceration ($0.05, p \leq 0.05$). Children of incarcerated fathers experienced fewer symptoms of depression when reporting closer relationships with their mothers. This interaction is depicted in Figure 1.

As seen in this figure, children whose fathers were not incarcerated and had close relations with their mothers had a depression score of 2.64 and those whose fathers were not incarcerated but had weak relationships with their mothers had a depression score of 2.69. Compare this with children whose fathers were incarcerated. Those who were close to their mothers had a depression score of 2.66 and those who had weak relations with their mothers had a depression score of 2.77. Although the relative magnitude of these differences on the depression score for those whose fathers were not and those whose fathers were incarcerated was not great, the differences between those groups were statistically different relative to the moderating influence of their closeness to their mothers. Therefore, the respondents' closeness to their mother had a protective influence of those children's depression symptoms.

DISCUSSION

Using the Adolescent Health Wave 1 and Wave 4 datasets, a multilevel regression statistical technique was employed to test hypotheses derived from the literature exploring the deleterious effects of mass incarceration on children of incarcerated parents. This study investigates how parental closeness moderates the relationship between parental incarceration and the behavioral outcomes of crime and depression. Overall, the results indicate that this relationship is mixed. Consistent with prior research, individuals reporting incarcerated mothers or incarcerated fathers were more likely to engage in criminal offending as adults (Murray and Farrington 2005; Huebner and Gustafson 2007; Murray, Loeber, and Pardini 2012; Van de Rakt, Murray, and Nieuwbeerta 2012; Wildeman et al. 2014). These children of incarcerated parents were also more likely to suffer depression.

Parental closeness influenced criminal offending. Individuals reporting closer relationships with their mothers committed less crime. Respondents reporting closer relationships with their fathers were also less likely to offend. There is some support for the argument that maternal closeness moderates parental incarceration's effect on crime and depression. For example, respondents reporting paternal incarceration were less likely to offend when they felt closer to their mothers. That is, closer maternal relationships provide emotional support to children suffering from paternal incarceration. This relationship is only found in the model examining the fathers' incarceration and depression. Interestingly, closeness to the mother does not have a dampening effect on the depression among children of incarcerated mothers. In this way, closeness to a mother may provide a protective influence that partially mitigates the harmful impact of an imprisoned father. Feeling closer to one's mother did not moderate the impact of maternal incarceration on crime. It is possible that respondents felt distant from their

mothers before a maternal incarceration. However, it is also possible that maternal incarceration was the event that damaged the quality of the parent-child relationship. Although these analyses did not assess the causal ordering of these events, it is logical to surmise that individuals reporting incarcerated mothers are less likely to feel close to their mothers.

Although parental incarceration may constitute a turning point that directs children toward crime, strong social bonds with mothers may mitigate the paternal imprisonment's impact on crime. Thus, strong emotional ties to one's mother appear to reduce the likelihood of crime. Although paternal closeness also reduced the likelihood of crime and depression, it did not produce a similar protective effect against depression. Some scholars (Kruttschnitt 2010) have proposed the "maternal salience" perspective, arguing that maternal incarceration may be more impactful than paternal incarceration on children's wellbeing. Children typically spend more time with mothers during crucial developmental stages (Murnane et al. 1981). Incarcerated women are more likely to live with their children before being imprisoned than are their male counterparts (Glaze and Maruschak 2008; Mumola 2000).

Females are typically incarcerated later in a child's life course than are males. In this sample, mothers experienced their first incarceration five years later than fathers. Based on Daly's (1987) research, we might surmise that judges were less likely to incarcerate these mothers when their children were young because those mothers may have been the primary and perhaps only caregivers. These data provide evidence suggesting that when convicted mothers' children are older and less dependent on their mothers, judges are more likely to incarcerate them. Strong bonds between the mother and child established during developmental years may prove partially resistant to the strain of paternal incarceration. Thus, developmental timing may also impact these results. Although maternal incarceration may prove especially damaging, the

close relationships forged during early childhood may prove resistant to incarceration's damaging effects. Control variables also impacted the likelihood of depression and crime. Consistent with prior research, males committed more crime and females reported more depression symptoms. Various forms of hardship such as abuse or being exposed to drugs in one's childhood home increased the likelihood of criminal offending. African American respondents committed more crime than White respondents, and immigrants committed less crime than individuals born in the United States. Abuse unsurprisingly increased the likelihood of depression, and White respondents reported fewer depression symptoms than African Americans and respondents of other races.

One surprising finding was the manner in which parents' college educations impacted crime. Controlling for all variables in the model, respondents reporting at least one parent with a college education actually committed more crime than those whose parents had no education. Hagan's (1988) power-control theory may offer one explanation. This theory posits that families with more traditional breadwinner-homemaker configurations are more likely to produce children who follow traditional gendered patterns of offending. In contrast, more egalitarian families are more likely to produce sons and daughters that offend at similar rates. It is possible that the more affluent families fall into this second category. Meanwhile, respondents with higher education levels report fewer crimes, consistent with trends in literature.

Although null models indicated that neighborhood characteristics impacted offending and depression, these effects largely disappeared when level one measures were introduced. Adding variables sequentially into the models allows for examination of changes in the amount of neighborhood disadvantage variance in crime and depression explained by the variables in the regression models. For example, comparing models 1 (the null models) to others, we see that the

neighborhood variances were reduced. This suggests that the variation found in Model 1 is largely explained by differences in individual-level factors. This is common with multilevel research, since the individual-level effects are closer to the subjects and usually exert more influence. Importantly, controlling for contextual forces allows to uniquely and separately identify neighborhood disadvantage's influence separate from parental incarceration and parental closeness. It assures the researcher that variance shared by the individual level and neighborhood level characteristics in explaining the antisocial behaviors are appropriately allotted to the respective explanatory variables. Past research that has not controlled for neighborhood disadvantage at level 2 may be attributing to parental incarceration and other measures variance that should be attributed to neighborhood disadvantage. This model specification allows the researcher to separate the unique explained variation to these related phenomenon.

Despite this, it is worth noting that the actual size of parental incarceration's effects on crime and depression—while statistically significant—was relatively small. While scholars generally agree that parental incarceration is a unique type of loss that proves deleterious to children, disagreement remains over the actual strength of its impact on crime and depression (see: Murray et al. 2012). These results indicate that parental incarceration had a statistically significant, but substantively small impact on crime and offending. One possible explanation is the extended family and kin networks of incarcerated parents. Scholars have found that poor minorities are more likely to suffer parental incarceration (Clear 2007; Pratt 2009). However, these communities may be more likely to rely on extended kin networks and mutual aid (Miller 2006, Moras 2007). Such collective responsibility may partially mitigate the harmful effects of parental incarcerations if extended caregiver networks provide much-needed assistance to children of incarcerated parents (Hanlon et al. 2005; Arditti 2012).

LIMITATIONS

This study has a number of limitations. These results do not produce evidence of causal relationships between parental incarceration and crime and depression. That is, these measures do not account for time ordering between the parental incarceration measures and variables in the model. It is possible that some of the variables are endogenous to the paternal and maternal incarceration variables. An endogenous variable is one that is determined by other variables in the model. Emotional, physical and sexual abuse were associated with crime and depression. In some cases, these instances of abuse may have occurred after the incidence of a parental incarceration, for example, the abuse of children by the mother's boyfriend after the father is incarcerated. Nevertheless, efforts are made the control for the unique effects of these variables on children's antisocial behaviors to determine the impact of incarceration and parent-child closeness even though causality or timing of events cannot be ascertained by these data.

Importantly, I argued that parent-child closeness moderated parental incarceration's impact on crime and found support or evidence approaching statistical significance for related hypotheses in three of the eight models. I concluded that children reporting closer relationships with their parents experienced a sort of buffer or protective effect against poor outcomes. However, many respondents had parents incarcerated before Wave 1, when they were asked about the closeness of their relationships to their parents. Thus, it is possible that some of those respondents who reported poorer relationships with their parents did so in part because of a parent's prior incarceration. Again, questions of causal order limit the substantive implications of these findings and arguments of causality.

The measure of parental incarceration itself is flawed. Although Add Health includes measures indicating how often a parent was incarcerated, it fails to distinguish between jail and

prison terms, and does not consider incarceration histories. Different types of incarceration may be qualitatively different, and thus may impact children of incarcerated parents differently. These measures fail to capture such distinctions. For example, a lengthier prison sentence may prove more impactful than a short stay in jail. Similarly, multiple parental incarcerations may prove especially disruptive to children. However, these analyses failed to account for length of incarceration, and did not differentiate between parents with single incarcerations and those with multiple imprisonments.

Data limitations forced other concessions. For example, Add Health's measures of emotional, physical and sexual abuse measure whether a respondent was victimized before their 18th birthday. However, this measure does not indicate whether the abuser was an actual parent as alluded to above. For this reason, comparing age at a parent's first incarceration to the age at first emotional, physical or sexual abuse is insufficient. We may expect that parental incarceration will prove less damaging to children whose parents abused them in the past. More sophisticated measures would offer a more complete examination of the respondents' home lives, and may explain some of the mixed results found in the analyses.

Add Health's school-based sampling design may also be problematic for these analyses. Individuals who dropped out of school where the interviews took place before the first wave of data collection were ineligible for the sample. These individuals may be at the greatest risk for parental incarceration. Their hypothetical inclusion in this study may affect results, with the transition away from school further impacting their life course trajectories. However, their inclusion would allow for a more thorough examination of selection effects, as these individuals are more likely to suffer other dimensions of disadvantage.

CONCLUSION

I argued that childhood household configuration and parental cohabitation were insufficient to capture the quality of the parent-child relationship. I also argued that paternal closeness moderated parental incarceration's effect on crime and depression. This study suggests partial support for this idea. The effects of parental closeness on crime and depression are varied. Individuals reporting closer relationships with mothers were less likely to offend criminally, and individuals reporting closer relationships with mothers or with fathers suffered fewer depression symptoms. Closer relationships with mothers reduced the likelihood of offending, even among children of incarcerated mothers. Closeness to an incarcerated father did not moderate the impact of either a paternal or a maternal incarceration. My findings demonstrate that parental closeness—particularly closeness to one's mother—is an important factor in predicting the impact of parental incarceration on crime. However, the strength of these effects may be limited, and strong relationships with one's father do not appear to be as impactful in limiting crime and depression. These outcomes may be related to gendered disparities in caregiving, or differences in the developmental timing of maternal and paternal incarceration.

Neighborhood effects also play a role in predicting criminal offending and depression. Individuals raised in poorer neighborhoods are more likely to offend criminally. They are also more likely to suffer depression. However, the impact of these neighborhood effects is relatively minor compared to individual-level factors, and the variation between different neighborhoods is relatively small. Thus, neighborhood factors appear to have a statically significant but overall minor impact, relative to the variance explained in the model, on predicting crime and depression when controlling for factors such as a history of abuse, level of self-control, or prior delinquency.

Future research should consider other aspects of parental closeness. Although these results indicate some support for the argument that parental incarceration is moderated by the effects of parental closeness, future research should consider other aspects of the parent-child relationship to better capture the quality of that relationship. The parental closeness measures were collected at Wave 1. Crime and depression were measured at Wave 4. The gap in time fails to account for potential changes in parent-child closeness in the intervening years. Meanwhile, the parent-child closeness measure is subjective. Future research should consider objective measures—for example, how much time parents spend with their children—to provide a more accurate picture of the parent-child relationship. Similarly, household configuration was measured at Wave 1. It is entirely possible that respondents' reporting a two-parent household in Wave 1 may have experienced parental death or divorce in the following years. Later household configurations should be assessed, and may provide a better picture of the temporal ordering of events.

Future research should consider the impact of parents' gender. My analyses focused on parents' biological sex, which may differ from one's gender identity. Similarly, families with less traditional identities may be differentially impacted by maternal incarceration and paternal incarceration. Assumptions about females doing the majority of childcare work are based upon typical patterns of parenting. However, children from families with atypical caregiver relationships may experience different outcomes than children from more traditional households.

Scholars should also closely consider the presence of pro-crime attitudes in childhood households. Unconventional parent-child relationships may place children on criminal trajectories, regardless of the strength of the parent-child relationship. Conversely, the

unexpected incarceration of parents living more conventional lifestyles may prove especially traumatic for children.

Closeness to one's parent impacts the likelihood of depression and crime, but it is only one component of the complex parent-child bond. A more complex and thorough examination of the myriad aspects of children's relationships to their incarcerated parent will provide a fuller picture of incarceration's effects. Thus, researchers can more adequately measure how the cumulative effects of parent-children relationships moderate the effects of parental incarceration on antisocial behavioral outcomes

CHAPTER THREE

THE MODERATING EFFECTS OF PARENT-CHILD GENDER ON CRIMINAL ACTIVITY AND DEPRESSION OF CHILDREN OF INCARCERATED PARENTS

Mass incarceration refers to the elevated imprisonment rates in the United States in recent decades (Garland 2001). The U.S. prison population began rising dramatically in the 1970s, and tripled between 1980 and 2000 (Maruschack et al. 2010). State prison populations have slightly decreased in recent years, but rates at the federal level continue to rise slightly (Mauer and Ghandnoosh 2014). Despite these modest changes, the U.S. incarceration rate remains at 655 inmates per 100,000 adults—well above the rates of other Western Industrialized nations (International Centre for Prison Studies 2018).⁴

Parental incarceration has seen a similar spike in recent decades. The number of children with an incarcerated parent doubled between 1991 and 2007, and roughly two million children have a parent in prison. The majority of prisoners at both the federal and state levels have children (Glaze and Maruschak 2010). Although data limitations make it difficult to estimate how many minors have ever experienced a parental incarceration, researchers concluded decades ago that at least 10 million children experienced such an imprisonment (Reed and Reed 1997). More recent scholarship indicates that this number has likely risen in the intervening years (Finkeldey and Dennison 2019).

Parental incarceration has understandably received much scholarly attention. Children of incarcerated parents report primary caregiver disruption, decreased school performance, and social stigma Braman 2004; Johnson and Waldfogel 2002; Murray and Farrington 2005; Cho

⁴ For comparison, Canada has an incarceration rate of 107. The incarceration rate in England and Wales (United Kingdom) is 113. France has an incarceration rate of 104.

2009a). Parental incarceration is associated with delinquency and depression (Roettger and Swisher 2011; Swisher and Roettger 2012).

Recent research seeks to assess how maternal and paternal incarceration differentially impact children. Maternal incarceration limits mothers' ability to "mother" their children, potentially reducing social support and adult supervision (Kruttschnitt 2010). Thus, some scholars note that maternal incarceration may be especially impactful on children—particularly when the incarcerated mother is the primary caregiver (Tasca et al. 2014). While maternal incarceration may promote greater family instability (Turney and Wildeman 2013), paternal incarceration may have a more direct effect on children's wellness (Turney and Goodsell 2018).

Extant literature establishes gendered differences in parental incarceration. Maternal and paternal incarceration may impact male and female children differently (Foster and Hagan 2013; Turney and Lanuza 2017). Both maternal incarceration and paternal incarceration are associated with internalizing and externalizing antisocial behaviors (defined and discussed further below).

Although extant literature examines the gendered effects of parental incarceration, a relatively limited body of work has focused on the interaction of parent-child gender. The gendered effects of parental incarceration is the primary focus of my research. Foster and Hagan (2013) used Add Health data to compare and contrast various perspectives. Aside from the same-sex role model hypothesis, they examined the gendered loss perspective (Umberson 2003; Swartz 2009), the intergenerational stress influence perspective (Farrington, Sekol and Olsen 2009; Rodriguez, Smith and Zatz 2009) and the maternal salience perspective (Kruttschnitt 2010). However, they limited their analyses to mental health and substance abuse outcomes. I expand upon extant literature by examining how the impact of parent-child gender moderates parental incarceration's impact on their children's experience of depression and crime.

Specifically, I examine whether parental incarceration has a greater impact on criminal offending and depression when the child is the same gender as the incarcerated parent. In addition, as many scholars (Hagan and Dinovitzer 1999, Johnson and Easterling 2012; Phillips et al. 2006; see also Mears and Siennick 2016) call for more rigorous methods to address selection effects, I use a multilevel approach to address neighborhood characteristics that may partially account for differences in criminal offending and depression found among studies of children of incarcerated parents that do not control for neighborhood effects.

PAST RESEARCH: THE EFFECTS OF PARENTAL INCARCERATION

Parental Incarceration as a Unique Type of Loss

The actual act of parental imprisonment is not a static event. Rather, it is part of an extended process that promotes numerous hardships for children of incarcerated parents. Families with an incarcerated parent are more likely to suffer residential instability (Geller and Franklin 2014; Wildeman 2014). These families are also more likely to experience economic hardships (Western and Petit 2010). Beyond this, children of incarcerated parents are more likely to suffer psychopathology and to report feeling stigmatized and socially isolated (Nestmith and Ruhland 2008; Phillips and Gates 2011).

Some scholars argue that other types of parental loss produce similar outcomes to parental incarceration (Cook and Eliot 1980; Amato 1993, 2000; Umberson 2003). Others counter that parental incarceration is a unique type of loss that differs from divorce or death. Parental incarceration impacts mental and physical health, education, antisocial behavior and social exclusion (Hagan and Foster 2012a; Huebner and Gustafson 2007; Lee and Luo 2013; Massoglia and Pridemore 2015; Wildeman and Turney 2014).

Internalizing vs. Externalizing Behaviors

Negative responses to stress produce internalizing and/or externalizing antisocial behaviors (Achenbach 1978; Murray and Farrington 2005; Murray and Farrington 2008b; Wildeman 2010). (Farrington 1989; Moffitt 1993). Parental incarceration is associated with both internalizing and externalizing antisocial behaviors. Males are more likely to exhibit internalizing and externalizing antisocial behaviors, while females are more likely to experience internalizing behaviors (Leadbeater et al. 1999).

Internalizing behaviors involve behaviors that focus negativity inward on the self. The individual experiencing these behaviors suffers, since such behaviors are directed inward. Depression and social withdrawal are common examples of internalizing behaviors. The nature of these behaviors means that their effects may not be visible to others.

Externalizing behaviors are directed outward toward the external environment (Eisenberg et al. 2001). Physical aggression, delinquency and crime all illustrate externalizing antisocial behaviors (Liu 2004).

Parental incarceration may have a causal influence on internalizing and externalizing behaviors. For example, Murray and Farrington (2005) examined parental incarceration's impact on internalizing and externalizing antisocial behaviors. They assessed data from the Cambridge Study in Delinquent Development (CSDD). The CSDD is a longitudinal study of 411 boys born in 1953 and living in South London (Farrington 2003). Various types of parental separation were considered, including (1) boys who suffered a parental incarceration prior to age 10; (2) boys who lost their parents to hospitalization or death; (3) boys separated from their parents by divorce; and (4) boys whose parents were incarcerated before their birth. Boys who suffered a parental incarceration between ages 0 and 10 were much more likely to exhibit externalizing

behaviors than were boys who never experienced parental imprisonment. Boys experiencing parental incarceration before age 10 were also much more likely to exhibit externalizing behaviors, and these results remained consistent even when controlling for preexisting risk factors.

Uncertainty over family roles may increase the likelihood of internalizing and externalizing behaviors for children of incarcerated parents (Murray and Farrington 2008b; Wildeman 2010). Such confusion increases the likelihood of rage, guilt, depression, and posttraumatic stress disorder (PTSD), although support from other family caregivers may mitigate these effects (Bockneck, Sanderson, and Britner 2009; Kampfner 2008; Mackintosh, Meyers, and Kennon 2006).

Recent scholarship has focused on the heterogeneous effects of parental incarceration. Researchers have examined the potential moderating impact of race, offspring's age at first incarceration, and the gender of incarcerated parents and their children (Burgess-Proctor, Huebner and Durso 2016; Swisher and Roettger 2012; Swisher and Shaw-Smith 2015) Literature on the differing effects of maternal and paternal incarceration is presented below.

Maternal Incarceration Effects

Scholars disagree over whether maternal and paternal incarceration affects children differently. While some argue that maternal incarceration is more damaging, others claim that paternal incarceration has a stronger effect on poor outcomes (Glaze and Maruschak 2008; Tasca et al. 2014).

As the incarceration rate has risen, so has the amount of inmates with children. Maternal incarceration in particular has doubled in recent decades, and results from the National

Longitudinal Study of Adolescent Health (Add Health) estimate that one to three percent of children report having a mother in jail or prison (Glaze and Maruschak 2008; Foster and Hagan 2012a; Lee and Luo 2013). Children of incarcerated mothers may suffer from a lack of parental supervision and social support as maternal incarceration reduces an imprisoned mother's ability to "mother" her children (Enos 2001; Hagen, Myers & Mackintosh 2005). Families with incarcerated mothers struggle with residential instability (Tasca, Rodriguez, and Zatz 2011). Families may also suffer financial hardship when imprisoned mothers were responsible for contributing to household income (Cho and Lalonde 2008; Glaze and Maruschak 2008). Such considerations are critical to life-course perspectives that posit the importance of caregiver supervision as a source of informal social control.

Similarly, maternal incarceration may prove especially impactful when it results in a change of legal guardianship for children. While some families use informal kin networks to mitigate the loss of an incarcerated mother, the intervention of child-welfare authorities may result in imprisoned mothers losing custody of their children (Anderson and Righton 2001). The government has increasingly targeted incarcerated mothers' rights in recent years (Lee, Gentry, and Laver 2005). Children are more likely to be placed with non-parent caregivers when they are exposed to a greater number of risk factors (Johnson and Waldfogel 2002).

Disagreement remains over the impact of changes in child guardianship. Children who are removed from unstable home environments may actually benefit in a change in legal guardianship. However, these children may still experience numerous hardships. Children of maternal incarceration are more likely to be displaced to homes with unmarried caregivers who report lower education, poorer health, and more financial problems. (Lawlor, Nicholls, and Sanfilippo 2008; Massoglia and Pridemore 2015). Despite this, children may benefit when their

caregiver scenario improves. Maternal incarceration's impact may be reduced for children who are being regularly supervised by other caregivers at the time of the imprisonment.

Disadvantaged children's environments may better "prepare" them for maternal incarceration, and a mother's imprisonment may actually prove beneficial in the short-term if the children are removed from harmful environments (Turanovic, Rodriguez, and Pratt 2012).

Huebner and Gustafson (2007) examined how maternal incarceration affected adult offspring's involvement in the criminal justice system. They used data from the National Longitudinal Survey of Youth 1979 (NLSY79). The original sample was a nationally representative sample of men and women between the ages of 14 and 22 in 1978. In 1986, data collection began on the children of mothers who were part of the original sample. The NLSY79 includes incarceration measures indicating whether or not a respondent was ever incarcerated, and information on respondents' criminal justice system involvement. Huebner and Gustafson (2007) concluded that adult children of incarcerated mothers were more likely to have been convicted of a crime or be sentenced to probation. Results indicated that maternal incarceration had a direct effect on child outcomes. However, maternal incarceration did not appear to promote other risk factors like delinquency and troubled home environment. The authors contended that such results may illustrate heterogeneity in maternal incarcerations.

Cho (2009b) assessed maternal incarceration's impact on elementary school children's cognitive skills. Drawing from panel data on 7,000 children, she compares the test scores of children with incarcerated mothers against other children. Children with imprisoned mothers reported lower average test scores than those without incarcerated mothers. However, children reporting prior maternal contact did not report poorer scores after maternal imprisonment. Cho

argues that this lack of negative impact on test scores may be the result of sympathetic teachers, or an increase in other factors that promote positive outcomes.

Arditti (2015) notes that numerous studies indicate long-term consequences of maternal incarceration (see: Arditti 2012; Murray, et al. 2009; Wildeman and Wakefield 2014). Arditti (2015) also notes that the effects of parental incarceration are heterogeneous. In other words, maternal incarceration effects may vary by context. For example, Turney and Wildeman (2015) draw again from the Fragile Families data set, concluding that children report fewer deleterious effects when their incarcerated mothers have a prior history of emotional instability or substance abuse. Thus, children from high-conflict homes may actually see an increase in wellbeing when removed from conflict and strife (see: Amato 1993). In contrast, children with more stable relationships with their mothers may be more negatively impacted by a maternal incarceration (Arditti 2015).

Thus, it seems clear that maternal incarceration adversely affects children in numerous ways. Children of incarcerated mothers report residential instability, financial insecurity, and reduced caregiver supervision. These children may also report decreased school performance and poorer cognitive skills.

Based on this review, children are affected in a number of adverse ways by their mothers' incarceration, such as reduced caregiver supervision, residential instability, financial instability, change in legal guardian and poor cognitive skills. However, maternal incarcerations may prove beneficial when they remove children from troubled homes. Maternal incarceration's impact may also vary based on gender, race/ethnicity and a child's ties to informal kinship networks. Turning the discussion to paternal incarceration, scholars also have identified problem behavioral outcomes particularly among children of incarcerated fathers.

Paternal Incarceration Effects

Paternal incarceration produces different effects than maternal incarceration. (Thornberry et al. 2003; Wildeman and Turney 2014). While maternal incarceration's impact results from poverty, substance abuse and other factors, paternal incarceration may have more direct consequences on children (Turney and Goodsell 2018). Parental incarceration promotes antisocial behavior (Murray et al. 2012; Roettger and Swisher 2011) and internalizing and externalizing outcomes (Murray and Farrington 2005, 2008b). Children of incarcerated fathers may be placed into foster care (Anderson and Wildeman 2014).

Anderson and Wildeman (2014) assessed how paternal incarceration impacted the likelihood of foster care placement for Danish children. They concluded that parental incarceration increased the likelihood of foster care placement for children, although the effect was only witnessed in children who were not residing with their fathers at the time of the incarceration. This suggests that intact families may be more equipped to weather the impact of paternal incarcerations.

Wildeman and Turney (2014) used data from the Fragile Families and Child Wellbeing Survey to examine how parental incarceration affected teacher- and caregiver-reported behavioral problems. Although children reporting parental incarcerations more likely to experience behavioral problems, these results lessened when controlling for selection effects. Thus, the behavioral issues may stem from preexisting factors, rather than the act of parental incarceration. Wildeman and Turney (2014) also concluded that race and ethnicity moderated parental incarceration's impact on behavioral problems, and that paternal incarceration was more likely than maternal incarceration to produce these outcomes. They also concluded that paternal

incarceration was associated with behavioral problems, whether or not the paternal incarceration occurred independently or concurrently with a maternal incarceration.

Children of incarcerated fathers are more likely to display antisocial traits, and they are less likely to be prepared for school. Haskins (2014) assessed how early paternal incarceration—occurring before age 5—impacted school readiness. Paternal incarceration reduced school preparedness, and sons of imprisoned fathers were more likely to be placed in special education programs (Haskins 2014).

Haskins (2015) again used data from the Fragile Families and Child Wellbeing Study to examine paternal incarceration's impact on antisocial behaviors in children. Self-report surveys of nine-year-old children were used to assess children's behavioral capacities. Children's parents were also surveyed, and the results were compared. Haskins found that paternal incarceration did not decrease prosocial skills. However, children of incarcerated fathers did exhibit higher levels of antisocial behavior. These behavioral issues proved problematic, as many of the children suffered some form of setback at school within two months of a paternal incarceration. Their conclusions indicate that paternal incarceration may have a greater impact on certain behaviors than on others.

Swisher and Shaw-Smith (2015) used Add Health data to assess how paternal incarceration's timing, frequency and duration impacted a variety of poor outcomes. They concluded that paternal incarceration was especially damaging for daughters who previously resided with their imprisoned fathers. Daughters reporting co-residence with an imprisoned father reported more symptoms of depression than did daughters who did not live with their incarcerated parent. This effect appeared to be gendered, as results did not hold for sons of incarcerated fathers.

Incarcerated fathers are not the only individuals impacted by their imprisonment. Incarcerated fathers, their romantic partners and their children may be more likely to report poor health outcomes (Massoglia and Pridemore 2015; Wildeman, Schnittker, and Turney 2012). Families with incarcerated fathers are also more likely to experience food insecurity (Davison et al. 2019).

Unfortunately, other findings are mixed. For example, paternal incarceration's impact on adolescent substance abuse and child education is inconsistent (Kinner et al. 2007; Hagan and Foster 2012a; Nebbit et al. 2014). Similar to maternal incarceration, paternal incarceration's impact may be heterogeneous.

Maternal Incarceration vs. Paternal Incarceration

While some scholars argue that maternal and paternal incarceration are equally likely to produce externalizing and internalizing antisocial behaviors (Johnson 2009; see also: Murray et al. 2009), others note a gendered component to parental incarceration. Various perspectives are considered, including the "maternal salience," "gendered loss," and same-sex role model hypotheses.

"Maternal salience" may be an important factor for predicting child outcomes. The maternal salience hypothesis is based upon the assumption that mothers are more likely than fathers to live with their children prior to an incarceration (Glaze and Maruschak 2008). As such, maternal incarceration is deemed to be particularly damaging for children of imprisoned parents. Tasca et al. (2014) examined cross-sectional data from parents confined in the Arizona Department of Corrections. They found that children of incarcerated mothers were much more likely than children of incarcerated fathers to experience parent-reported mental health services.

Others present a “gendered loss” hypothesis. This argument posits that paternal and maternal incarceration promote different types of problems for children. This is based upon the assumption that traditional parenting roles dictate fathers being disciplinarians, while mothers are more likely to provide emotional support. Maternal incarceration damages the nurturing parent-child relationship, increasing the likelihood of internalizing antisocial behaviors. In contrast, losing a father to incarceration damages relationships that are traditionally built on play and companionship (Collins and Russell 2001; Pleck 2010). Parental incarceration disrupts this relationship, increasing the likelihood of externalizing antisocial behaviors.

Finally, others present a same-sex role model hypothesis (Korupp et al. 2002). The same-sex role model hypothesis posits that children are more likely to view the same-sex parent as a role model for their own behaviors. These scholars also argue that children are more likely to spend time with parents of the same gender. Thus, maternal incarceration may impact daughters more severely than it impacts sons. Similarly, paternal incarceration may have a greater effect on sons than on females.

Foster and Hagan (2013) used Add Health to test the gendered loss, maternal salience and the same-sex role model perspectives. The same-sex role model perspective posits that these children are predicted to report heightened emotional intensity toward parents of the same sex (Wickrama et al. 1999, Thornberry et al. 2006). Foster and Hagan compared and contrasted maternal and paternal incarceration’s effects on various mental health outcomes and substance abuse. Among other findings, they indicated no support for the same-sex role model perspective. They concluded that maternal imprisonment was not more likely than paternal imprisonment to produce substance use problems and certain mental health outcomes. However, they suggested

that the same-sex role model perspective may find support when other outcome variables are introduced.

Finally, Burgess-Proctor, Huebner and Durso (2016) used Add Health Data to assess how maternal and paternal incarceration impacted adult offspring's involvement with the criminal justice system. Both maternal incarceration and paternal incarceration increased the likelihood of adult children's involvement in the criminal justice system. The effect was particularly strong for children who were the same sex as their incarcerated parent. These results further illustrate a gendered component to parental incarceration's impact on crime.

My research builds upon Foster and Hagan's (2013) suggestion that the same-sex role model hypothesis may find support with the introduction of different outcome measures. Burgess-Proctor et al. (2016) similarly point to a gendered component of parental incarceration, concluding that parental imprisonment's effects on criminal justice system involvement are especially acute when the parent and child are of the same sex. This study contributes to the literature by assessing how the interaction of parent-child gender moderates parental incarceration's impact on crime and depression among their children. Before deriving my hypotheses, I outline the life course perspective and parental incarceration as a potential turning point that directs individuals toward crime and depression.

THE LIFE COURSE PERSPECTIVE: PARENTAL INCARCERATION AS A TURNING POINT

Individuals are often forced to adapt to temporary life events. Events that spark long-term discontinuities may persist over time. They may be amplified through accumulating and self-reinforcing consequences. When this occurs, these events become turning points. (Elder and Giele 2009; Mortimer and Shanahan 2003; Sampson and Laub 1997). Often, these events alter

contexts and circumstances. They also affect, introduce or remove opportunities for achievement, personal relationships and changes in self-concepts (Rutter 1996).

Criminal justice system involvement may create or increase preexisting marginalization of families. Incarceration in particular may promote collateral effects that impact ex-prisoners. These individuals may see their personal relationships altered. They may also see reduced access to housing, employment and other services (Petersilia 2003; Travis 2005). Parental incarceration becomes a turning point for children when it disrupts social, psychological and emotional development during the transition to adulthood (Foster and Hagan 2007).

Extant literature indicates that youths who offend may suffer long-term consequences associated with education (Tanner, Davies, and O'Grady 1999), income (Kerley et al. 2004), and mental health (Hagan 1997). However, there is still uncertainty over parental incarceration's long-term effects during the transition to adulthood. Children may view this as an opportunity to alter their trajectories away from their stigmatized parents (Giordano 2010). However, those who suffer through parental incarceration during a developmentally vulnerable time may struggle with social isolation, family instability and other hardships that hinder the transition to adulthood (Foster and Hagan 2007; Johnson and Easterling 2015; Sampson and Laub 2005; Uggen and McElrath 2014). Parental incarceration may seem similar to other forms of parental loss like divorce. Children from divorced households experience lower quality romantic relationships, lower SES and decreased subjective well-being (Amato 1999). Parental incarceration may similarly impact the child's transition to adulthood. Incarcerated parents may struggle to provide emotional and financial support, social capital and other resources necessary to aid children during the transition to adulthood (Arditti 2012; M. K. Johnson and Benson 2012; Siennick 2014; Swartz 2009; Uggen and McElrath 2014).

Studies that have followed children of incarcerated parents into adulthood suggest that paternal incarceration has long-term effects on children's wellbeing. Analyses of data from the Cambridge Study in Delinquent Development, as well as the Dutch Criminal Career and Life Course Study, have linked parental incarceration with adult convictions and criminal records among offspring (Besemer et al. 2011; Murray, Janson, and Farrington 2007; van de Rakt et al. 2012). Murray and Farrington (2005, 2008) found that the 23 boys in the Cambridge study who experienced parental incarceration before age 10 had more internalizing and antisocial problems at midlife than did other boys. Other studies suggest the potential for such long-term effects. Roettger and colleagues (2011) linked fathers' incarcerations with higher levels of children's marijuana and other drug use throughout adolescence and into the early 20s, while Foster and Hagan (2007) found that young adult children of incarcerated fathers were more likely to be homeless. Finally, Mears and Siennick (2016) found that parental incarceration negatively affected children across multiple life domains including income, education and personal relationships. Thus, studies suggest that parental incarceration may constitute a turning point in the lives of children that promotes hardships during youth and into adulthood.

Informed by life-course theory, I test hypotheses that parental incarceration affects children across a wide range of domains, including internalizing and externalizing antisocial behavior. Consistent with extant literature, I examine whether or not there is a gendered component to parental incarceration. Although Foster and Hagan (2013) found no support for the same-sex role model hypothesis, they suggested that results may differ with the introduction of different outcome variables. To that end, I introduce the CESD depression scale and a general crime scale. I test the following hypotheses:

The first set of hypotheses deal with how close relationships with mothers and fathers moderate maternal incarceration's effect on crime.

H1. Females will report more externalizing antisocial behaviors if they are the same gender as an incarcerated parent.

H2. Females will report more internalizing behaviors if they are the same gender as an incarcerated parent.

H3. Males will report more externalizing antisocial behaviors if they are the same gender as an incarcerated parent.

H4. Males will report more internalizing behaviors if they are the same gender as an incarcerated parent.

Now, I discuss the data and methods used to test these hypotheses.

DATA

Sample

I use data from the National Longitudinal Study of Adolescent to Adult Health (Add Health). Data for my analyses must include detailed information on family contexts, parental incarceration timing and status, as well as negative outcomes including internalizing and externalizing antisocial behaviors. The National Study of Adolescent to Adult Health (Add Health) satisfies this goal.

Add Health is a nationally representative longitudinal study following a cohort of United States youth between the 1994-1995 school year to present. The cohort—between grades 7 to 12 in the 1994-1995 school year—has been followed into young adulthood with four in-home interviews. The most recent wave was Wave 5 in 2016-2018, when the sample was aged 34 to

42. Add Health combines survey data on respondents' economic, psychological and physical well-being with contextual data on the family, neighborhood, community, school, friendships, peer groups, and romantic relationships, providing unique opportunities to study how social environments and behaviors in adolescence are linked to health and achievement outcomes in young adulthood.

Add Health data were collected from adolescents, their fellow students, school administrators, parents, siblings, friends, and romantic partners through multiple data collection components, including four respondent in-home interviews. In addition, existing databases with information about respondents' neighborhoods and communities have been merged with Add Health data, including variables on income and poverty, unemployment, availability and utilization of health services, crime, church membership, and social programs and policies. Wave 1 (1994-1995) included both in-school (N=90,118) and in-home (N=20,745) components for adolescents. Parents (N=17,670) and school administrators (N=144) were also sampled in Wave 1. Wave 3 included data from romantic partners (N=1,507). The original cohort is aged 24 to 32 in Wave 4 (N=15,701). Add Health followed up with Wave 5 between 2016 and 2018. However, the data were not released in time for these analyses.

Variables and Measures

Dependent Variables

Criminal Offending

I create a scale from Wave 4 items to operationalize externalized antisocial behavior. Table 1 includes a summary of items and scales. The scale includes 11 continuous-measure items asking respondents how many criminal acts they committed in the past year. Responses of "0"

indicate no criminal activity; “1” indicates one or two offenses; “2” indicates three or four offenses; and “3” indicates five or more offenses. Combined, the items in this scale include: (1) damaging property, (2) stealing something valued over \$50, (3) stealing something valued under \$50, (4) entering a house or building to steal something, (5) using or threatening to use a weapon to get something from someone, (6) selling marijuana or other drugs, (7) holding or using stolen property, (8) using someone else’s bank card without their knowledge or permission, (9) taking part in a physical fight as an individual or (10) in a group or (11) harming someone in a fight badly enough to require medical care. The scale ranges from zero to 33, with higher scores indicating higher levels of criminal activity. Cronbach’s alpha is .705, indicating a moderate level of reliability, and factor analysis suggests that all 11 items load on one factor.

Depression

I assess internalizing antisocial behavior by examining depression symptoms reported at Wave 4. I use Add Health’s constructed Center for Epidemiologic Studies Depression Scale (CESD) variable to measure internalized antisocial behavior. The CESD was created in 1977, revised in 2004, and remains widely used in psychiatric epidemiology. The CESD uses 15 different items across nine groups to measure depression. These groups include: (1) feelings of disproportionate sadness, (2) loss of interest in activities (3) loss of appetite, (4) insomnia, (5) inability to think clearly or concentrate, (5) disproportionate feelings of guilt, (7) extreme fatigue, (8) agitation and (9) suicidal thoughts. Wave 4 includes a continuous measure indicating the number of reported CESD symptoms.

Natural Logarithm of Depression and Crime

Preliminary analyses indicate that the continuous measures of dependent variables are skewed. This is common in criminological research, because these behaviors are rare in the population. This violates the ordinary least squares regression assumption of normal distribution for the dependent variables. I examined residuals from the initial regression analyses for evidence of heterogeneity in the error term and found such evidence. I then transformed the dependent variables with a natural logarithmic transformation, which is common in studies of deviance and criminality. Many cases of the dependent variable contain zeroes, so I add one to the quantity to avoid taking the log of zero. The Stata command is *gen new variable = ln(y_i + 1)*.

Independent Variables

Paternal and Maternal Incarceration

My primary independent variables measure maternal and paternal incarceration. Add Health Wave 4 includes retrospective measures asking respondents if either parent has ever been incarcerated. Although Add Health includes measures for parental figures, I focus my analyses on biological parents. Specifically, Wave 4 respondents were asked, “Has/did your biological mother spend/spend time in jail or prison?” and “Has/did your biological father spend/spend time in jail or prison?” These measures are dichotomous, with “0” indicating that the parent has no incarceration history, and “1” indicating that they have been incarcerated at least once.⁵

⁵ Add Health data include measures for mother figure and father figure incarceration. Less than one percent of respondents report a mother figure incarceration and roughly two percent report a father figure incarceration. I include these cases, although my analyses focus only on biological parents’ incarceration(s). This is consistent with related studies of parental incarceration (see: Mears and Siennick 2016; Swisher and Shaw-Smith 2015).

Biological Sex: Respondent

I include sex as a dummy variable. The reference category varies depending on whether the incarcerated parent is a mother or a father. I code “respondent sex: female” as “1” when examining incarcerated mothers, and “respondent sex: male” as “1” when examining incarcerated fathers. I do this for simplicity when creating interaction effects. Thus, I multiply “1” “mother ever incarcerated”, by “1” “respondent’s sex: female” to create the interaction of mother-daughter gender. Similarly, I create an interaction term for sons of incarcerated fathers, where “1” “father ever incarcerated” is multiplied by “1” “respondent sex: male”.

Control Variables

Age at Parent’s First Incarceration

Wave 4 also measures how old individuals were at the time of their parents’ first incarceration. Respondents were asked the age of their biological parents’ first incarceration(s). Values range from “0” for “Not yet born” to “31 years old.”

Parental Closeness

Respondents report how close they feel to their biological parents. Wave 1 asks, “How close do you feel to your biological mother?” and “How close do you feel to your biological father?” Responses range from 1 to 5, with higher scores indicating a closer parent-child relationship. Responses include: (1) not close at all, (2) not very close, (3) somewhat close, (4) quite close, and (5) extremely close. I reverse-code these variables, so higher values indicate poorer relationships between parents and their children. Thus, I hypothesize a positive relationship for parent-child closeness measures with the antisocial behavior outcome measures.

Demographics: Race/Ethnicity Immigrant Status

Add Health data include sociodemographic factors commonly associated with health outcomes. Adolescent self-reports college at Wave 1 include measures of race/ethnicity. I recode four separate race categories into three dichotomous race variables. There are three separate variables for Whites, African Americans, and other race, with each respective race coded as “1” and the other two races coded as “0”. I omit the measure for Whites as the reference category. Since immigrants are less likely to commit crime, I include a dummy variable indicating whether respondents were born in the United States, with foreign-born coded “1” and all others coded “0”.

Household Composition

Respondent’s household composition is measured at Wave 1. Respondents report whether they: (1) live with two biological parents, (2) live with two parents, (3) live with a single mother, (4) live with a single father, or (5) live with another caregiver. Although I separated these variables into five dichotomous measures, preliminary analyses indicated a high level of collinearity between (1) two biological parent-households and (2) two parent-households. Other categories consistently failed to produce statistically significant results, so for the sake of parsimony, I recode the household configuration variables into a single dichotomous variable with “1” indicating a two-parent household and “2” indicating another household configuration.

Respondent’s Education

I include respondents’ education as a proxy for social class. Respondents are asked at Wave 4: “What is the highest level of education you have completed?” Responses include: (6)

6th grade, (7) 7th grade, (8) 8th grade, (9) 9th grade, (10) 10th grade, (11) 11th grade, (12) 12th grade, (13) one year of college, (14) two years of college, (15) three years of college, (16) four years of college; (17) five or more years of college, (18) one year of graduate school, (19) two years of graduate school, (20) three years of graduate school, (21) four years of graduate school and (22) five or more years of graduate school.

Parents' Education

Parental education control measures are included at Wave 1 as another measure of class. Respondents are asked: "How far in school did your biological mother go?" and "How far in school did your biological father go?" Responses include: (1) eighth grade or less, (2) more than eighth grade, but did not graduate high school, (3) went to a business, trade or vocational school instead of high school, (4) high school graduate, (5) completed a GED, (6) went to a business, trade, or vocational school after high school, (7) went to college, but did not graduate, (8) graduated from a college or university, (9) professional training beyond a four year college or university, (10) never went to school, (11) went to school, but respondent does not know what level. I recode values of 10 to zero, so a zero indicates that a respondent's parent did not go to school. I recode "went to school, but respondent does not know what level" as missing. Preliminary analyses consistently failed to indicate a statistically significant relationship between mothers' education and depression or crime, so final analyses only include measures for fathers' education.

Mistreatment by Adults

It remains important to control for childhood abuse when measuring poor outcomes. However, such assessments may prove problematic when estimating parental incarceration's impact. For example, parental incarceration may actually reduce the likelihood of crime or depression if the incarcerated parent is abusive. Unfortunately, Add Health data do not include specific measures for parental abuse, focusing instead on whether or not a child was abused by any adult before age 18. Nevertheless, I include three separate measures for mistreatment by adults before age 18.

Wave 4 includes three separate measures of emotional, physical and sexual abuse. Respondents who report adults having made them feel unloved are considered to have experienced emotional abuse. Physical abuse is measured by a history of being punched, kicked, or thrown by an adult. Finally, respondents are considered to have been sexually abused if they report being touched in a sexual way by an adult, or being forced to touch an adult or have sexual intercourse. I dichotomize each measure, with "0" indicating no history of abuse, and "1" indicating at least one experience of abuse.

Self-Control

Self-control is a consistent predictor of involvement in deviant or criminal behavior. I create a scale from fourteen Wave 4 items to assess how self-control impacts criminal offending and depression. Measures include how often respondents (1) sympathized with others, (2) experienced frequent mood swings, (3) were quick to anger, (4) were uninterested in the problems of others, (5) were easily bothered, (6) were rarely irritated (7) felt empathy for others emotions, (8) were easily upset, (9) lost their temper easily, (10) were uninterested in others, (11)

kept their cool, (12) made decisions based on gut instinct rather than rational thinking, (13) enjoyed taking risks and (14) lived for the present without thinking of future consequences. These Likert item responses vary from “1” for “strongly agree” to “5” for “strongly disagree.” I recode the item variables so all higher values indicate increased self-control. Cronbach’s alpha of .757 indicates a high level of reliability, and factor analysis suggests that all 14 items load on one factor. Items that would indicate increased self-control have negative factor loading scores, and items indicating reduced self-control have positive factor loading scores. Therefore, the theoretically predicted direction of the relationship between this measure of self-control would be negative.

Prior Delinquency

Prior delinquency is a strong predictor of adult criminal activity. Delinquent behavior is measured at Wave 1. I create a general delinquency scale including 15 items assessing how often respondents engaged in delinquency in the past year. Table 1 summarizes these items and scales. For each response, “0” indicates never, “1” indicates one or two offenses, “2” indicates three or four offenses, and “3” indicates five or more offenses. The items in the index include: (1) painting graffiti, (2) damaging another person’s property, (3) lying to parents about where they were or whom they were with, (4) taking something from a store without paying for it, (5) getting into a serious physical fight, (6) harming someone badly enough that they required medical attention, (7) running away from home, (8) driving a car without the owner’s permission, (9) stealing something worth more than \$50 (10) entering a house to steal something, (11) using or threatening to use a weapon, (12) selling marijuana or other drugs, (13) stealing something worth less than \$50, (14) taking part in a group fight and (15) acting rowdy, loud or

unruly in a public place. The delinquency scale ranges from 0 to 45. Zero indicates no delinquency, and 45 indicates a high level of delinquent behavior. Cronbach's alpha of .829 indicates a high level of reliability, and factor analysis indicates that all 15 items load on one factor.

Neighborhood Disadvantage

Wave 1 includes contextual variables at the state, county, tract and block group levels. Respondents' Wave 1 addresses provide this information. I create a level two neighborhood disadvantage variable adding the components weighted by their factor loadings to control for selection effects. This corrects for violations of the OLS assumption of uncorrelated error terms.

I account for selection effects by creating a level two neighborhood disadvantage measure that includes the items: (1) the proportion of households in the block group with annual income less than \$15,000, (2) the proportion of female-headed households in the block group, (3) the unemployment rate in the block group, (4) the proportion of black individuals in the block group, and (5) the proportion of households receiving public assistance income. The measure ranges from 0 to 3.29. Higher values indicate greater levels of disadvantage, and lower values indicate lower levels of disadvantage. Cronbach's alpha of .785 indicates a high level of reliability, and factor analysis shows that all five items load on one factor.

Missing Data

Preliminary analyses indicate missing data. Although this is not an issue for the majority of items, some variables have relatively large percentages of missingness. I address this issue

with multiple imputation, using a set of five imputations to predict missing values across variables.

Standard regression procedures are used, and results are combined from five imputation analyses. Missing values are imputed using an appropriate model that incorporates random variation (Rubin 1977, 1987). Multiple imputation is appealing because (1) its introduction of appropriate random error make it possible to achieve approximately unbiased parameter estimates, and (2) repeated imputation produces good estimates of standard errors (Allison 2002). I use Stata's `mi impute chained` command, which iteratively estimates values by using chained equations, sequencing univariate imputation methods with fully conditional specification (FCS). Univariate models are used for each variable containing missing values. Imputed values are used to impute values on other variables with missingness. I use truncated linear regression for continuous variables, using left- and right-truncation values that are consistent with unimputed variables' minimum and maximum values. I use logistic regression for categorical variables (Enders 2010).

Although the average missing data is roughly four percent, the number is skewed by high levels of missingness on three variables: father ever incarcerated (seven percent missing), close to mother (five percent missing), and close to father (28% missing). No other variable had more than two percent missingness. Analyses were conducted on original unimputed data, and separately for each imputation, producing consistent substantive results across all models and imputations. The average of the five imputations are presented in the results section.

Multicollinearity and Weighting Data

Analyses indicate that multicollinearity does not seem to be an issue with these analyses. Bivariate correlations of all variables range from 0.00 to .047, and Stata's *vce* option—used to examine correlations of estimated coefficients—produces similar results. Variance inflation factor (VIF) scores range from 1.03 to 1.22.

Add Health adjust for varying probabilities of initial sampling and longitudinal retention with longitudinal sample weights. Sampling weights are available for individuals who are members of the Add Health probability sample. Clustering of adolescents in schools can be identified using sampling weights. Researchers use sampling weights to obtain unbiased estimates and standard errors when conducting analyses.⁶

Although data were collected at two separate points in time, analyses are cross-sectional. Level one measures are only included as control variables. Cases without appropriate sampling weights are dropped, resulting in a sample of (N=14,800). These data include siblings from the same household, which violates the ordinary least squares (OLS) regression assumption that error terms are not correlated. Thus, I drop any sibling cases beyond the first, ensuring that only one sibling case from each household is used. Unique family identifiers indicate cases from the same household. I use Stata's random number generator to randomize the order of the sibling cases, and then drop any duplicate family identifiers. Thus, only one randomly-selected case from each household is included. Dropping these cases results in a final sample of (N=14,584).

⁶ Survey non-response is particularly important in this context. Data from a randomly selected sample may be projected onto a larger population. However, non-response bias occurs when respondents fail to participate are not independent from the variables being studied. That is, bias occurs when individuals who do respond are uniquely different from those who fail to respond.

PRELIMINARY FINDINGS

Descriptive Statistics

Descriptive statistics and bivariate correlations of all variables with the outcome measures are presented in Table 2a (N=14,584). Unsurprisingly, the metric measures of crime and depression are both skewed. The crime scale ranges from 0-27. Its mean is 0.40 with a standard deviation of 1.35. The metric measure for depression ranges from 0-15. Its mean is 2.62 and has a standard deviation of 2.55.

The crime scale (*ln*) ranged from 0-3.34. The average crime score was 0.17 and the standard deviation was 0.44. The depression scale (*ln*) ranged from 0-2.79. The average depression score was 1.05 and the standard deviation was 0.70. The small mean values characterize rare events, consistent with common patterns for crime and depression.

Four percent of respondents reported having an incarcerated mother and 14 percent reported an incarcerated father. The average age at first maternal incarceration was almost 13, and the average age at first paternal incarceration was roughly eight years old. The maternal closeness mean was 1.17 with a standard deviation of 0.49. The average paternal closeness score was 1.46, with a standard deviation of 0.81. Poorer parental relationships were statistically significantly and positively correlated with crime and depression ($p > 0.05$, two-tailed).

Fifty-three percent of respondents were female, 69 percent were white, 22 percent were African American and 8 percent were born outside of the United States. Seventy percent of respondents lived in two parent households during Wave 1 and 30 percent were raised by single parents or others.

Emotional abuse was somewhat common, with almost fifty percent of respondents reporting feeling unloved before age 18. Physical and sexual abuse were less common, with 20

percent and five percent of respondents reporting these types of abuse, respectively. The average self-control scale score was 48, falling in the middle of the 14-70 range. Delinquency was a relatively minor occurrence, with an average score of 4.21 on a scale ranging from 0-45.

Three percent of respondents reported drugs being present in their childhood homes. Roughly one-third of respondents reported at least one parent completing college, and a similar number of respondents completed college by Wave 4. Finally, the average neighborhood disadvantage score was 0.58, with a range of 0 to 3.29.

ANALYTIC STRATEGY

Negative binomial regression is often used when outcome variables are counts and are skewed. However, Stata's *mi estimate* command does not support negative binomial regression. Instead, I use multilevel mixed-effects linear regression for the continuous outcome variables, crime and depression. Consistent with prior research, I perform a natural logarithmic transformation on the skewed outcome variables. The equation is expressed as follows:

$$y_{ij} = \beta_0 + \beta_1 X_{ij} + u_j + \varepsilon_{ij}$$

In the above equation, $i = 1, \dots, n_i$, the number of respondents, and $j = 1, \dots, n_j$ block groups. u_j is a random effect at the block group level and ε_{ij} is the random effect at the individual level. Linear mixed models allow both fixed and random effects that are useful when there is non-independence in the data. For example, children may be sampled within the same neighborhoods—or, in this study, from similar block groups. When including multiple levels, variability may be either within groups or between groups. Units sampled at the highest level—

in this study, individuals residing on similar block groups at Wave 1—are not independent because they may be similar to others within the same (block) group. Observations at the lowest level—the grown children of incarcerated parents—are independent, especially because the sibling cases have been deleted from the sample. Mixed models incorporate fixed and random effects (StataCorp 2019).

Five separate block level measures are included in the neighborhood disadvantage variable. This block level variable serves as a proxy for neighborhood effects. The variable is correlated with both crime and depression. I analyze 14,584 individuals nested within 3,861 different groups. Thus, 14,584 individuals (at level 1) nested within 3,861 “neighborhoods” or block groups (at level 2) comprise the multilevel data structure considered in this analysis. These multilevel analyses allow for estimation of (1) the associations between compositional factors and crime and depression (“fixed parameters”) and (2) the variation in crime and depression between neighborhoods (“random parameters”). The results of multilevel regression models are presented below.

RESULTS

Multilevel Regression Analyses

Maternal Incarceration, Parent-Child Gender and Crime

Table 8 presents the effects of maternal incarceration and parent-child gender on crime. Model 1 is a null model. Only the outcome variable (crime) and the level two variable (neighborhood disadvantage) are included. Variation in offending was partitioned across individuals within groups. Variation was also divided between block groups. There was significant variation in crime between neighborhood ($\sigma^2_{u0} = 0.05$), even before adding predictors.

Compositional factors are added in Model 2. Factors such as respondent gender, history of abuse, parental closeness, and household composition are introduced. I include correlates of criminal offending such as prior delinquency history and decreased self-control. Finally, I add various demographic controls. Neighborhoods' effect on crime decreased with the addition of main effects, although it remained statistically significant. Children of incarcerated mothers were more likely to offend, as were respondents reporting emotional, physical or sexual abuse as minors. Individuals who committed delinquency are more likely to engage in crime as adults, as were individuals with lower levels of self-control. Individuals raised in homes where drugs were readily available were more likely to offend, as are individuals who had a parent with a college degree. However, respondents who reported closer relationships with their mothers were less likely to offend, as were respondents with college degrees. Finally, Black respondents were more likely to offend than White respondents. Males were more likely to offend than females. These findings are consistent with theoretical predictions.

Model 3 includes all items present in Model 2 with the addition of a product-term interaction (maternal incarceration by respondent gender) to test my hypothesis that maternal incarceration has a stronger impact on the effect of daughters' offending than on sons' criminal involvement. The interaction of maternal incarceration and respondent gender (i.e. sex: female = "1") is approaching statistical significance ($p \leq .10$), the relationship is in the opposite direction of my prediction. This indicates that the association between the predictor and the outcome variable decreases if the other predictor increases. Hypothesis 1 is not supported. The interaction is presented in Figure 2.

As seen in this figure, sons of nonincarcerated mothers had a crime score of 0.49. Daughters of nonincarcerated mothers had a crime score of roughly 0.37. Compare this to

children whose mothers were incarcerated. Sons reporting maternal incarcerations reported crime scores of 0.58, while daughters reporting maternal incarcerations reported crime scores of 0.40. Again, the relative magnitude of these differences for sons and daughters reporting maternal incarceration is not great. However, the differences between sons and daughters was statistically different relative to the moderating influence of respondents' biological sex. Although sons and daughters were both more likely to commit crime when experiencing maternal incarceration, a mother's imprisonment had a greater impact on male crime commission than on female offending.

Paternal Incarceration, Parent-Child Gender and Crime

Table 9 presents the effects of paternal incarceration and parent-child gender on crime. Once again, Model 1 is a null model that includes only the outcome variable (crime) and the level two variable (neighborhood disadvantage). Variation in offending was divided across individuals within groups and between block groups. Neighborhood disadvantage significantly impacted depression ($\sigma^2_{u0} = 0.05$), even before adding predictors.

Model 2 introduces compositional factors. I include factors such as respondent gender, parental closeness, and household composition. I also add history of emotional, physical or sexual abuse, as well as prior delinquency and level of self-control. Demographic controls such as immigrant status, race and education level complete the model.

Neighborhood disadvantage impacts crime, even when accounting for main effects. However, neighborhoods' impact on crime was severely diminished when introducing individual-level variables. Therefore, neighborhood disadvantage's effect on crime decreased with the addition of main effects, although it remained statistically significant. Respondents were

more likely to offend if their father had been incarcerated. Males were more likely to offend, as were respondents who reported poorer relationships with their mothers. Emotional, physical and sexual abuse all increased the likelihood of crime, as did reduced levels of self-control. The presence of drugs in one's childhood home increased the likelihood of offending, as did having a parent with a college degree. Respondents with college degrees committed less crime than counterparts with less education, and Black respondents committed more crime than White respondents. Immigrants committed less crime than respondents born in the United States.

Model 3 introduces the interaction term of paternal incarceration and respondent sex (i.e. males = "1") to test my hypothesis that paternal incarceration will have a stronger impact on males' offending than on females' offending. The interaction of paternal incarceration and respondent gender (i.e. sex: male) is statistically significant and positive. Thus, respondent gender does moderate the impact of paternal incarceration for male respondents. In other words, paternal incarceration has a stronger impact on sons' criminal offending than on daughters' offending. Male respondents reporting paternal incarceration are much more likely to commit crime as adults, indicating support for Hypothesis 2. The interaction is presented in Figure 3.

As seen in this figure, sons who never had a father incarcerated reported crime scores of 0.62. In contrast, females reporting no paternal incarcerations reported crime scores of 0.50. Sons reporting paternal incarcerations reported crime scores of 0.70, while daughters reporting imprisoned fathers had crime scores of 0.51. Once again, the differences are substantively small but statistically significant relative to the moderating influence of respondents' biological sex. Paternal incarceration had a greater aggravating effect on sons' rather than daughters' offending.

Maternal Incarceration, Parent-Child Gender and Depression

Table 10 presents the effects of maternal incarceration and parent-child gender on depression. Model 1 is again a null model, including only the outcome variable (depression) and the level-two variable (neighborhood disadvantage). Neighborhood disadvantage has a statistically significant effect on depression.

As in the analyses of criminal involvement above, I include main effects in Model 2. Respondents with incarcerated mothers are more likely to experience depression. Parental closeness impacts depression, as individuals reporting poorer relationships with their mothers and with their fathers are more likely to experience depression. Emotional, physical and sexual abuse all increased the likelihood of depression. Prior history of delinquency also increased depression. Individuals with higher levels of self-control reported fewer depression symptoms. Respondents who were raised in non-traditional households were more likely to experience depression than were individuals raised in two-parent homes. Individuals with college degrees reported fewer symptoms than those with no degrees. Black respondents and individuals of other races were more likely to experience depression than were White individuals. Finally, females were more likely than males to report depression.

Model 3 includes the interaction of maternal incarceration and sex: female. The interaction of maternal incarceration and gender (female=1) is statistically significant, but it is negative. Thus, gender does moderate maternal incarceration's impact on depression, but is opposite of the predicted direction. Maternal incarceration impacts males' depression symptoms more severely than females. Hypothesis 3 is not supported. The interaction is depicted in Figure 4.

Once again, the figure illustrates gendered differences in parental incarceration. Females reporting no maternal incarceration reported depression scores of 2.76, and those reporting maternal imprisonment actually experienced a similar number of depression symptoms. In contrast, males reporting no maternal incarceration reported depression scores of 2.6, while those experiencing a maternal imprisonment reported depression scores of 2.64. Yet again, the relative magnitude of these differences on the depression score for sons and daughters is small. However, the differences between these groups were statistically different relative to the moderating influence of respondents' biological sex. Maternal incarceration had a stronger impact on sons', rather than daughters' depression symptoms.

Paternal Incarceration, Parent-Child Gender and Depression

Table 11 presents the effects of paternal incarceration and parent-child gender on depression. As with previous tables, Model 1 is a null model indicating that neighborhood disadvantage statistically significantly impacts depression.

Model 2 includes main effects. Respondents reporting incarcerated fathers suffered more depressive symptoms, and males experienced less depression than females. Individuals who weren't as close to their mothers were more likely to experience depression. Respondents experiencing poorer relationships with their fathers were somewhat more likely to report depression symptoms, although this relationship was only approaching statistical significance ($p \geq .10$). Emotional, physical and sexual abuse increased the likelihood of depression, as did poor self-control and a history of delinquency. Individuals raised in two-parent households experienced less depression than did individuals from other households, and respondents with college degrees experienced less depression than those without college educations. Black

respondents and members of other races all experienced more depression than White respondents.

Model three introduces the interaction of parent-child gender—in this case, the interaction of paternal imprisonment and sex: male. I test my hypothesis that paternal incarceration has a greater impact on males' depression than on females' depression. This relationship is not statistically significant. That is, respondent gender does not moderate paternal incarceration's impact on males' depression. Hypothesis 4 is not supported.

DISCUSSION

I investigated how gender moderates the impact of parental incarceration on the wellbeing of their children. Specifically, I tested whether parental incarceration was more likely to produce criminal involvement or depression symptoms when children were the same gender as their incarcerated parents. First and foremost, the present study substantiated that maternal and paternal incarceration both increased the likelihood of internalizing and externalizing antisocial behavior (Murray and Farrington 2005). Although there is a gendered component to parental incarceration's impact on depression and crime, my findings confirm that both paternal and maternal imprisonment negatively impacted respondents in a variety of ways. The gender component of this project illuminated the ways in which parental incarceration affected their children's antisocial behaviors.

My hypotheses about same-sex role models' incarceration having a greater impact on crime and depression were not supported. Based on same-sex role models' premise that parents will have more of an influence on children of their same sex, I hypothesized that maternal incarceration would have more impact on their daughters' antisocial behaviors and that paternal

incarceration would more adversely affect their sons' behaviors (Korupp et al. 2002). Although the interaction of parent-child gender moderated parental incarceration's impact on crime and depression, the relationship was oftentimes in the opposite of the predicted direction.

Specifically, both maternal and paternal incarceration had a greater impact on males' criminal involvement than on females' crime. The literature documents that females are less likely to act out in externalizing behaviors than males and instead internalize stressful life events (Leadbeater et al. 1999); therefore, these results substantiate extant findings. My analyses also demonstrate that mothers' incarceration had a greater impact on sons' depression than on daughters'.

Scholars have offered competing hypotheses of male and female "vulnerability," arguing that one sex or gender is more sensitive to the deleterious effects of parental incarceration. Extant scholarship provides mixed evidence for these hypotheses, with some concluding that females are more susceptible to poor outcomes (Dallaire et al. 2010) and others countering that males are more likely to act antisocially after a parental imprisonment (Besemer et al. 2011). These results support the "male vulnerability" hypothesis, while the "female vulnerability" hypothesis is not supported.

Evidence on the impact of same-sex parental incarceration is mixed. Although prior research established that adults may be even more likely to offend when they are the same sex as their incarcerated parent (Burgess-Proctor et al. 2016), these results do not support such an assertion. Parental incarceration has a deleterious emotional impact on children—and perhaps sons, in particular (Turney 2018). Although these analyses reveal a gendered component of parental incarceration, results echo Foster and Hagan's (2013) work, which found no support for the same-sex role model hypothesis. Findings are also somewhat consistent with Frischt and Burkhead (1981), who concluded that children of incarcerated mothers were more likely to

report internalizing behaviors and children of incarcerated fathers reported higher levels of externalizing behaviors. Scholars have noted that a child's age at first incarceration moderates the impact of that imprisonment. It is possible that this may impact the results, although the nature of the analyses preclude anything beyond supposition.

Finally, the impact of paternal incarceration and child's gender did not statistically significantly moderate depression symptoms. Whereas mothers' incarceration is more likely to influence sons' depression, fathers' incarceration appears to be most influential on increasing criminal behavior among their sons. Maternal incarceration had a greater impact on negative life outcomes for sons than for daughters by influencing both criminal involvement and depression among their sons. Paternal incarceration had a greater impact on son's likelihood of crime than on daughters' crime commission.

Extant status attainment literature has established the validity of the same-sex role model hypothesis (Korupp et al. 2002). However, prior research on parental incarceration has failed to support this hypothesis (Foster and Hagan 2013). Furthermore, disagreement remains about the gendered component of parental incarceration's impact. Some have argued for a "female vulnerability" hypothesis, especially in the academic realm (Dallaire et al. 2010). Other scholars have countered with a "male vulnerability" hypothesis, positing that males are more likely than females to experience externalizing antisocial behaviors and high school dropout (Besemer et al. 2011). This is particularly pronounced when parental incarceration occurs during adolescence.

Females are typically incarcerated later in a child's life course than are males. In this sample, mothers experienced their first incarceration five years later than fathers. Based on Daly's (1987) research, we might surmise that judges were less likely to incarcerate these mothers when their children were young because those mothers may have been the primary and

perhaps only caregivers. These data provide evidence that when convicted mothers' children are older and less dependent on their mothers, judges are more likely to incarcerate them. Thus, developmental timing may also impact these results. It is possible that male respondents' particular sensitivity to maternal incarceration is moderated by its developmental timing though we have no evidence for this based on these analyses. These results are merely suggestive that developmental timing may be influencing these findings.

Paternal incarceration has a greater impact on male's criminal offending than on female offending. It is consistent with extant literature indicating that males are more likely than females to exhibit externalizing antisocial behaviors (Jaffe et al. 1986; Leadbeater et al. 1999). Although estimates from the maternal and paternal incarceration models were not directly compared, it should be noted that both types of incarceration increased the likelihood of internalizing and externalizing antisocial behaviors.

Neighborhood factors also play a significant role in predicting offending and depression. Adding variables sequentially allows for examination of changes in the amount of neighborhood disadvantage variance in crime and depression explained by the variables in the regression model. For example, comparing models 1 (the null models) to others, we see that the neighborhood variances were reduced. This suggests that the variation found in Model 1 is largely explained by differences in individual-level factors although neighborhood factors were statistically significant in the full models.

Although parental incarceration promoted higher levels of crime and depression, the actual effect was relatively small. This further contributes to a muddled scholarship that has produced many mixed results on the relative strength of parental incarceration's impact on antisocial outcomes (see: Murray et al. 2012). Nevertheless, these results indicate that parental

incarceration's impact—while statistically significant—was substantively small. The kin networks and extended family of incarcerated parents and children may provide one explanation for why this substantive effect appears to be relatively small. Poor minorities are the most likely individuals to suffer parental incarceration (Clear 2007; Pratt 2009), but they may also be more likely to rely on mutual aid and shared caregiving responsibilities (Miller 2006; Moras 2007). These extended caregiver networks may partially mitigate the deleterious effects of incarceration if children can receive support that is lacking due to the loss of a parent (Hanlon et al. 2005; Arditti 2012).

LIMITATIONS

This study has a number of limitations. These results do not produce evidence of causal relationships between parental incarceration and their children's antisocial behaviors—that is, crime and depression. These measures do not account for time ordering between the parental incarceration measures and other control variables. It is possible that many of the control variables are endogenous to the paternal and maternal incarceration variables. Nevertheless, my analyses produce findings that are consistent with prior research and are robust across models providing more confidence in my substantive findings.

The measure of parental incarceration itself is flawed. Although Add Health includes measures indicating how often a parent was incarcerated, it fails to distinguish between jail and prison terms or the duration of their incarceration. Different types of incarceration may be qualitatively different, and thus may impact children of incarcerated parents differently—allowing different types of contact with children. Meanwhile, I did not differentiate between a single incarceration and individuals reporting more than one imprisonment. It is possible that

multiple incarcerations may prove particularly disruptive, and more likely to promote deleterious effects (Swisher and Shaw-Smith 2015). These measures did not allow me to account for these distinctions in my analyses.

Data limitations forced other concessions. For example, Add Health's indicators of emotional, physical and sexual abuse measure whether a respondent was victimized before their 18th birthday. However, these measures do not indicate whether the abuser was an actual parent. For this reason, even comparing age at a parent's first incarceration to the age at first emotional, physical or sexual abuse is insufficient and not possible with these data. We may expect that parental incarceration will prove less damaging to children whose parents abused them prior to incarceration. More precise measures and the time in their lives when they occurred would offer a more complete examination of the respondents' home lives and may explain some of the mixed results found in the analyses.

Add Health's school-based sampling design may also be problematic for these analyses. Individuals who dropped out before the first wave of data collection were ineligible for the sample. These individuals may be at the greatest risk for parental incarceration. Their hypothetical inclusion may affect results, with the transition away from school further impacting their life course. However, their inclusion may allow for a more thorough examination of selection effects, as these individuals are more likely to suffer other dimensions of disadvantage.

CONCLUSION

In this chapter, I argued that parental incarceration would have a greater impact on children of the same biological sex as the incarcerated parent. I hypothesized that males and females would be more likely to engage in crime and suffer depression if they were the same

biological sex as their incarcerated parents according to the same-sex role model hypothesis. My hypotheses found little support for this same-sex role model hypothesis. However, they do reveal gendered components of parental incarceration's impact on crime and depression.

Consistent with prior research, parental incarceration increased the likelihood of both criminal offending and depression (Burgess-Proctor et al. 2016; Murray and Farrington 2005; Roettger and Swisher 2011; Swisher and Roettger 2012; Swisher and Shaw-Smith 2015). Parent-child gender statistically significantly moderates parental incarceration's effect on crime. However, the impact of maternal incarceration and paternal incarceration on crime is greater for males than females (Wildeman 2010; Turney 2018). Similarly, the impact of maternal incarceration has a greater impact on males' depression symptoms than on females' depression. Maternal incarceration's impact on depression is unsurprising, and parallels previous work (Umberson 2003; Foster and Hagan 2013), though we would have expected to see some impact on females' depression. This study extends this body of literature by illuminating the ways incarcerated parents' gender interacts with the gender of their children in moderating their children's antisocial behavior.

Parents' and children's biological sex moderated parental incarceration's impact on crime and depression. Future research should consider the impact of parents' gender. My analyses focused on parents' biological sex, which may differ from one's gender identity. Similarly, families with less traditional identities may be differentially impacted by maternal incarceration and paternal incarceration. Assumptions about females doing the majority of childcare work are based upon traditional patterns of parenting. However, children from families with nontraditional caregiver relationships may experience different outcomes than children from more traditional households. For example, incarceration consistently proves more deleterious when children are

living with their parent at the time of the incarceration (Gellar et al. 2012; Turney 2018). These outcomes may be related to gendered disparities in caregiving, or differences in the developmental timing of maternal and paternal incarceration.

Although there was a gendered component to parental incarceration's impact on crime and depression, it is worth noting that both maternal and paternal incarceration produced internalizing *and* externalizing antisocial behaviors. Furthermore, consistent with life course scholarship, parental incarceration impacted respondents across multiple domains—mainly, mental health criminal offending. Future research should continue to examine developmental timing, and its impact on various outcomes.

There was a gendered component to parental incarceration's impact on crime and depression. However, these effects may vary when considering different types of offending. Future research should consider differentiating between different types of crime—for example, separately examining property and violent crimes. Furthermore, research should consider other mental health outcomes beyond depression to ascertain how parental incarceration timing impacts respondents across varied life domains.

Neighborhood disadvantage effects also play a role in predicting criminal offending and depression. Individuals raised in poorer neighborhoods are more likely to offend criminally. They are also more likely to suffer depression. However, the impact of these neighborhood effects is relatively minor compared to individual-level factors, and the variation between different neighborhoods is relatively small. Thus, neighborhood factors appear to have a statically significant but overall minor impact on predicting crime and depression when controlling for factors such as a history of abuse, level of self-control, or prior delinquency. Nevertheless, because these effects are statistically significant, they should be incorporated into

future research to ensure that these effects are not being confounded in other related factors influencing the outcome behaviors.

Scholars should also closely consider the presence of pro-crime attitudes in childhood households (Lipsey and Derzon 1998). Unconventional parent-child relationships may place children on criminal trajectories, regardless of the strength of the parent-child relationship. Conversely, the unexpected incarceration of parents living more conventional lifestyles may prove especially traumatic for children (Arditti 2015; Turanovic, Rodriguez, and Pratt 2012). Adult males are more likely than females to engage in most forms of crime. Females are more likely than males to suffer depression. These outcomes are increasingly likely when individuals have an incarcerated parent. Biological sex of both the incarcerated parent and the child moderate incarceration's impact on depression and crime. However, it is only one component of the parent-child relationship. Factors such as the closeness of the parent-child relationship, household configuration and developmental timing of incarceration should be more thoroughly examined to provide a more complete picture of incarceration's effects on children of the incarcerated.

CHAPTER FOUR
THE INFLUENCE OF TIMING OF PARENTAL INCARCERATION
ON CHILDREN'S ANTISOCIAL BEHAVIOR

Mass incarceration creates widespread social problems. Consequences extend beyond the increased likelihood of recidivism (Clear 2007; Cochran et al. 2014; Nagin et al. 2009). Ex-prisoners are more likely to be homeless and suffer drug addiction. They are more likely to experience mental and physical health problems (Garland 2013; Petersilia 2003; Travis 2005; Western 2006). These problems may exacerbate issues associated with traditionally disadvantaged groups and settings (Wakefield and Wildeman 2014). While most of the literature related to mass incarceration focuses on its effects on offenders and crime, recent scholarly work has highlighted the salience of incarceration on families and communities (Clear 2007; Finkeldey and Dennison 2019). Relatedly, the absence of a parent has potentially harmful effects for children, including housing insecurity and a lack of supervision. A parent's return home may actually increase problems, as ex-prisoners contend with strains associated with their incarceration that may make family life difficult and stressful (Danish and Antonides 2013; Doyle and Peterson 2005).

Parental incarceration may result in reduced child supervision, potentially reducing school attendance, weakening emotional attachment, and stunting social development (Glaze and Maruschak 2008; Mumola 2000). It may increase financial, emotional, and residential strain, potentially increasing the likelihood of poor parenting and future offending for children (Agnew 2005). Although parental incarceration may be beneficial in some cases when a dysfunctional

family member is removed, it can also negatively affect different life domains. Some of these effects may present themselves quickly, while others may unfold over time.

Scholars have noted that parental incarceration effects may vary by children's age during parental imprisonment. Parental incarceration timing may impact school performance, mental and physical health outcomes, and aggressive behavior (Cho 2009b; 2010; Dallaire 2007a; 2007b Johnson 2006; Johnston 1995; Poehlmann 2005; Wildeman 2008). I add to this growing body of scholarship by assessing parental incarceration timing's impact on adult crime and depression. For example, does a child's age when their parent is incarcerated have an impact on that child's adult antisocial behavior? Is the age of the child at first parental imprisonment more important for maternal or paternal incarceration? As the focus of the current study, I argue that parental incarceration's impact on crime and depression may vary, depending upon the child's age at the time of that imprisonment.

To pursue the answers to these questions, I begin with reviewing the evidence regarding the differential effects on children of maternal vs paternal incarceration. Next, I focus on the central issue of developmental timing in parental incarceration and follow with an elaboration of the underlying life course perspective upon which these analyses are based. This leads to my statement of hypotheses to be tested in these analyses followed by the data and analytic techniques used to test my hypotheses. After the results of my analyses are presented, I will assess in the last section whether my hypotheses were supported and how the findings contribute to the literature and our understanding of developmental timing and antisocial behavior of children of incarcerated parents.

PAST RESEARCH: THE EFFECTS OF PARENTAL INCARCERATION

The Different Effects of Maternal and Paternal Incarceration

Males are more likely to be involved in criminal behaviors that lead to incarceration, therefore paternal incarceration is more common than maternal incarceration. Nevertheless, the number of children with incarcerated mothers has risen more sharply than the number of children with incarcerated fathers in recent decades. Murray and Murray note that the maternal incarceration rate rose by 131 percent between 1991 and 2007, compared to an increase of 77 percent for incarcerated fathers in the same timeframe (2010). Still, over 90 percent of incarcerated parents are fathers (Glaze and Maruschak 2008).

Maternal and paternal incarceration may affect children differently. Some argue that maternal incarceration may be more damaging than paternal incarceration (Myers et al. 1999; Novero, Loper, and Warren 2011; Nebitt et al. 2013). However, others have found paternal incarceration more likely to increase negative child outcomes (Thornberry et al. 2003; Wildeman 2014; Wildeman and Turney 2014). Murray and Murray (2010) present a number of differences in the deleterious effects for children between incarcerated mothers and incarcerated fathers, concluding that maternal incarceration may be more damaging to children than paternal incarceration. They note that maternal incarceration is associated with higher rates of primary caregiver disruption and a greater incidence of other risk factors such as parental drug use and mental illness.

Resilient children, parents, teachers and other family members may provide a buffer that strengthens the family's and/or children's ability to withstand adversity (Conger and Conger 2002). There is a relative dearth of strengths-based literature; however, some studies illustrate the resilience of children whose parents are imprisoned. Johnson and Easterling (2014) found

that youths showed a variety of coping measures that allowed them to better handle their parents' imprisonment; they found that many youths disassociated themselves from the incarcerated parent while strengthening the bond with the nonincarcerated parents in their lives. Furthermore, children may experience fewer negative outcomes if they are situated in neighborhoods and schools where peers share the same experience; thus, these children are less likely to be stigmatized for having an incarcerated mother (Nesmith and Ruhland 2008). However, simply being exposed to more peers with incarcerated parents may actually increase the likelihood of negative outcomes if these schools are disproportionately located in disadvantaged neighborhoods. In such cases, negative peer influences may affect child outcomes (Gardner and Steinberg 2005; Haynie and Payne 2005).

Finally, recent scholars (Wildeman and Turney 2014) have argued that the effect of maternal incarceration may actually increase adverse outcomes among children when a father is also imprisoned. Wildeman and Tunney found that children who experienced joint parental incarceration were more likely to exhibit negative externalizing behaviors. Other studies indicate that joint parental incarceration may affect obesity. Roettger and Boardman (2012) found that joint parental incarceration increased obesity among daughters. However, Lee et al. (2013) found that joint parental incarceration actually reduced child obesity, and was otherwise inconsequential.

Internalizing vs. Externalizing Behaviors

Persons subject to adverse situations may respond with internalizing or externalizing behaviors. Individuals experience *internalizing behaviors* when they focus negativity inward. Since such behaviors are directed at the self, they harm the individual. Due to their internalized

nature, these behaviors may difficult for others to witness. Depression and social isolation are examples of internalizing behaviors. Individuals who focus negativity outward exhibit *externalizing behaviors* (Eisenberg et al. 2001). Since these behaviors are directed outward, they may harm other individuals. Delinquency and crime illustrate externalizing behaviors (Liu 2004).

Developmental Timing of Parental Incarceration

Developmental timing of parental incarceration may affect the specific consequences associated with it. Incarceration may differentially impact children, relative to their ages during their parents' imprisonment(s). Children of incarcerated parents may experience a variety of distinct issues depending upon their ages when their parent is incarceration. Younger children may struggle with psychosocial issues, while older children may feel increasingly stigmatized outside of the home (Johnson 2006; Cho 2009b, 2010).

Cho (2010) finds that older children are more likely than younger children to experience direct negative effects of parental incarceration if the parent-child separation occurs during a period where trust and attachment are developing. Children in early childhood (ages 2-7) may experience trauma over parental arrest and separation. In middle childhood (ages 8-11), children may experience decreased self-esteem or poor self-concept. Adolescent children of incarcerated parents may display maladaptive and aggressive coping mechanisms that may increase the likelihood of dropout, delinquency, or adult criminal involvement (Johnston 1995; Poehlmann 2005; Dallaire 2007a; Dallaire 2007b). Wildeman (2008) found a gendered difference in attitudes after parental incarceration; among children between the ages of 3-5, only boys exhibited increased aggression immediately after their mothers' incarcerations.

Cho (2010) examined whether the effect of maternal incarceration on children's adolescent academic outcomes varied by the duration of their mothers' incarceration, measured by the total number of months a mother is incarcerated, the total number of maternal incarcerations, and an indicator variable for whether the mother has ever been incarcerated. She analyzed data on 9,563 children who were between the ages of 5 and 17 when their mothers entered prison, using a sibling-pair sample to control for unobserved maternal household-level characteristics. She concluded that only boys were sensitive to the respective effects of timing and dosage on outcomes such as school dropout. Boys experiencing a mother's incarceration during early adolescence (between the ages of 11 and 14) were most likely to drop out of school, or to be incarcerated themselves. In contrast with previous studies (e.g. Rudolph and Hammen 1999), girls did not appear to be sensitive to the timing of maternal incarceration. Cho reasoned that this apparent lack of effect may be the result of the studies focus on externalizing behavior problems. Finally, boys' school dropout behaviors were sensitive to the frequency of maternal incarceration, while girls' dropout behaviors due to their own incarceration were sensitive to the length of their mothers' incarceration. Both boys and girls displayed better school outcomes as the frequency and length of maternal incarceration increased. However, Dellaire, Ciccone, and Wilson (2010) found that children of incarcerated mothers were more likely to receive lower teacher-ascribed ratings of academic competence.

Murray and Farrington (2005) compared antisocial and delinquent behaviors among a sample of English boys who experienced the incarceration of a parent during the first 10 years of their lives to boys who experienced other forms of separation from parents during childhood and boys who had a parent who had been incarcerated prior to their birth. Boys who experienced separation due to incarceration ($n = 23$) exhibited more antisocial and delinquent outcomes in

adulthood than boys separated from parents because of hospitalization or death ($n = 77$); boys separated from parents for other, nonspecified reasons ($n = 61$); and boys whose parents had been incarcerated prior to their birth ($n = 17$). These results indicate that parental incarceration affects child outcomes above and beyond parental criminality, separation from parents, and sociodemographic characteristics.

THE LIFE COURSE PERSPECTIVE: PARENTAL INCARCERATION AS A TURNING POINT

Individuals must often adapt to temporary life events. Such events become turning points if they interrupt prior adjustments, then persist through a dynamic process of self-reinforcing consequences (Elder and Giele 2009; Mortimer and Shanahan 2003; Sampson and Laub 1997). These events alter contexts or circumstances, and they may create or close off social networks, relationships and opportunities for achievement (Rutter 1996).

Criminal justice system involvement may promote discontinuities in prior adjustment. Criminal justice system involvement may amplify social and economic marginalization, while also damaging familial relationships and limiting access to housing, employment, treatment, and services (Petersilia 2003; Travis 2005).

Parental incarceration constitutes a turning point for children if it disrupts their psychological and emotional development during their transition to adulthood (Foster and Hagan 2007). Evidence indicates that youths' who offend, are arrested, and/or incarcerated may suffer long term effects on mental health (Hagan 1997), income (Kerley et al. 2004), and educational attainment (Tanner, Davies, and O'Grady 1999), income, and mental health. Viewed from a life course perspective, the effects of parental incarceration on children remain uncertain. Some children may relish the opportunities to turn away from their stigmatized parents and redirect

maladaptive trajectories (Giordano 2010). In contrast, parental incarceration during childhood may produce social isolation and family instability. Children suffering such experiences may lack skills and resources for successful transitions into adulthood (Foster and Hagan 2007; E. I. Johnson and Easterling 2015; Sampson and Laub 2005; Uggen and McElrath 2014). In some ways, parental incarceration is similar to other types of parental loss like divorce or death. For example, children from divorced households may report poorer quality romantic relationships and lower socioeconomic attainment than those from biological two-parent families (Amato 1999). Parental incarceration similarly disrupts the transition to adulthood by limiting parents' ability to provide their children with necessary resources and support. As adults, these children struggle with divorce, homelessness and finding employment. They also suffer poorer mental and physical health than individuals reporting no incarcerated parents (Arditti 2012; M. K. Johnson and Benson 2012; Siennick 2014; Swartz 2009; Uggen and McElrath 2014).

Studies that have followed children of incarcerated parents into young adulthood suggest that parental incarceration exerts long-term impacts over the life course. Analyses of data from the Cambridge Study in Delinquent Development, as well as the Dutch Criminal Career and Life Course Study, have linked parental incarceration with adult convictions and criminal records among offspring (Besemer et al. 2011; Murray, Janson, and Farrington 2007; van de Rakt et al. 2012). For example, Murray and Farrington (2005, 2008) found that the 23 boys in the Cambridge study who experienced parental incarceration before age 10 had more internalizing and antisocial problems at midlife than did other boys. Other studies suggest the potential for similar long-term effects. Roettger and colleagues (2011) linked fathers' incarcerations with higher levels of children's marijuana and other drug use throughout adolescence and into the early 20s, while Foster and Hagan (2007) found that young adult children of incarcerated fathers

had higher rates of homelessness and political disengagement. Finally, Mears and Siennick (2016) found that parental incarceration had detrimental effects across multiple life domains such as education, earnings and intimate relationships. In short, studies to date suggest the potential for parental incarceration to constitute a significant turning point in the lives of children, one that may exact penalties upon these children in their youth and as they progress into adulthood.

Informed by life-course theory and prior research, I wish to test hypotheses that parental incarceration affects children across a wide range of domains, including internalizing and externalizing antisocial behavior. Consistent with extant literature, I examine whether or not there is a gendered component to parental incarceration; and, therefore, examine the effects of both maternal and paternal incarceration on their male and female offspring (Finkeldey and Dennison 2019). To that end, I employ as measures of antisocial behavior outcomes including the CESD depression scale, an internalizing behavior scale, and a general crime scale, an externalizing behavior. I test hypotheses relating to parental incarceration timing's effect on crime and depression in the lives of their adult children.

This first set of hypotheses focus on how maternal incarceration timing impacts crime and depression.

H1. Respondents reporting maternal incarceration at later ages will report more externalizing antisocial behaviors than respondents reporting maternal incarcerations at earlier ages.

H2. Respondents reporting maternal incarcerations at earlier ages will report more internalizing behaviors than respondents reporting maternal incarcerations at later ages.

The following hypotheses consider the impact of paternal incarceration on crime and depression.

H3. Respondents reporting paternal incarcerations at later ages will report more externalizing antisocial behaviors than respondents reporting paternal incarcerations at earlier ages.

H4. Respondents reporting paternal incarcerations at earlier ages will report more internalizing behaviors than respondents reporting paternal incarcerations at later ages.

These hypotheses examine gendered differences in crime and depression. Males and females reporting paternal incarceration are analyzed separately.

H5. Females reporting paternal incarcerations at later ages will report more externalizing antisocial behaviors than females reporting paternal incarcerations at earlier ages.

H6. Males reporting paternal incarcerations at later ages will report more externalizing antisocial behaviors than males reporting paternal incarcerations at earlier ages.

H7. Females reporting paternal incarcerations at earlier ages will report more internalizing behaviors than females reporting maternal incarcerations at later ages.

H8. Males reporting paternal incarcerations at earlier ages will report more internalizing behaviors than males reporting maternal incarcerations at later ages.

Finally, these hypothesis also consider gendered differences in crime and depression.

Males and females reporting maternal incarceration are examined separately.

H9. Females reporting maternal incarcerations at later ages will report more externalizing antisocial behaviors than females reporting maternal incarcerations at earlier ages.

H10. Males reporting maternal incarcerations at later ages will report more externalizing antisocial behaviors than males reporting maternal incarcerations at earlier ages.

H11. Females reporting maternal incarcerations at earlier ages will report more internalizing behaviors than females reporting maternal incarcerations at later ages.

H12. Males reporting maternal incarcerations at earlier ages will report more internalizing behaviors than females reporting maternal incarcerations at later ages.

These hypotheses derived from previous research and based in the life course perspective will be tested using longitudinal data that identifies the age of the child at the time the parent was incarcerated. A description of these data and measures derived from them for conducting these tests follow.

DATA

Sample

I use data from the National Longitudinal Study of Adolescent to Adult Health (Add Health). Data for my analyses must include detailed information on family contexts, parental incarceration timing and status, as well as negative outcomes including internalizing and externalizing antisocial behaviors. The National Study of Adolescent to Adult Health (Add Health) satisfies this goal.

Add Health is a nationally representative longitudinal study following a cohort of United States youth between the 1994-1995 school year to present. The cohort—between grades 7 to 12 in the 1994-1995 school year—has been followed into young adulthood with four in-home interviews. The most recent wave was Wave 5 in 2016-2018, when the sample was aged 34 to 42. Add Health combines survey data on respondents' economic, psychological and physical well-being with contextual data on the family, neighborhood, community, school, friendships, peer groups, and romantic relationships, providing unique opportunities to study how social environments and behaviors in adolescence are linked to health and achievement outcomes in young adulthood.

Add Health data were collected from adolescents, their fellow students, school administrators, parents, siblings, friends, and romantic partners through multiple data collection components, including four respondent in-home interviews. In addition, existing databases with information about respondents' neighborhoods and communities have been merged with Add Health data, including variables on income and poverty, unemployment, availability and utilization of health services, crime, church membership, and social programs and policies. Wave 1 (1994-1995) included both in-school (N=90,118) and in-home (N=20,745) components for adolescents. Parents (N=17,670) and school administrators (N=144) were also sampled in Wave 1. Wave 3 included data from romantic partners (N=1,507). The original cohort is aged 24 to 32 in Wave 4 (N=15,701).

Variables and Measures

Dependent Variables

Criminal Offending

I create a general crime scale to operationalize externalized antisocial behavior. Table 1 presents items and scales used in these analyses. I first create a scale that includes 11 continuous-measure items measuring how often in the past year respondents committed crime. Item responses are coded "0" for never, "1" for one or two offenses, "2" for three or four offenses, and "3" for five or more offenses. Items in the scale include: (1) damaging property, (2) stealing something valued over \$50, (3) stealing something valued under \$50, (4) entering a house or building to steal something, (5) using or threatening to use a weapon to get something from someone, (6) selling marijuana or other drugs, (7) holding or using stolen property, (8) using someone else's bank card without their knowledge or permission, (9) taking part in a physical

fight as an individual or (10) in a group and (11) harming someone in a fight badly enough to require medical care. This crime scale ranges from zero to 33, with higher levels indicating more criminal involvement. Factor analysis suggests that all 11 items load on one factor, and a Cronbach's alpha of .705 indicates a moderate level of reliability.

Depression

I use Add Health's constructed Center for Epidemiologic Studies Depression Scale (CESD) variable to measure internalizing behaviors. The CESD was created in 1977 and revised in 2004, and it remains popular in psychiatric epidemiology. The scale measures depression symptoms using 15 different items across nine groups including: (1) feelings of disproportionate sadness, (2) loss of interest in activities (3) loss of appetite, (4) insomnia, (5) inability to think clearly or concentrate, (6) disproportionate feelings of guilt, (7) extreme fatigue, (8) agitation and (9) suicidal thoughts. Wave 4 data include a continuous-measure item indicating respondents' reported depression symptoms.

Natural Logarithm of Depression and Crime

Preliminary analyses reveal that the dependent variables are skewed. This is common for rare events, as many respondents report no criminal involvement or depression symptoms. Using these measures in ordinary least squares regression violates the assumption of normal distribution for the dependent variable. Therefore, I examine the residuals from initial regression analyses for evidence of heterogeneity in the error term, which indicates a violation of the normally distributed dependent variable. I use a natural logarithmic transformation to correct the skewness in the dependent variables, which is common in studies of deviance and criminality.

Since many cases contain a value of zero for the outcome variables, I add one to the quantity to avoid taking the log of zero. The Stata command is *gen new variable = ln(y_i + 1)*.

Independent Variables

Paternal and Maternal Incarceration

My primary independent variables involve parental incarceration. Wave 4 interview data includes retrospective measures on both maternal and paternal incarceration. I focus my analyses on biological parents, rather than mother or father figures. Wave 4 respondents were asked: “Has/did your biological mother spent/spend time in jail or prison?” and “Has/did your biological father spent/spend time in jail or prison?” Both measures are dichotomous, indicating whether respondents’ parents have ever been incarcerated.⁷

Age at Parent’s First Incarceration

Wave 4 asks respondents’ age(s) at the time of their first maternal and/or paternal incarceration(s). Values range from “0” for Not yet born to 31 years old. The measures are the same for both maternal and paternal incarcerations. Therefore, I predict a negative coefficient for this age measure in the depression outcome model and a positive coefficient for age at parent’s incarceration for the crime outcome model.

⁷ Add Health data include measures for mother figure and father figure incarceration. Less than one percent of respondents report a mother figure incarceration and roughly two percent report a father figure incarceration. I include these cases, although my analyses focus only on biological parents’ incarceration(s). This is consistent with related studies of parental incarceration (see: Mears and Siennick 2016; Swisher and Shaw-Smith 2015).

Parental Closeness

Add Health measures mother-child closeness at Wave 1 with the question: “How close do you feel to your biological mother?” Responses include: “1” not close at all, “2” not very close, “3” somewhat close, “4” quite close, and “5” extremely close. Respondents are asked the same question about their relationships to their fathers. I reverse-code these measures, so higher values indicate poorer relationships with parents. Thus, I hypothesize a positive relationship for parent-child closeness measures with the antisocial behavior outcome measures.

Control Variables

Demographics: Race/Ethnicity and Sex

Many sociodemographic factors collected during Wave 1 are often associated with health outcomes. I measure race/ethnicity with a constructed variable from Wave 1 adolescent self-reports. I recode four categories into three separate dichotomous measures, with the race coded as “1” and “0” otherwise, each representing: Whites, African-American, and other race. The measure for Whites is omitted from the model as the reference category.

I include sex as a dummy variable with males as the reference group, coded “1”, and females coded “0”. I measure immigration status with a dummy variable indicating whether respondents were born in the United States or born in another country. Foreign-born is the reference category, coded “1”, and coded “0” otherwise.

Household Composition

Respondents report their household composition in Wave 1, with responses indicating that they were: “1” living with two biological parents, “2” living with two parents, “3” living

with a single mother, “4” living with a single father, and “5” living with another caregiver. I separate this constructed variable into five separate dichotomous measures. Preliminary analyses indicate a high degree of multicollinearity between the responses: “1” living with two biological parents and “2” living with two parents. Other categories failed to statistically significantly impact outcome measures in any preliminary analyses. For simplicity and the sake of parsimony, I recode the household composition measure into one single dichotomous variable with “1” indicating a two-parent household and “0” indicating any other type of household.

Respondent’s Education

I include respondents’ education as a proxy for social class. Wave 4 includes the question: “What is the highest level of education you have completed?” Responses include: (6) 6th grade, (7) 7th grade, (8) 8th grade, (9) 9th grade, (10) 10th grade, (11) 11th grade, (12) 12th grade, (13) one year of college, (14) two years of college, (15) three years of college, (16) four years of college; (17) five or more years of college, (18) one year of graduate school, (19) two years of graduate school, (20) three years of graduate school, (21) four years of graduate school and (22) five or more years of graduate school.

Parents’ Education

Wave 1 includes questions about parents’ educations. Questions and answers follow the same format as questions about respondents’ education.

Responses include: (1) eighth grade or less, (2) more than eighth grade, but did not graduate high school, (3) went to a business, trade or vocational school instead of high school, (4) high school graduate, (5) completed a GED, (6) went to a business, trade, or vocational

school after high school, (7) went to college, but did not graduate, (8) graduated from a college or university, (9) professional training beyond a four year college or university, (10) never went to school, (11) went to school, but respondent does not know what level. I recode values of 10 to zero, so a zero indicates that a respondent's parent did not go to school. I recode "went to school, but respondent does not know what level" as missing. Preliminary analyses consistently failed to indicate a statistically significant relationship between mothers' education and depression or crime, so final analyses only include measures for fathers' education.

Mistreatment by Adults

History of childhood abuse must be considered when examining antisocial outcomes. This is especially important when assessing the impact of parental incarceration's impact. If an abusive parent is incarcerated, parental incarceration may positively impact children by removing an abusive influence from their lives. Wave 4 data include retrospective measures asking respondents if they were emotionally, physically or sexually abused before age 18. However, these measures do not include information on respondents' relationships with their past abusers. Thus, it is impossible to ascertain if an incarcerated parent is also an abusive parent. Nevertheless, I include these three measures for physical, emotional, and sexual abuse by adults.

Respondents are considered having been emotionally abused if they report an adult or caregiver said something that made them feel unloved. Respondents who reporting being kicked, punched, or thrown by an adult are considered to have suffered physical abuse. Sexual abuse is measured by the question: "How often did an adult or caregiver touch you in a sexual way, force you to touch him or her in a sexual way, or force you to have sexual relations?" I dichotomize all

these measures into three separate dichotomous abuse measures, with “0” indicating no abuse and “1” indicating at least one instance of abuse.

Self-Control

Self-control is a consistent predictor of deviance or crime. I include 14 Wave 4 items asking respondents how often they: (1) sympathized with others, (2) experienced frequent mood swings, (3) were quick to anger, (4) were uninterested in the problems of others, (5) were easily bothered, (6) were rarely irritated (7) felt empathy for others emotions, (8) were easily upset, (9) lost their temper easily, (10) were uninterested in others (11) kept their cool, (12) made decisions based on gut instinct rather than rational thinking, (13) enjoyed taking risks and (14) lived for the present without thinking of future consequences. All questions are Likert item responses, with one indicating “Strongly Agree” and five indicating “Strongly Disagree”. Some of the measures are such that higher levels indicate higher self-control. For others, higher values indicate lower self-control. I recode the variables so higher values indicate increased self-control. I create an additive scale measuring respondents’ self-control. Factor analysis suggests that all 14 items load on one factor, with a Cronbach’s alpha of .757 indicating a high level of reliability. Those items that would theoretically reduce one’s self-control have positive factor loading scores and those that would increase one’s self-control have negative factor loading scores.

Prior Delinquency

Prior delinquency is a strong predictor of adult criminal offending. I use Wave 1 items to create an additive scale to control for prior delinquency. Items and scales are summarized in Table 1. The delinquency scale contains 15 continuous-measure items asking respondents how

often in the past year they committed delinquent acts. A response of “0” indicates never, “1” indicates one or two offenses, “2” indicates three or four offenses, and “3” indicates five or more offenses. The items in the index include: (1) painting graffiti, (2) damaging another person’s property, (3) lying to parents about where they were or whom they were with, (4) taking something from a store without paying for it, (5) getting into a serious physical fight, (6) harming someone badly enough that they required medical attention, (7) running away from home, (8) driving a car without the owner’s permission, (9) stealing something worth more than \$50 (10) entering a house to steal something, (11) using or threatening to use a weapon, (12) selling marijuana or other drugs, (13) stealing something worth less than \$50, (14) taking part in a group fight and (15) acting rowdy, loud or unruly in a public place. The general delinquency scale ranges from zero to 45, with higher numbers indicating greater levels of delinquent behavior. A Cronbach’s alpha of .829 indicates a high level of reliability, and factor analysis suggests that all items load on one factor.

Neighborhood Disadvantage

Community contextual variables based on state, county, tract, and block group levels are included in Wave 1. This information is derived from respondents’ Wave 1 addresses. I create a level two neighborhood disadvantage variable adding the components weighted by their factor loadings to control for selection effects. This corrects for violations of the OLS assumption of uncorrelated error terms. This measure includes the following items: (1) the proportion of households in the block group with annual income less than \$15,000, (2) the proportion of female-headed households in the block group, (3) the unemployment rate in the block group, (4) the proportion of black individuals in the block group and (5) the proportion of households

receiving public assistance income. A Cronbach's alpha of .785 indicates a high level of reliability, and factor analysis reveals that all five items load on one factor. The measure ranges from 0 to 3.29. Higher values indicate more disadvantaged block groups.

Missing Data

Preliminary analyses reveal missing data. Although many of the items in this analysis have only small amounts of missing data, some variables have a relatively large percentage of missingness. I use multiple imputation to manage missingness on all variables. I use a series of five imputations to predict missing values across variables. Multiple imputation analyzes the estimates using standard regression procedures and combines the results from values generated in the five imputation analyses. Missing values are imputed using an appropriate model that incorporates random variation (Rubin 1977, 1987). Appealing features of multiple imputation include: (1) introduction of appropriate random error, making it possible to achieve approximately unbiased parameter estimates; and (2) good estimates of standard errors that are achieved through repeated imputation (Allison 2002).

Stata's *mi impute* chained command uses chained equations to estimate values iteratively. This technique sequences univariate imputation methods with fully conditional specification (FCS). Univariate models are used for each variable that has missingness, and imputed values are then used to impute values on other variables with missing values. I use truncated linear regression for continuous variables, with left- and right-truncation values consistent with the unimputed values' minimum and maximum values. I use logistic regression for categorical variables (Enders 2010).

Although the average missing data amount is roughly four percent for measures used in these analyses, this percentage is skewed by high levels of missingness on three variables: father ever incarcerated (seven percent missing), close to mother (five percent missing), and close to father (28% missing). No other variable has even two percent missingness. I conducted analyses on the original unimputed data, and separately for each imputation. Analyses produced consistent substantive results across all models and imputations. I present results that reflect the average of the five imputations.

Multicollinearity and Weighting Data

I examine that data for evidence of multicollinearity. Bivariate correlations of all variables range from 0.00 to 0.47. I follow preliminary regression analyses with Stata's *vce* option to determine the comparability of estimated coefficients using robust standard errors and those estimated without robust standard errors. The results were substantively the same. Finally, none of the variance inflation factor (VIF) scores exceeded 1.22. Multicollinearity does not appear to be an issue with the findings.

Add Health includes longitudinal sample weights to adjust for varying probabilities of initial sampling and longitudinal retention. When researchers omit sample weights from their analyses, parameter estimates are biased. Also, findings cannot be generalized to the larger population unless sampling weights are used.

Add Health includes sampling weights for individuals who are part of the Add Health probability sample. Researchers use weights and variables to identify clustering of adolescents in

schools. Sampling weights allow researchers to obtain unbiased estimates and standard errors in their analyses.⁸

Although Add Health collects data over multiple waves, my analyses are cross-sectional. Thus, I use Add Health's cross-sectional sampling weight for Wave 4 respondents who were also interviewed at Wave 1. This produces a sample of (N=14,800). Siblings may be included in these data, even if they share the same household. Since this violates the ordinary least squares (OLS) regression assumption that data represent a random sample and that error terms are not correlated, I include only one sibling case from each household, and drop any cases beyond the first. A unique family identifier indicates households with multiple siblings. I use Stata's random number generator to randomize the order of the cases before I drop any duplicate family identifiers. In other words, only one randomly-selected case from each household is included. Removing these cases produces a sample of (N=14,584). The analyses for the current study focus on respondents reporting a maternal incarceration before age 18 (428) and respondents who reported a paternal incarceration before age 18 (1,455). These represent the samples with which the hypotheses will be tested.

PRELIMINARY FINDINGS

Descriptive Statistics: Respondents Reporting Maternal Incarceration

Table 2b includes descriptive statistics for respondents reporting a maternal incarceration before age 18 (N=428). Once again, metric measures of crime and depression are skewed. The crime scale has a mean of 0.40 and its standard deviation is 1.35. The scale ranges from 0-16.

⁸ Researchers may project data from a randomly selected sample may be projected onto a larger population. However, non-response bias occurs when respondents who fail to participate are not independent from the variables being studied. That is, non-response bias occurs when those who fail to respond are uniquely different from those who do respond.

The depression scale has a mean of 3.48 and a standard deviation of 3.17. The scale ranges from 0-15. On average, respondents were almost seven years old at the time of their mothers' first incarcerations. Sixty-four percent reported being emotionally abused and 38 percent reported physical abuse. Finally, 13 percent reported being sexually abused by an adult before age 18.

The crime scale (*In*) has a mean was 0.31 with a standard deviation of 0.58. Roughly half of respondents reporting a maternal incarceration also experienced a paternal incarceration at some point.⁹ The average delinquency score was 6.29 and the average self-control score was 46.54. Sixty percent of respondents did not come from two-parent households and 43 percent were black. The average respondent's education score was 13.17, with a standard deviation of 2.07. The father's education mean was 4.45, with a standard deviation of 2.34. The neighborhood disadvantage score ranged from 0-3.16, and the mean was 0.77.

Descriptive Statistics: Respondents Reporting Paternal Incarceration

Table 2c presents descriptive statistics for respondents reporting a paternal incarceration before age 18 (N=1,455). The metric measures of crime and depression are both skewed. The crime scale has a mean of 0.69 and a standard deviation of 1.77. It ranges from 0-16. The depression scale has a mean of 3.19 and a standard deviation of 2.90. It ranges from 0-15. Ten percent of respondents reporting a paternal incarceration before 18 also experienced a maternal incarceration at some point.¹⁰ On average, children were roughly six years old at the time of their fathers' first incarcerations. Sixty percent of respondents had a history of emotional abuse. Thirty-two percent reported physical abuse and 12 percent indicated sexual abuse. The

⁹ In Table 2b, the sample includes only individuals reporting a maternal incarceration before adulthood. However, the measure of paternal incarceration in Table 2b indicates a father's imprisonment at any age, even beyond 17.

¹⁰ In Table 2c, the sample includes only individuals reporting a paternal incarceration before adulthood. However, the measure of maternal incarceration in Table 2c indicates a mother's imprisonment at any age, even beyond 17.

average delinquency score was 5.56 and the average self-control score was 46.90. Only 53 percent of individuals were raised in two-parent households. The average respondent's education score was 12.01, with a standard deviation of 3.07. The father's education mean was 4.45, with a standard deviation of 2.34. The neighborhood disadvantage score ranged from 0-2.78, and the mean was 0.68.

ANALYTIC STRATEGY

The skewed nature of the outcome variables make negative binomial regression preferable. However, Stata does not support negative binomial regression when using its *mi estimate* command.¹¹ Instead, I transform these skewed outcome variables using a natural logarithmic transformation and use multilevel mixed-effects linear regression for the continuous outcome variables, crime and depression. The equation is:

$$y_{ij} = \beta_0 + \beta_1 X_{ij} + u_j + \varepsilon_{ij}$$

In the above equation, $i = 1, \dots, n_i$, the number of respondents, and $j = 1, \dots, n_j$ block groups. u_j is a random effect at the block group level and ε_{ij} is the random effect at the individual level. Linear mixed models allow both fixed and random effects that are useful when there is non independence in the data. For example, children may be sampled within the same classrooms—or, in this study, from similar block groups. Variability may be within groups or between groups. Units sampled at the highest level—in this study, respondents living in similar block

¹¹ Numerous criminological studies use census tract data for neighborhood effects (see: Krivo and Peterson 1996; Hipp 2007; Ranson, Baumer and Arnio 2018). However, others have presented block-group data as an appropriate measure of neighborhood effects (McNulty and Holloway 2000; Messer et al. 2006; McDonald 2008).

groups at Wave 1—are not independent because they may be similar to others within the same (block) group. Observations at the lowest level—the grown children of incarcerated parents—are independent, especially because the sibling cases have been deleted from the sample. Mixed models incorporate fixed and random effects (StataCorp 2019).

I use five separate block level measures to create the neighborhood disadvantage variable. This measure serves as a proxy for neighborhood effects, to account for potential selection effects. Higher levels of neighborhood disadvantage are correlated with both crime and depression. I conduct a multilevel analysis of 14,584 individuals nested within 3,861 different groups. That is, 14,584 individuals (at level 1) are nested within 3861 “neighborhoods” (at level 2). These multilevel analyses allow for estimation of (1) the associations between compositional factors and crime and depression (“fixed parameters”) and (2) the variation in crime and depression between neighborhoods (“random parameters”). The results presented are multilevel regression models. When examining respondents reporting a maternal incarceration before age 18, 428 individuals are nested within 350 different groups. Finally, I conduct a multilevel analysis of individuals reporting a paternal incarceration before age 18. In this analysis, 1,455 individuals are nested within 878 groups.

RESULTS

Multilevel Regression Analyses

Maternal Incarceration Timing and Crime

Full Sample

Table 12 presents the effects of maternal incarceration timing on crime committed by their adult children. This sample includes only respondents’ reporting at least one maternal

incarceration (N=428). Model 1 includes only the outcome variable—crime—and the level two variable—neighborhood disadvantage. This null model with no predictors indicates that variation in offending was estimated across individuals (within block groups) and between block groups. Among respondents reporting parental incarcerations before age 18, neighborhood effects did not have a statistically significant effect on crime.

Model 2 adds the primary independent variable: respondent's age at maternal incarceration. I also add other variables, including parental closeness, history of abuse, history of delinquency, self-control, drugs in childhood home, childhood household composition, respondents' and respondents' parents' education, and other demographic controls. As expected, the influence of neighborhood disadvantage on crime decreased with the introduction of level one main effects

Maternal incarceration timing had a statistically significant impact on crime. Each one year increase in age of the respondent at the time of maternal incarceration slightly increased the likelihood of the child engaging in crime. Thus, maternal incarceration was more likely to produce criminal involvement when the incarceration occurred when the child was older. Hypothesis 1 is supported. Other factors also impacted the likelihood of crime. Respondents reporting emotional abuse were actually less likely to commit crime—though this relationship approached statistical significance ($p \leq .10$), so may be worth noting. Respondents who had been physically abused were more likely to commit crime, as were respondents who were sexually abused. Reduced self-control increased the likelihood of crime, as did a prior history of delinquency. Males were more likely to commit crime, although other demographic factors such as race, immigrant status, and education did not impact the likelihood of crime for this sample.

Female Respondents

Models 3 and 4 focus on female respondents reporting maternal incarceration (N=257).

Model 3 is a null model that includes only the outcome variable and the level two variable.

Disadvantaged block groups were more likely to produce crime.

The results of maternal incarceration timing on females' criminal offending are presented in Model 4. Each one year increase in age actually decreases the likelihood of females committing crime. That is, maternal incarceration produced higher levels of crime in daughters if the incarceration occurred earlier in life. Hypothesis 9 is not supported.

Other factors affected the likelihood that daughters of incarcerated mothers would offend. Respondents reporting emotional abuse were actually less likely to offend than those reporting no abuse. Physical abuse increased the likelihood of crime, although this relationship merely approached statistical significance ($p \leq .10$). A prior history of delinquency increased the likelihood of adult crime, as did the presence of drugs in one's childhood home. Respondents with at least one college-educated parent were less likely to offend than individuals whose parents lacked college degrees. Female immigrants of incarcerated parents were more likely to offend than were individuals who were born in the United States.

Other controls did not affect the likelihood of crime. Parental closeness, history of sexual abuse, and self-control did not impact criminal offending of females whose mothers were incarcerated. Respondent's level of education did not affect offending, and race did not statistically significantly impact the likelihood of crime.

Male Respondents

Regression estimates for male respondents reporting maternal incarceration are presented in Models 5 and 6 (N=170). Model 5 is again a null model including only the outcome variable—crime—and the level two variable—neighborhood disadvantage. Among males reporting parental incarceration, neighborhood characteristics did not have a statistically significant impact on crime.

Level one main effects are introduced in Model 6. Age of respondent at first maternal incarceration is included along with other controls. Timing of maternal incarceration statistically significantly impacted males' likelihood of criminal offending. Each one year increase in age at first maternal incarceration increased the likelihood that males would offend. Thus, maternal incarcerations appeared more likely to produce crime in sons when those incarcerations occur at a later age in the sons' youth. Hypothesis 10 is supported.

Males reporting prior delinquency were more likely to offend. Those with higher levels of self-control were less likely to offend. Respondents who reported drugs in their childhood home were actually less likely to offend, although this relationship merely approached statistical significance ($p \leq .10$).

Other factors did not impact respondents' likelihood of offending. Parent-child closeness and all types of abuse did not affect crime among sons of incarcerated mothers. Household composition, parents' and respondents' education and race all failed to impact sons' criminality. Finally, immigrant status did not affect respondents' likelihood of offending.

Maternal Incarceration Timing and Depression

Full Sample

Table 13 presents the effects of maternal incarceration timing on depression among adult children. This is the same sample as used above, including only respondents who reported at least one maternal incarceration (N=428). Model 1 is a null model, including only the outcome variable—depression—and the level two variable—neighborhood disadvantage. This model has no predictors. When assessing respondents who reported a maternal incarceration before age 18, neighborhood disadvantage did not have a statistically significant impact on depression.

Model 2 adds the primary independent variable: respondent's age at maternal incarceration. As in table 12, Model 2 adds other control variables, including parental closeness, history of abuse and history of delinquency. I similarly control for respondents' level of self-control, the presence of drugs in their childhood homes, and childhood household composition. Finally, I include measures of respondents' education level, and the education level of their parents, as well as other demographic controls.

Maternal incarceration timing had a statistically significant impact on depression. Each one year increase in age of the respondent at the time of maternal incarceration slightly decreased the number of reported depression symptoms. Thus, maternal incarceration was more likely to produce depression when the incarceration occurred at an earlier age. Hypothesis 2 is supported.

Other factors also affected the likelihood of depression. Respondents who were physically abused were more likely to report depression, as were respondents with lower levels of self-control. Black respondents were more likely to suffer depression than white respondents. However, many other controls did not statistically significantly impact these respondents'

depression. Parental closeness did not affect the likelihood of depression. Emotional abuse and sexual abuse did not affect depression. A prior history of delinquency did not have a significant impact on depression, and being raised in a household where drugs were present had no effect, either. Finally, household composition, education, and immigrant status did not statistically significantly affect depression symptoms.

Female Respondents

Models 3 and 4 present regression estimates for females reporting maternal incarceration (N=257). The null model includes only the outcome variable, depression, and the level two variable, neighborhood disadvantage. Neighborhood disadvantage did not have a statistically significant effect on depression.

Main effects are introduced in Model 4. Respondents' age at their mothers' first incarcerations statistically significantly impacted the likelihood of depression. Each one year increase in age at first maternal incarceration decreased the likelihood of depression.

Other factors affected the likelihood of depression. Respondents reporting sexual abuse were actually less likely to report depression, although this relationship was only approaching statistical significance ($p \leq .10$). Females with higher levels of self-control were less depressed. However, other controls did not impact the likelihood of depression. Parent-child closeness, emotional and physical abuse, and a prior history of delinquency did not affect depression symptoms. Household configuration, education level, and the presence of drugs in a childhood home did not affect depression. Finally, race and immigrant status did not impact the likelihood that daughters of incarcerated parents would report depression symptoms.

Male Respondents

Regression estimates for males reporting maternal incarceration are presented in Models 5 and 6. The null model indicates that neighborhood did not statistically significantly impact males' reported depression symptoms.

Model 6 introduces the primary independent variable—age of the respondent at first maternal incarceration. Males were sensitive to maternal incarceration timing, although this relationship is only approaching statistical significance ($p \leq .10$). However, the direction of the relationship ran counter to my expectations. Each one year increase in age actually increased the likelihood of males' depression. In other words, males were more likely to report depression when their mothers were incarcerated at later ages. Hypothesis 12 is not supported. It is interesting to note, though that if these analyses had not focused on the gendered differences, the results would not have revealed this finding for males that is opposite than that for females.

Physical abuse increased the likelihood of depression. Black respondents reported higher levels of depression than White respondents, although this relationship was only approaching statistical significance ($p < .10$). Similarly, immigrant sons of incarcerated parents reported more depression symptoms than respondents born in the United States. This relationship was also merely approaching statistical significance ($p < .10$). Other factors failed to impact the likelihood of depression among sons of incarcerated mothers. Parent-child closeness, emotional abuse, sexual abuse and a prior history of delinquency all had no effect on depression. Respondents' self-control had no effect, as did the presence of drugs in the childhood home. Household composition and education levels of respondents and their parents also failed to affect reported depression symptoms.

Paternal Incarceration Timing and Crime

Full Sample

Table 14 presents the effects of paternal incarceration timing on crime engaged in by their adult children. This sample includes only respondents' reporting at least one paternal incarceration (N=1,455). Model 1 is a null model, including only the outcome variable—crime—and the level two variable—neighborhood disadvantage. This model with no predictors indicates that variation in offending was delineated across individuals (within block groups) and between block groups. Neighborhood disadvantaged did not have a statistically significant impact on crime.

I introduce the primary independent variable—age of respondent at the time of paternal incarceration—in Model 2. I also introduce the other control variables included in the comparable analyses for maternal incarceration.. When examining the entire sample, paternal incarceration timing does not impact criminal offending. Thus, a respondent's age at their first paternal incarceration did not have an influence on the children's involvement in crime. Hypothesis 3 is not supported.

Among respondents reporting paternal incarceration, poorer relationships with mothers actually decreased the likelihood of crime. Emotional and physical abuse increased the likelihood of crime, although sexual abuse failed to statistically significantly impact the likelihood of criminal involvement. Prior history of delinquency increased the likelihood of crime, as did a lack of self-control. Respondents reporting the presence of drugs in their childhood homes were more likely to commit crime. Males were more likely than females to offend, and African Americans were more likely to offend than White respondents. Individuals with college degrees were less likely to offend than respondents lacking a college education.

However, a close relationship to one's father did not impact criminal involvement, and childhood household composition similarly had no effect. Finally, parents' education level and respondents' immigrant status did not have a statistically significant impact on crime.

Female Respondents

Models 3 and 4 focus on female respondents reporting paternal incarceration (N=769). Model 3 is again a null model, including only the outcome variable—crime—and the level two variable—neighborhood disadvantage. Neighborhood disadvantage did not have a statistically significant impact on crime.

Model 4 presents the results of paternal incarceration timing on females' criminal involvement (N=769). When separating the sample by sex, I estimate the gendered differences in paternal incarceration's impact on crime. Each one year increase in respondent's age decreased the likelihood of females committing crime. In other words, paternal incarceration was more likely to produce female criminal involvement if it occurred earlier in life. Hypothesis 5, that posits paternal incarceration later in the child's life increases the involvement in crime, is not supported in this model for female respondents.

Parent-child closeness and emotional, physical and sexual abuse did not impact female respondents' criminal involvement. Respondents with a prior history of delinquency were more likely to commit crime, as were respondents' with lower self-control. Respondents who grew up in households where drugs were present were more likely to commit crime than those who grew up in drug-free homes. Household composition had a minor impact on crime: respondents from non-traditional household configurations committed more crime than individuals raised in two-parent homes, though this relationship merely approached statistical significance ($p \leq .10$). Black

respondents were more likely to commit crime than White respondents. Finally, immigrant status and being of another race did not statistically significantly impact the likelihood of crime.

Male Respondents

Models 5 and 6 present regression estimates for male respondents reporting paternal incarceration (N=686). Once again, Model 5 is a null model that includes only the outcome variable—crime—and the level two variable—neighborhood disadvantage. Neighborhood disadvantage did not have a statistically significant impact on criminal involvement.

Model 6 introduces main effects at level one. I include the primary independent variable—age of respondent at first paternal incarceration, as well as various controls. Timing of paternal incarceration did not have a statistically significant impact on males' criminal involvement. Respondents' age at their fathers' first incarcerations did not have an impact on the sons' criminal offending. Hypothesis 6 is not supported.

Physical abuse increased the likelihood that sons of incarcerated fathers would offend. Males reporting emotional and sexual abuse were somewhat more likely to commit crime, as these relationships approached statistical significance ($p \leq .10$). Again, respondents were more likely to offend when they had a prior history of delinquency and lower self-control. Respondents with college degrees were somewhat less likely to offend than those with college degrees ($p \leq .10$). The presence of drugs in one's childhood home, as well as respondents' childhood household composition did not impact criminal involvement. Similarly, parents' education did not affect the likelihood of crime. Finally, respondent's race did not impact crime commission.

Paternal Incarceration Timing and Depression

Full Sample

Table 15 presents the effects of paternal incarceration timing on depression among their adult children. Once again, this sample includes only respondents reporting one or more paternal incarcerations (N=1,455). Model 1 includes only the outcome variable—depression—and the level two variable—neighborhood disadvantage. This null model with no predictors indicates that variation in depression was split across individuals (within block groups) and between block groups. Neighborhood disadvantage did not have a statistically significant impact on depression.

Model 2 introduces the primary independent variable—respondents' age at the time of paternal incarceration. I include controls for parent-child closeness and history of emotional, physical or sexual abuse. I also include measures of delinquency, self-control, and household composition. Finally, I include measures of education and other demographic controls. Parental incarceration timing does not statistically significantly impact depression symptoms. The age at which a father is incarcerated did not impact the respondents' depression. Hypothesis 4 is not supported.

Father-child closeness did not affect depression, although respondents who were closer to their mothers were less likely to report depression symptoms. Individuals reporting emotional or physical abuse were more likely to experience depression, although sexual abuse did not impact depression symptoms. Respondents with a history of delinquency were more likely to be depressed, as were individuals with decreased self-control. Females were more likely to experience depression than males. Black respondents were somewhat more likely than White respondents to suffer depression ($p \leq .10$). Childhood household configuration and the presence of drugs in one's childhood home did not impact depression. Respondents' education—and their

parents' education—did not statistically significantly affect depression. Immigrant status did not affect depression. Finally, neighborhood disadvantage still increased the likelihood of depression, although its impact decreased with the introduction of main effects at level one.

Female Respondents

Models 3 and 4 focus on female respondents reporting paternal incarceration (N=769). Model 3 includes only the outcome variable—depression—and the level two variable—neighborhood disadvantage. Neighborhood disadvantage did not statistically significantly impact depression among females.

Model 4 presents the results of paternal incarceration timing on depression among female respondents (N=769). Results indicate there are gendered differences in parental incarceration timing's impact on depression. Each one year increase in female respondent's age decreased the likelihood of depression. Daughters of incarcerated fathers were more likely to suffer depression when the first paternal incarceration occurred earlier in their lives. Hypothesis 7 is supported.

Females who were closer to their mothers reported fewer depression symptoms, as did respondents with higher levels of self-control. Emotional abuse increased the likelihood of depression. Respondents of other races were more likely than White respondents to report depression ($p \leq .10$), though the estimate merely approached statistical significance. Father-child closeness did not impact depression symptoms. Physical and sexual abuse had no effect on depression among females. Prior delinquency, household configuration and education similarly failed to affect females' depression symptoms.

Male Respondents

Male respondents reporting parental incarceration are outlined in Models 5 and 6 (N=686). The null model includes two variables—the outcome variable, depression, and the level-two variable, neighborhood disadvantage. Neighborhood disadvantage increased the likelihood that male respondents reporting incarcerated fathers would suffer depression.

Level one main effects are presented in Model 6. Age of the respondent at the time of the first parental incarceration is included, as are various demographic control variables. Paternal incarceration timing did not impact the likelihood of males suffering depression. Hypothesis 8 is not supported.

Males reporting incarceration were somewhat more likely to suffer depression if they were physically abused or if they committed delinquency as minors; both relationships approach statistical significance at the $p \leq .10$ level. Respondents were less likely to suffer depression if they had college degrees, again merely approaching statistical significance ($p < .10$). Males who were sexually abused suffered more depression, as did respondents who were raised in the presence of drugs. Higher levels of self-control reduced depression symptoms, as did poorer relationships with mothers. Emotional abuse did not impact the likelihood of depression. Similarly, father-child closeness did not affect depression symptoms. Household configuration, parents' education, race and immigrant status all failed to affect the likelihood of suffering depression. Neighborhood characteristics remained statistically significant in this depression model, as respondents from disadvantaged neighborhoods reported more depression. However, neighborhoods' impact on depression diminished with the introduction of variables at level one. With the results of the statistical tests of my hypotheses reviewed, the discussion of the substantive importance of these findings will now be addressed.

DISCUSSION

The purpose of this research was to investigate how parental incarceration timing in the lives of their children affected internalizing and externalizing antisocial behaviors—specifically, crime and depression—among those children. More specifically, I focused analyses on children of incarcerated parents, differentiating between paternal and maternal incarceration. I also examined gender differences among children of incarcerated mothers and of incarcerated fathers, separately examining male and female respondents who reported an incarcerated mother or incarcerated father. The sample of respondents with incarcerated mothers provided a sufficient sample size to allow for estimating the parameter coefficients for these gendered models, but the sample sizes were small (N=257 for females and N=170 for males, respectively); therefore, the reader should use caution in making substantive inferences based on these findings. Because of the small sample sizes, analysis of outliers and influential cases is especially important.

The analyses support my hypotheses about maternal incarceration timing and its effect on crime and depression among the children of these incarcerated mothers. Maternal incarceration timing does have a statistically significant impact on crime for the total sample of males and females, as respondents are more likely to engage in externalizing behaviors when their mothers' first incarcerations occur later in their children's lives. This is consistent with prior literature that has similarly concluded that developmental timing of parental incarceration differentially impacts children of imprisoned parents (Cho 2009a, 2009b; Swisher and Shaw-Smith 2015). Parental incarceration is associated with aggression and externalizing behaviors in adolescence (Johnston 1995; Poehlmann 2005; Dallaire 2007a; Dallaire 2007b), so these findings substantiate extant research on this subject. Extant literature has established that children of incarcerated parents are at increased risk of externalizing factors such as drug abuse, school failure and

unemployment (Meyers et al. 1999; Murray and Farrington 2008a; Roettger 1999). Children of incarcerated parents are also more likely to engage in crime themselves (de Rakt, Murray, and Nieuwbeerta 2012; Murray, Loeber, and Pardini 2012).

However, these effects varied by respondent's gender. Although males are more likely to offend if their mothers are incarcerated at later ages, females are actually more likely to offend when their maternal incarcerations occur earlier in the child's life. Cho (2010) similarly concludes that developmental timing of a parent impacts poor outcomes. She argues that children's age at first maternal incarceration moderates imprisonment's effects on antisocial behaviors. She concluded that older children were more likely than younger children to react aggressively, while younger children were more likely to feel traumatized or suffer with esteem issues. The findings in the present study substantiate Cho's.

Findings regarding maternal incarceration's effect on mental health are also consistent with extant literature (Lee, Fang and Luo 2013). While maternal incarceration is more likely to produce externalizing antisocial behavior among older respondents, it is also more likely to produce internalizing behaviors among younger respondents. Taken separately, we see that early maternal incarcerations are more likely to promote depression and later maternal incarcerations are more likely to promote crime. The gendered patterns for maternal incarceration timing's impact on depression are similar to those for crime. Again, females are more likely to report depression symptoms when their mothers' first incarceration occurs earlier in life. In contrast, males suffer more depression when maternal incarceration occurs later in life. Consistent with my findings, extant literature has established gendered differences among male and female children of incarcerated parents (Finkeldey and Dennison 2019; Swisher and Shaw-Smith 2015). For example, Cho (2010) found that boys were more sensitive to frequent incarcerations,

while girls were more impacted by lengthier imprisonments. This dissertation's findings contribute to a body of literature that recognizes gendered differences in incarceration outcomes.

Elsewhere, I argued that paternal incarceration timing during the lives of their children would similarly impact respondents' criminal involvement and depression symptoms. With few exceptions, I found only limited support for these arguments. For all respondents reporting paternal incarceration, the timing in their lives of a father's first incarceration did not impact the likelihood of either crime or depression. Furthermore, examining sons and daughters of incarcerated fathers separately, I found that females were more likely to commit crime when their fathers' first incarcerations occurred at earlier ages, which was opposite to my hypotheses that incarceration at earlier ages would increase depression, not criminal involvement, among adult children of the incarcerated. However, paternal incarceration timing in the respondents' lives had no impact on males' likelihood of offending. Results for paternal incarceration's impact on depression were similarly mixed. Once again, when including the full sample, parental incarceration timing did not affect respondents' reported depression symptoms. When examining daughters and sons of incarcerated fathers separately, though, we see gendered differences in response to paternal incarceration timing providing mixed support for my hypothesis. Females were more likely to suffer depression when their fathers were incarcerated at earlier ages as hypothesized, but males' depression symptoms were unaffected by the timing of their fathers' first imprisonments. Therefore, only one of the four gendered hypotheses relative to paternal incarceration was supported.

The analyses surrounding paternal incarceration's impact on crime and depression provide interesting findings. Females, rather than males, seem especially sensitive to the developmental timing of paternal incarceration. Consistent with prior scholarship (Johnson 2006;

Cho 2009b, 2010), we see that female respondents are more likely to report internalizing behaviors when paternal incarceration occurs earlier in life and also are more likely to report externalizing antisocial behaviors when paternal incarceration occurs earlier in life. Although the timing of maternal incarceration increased the likelihood of crime and depression for males, the timing of paternal incarcerations did not impact the likelihood of males' offending or depression. Therefore, according to my analyses, developmental timing of paternal incarceration is more important for female children of incarcerated parents, but not for male children. However, both males and females are sensitive to the timing of maternal incarceration.

Among the importance of my substantive findings, scholars have long called for more rigorous research methods in parental incarceration literature (Hagan and Dinovitzer 1999, Johnson and Easterling 2012; Phillips et al. 2006; Murray, et al. 2012; see also Mears and Siennick 2016). Multilevel analyses employed in my study afforded the opportunity to control for neighborhood disadvantage as a factor in promoting crime and depression; and I found, in fact, that neighborhood factors played a significant role in predicting offending and depression mostly in the male models after controlling for a host of related causal factors. That is, neighborhood disadvantage was not statistically significant in the majority of models analyzed. Sequentially adding these control variables allowed for examination of changes in neighborhood effects in crime and depression explained by the variables in the regression. Thus, the variation found in the null models is partly explained by individual-level factors. This model specification contributes to the literature by giving us confidence that the substantive findings among other regressors are not attributed to selection effects—that is, the shared variance with neighborhood disadvantage.

Parental incarceration promoted higher levels of crime and depression. However, the actual effect was relatively small. Presently, scholars remain divided over the relative strength of parental incarceration's impact on antisocial outcomes, and the moderating factors that may differentially impact those outcomes (see: Murray et al. 2012). Nevertheless, these results indicate that parental incarceration's impact—while statistically significant—was substantively small. The extended family networks of incarcerated parents and children offer one potential explanation. Although poor minorities are at the highest risk for parental incarceration (Clear 2007; Pratt 2009), they may also be more likely to share caregiving responsibilities that provide a protective effect against parental incarceration's impact on crime and depression. Providing much-needed support for children struggling with parental loss may partially mitigate parental incarceration's harmful effects (Hanlon et al. 2005; Arditti 2012).

LIMITATIONS

This study has a number of limitations that bear noting. These results do not produce evidence of causal relationships between parental incarceration and crime and depression because these measures do not account for time ordering between the parental incarceration measures and other control variables. It is possible that many of the control variables are endogenous to the paternal and maternal incarceration variables. Nevertheless, their association is important to document.

Separate analyses were performed on females and males reporting maternal incarceration before age 18. Given the small sample sizes (N=257 for females and N=170 for males), we should be cautious about making any substantive inferences from these results. Analysis of outliers and influential cases is especially important when assessing such a small sample.

The measure of parental incarceration itself is flawed. Although Add Health includes measures indicating how often a parent was incarcerated, it fails to distinguish between jail and prison terms, and does not consider incarceration histories. Different types of incarceration may be qualitatively different, and thus may impact children of incarcerated parents differently. These measures fail to capture such distinctions. Nevertheless, these analyses provide evidence that incarceration—regardless of the duration, the restriction the setting places on parent/child contact or the instability it brings to the family, has deleterious effects on children of the incarcerated depending on the developmental timing of the parents' first incarceration.

Data limitations forced other concessions. For example, Add Health's measures of emotional, physical and sexual abuse measure whether a respondent was victimized before their 18th birthday. However, this measure does not indicate whether the abuser was an actual parent. For this reason, comparing age at a parent's first incarceration to the age at first emotional, physical or sexual abuse is insufficient to establish a connection between parental abuse and antisocial behavioral outcomes for their children. We may expect that parental incarceration will prove less damaging to children whose parents abused them in the past. More sophisticated measures would offer a more complete examination of the respondents' home lives, and may explain some of the mixed results found in the analyses. Still, it is important to control for any effects that abuse in the children's past that might be confounded with the impact parental incarceration has on antisocial behavior as adults.

Add Health's school-based sampling design may also be problematic for these analyses. Individuals who dropped out before the first wave of data collection were ineligible for the sample. These individuals may be at the greatest risk for parental incarceration. Their hypothetical inclusion may affect results, with the transition away from school further impacting

their life course. However, their inclusion may allow for a more thorough examination of selection effects, as these individuals are more likely to suffer other dimensions of disadvantage.

CONCLUSION

While others have examined paternal incarceration timing's impact on crime among children of the incarcerated, at present no study has used Add Health data to assess maternal incarceration timing's impact on crime. In this study, I tested how parental incarceration timing impacted crime and depression arguing that earlier parental incarcerations would promote internalizing behaviors like depression, while later parental incarcerations would promote externalizing antisocial behaviors like crime. Although results were mixed, these findings remain important and provide some evidence supporting developmental timing.

Maternal incarceration timing impacted criminal offending and depression among adult children of the incarcerated. In the full sample, earlier maternal incarcerations were more likely to produce depression, while later incarcerations were more likely to produce crime. In the gender-specific analyses, though, female children whose mothers were incarcerated earlier in the child's life were more likely to engage in crime and suffer depression. Conversely, male children whose mothers were incarcerated later in the sons' lives were more likely to commit crime and report depressive symptoms.

In the full sample, among respondents reporting maternal incarcerations, parent-child closeness did not impact likelihood of criminal offending. One important consideration is the moderating impact of parental abuse. Emotional, physical and sexual abuse all increased the likelihood of crime, but only physical abuse increased offending among respondents reporting maternal incarcerations. Due to Add Health's data limitations, it is impossible to determine the

source of parental abuse. In other words, it is impossible to ascertain if the abuser was the incarcerated parent, or another adult. Future research should examine how different forms of abuse moderate the impact of parental incarceration.

Results for the impact of paternal incarceration timing on crime and depression were mixed. Gendered differences were revealed when separately examining females and males. Females were more sensitive to the developmental timing of paternal incarceration, as earlier incarcerations actually produced more crime and more depression. In contrast, paternal incarceration timing did not have a statistically significant impact on males' offending and depression. Many of the control variables did not impact offending of females reporting paternal incarcerations. For example, parental closeness did not affect offending. Respondents' education and their parents' education levels similarly had no effect on crime. Immigrant status—often associated with reduced criminal involvement—did not affect criminal offending among females reporting paternal incarcerations. Finally, all types of abuse failed to impact offending among female respondents.

In contrast, male respondents reporting paternal incarcerations were more likely to be impacted by the aforementioned factors. Emotional, physical and sexual abuse all increased the likelihood of offending. Although daughters of incarcerated fathers were more likely to offend if they were raised in a home where drugs were present, males were not affected by the presence of illicit substances. Although respondents' education did not impact the likelihood of female offending, males were somewhat less likely to offend if they had a college education. Black females were more likely to offend than White females, although race did not impact the likelihood of offending among sons of incarcerated fathers.

The important substantive finding from this study is that paternal and maternal incarceration timing impacted respondents differently. The timing of maternal incarceration differentially affected female and males children's criminality and depression, though females were sensitive to the developmental timing of paternal incarceration whereas males were not. Although extant literature on the developmental timing of stressful life events remains mixed (see: Cho 2010), these results follow previous scholarship that has found adolescent females to be particularly vulnerable to certain types of stress. For example, Rudolph and Hammen (1999) concluded that adolescent boys reported higher levels of stress associated with self-generated events, while females reported higher levels of interpersonal stress—especially when there was conflict in the parent-child relationship during adolescence. Although Rudolph and Hammen (1999) did not specifically study parental incarceration, their results remain relevant to my analyses. Results provide support for the argument that interpersonal stress and conflict may prove especially harmful to adolescent girls.

Related to this is the household structure for children and parent-child relationship when a parent is incarcerated. Future research should consider more sophisticated measures of household configuration (see: Swisher and Shaw-Smith 2015) and parent-child closeness to better assess post-incarceration household makeups and other potential sources of stress and resiliency in children of incarcerated parents. A better understanding of the quality of the parent-child relationship before, during and after incarceration may provide a fuller picture of how incarceration promotes crime and depression.

African-American families may possess resiliency resulting from years of disenfranchisement and cumulative disadvantage. These families are more likely to share childrearing responsibilities in extended kin networks (Miller 2007). They are more likely to

express fluid familial boundaries, a willingness to “absorb” or take in other relatives, and a focus on mutual aid (Moras, Shehan, and Berardo 2007). This focus on collective responsibility may be especially beneficial in situations of parental incarceration, since children of incarcerated parents are more likely to require assistance from others (Hanlon et al. 2005; Arditti 2012). However, such assumptions may be problematic for these findings. Although this argument may hold true for males, the present study shows that female respondents’ race in the paternal incarceration model had a statistically significant impact on female criminal involvement. Specifically, for females whose fathers were incarcerated, black females were more likely than white females to offend.

In these findings, parental education was rarely statistically significantly associated with poor outcomes. Children from extremely disadvantaged families may experience less stigma surrounding parental incarceration than do their more advantaged counterparts. Less-stigmatized children are more likely to receive social support from their peer groups. Social support may also moderate stigma, thus increasing the overall wellbeing of these children (Hagen and Myers 2003). In contrast, more advantaged children may have less ability to cope because of the stigma of incarceration that is less common among advantaged persons. They may lack social support, and they may be more likely to experience stigmatizing effects of parental incarceration.

Neighborhood disadvantage predicted criminal offending and depression in some of these analyses. Primarily male respondents from disadvantaged neighborhoods were more likely to offend criminally and to suffer depression. However, those statistically significant neighborhood effects largely dissipated when introducing individual-level factors. Thus, the variation explained by neighborhood disadvantage was shared by that explained by individual factors.

Scholars should also closely consider the presence of pro-crime attitudes in childhood households. Unconventional parent-child relationships may place children on criminal trajectories, regardless of the timing of the children's parents' incarcerations. Conversely, the unexpected incarceration of parents living more conventional lifestyles may prove especially traumatic for children. These are important aspects of the lives of children with incarcerated parents that should be considered in future research on this subject.

CHAPTER FIVE: CONCLUSION

The U.S. incarceration rate has exploded in recent decades, and a large body of research focuses on the deleterious effects of mass incarceration on offenders upon release from prison. Ex-prisoners struggle finding employment and recidivate at a high rate. These individuals are also at increased risk for substance abuse and mental health issues (Western 2006; Clear 2007; Nagin, Cullen and Jonson 2009; Garland 2013).

Meanwhile, a growing body of empirical work examines how incarceration impacts families and communities. Parental incarceration promotes housing and food insecurity, familial disruption and reduced parental supervision for the children. The families most likely to suffer incarceration also struggle with preexisting disadvantage (Wakefield and Wildeman 2014). Meanwhile, reentry into the community may actually compound these issues. The act of incarceration is not a single static event; rather, it is part of a complex ongoing process—the consequences of which extend well beyond the act of imprisonment. Such consequences may extend to families across various life domains (Murray et al. 2012; Rakt et al. 2012; Turney 2014). In particular, the children of incarcerated parents may suffer in a variety of ways. The focus of the present study has been how parental incarceration influences antisocial behavior among the children of the incarcerated.

The life course perspective has been used to study crime and deviance. Life-course criminologists assess continuity and change over time. Researchers have found that temporal trajectories of criminal involvement carry over from childhood and adolescence into adulthood. Parental incarceration may alter long-term trajectories by causing disruption at developmentally

critical times. Thus, parental incarceration constitutes a turning point when it disrupts children's transitions into adulthood.

SUMMARY OF FINDINGS

As detailed in Chapter 1, parental incarceration is a unique type of loss. Other types of loss such as parental death may produce similar outcomes, but incarceration provides a unique combination of stressors that impact individuals across numerous life domains. However, many factors may moderate the impact of parental incarceration. Scholars have noted that incarceration impacts sons and daughters differently (Cho 2010). Others have noted that maternal and paternal incarcerations may produce different outcomes (Foster and Hagan 2013; Turney and Lanuza 2017). Still others have argued the preexisting disadvantage and selection effects may partially explain poor outcomes associated with parental incarceration (Hagan and Dinovitzer 1999, Johnson and Easterling 2012; Phillips et al. 2006; see also Mears and Siennick 2016).

This study joins a growing body of literature examining parental incarceration's impact on internalizing and externalizing antisocial behaviors. While internalizing behaviors involve negativity directed inward toward the self, externalizing behaviors direct negativity outward. My analyses focused on the internalizing behavior of depression and the externalizing behavior of adult crime. In chapter two, I assessed the impact of parent-child closeness, to ascertain whether parental incarceration may prove more deleterious to children when they report closer personal relationships with their incarcerated parents. In chapter three, I examined whether parental incarceration was more damaging to children if they were the same biological sex as the incarcerated parent. Finally, in chapter four, I examined whether the age of the child at the time of parental incarceration's first occurrence affected the likelihood of crime and depression of the

adult child of the incarcerated. I used a multilevel approach in these analyses, addressing calls for rigorous research methods that account for selection effects. My objective was to measure how different factors moderating parental incarceration impact criminal involvement and depression among their children, while also accounting for variation attributable to neighborhood characteristics. I argued that parental incarceration was a turning point that altered their children's trajectories toward crime and depression, and that the above-mentioned factors of gender and closeness may moderate imprisonment's impact and promote especially poor outcomes for children of incarcerated parents. Based on the extant literature relevant to these subjects, hypotheses were derived that were tested using multi-level regression models.

Overall, support for the hypotheses were mixed. Contrary to some previous work (Wildeman 2008), maternal and paternal incarceration both produced internalizing and externalizing antisocial behavior. Consistent with prior scholarship (Besemer et al. 2011; Burgess-Proctor et al. 2016; Foster and Hagan 2013; Swisher and Shaw-Smith 2015), analyses revealed a gendered component of parental incarceration's impact on crime. Consistent with some of my hypotheses, maternal and paternal incarceration both produced internalizing and externalizing antisocial behavior—that is, maternal and paternal incarceration increased the likelihood of crime and depression among their children. The interaction of parent-child gender moderated parental incarceration's impact on internalizing and externalizing antisocial behaviors, although the findings ran counter to some of my hypotheses. Both maternal and paternal incarceration had a greater impact on males' crime commission than on females' offending. Maternal incarceration also had a greater impact on males' depression symptoms than on females' depression. Thus, gender moderated parental incarceration's impact on both crime and depression—it impacted males more severely than females. This may provide support for the

“male vulnerability” hypothesis, which posits that males are more likely than females to report antisocial outcomes when suffering parental incarceration (Besemer et al. 2011).

In chapter three, I hypothesized that parent-child closeness moderated parental incarceration’s impact on crime. I found partial support for this idea. Individuals who were closer to their mothers were less likely to offend, and both maternal and paternal closeness decreased the likelihood of depression among those whose father was incarcerated. Mother-child closeness did moderate maternal incarceration’s impact on crime, as individuals who were closer to their incarcerated mothers committed even less crime than those who weren’t as close to their incarcerated mothers. It is possible that the closeness to one’s mother provides a strong sense of attachment to conventional values that incarceration cannot disrupt.

Although the rare event of maternal incarceration seems to indicate a lack of conventionality, Add Health’s maternal imprisonment measure must be considered when interpreting these findings. Add Health’s incarceration measure does not differentiate between a lengthy prison sentence or spending a single night in jail. Thus, it is possible that the incarcerated mothers who were close to their children were experiencing short jail stints, rather than lengthy imprisonments. The former would be less likely to constitute a turning point that would alter individuals’ trajectories toward crime or depression. For such imprisonments, maternal closeness may provide a protective effect against the disruptive event of parental imprisonment. In contrast, paternal closeness did not moderate parental incarceration’s impact on crime or depression—even in cases where the mother was the incarcerated parent. This may illustrate the presence of traditional households, where the mothers are the primary caregivers. Children’s fathers are typically incarcerated at earlier ages than mothers, so these outcomes may also be related to the developmental timing of parental incarceration.

Finally, I examined how the developmental timing of maternal and paternal incarceration's impacted criminal offending and depression symptoms. Consistent with prior research (Cho 2010), the developmental timing of maternal incarceration impacted depression and crime among the adult children of the imprisoned. Earlier incarcerations were more likely to produce depression, and later incarcerations more often resulted in crime. Meanwhile, females were more sensitive to the developmental timing of paternal incarceration, with both early and late incarcerations producing higher levels of crime and depression. In contrast, developmental timing of paternal incarceration did not affect males' likelihood of engaging in depression or crime. This provides support for Rudolph and Hammen's (1999) work, which concluded that males were more sensitive to noninterpersonal stress, and females were more sensitive to interpersonal stress—particularly when that stress occurred during adolescence, and when that stress generated conflict in parent-child relationships. These analyses capture similar results, finding that females under the age of 18 are more sensitive than their male counterparts to the interpersonal conflict associated with parental incarceration.

Neighborhood disadvantage predicted criminal offending and depression in some of these analyses. However, those neighborhood effects largely dissipated when introducing individual-level factors. Thus, the variation explained by neighborhood disadvantage was shared by that explained by individual factors. This contributes to empirical work indicating that parental incarceration is a unique form of loss that promotes poor outcomes over and above the effects of neighborhood disadvantage.

LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

Although the multilevel analyses presented in this dissertation allowed for an approximation of neighborhood effects, they may be inadequate indicators of community contexts. Analyses include measures at the block group level, which may be insufficient to assess other community-level factors that promote normative development. These measures may not completely capture neighborhood-level effects that affect crime and depression. For example, these measures do not provide a full picture of adversity, nor do they address resiliency in disadvantaged communities—such resiliency has been found to partially mitigate the harmful effects of parental incarceration (Burgess-Proctor et al, 2016; Collins and Russell 2001; Pleck 2010; Tasca et al. 2014). If we could control for resiliency, we might find that parental incarceration has more deleterious effects on antisocial behaviors for those who have less resilience.

Extant literature also notes a variety of mechanisms linking parental incarceration to poor health outcomes, including a lack of stable relationships and exposure to violence. These data do not allow for determining the causal ordering between parental incarceration and antisocial behavior among their children. Efforts are made to control for other factors that may also account for the children's externalizing and internalizing behaviors, but there is no way to establish causal ordering of forces on the children's lives using these data. Further research is necessary to assess parental incarceration's causal impact on crime and depression.

These analyses indicate that developmental timing of incarceration impacted the likelihood of crime and depression—particularly when the incarcerated parent was a mother. However, preexisting hardship may partially account for these poor outcomes. Future research should consider the developmental timing of factors such as emotional, physical and sexual

abuse. If these abuses occurred before a parent's incarceration, that imprisonment may actually prove productive to children by removing a source of strain. However, abuses that occur after a parental incarceration may instead indicate yet another way that incarceration compounds familial problems. More work is necessary to assess the potential mediating impact of abuse on poor behavioral outcomes.

Other aspects of incarceration must also be considered. A large number of parental incarcerations may prove more disruptive and harmful than a single, short jail sentence. Elsewhere, lengthy incarcerations may affect children of the incarcerated differently than short imprisonments. Swisher and Shaw-Smith (2015) concluded as much in their examination of paternal incarceration's impact on poor behavioral outcomes. It is possible that multiple maternal incarcerations may prove especially disruptive. Meanwhile, lengthier maternal imprisonments remove mothers from their children for extended periods of time. Future research should consider how these aspects of maternal incarceration may impact crime and depression among the children of the incarcerated.

These analyses also failed to account for certain factors that may increase the likelihood of internalizing or externalizing antisocial behaviors. For example, these analyses did not address subcultural beliefs favorable to violence. Parental incarceration is associated with preexisting disadvantage (Wakefield and Wildeman 2014), and such disadvantageous conditions may promote cultural norms supporting violence (Anderson 1999). These norms interact with structural environments, and should be considered in future research.

These findings indicate a gendered component to parental incarceration's impact on crime and depression. Criminologists have established that there are gender differences in offending; for example, males are more likely to engage in violent crimes than females. For

expediency, my analyses centered on a general measure of crime that combined both violent and nonviolent offenses. Future research may provide a more precise picture of parental incarceration's impact on crime committed by their sons and daughters by differentiating between violent and property crimes, which is likely to reveal more gender differences.

Age is another important consideration. Outcome measures related to crime focus only on the past calendar year—when respondents were well past the ages associated with traditional patterns of offending—that is, most individuals age out of crime. Results may differ among younger respondents. Adolescents typically act out and begin criminal offending in their mid to late teens. Perhaps, the initial age of crime commission should be compared to the age at parental incarceration to more directly ascertain imprisonment's impact on crime among children of the incarcerated. Furthermore, this line of research would allow for the assessment of competing theoretical perspectives.

These analyses followed a life-course framework, which posits that parental incarceration is a disruptive turning point that alters individuals' trajectories toward crime and depression. However, these analyses did not directly test any components of this theoretical framework. For example, life course theory presents a cumulative disadvantage hypothesis which posits that accumulated disadvantage promote health and educational disparities that increase over the life course (Dupree 2008). Longitudinal analyses would allow for a more thorough assessment of how disadvantage associated with parental incarceration accumulates and produces poor outcomes over the life course. Data should be collected so that future research could directly test this perspective.

Analyses considered how parental incarceration impacted criminal offending and depression symptoms of adults age 24-32. Although results indicate that respondents reporting

parental incarcerations are more likely to suffer depression and commit crime as adults, these results might appear different if outcomes were measured at Wave 3. Offending typically increases from late childhood, before peaking in the teenage years and eventually declining in the early 20s (National Institute of Justice, n.d.). Wave 3 data were collected when respondents were aged 18-26, during ages that are more likely to be associated with crime. Furthermore, life course scholarship posits that individuals may desist from crime when situations allow them to “knife off” the present from the past. Examples of these events include military service, marriage, and professional advancement—all events that are likely to occur during Wave 3. Longitudinal analyses capturing changes in offending during Wave 3 and Wave 4 would allow for assessment of changes in offending over the life course.

THEORETICAL AND POLICY IMPLICATIONS

These limitations do not negate the study’s theoretical and policy implications. Life course scholarship posits that parental incarceration is a potential turning point that adversely affects individuals during and after the transition to adulthood. Mass incarceration scholars have called for longitudinal data to follow children’s transitions into adulthood (Mears and Siennick 2016; Sampson and Laub 2005; Swisher and Shaw-Smith 2015). As discussed above, there are other aspects of parental incarceration and its impact on children that could be more directly addressed with better longitudinal data, especially regarding the timing of the parent’s incarceration relative to antisocial behavior among their children.

The current study also has implications for life-course research. The life-course perspective posits that age-graded institutions mediate individual behavior. Sampson and Laub (1993) argue that social bonds may change over the life course. Examining parental incarceration

from this perspective is intuitive and useful, as parental incarceration clearly weakens social bonds, which in turn adversely affect individuals in a variety of other ways. For example, children of incarcerated parents may suffer from primary caregiver loss and reduced supervision. This may damage attachment to loved ones. Young and Jefferson Smith (2019) note that children of incarcerated parents may report ongoing struggles with trusting their previously imprisoned parents. However, others have concluded that close relationships with parents may actually reduce depression and psychological distress, even among high-risk children (Amato 1994; Davis and Shalfer 2017; Zweig, Phillips and Lindberg 2002). This research reinforces the argument that close personal relationships with parents may provide a protective effect against external stressors—even those as serious as parental incarceration.

Furthermore, this literature provides further evidence of the linked lives perspective. Specifically, this perspective posits that individuals in salient relationships are reciprocally connected. These individuals continue on intertwined trajectories throughout the life course. Thus, incarceration of an adult child may prove deleterious to their parents. Similarly, parental incarceration may prove impactful on adult children's mental health and criminal offending, even when the imprisonment occurs when the child has reached adulthood.

Although literature understandably focuses on parental incarceration of minors (Arditti, Lambert-Schute, and Joest 2004; Murray and Farrington 2005; Cho 2010; Swisher and Shaw-Smith 2015; Tasca, Rodriguez and Zatz 2011), parental incarceration may prove stressful at any age. Since stressful events may promote psychological distress (Doherty and Baptiste 1993) or resiliency (Elder 1998), we expect that the stress of a parental incarceration will prove impactful, even among adult children of imprisoned parents.

Viewed from a life course perspective, it is critical that incarceration not be viewed in a vacuum. Future research and theory must continue to assess how parental incarceration promotes internalizing and externalizing behaviors throughout the life course. The interlocking trajectories of incarcerated parents and their adult children must be considered. Relatedly, research should consider how an adult child's imprisonment may prove harmful to parents' wellbeing.

This study contributes to a growing body of literature that recognizes parental incarceration as a unique type of loss associated with a wide array of behavioral and health-related consequences (Turney 2014; Turney and Goodsell 2018). Children of incarcerated parents face a wide array of inequalities and disadvantages that promote intergenerational consequences (Eddy and Poehlmann 2010).

Furthermore, parental incarceration affects individuals directly and indirectly. While incarceration increases the likelihood of recidivism, it also compounds and amplifies the deleterious effects of preexisting disadvantage (Wakefield and Wildeman 2014) for children. This is especially problematic for poor minority children who are at the greatest risk of parental incarceration (Clear 2007; Pratt 2009). Collateral consequences extend beyond the single act of incarceration (Clear 2007; Wildeman 2014). Parental incarceration disenfranchises ex-prisoners, limiting their job opportunities, promoting housing insecurity and familial disruption (Manza and Uggen 2006; Muller 2013). The many consequences extend well into adulthood and may persist throughout the life-course.

It is critical that policymakers develop programs to mitigate the disadvantages these children face. Although the majority of treatment programs focus on maternal incarceration, others aid in managing paternal incarceration, substance abuse, and rebuilding relationships with loved ones. Turney and Goodsell (2018) assessed various types of programs, including parenting

programs, substance abuse programs and relationship strengthening programs. She calls for more impactful interventions to help the children of incarcerated parents navigate factors that impact children before, during and after incarceration. This dissertation presents evidence indicating that paternal and maternal incarceration produce similar effects and that parent-child closeness actually reduces the negative consequences associated with incarceration. Thus, programs should address improving parent-child relationships.

This study also has implications for policies such as the Formerly Incarcerated Reenter Society Transformed Safely Transitioning Every Person Act (First Step Act). Among other provisions, the act expands compassionate release for terminally ill patients, aims to place some prisoners closer to their families, and increases the amount of good conduct time prisoners can receive per year.¹² It is likely that this legislation may prove impactful for children of incarcerated parents, although it is difficult to make causal inferences from these data. Since parental closeness was measured at Wave 1, analyses did not consider if incarcerations occurred before or after 1994-1995.

Respondents committed more crime and suffered more depression when they reported poorer relationships with their parents. However, the act of parental incarceration may damage children's relationships with the incarcerated parent. In other words, one must consider whether respondents reporting paternal incarcerations have poorer relationships with their parents because of a parental incarceration, or whether this lack of parental closeness existed before the incarceration.

¹² Good conduct time is sometimes referred to as "time off for good behavior." Prisoners who maintain good behavior may earn credits toward a reduced sentence. The First Step Act increases the amount of credits prisoners can earn per year, potentially decreasing the length of their imprisonments.

The First Step Act's effects on crime and depression may depend on the quality of the relationships children had with their parents before incarceration. If the parent provides strong support in the child's life, the interruption of the child-parent relationship will lead to or exacerbate many of the issues or risk factors associated with parental incarceration. Conversely, in some cases a child might benefit from the removal of a parent who presented problems for the child. Any attempt to facilitate contact between the incarcerated parent and child should consider the quality of the relationship the child had with the parent before incarceration

This study also has potential implications for other types of parental loss such as family separations at the United States-Mexico border. The results support extant literature indicating that closer relationships with parents are more likely to produce healthier outcomes (Amato 1994; Davis and Shalfer 2017). Similarly, scholars have established that various types of parental loss may have damaging effects on children (Cook et al. 1980; Umberson 2003). Border separations may prove similar to other types of parental loss such as death or divorce, and the stress associated with a forcible parental separation is associated with psychological and physical damage that may prove catastrophic to children. This type of loss is associated with long-term trauma that may prove developmentally debilitating. This research contributes to scholars who have called for an end to this policy that will likely produce long-lasting poor health outcomes for children.

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Table 1: Summary of Reliability Statistics.

Index	Survey Wave/Year	Cronbach's Alpha	Analyses
General Crime (11items)			
Damaged property			
Stole something worth more than \$50			
Broke into a home to steal property			
Used or threatened to us a weapon			
Sold drugs			
Stole something worth less than \$50	Wave 4, 2008	.705	Outcome Variable/ Externalizing Behavior
Physical fight (group)			
Held or used stolen property			
Used another person's bank card without permission			
Physical fight (individual)			
Injured another person severely			
Delinquency (15 items)			
Paint graffiti in a public place			
Damaged property			
Lied to parents			
Took something from a store			
Physical fight (individual)			
Injured another person severely			
Ran away from home	Wave 1, 1994-1995	.829	Control Variable
Held or used stolen property			
Stole something more than \$50			
Broke into a home to steal something			
Used or threatened to use a weapon			
Sold drugs			
Stole something worth less than \$50			
Physical fight (group)			
Loud or unruly in public			

Table 1: Summary of Reliability Statistics (continued).

Index	Survey Wave/Year	Cronbach's Alpha	Analyses		
Self-Control (14 Items)					
Sympathize with others' feelings					
Frequent mood swings					
Angered easily					
Uninterested in others' problems					
Bothered easily					
Irritated easily					
Empathize with others' emotions	Wave 4,	.788	Control Variable		
Upset easily	2008				
Lose temper easily					
Uninterested in others					
Keep one's cool					
Rely on instinct rather than thinking things through					
Enjoy taking risks					
Live without thinking of the future					
Neighborhood Disadvantage (5 items)					
Proportion in block group with income under \$15k					
Proportion in block group with female head of household	Wave 1,			.785	Level 2 Neighborhood Variable
Proportion Race: Black in block group	1994-1995				
Proportion of block group requiring public assistance income					
Unemployment rate in block group					

Table 2a: Descriptive Statistics and Bivariate Correlations of Variables with Outcome Measures for Total Sample and Descriptives for Respondents with Incarcerated Mothers and for Respondents with Incarcerated Fathers.

N=14,584 (weighted)	Mean	Std. Deviation	Minimum/Maximum	Correlation with Crime (<i>ln</i>)	Correlation with Depression (<i>ln</i>)
Crime	.40	1.35	0-27	1***	.07***
Depression	2.62	2.55	0-15	.07***	1***
Crime (<i>ln</i>)	.17	.44	0-3.34	1***	.14***
Depression (<i>ln</i>)	1.05	.70	0-2.79	.14***	1***
Mother Ever Incarcerated	.04	.20	0-1	.06***	.06***
Father Ever Incarcerated	.16	.37	0-1	.09***	.09***
Age at Maternal Incarceration	12.72	7.99	0-31	-.05	-.11*
Age at Paternal Incarceration	8.30	7.75	0-31	-.02	-.01
Not Close to Mother	1.15	.46	1-5	.03*	.07***
Not Close to Father	1.32	.67	1-5	.01*	.08***
Emotionally Abused	.48	.49	0-1	.10***	.19***
Physically Abused	.19	.39	0-1	.13***	.12***
Sexually Abused	.05	.22	0-1	.05***	.09***
Delinquency Scale	4.21	5.11	0-45	.20***	.08***
Self-Control Scale	48.40	6.47	14-70	-.20***	-.35***
Alcoholism: Either Parent	.17	.37	0-1	.04***	.06***
Drugs in Childhood Home	.03	.17	0-1	.06***	.03***
Household: Two Parents	.70	.46	0-1	-.04***	-.08***
Household: Other	.29	.46	0-1	.04***	.08***
Respondent's Education	13.17	3.19	1-13	-.12***	-0.14***
Father's Education	5.4	2.47	1-13	-.01	-.07***
Sex: Male	.47	.49	0-1	.18***	-.10***
Race: White	.38	1.33	0-1	-.04***	-.08***
Race: Black	.22	.42	0-1	.05***	.08***
Race: Other	.07	.25	0-1	-.003	.02*
Hispanic	.16	.37	0-1	.0004	.001
Foreign Born	.8	.26	0-1	-.04***	-.004***
Neighborhood Disadvantage	.58	.48	0-3.29	.03***	.07***

Note: + = $p < .10$, * = $p < .05$, ** = $p < .01$, *** = $p < .001$, (two-tailed test). Source: National Longitudinal Study of Adolescent to Adult Health, Wave 1 (1994-1995) and Wave 4 (2008).

Table 2b: Descriptive Statistics and Bivariate Correlations of Variables with Outcome Measures: Respondents Reporting Incarcerated Mothers Before Age 18.

N=428 (weighted)	Mean	Std. Deviation	Minimum/ Maximum	Correlation with Crime (<i>ln</i>)	Correlation with Depression (<i>ln</i>)
Crime	.72	1.77	0-16	1***	0.08+
Depression	3.48	3.17	0-15	.08+	1***
Crime (<i>ln</i>)	.31	.58	0-2.83	1***	.10*
Depression (<i>ln</i>)	1.25	.74	0-2.78	.10*	1***
Father Ever Incarcerated	.51	.50	0-1	0.05	0.03
Age at Maternal Incarceration	9.10	5.50	0-17	-.01+	.11+
Age at Paternal Incarceration	6.77	5.85	0-17	-.06 *	-.001
Not Close to Mother	1.22	.55	1-5	-.02	0.06
Not Close to Father	1.34	.71	1-5	0.04	0.05
Emotionally Abused	.64	.48	0-1	-.01	.10*
Physically Abused	.38	.49	0-1	.12**	.14**
Sexually Abused	.13	.33	0-1	.05	0.03
Delinquency Scale	6.29	6.71	0-45	.20***	0.07
Self-Control Scale	46.54	7.49	14-69	-.26***	-0.37***
Drugs in Childhood Home	.05	.23	0-1	0.01	0.06
Household: Two Parents	.39	.49	0-1	0.01	-0.08
Household: Other	.60	.49	0-1	-.01	0.08
Respondent's Education	11.84	3.08	1-13	-.12***	-0.14***
Father's Education	4.83	2.32	1-13	-.01	-.03
Sex: Male	.40	.49	0-1	.19***	0.02
Race: White	.51	.50	0-1	.02	-.09*
Race: Black	.43	.50	0-1	-.06	.08+
Race: Other	.06	.24	0-1	.07	0.04
Foreign Born	.02	.15	0-1	.03	0.002
Neighborhood Disadvantage	.77	.58	0-3.16	-.05	.08+

Note: + = $p < .10$, * = $p < .05$, ** = $p < .01$, *** = $p < .001$, (two-tailed test). Source: National Longitudinal Study of Adolescent to Adult Health, Wave 1 (1994-1995) and Wave 4 (2008).

Table 2c: Descriptive Statistics and Bivariate Correlations of Variables with Outcome Measures: Respondents Reporting Incarcerated Fathers Before Age 18.

N=1,455 (weighted)	Mean	Std. Deviation	Minimum/ Maximum	Correlation with Crime (<i>ln</i>)	Correlation with Depression (<i>ln</i>)
Crime	.69	1.77	0-16	1***	.10***
Depression	3.19	2.90	0-15	.09***	1***
Crime (<i>ln</i>)	.28	.57	0-2.83	1***	.10***
Depression (<i>ln</i>)	1.19	.71	0-2.78	.10***	1***
Mother Ever Incarcerated	.10	.30	0-1	.07**	.04
Age at Maternal Incarceration	11.03	7.2	0-17	-.04	-.001
Age at Paternal Incarceration	6.18	5.50	0-17	.02	-.05
Not Close to Mother	1.17	0.49	1-5	-.03	.13***
Not Close to Father	1.46	.81	1-5	-.02	.10***
Emotionally Abused	.60	.49	0-1	.09***	.19***
Physically Abused	.32	.47	0-1	.12***	.12***
Sexually Abused	.10	.30	0-1	.02	.07*
Delinquency Scale	5.56	6.07	0-45	.23***	.12***
Self-Control Scale	46.90	6.91	14-68	-.19***	-.35***
Drugs in Childhood Home	.06	.23	0-1	.08***	.002
Household: Two Parents	.53	.50	0-1	-.47+	-.03
Household: Other	.47	.50	0-1	.47+	.03
Respondent's Education	12.01	3.07	1-5	-0.10***	-.08**
Father's Education	4.17	2.34	1-5	-.001	-0.06*
Sex: Male	.47	.50	0-1	.23***	-.12***
Race: White	.66	.48	0-1	-.03	-0.04
Race: Black	.29	.45	0-1	.02	0.03
Race: Other	.05	.22	0-1	0.02	0.02
Foreign Born	.04	.20	0-1	-0.02	-0.04
Neighborhood Disadvantage	.68	.52	0-2.78	0.03	0.01

Note: + = $p < .10$, * = $p < .05$, ** = $p < .01$, *** = $p < .001$, (two-tailed test). Source: National Longitudinal Study of Adolescent to Adult Health, Wave 1 (1994-1995) and Wave 4 (2008).

Table 3: Bivariate Correlations for Total Sample, N=14,584.

	1	2	3	4	5	6	7	8	9	10	11	12
1 Crime (<i>ln</i>)	1***											
2 Depression (<i>ln</i>)	.14***	1***										
3 Mother Incarcerated	.06***	.06***	1***									
4 Father Incarcerated	.09***	.09***	.17***	1***								
5 Prison Mother: Age	.01	.04	1***	1***	1***							
6 Prison Father: Age	-.07*	-.02	1***	1***	.47***	1***						
7 Not Close to Mother	.01*	.07***	.03***	.01+	-.04	.03	1***					
8 Not Close to Father	.02*	.10***	.01	.08***	.08+	-.03	.34***	1***				
9 Sex: Male	.18***	-.10***	-.02**	-.01***	.06	.04	-.08***	-.14***	1***			
10 Sex: Female	-.18***	.10***	.02**	.01**	-.06	-.04	.08***	.14***	-1***	1***		
11 Emotionally Abused	.10***	.20***	.07***	.10***	.10	-.02	.10***	.14***	-.11***	.11***	1***	
12 Physically Abused	.13***	.13***	.10***	.14***	.08	-.01	.10***	.10***	.02*	-.02*	.37***	1***
13 Sexually Abused	.06***	.10***	.06***	.10***	-.14+	-.19	.03***	.07***	-.11***	.11***	.16***	.20***
14 Delinquency	.20***	.08***	.07***	.10***	-.00**	-.08*	.16***	.17***	.13***	-.13***	.08***	.12***
15 Self-Control	-.20***	-.35***	-.06***	-.09***	-.13**	.02	-.05***	-.06***	-.06***	.06***	-.11***	-.11***
16 Drugs in Childhood Home	.06***	.03**	.04***	.06***	.013+	.16	.03***	.04***	.01***	-.01***	.04***	.03***
17 Household: 2 Parents	-.04***	-.08***	-.13***	-.18***	.17	.04	-.01	-.04***	.04***	-.04***	-.08***	-.07***
18 Household: Other	.04***	.08***	.13***	.18***	-.17	-.04	.01	.04***	-.04***	.04***	.08***	.07***
19 Respondent's Education	-0.12***	-0.14***	-.08***	-.15***	-0.04	-0.0007	-0.007	-0.01+	-0.12***	0.12***	-0.01	-0.05***
20 Father's Education	-0.01	-0.03***	-0.02**	-0.10***			-0.01	-0.004	0.01	-0.01	-0.001	-0.01+
21 Race: White	-.04***	-.08***	-.07***	-.04***	.10*	-.09	-.01***	-.03	.02**	-.02***	-.02*	-.02+
22 Race: Black	.05***	.08***	.09***	.08***	-.10	.04	-.01	.01	-.04***	.04**	.00	-.00
23 Race: Other	-.003	.01+	-.02*	-.04***	.01	.10***	.03	.03***	.02*	-.02*	.02***	.03***
24 Foreign Born	-.04***	-.004	-.04***	-.06***	-.07	-.05	.02*	.00	.00	-.00	-.00	.01
25 Neighborhood Disadvantage	.04***	.07***	.08***	.11***	-.07	-.05	-.02**	.02***	-.04***	.04***	-.01	.02+

Table 3: Bivariate Correlations (continued).

	13	14	15	16	17	18	19	20	21	22	23	24	25
13 Sexually Abused	1***												
14 Delinquency	.02**	1***											
15 Self-Control	-.05***	-.16***	1***										
16 Drugs in Childhood Home	.01***	.16***	-.05***	1***									
17 Household: 2 Parents	-.08***	-.05***	.07***	-.04***	1***								
18 Household: Other	.08***	.05***	-.07***	.04***	-1***	1***							
19 Respondent's Education	-.05***	-.14***	0.25***	-0.04***	.14+	-.14+	1***						
20 Father's Education	-0.01	-0.004	0.01***	-0.04***	0.08***	-0.08***	0.23***	1***					
21 Race: White	-.01+	-.01	.02*	-.01	.21***	-.21***	.00***	-.03***	1***				
22 Race: Black	.02+	-.01	-.02**	.003	-.26***	.26***	-.05***	-.00***	-.80***	1***			
23 Race: Other	.0001	.03***	.002	.01	.05***	-.05***	.06***	.06***	-.46***	-.17***	1***		
24 Foreign Born	.001	-.04***	.01	-.01	.01+	-.01***	.02***	-.003***	-.11***	-.09***	.31***	1***	
25 Neighborhood Disadvantage	.05***	-.01	-.06***	.01	-.27***	.27***	-.14***	-.14***	-.50***	.61***	-.08***	-.01	1***

Note: + = $p < .10$, * = $p < .05$, ** = $p < .01$, *** = $p < .001$, (two-tailed test).

Table 4: Multilevel Mixed Effects Linear Regression: Incarcerated Mother, Parental Closeness and Crime.

N=14,584	Model 1	Model 2	Model 3	Model 4
	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)
Mother Ever Incarcerated		0.07*** (0.02)	-0.04 (0.07)	-0.02 (0.07)
Not Close to Mother		0.01+ (0.001)	-0.01 (0.01)	0.01+ (0.01)
Not Close to Father		0.01* (0.004)	0.01* (0.001)	0.01 (0.01)
Emotionally Abused Before Age 18		0.05*** (0.01)	0.05*** (0.01)	0.05*** (0.01)
Physically Abused Before 18		0.08*** (0.01)	0.08*** (0.01)	0.08*** (0.01)
Sexually Abused Before 18		0.08*** (0.01)	0.08*** (0.02)	0.08*** (0.02)
Delinquency Scale		0.01*** (0.001)	0.01*** (0.001)	0.01*** (0.001)
Self-Control Scale		-0.01*** (0.001)	-0.01*** (0.001)	-0.01*** (0.001)
Drugs in Childhood Home		0.06** (0.02)	0.06** (0.02)	0.06** (0.02)
Household: Other		-0.002 (0.01)	-0.002 (0.01)	-0.002 (0.01)
Respondent's Education		-.01*** (0.01)	-.01*** (0.02)	-0.01*** (0.01)
Father's Education		0.004** (0.01)	0.004** (0.01)	0.004** (0.01)
Sex: Male		0.14*** (0.01)	0.14*** (0.01)	0.14*** (0.01)

Table 4: Multilevel Mixed Effects Linear Regression: Incarcerated Mother, Parental Closeness and Crime (continued).

Race: Black		0.05*** (0.01)	0.05*** (0.01)	0.05*** (0.01)
Race: Other		0.01 (0.01)	0.01 (0.01)	0.01 (0.01)
Foreign Born		-0.05*** (0.01)	-0.05*** (0.01)	-0.05*** (0.01)
Prison: Mother*Not Close to Mother			-0.02 (0.04)	
Prison Mother*Not Close to Father				0.02 (0.02)
Constant	0.18*** (0.004)	0.50*** (0.03)	0.50*** (0.03)	0.50*** (0.03)
Random effects				
Level 2 (Neighborhood Disadvantage)	0.05*** (0.01)	0.03*** (0.01)	0.03*** (0.01)	0.03*** (0.01)
Level 1	0.45 (0.003)	0.42 (0.003)	0.42 (0.002)	0.42 (0.002)
ICC	0.01	0.01	0.01	0.01
N	3861	3861	3861	3861

Note: + = $p < .10$, * = $p < .05$, ** = $p < .01$, *** = $p < .001$, (two-tailed test).

Table 5: Multilevel Mixed Effects Linear Regression: Incarcerated Father, Parental Closeness and Crime.

N=14,584	Model 1	Model 2	Model 3	Model 4
	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)
Father Ever Incarcerated		0.05*** (0.01)	0.04* (0.02)	0.08** (0.03)
Not Close to Mother		0.02+ (0.1)	0.01+ (0.004)	0.01 (0.01)
Not Close to Father		.01* (0.001)	-0.01* (0.01)	0.01* (0.01)
Emotionally Abused Before Age 18		0.05*** (0.01)	0.05*** (0.01)	0.05*** (0.01)
Physically Abused Before 18		0.08*** (0.01)	0.08*** (0.01)	0.08*** (0.01)
Sexually Abused Before 18		0.07*** (0.02)	0.07*** (0.02)	0.07*** (0.02)
Delinquency Scale		0.01*** (0.001)	0.01*** (0.001)	0.01*** (0.001)
Self-Control Scale		-0.01*** (0.001)	-0.01*** (0.001)	-0.01*** (0.001)
Drugs in Childhood Home		0.05** (0.02)	0.05** (0.02)	0.05** (0.02)
Household: Other		-0.001 (0.01)	-0.001 (0.01)	-0.001 (0.01)
Respondent's Education		-0.01*** (0.01)	0.01*** (0.01)	0.01*** (0.01)
Father's Education		0.01** (0.01)	0.01** (0.01)	0.01** (0.01)
Sex: Male		0.14*** (0.01)	0.14*** (0.01)	0.14*** (0.01)

Table 5: Multilevel Mixed Effects Linear Regression: Incarcerated Father, Parental Closeness and Crime (continued).

Race: Black		0.05*** (0.01)	0.05*** (0.01)	0.05*** (0.01)
Race: Other		0.02 (0.01)	0.02 (0.01)	0.01 (0.01)
Foreign Born		-0.05*** (0.01)	-0.05*** (0.01)	-0.05*** (0.01)
Prison: Father*Not Close to Father			0.01 (0.02)	
Prison: Father*Not Close to Mother				-0.03 (0.02)
Constant	0.18*** (0.004)	0.50*** (0.03)	0.50*** (0.03)	0.50*** (0.03)
Random effects				
Level 2 (Neighborhood Disadvantage)	0.05*** (0.01)	0.03*** (0.01)	0.03*** (0.01)	0.03*** (0.01)
Level 1	0.45 (0.003)	0.42 (0.002)	0.42 (0.003)	0.42 (0.003)
ICC	0.01	0.01	0.01	0.01
N	3861	3861	3861	3861

Note: + = $p < .10$, * = $p < .05$, ** = $p < .01$, *** = $p < .001$, (two-tailed test).

Table 6: Multilevel Mixed Effects Linear Regression: Incarcerated Mother, Parental Closeness and Depression.

N=14,584	Model 1	Model 2	Model 3	Model 4
	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)
Mother Ever Incarcerated		0.04* (0.02)	-0.03 (0.07)	0.07 (0.06)
Not Close to Mother		0.03** (0.01)	0.03** (0.01)	0.03** (0.02)
Not Close to Father		0.02* (0.02)	0.02* (0.02)	0.02* (0.01)
Emotionally Abused Before Age 18		0.17*** (0.01)	0.17*** (0.01)	0.17*** (0.01)
Physically Abused Before 18		0.04*** (0.01)	0.05*** (0.01)	0.05*** (0.02)
Sexually Abused Before 18		0.11*** (0.02)	0.11*** (0.01)	0.11*** (0.03)
Delinquency Scale		0.002* (0.001)	0.002* (0.001)	0.002* (0.001)
Self-Control Scale		-0.03*** (0.0001)	-0.03*** (0.0001)	-0.04*** (0.0001)
Drugs in Childhood Home		0.03 (0.03)	0.03 (0.03)	0.03 (0.03)
Household: Other		0.03* (0.01)	0.03* (0.01)	0.03* (0.01)
Respondent's Education		-0.02*** (0.002)	-0.02*** (0.002)	-0.02*** (0.002)
Father's Education		0.004 (0.01)	0.004 (0.01)	0.004 (0.01)
Sex: Male		-0.14*** (0.01)	-0.14*** (0.01)	-0.14*** (0.01)

Table 6: Multilevel Mixed Effects Linear Regression: Incarcerated Mother, Parental Closeness and Depression (continued).

Race: Black		0.10*** (0.01)	0.10*** (0.01)	0.10*** (0.01)
Race: Other		0.07*** (0.02)	0.07*** (0.02)	0.07*** (0.02)
Foreign Born		-0.01 (0.02)	-0.01 (0.02)	-0.01 (0.02)
Prison: Mother*Not Close to Mother			0.05 (0.05)	
Prison: Mother*Not Close to Father				-0.02 (0.04)
Constant	1.06*** (0.01)	2.53*** (0.04)	2.53*** (0.04)	2.53*** (0.04)
Random effects				
Level 2 (Neighborhood Disadvantage)	0.09*** (0.01)	0.04*** (0.02)	0.04*** (0.02)	0.04*** (0.02)
Level 1	0.45 (0.003)	0.63 (0.004)	0.63 (0.004)	0.63 (0.004)
ICC	0.01	0.01	0.1	0.1
N	3861	3861	3861	3861

Note: + = $p < .10$, * = $p < .05$, ** = $p < .01$, *** = $p < .001$, (two-tailed test).

Table 7: Multilevel Mixed Effects Linear Regression: Incarcerated Father, Parental Closeness and Depression.

N=14,584	Model 1	Model 2	Model 3	Model 4
	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)
Father Ever Incarcerated		0.06*** (0.01)	0.02 (0.03)	-0.01 (0.02)
Not Close to Mother		0.03** (0.01)	0.03** (0.01)	0.04 (0.01)
Not Close to Father		.02+ (0.01)	0.01 (0.01)	0.01+ (0.02)
Emotionally Abused Before Age 18		0.05*** (0.01)	0.17*** (0.01)	0.17*** (0.01)
Physically Abused Before 18		0.08*** (0.01)	0.05*** (0.01)	0.05*** (0.01)
Sexually Abused Before 18		0.07*** (0.02)	0.11*** (0.02)	0.11*** (0.02)
Delinquency Scale		0.01*** (0.001)	0.002* (0.001)	0.002* (0.001)
Self-Control Scale		-0.01*** (0.001)	-0.03*** (0.001)	-0.03*** (0.001)
Drugs in Childhood Home		0.05** (0.02)	0.02 (0.03)	0.02 (0.03)
Household: Other		-0.001 (0.01)	0.02* (0.01)	0.02* (0.01)
Respondent's Education		-0.01*** (0.01)	-0.02*** (0.004)	-0.02*** (0.004)
Father's Education		0.01** (0.01)	0.004 (0.002)	0.004 (0.002)
Sex: Male		0.14*** (0.01)	-0.14*** (0.01)	-0.14*** (0.01)

Table 7: Multilevel Mixed Effects Linear Regression: Incarcerated Father, Parental Closeness and Depression (continued).

Race: Black		0.05*** (0.01)	0.10*** (0.01)	0.10*** (0.01)
Race: Other		0.02 (0.01)	0.07*** (0.02)	0.07*** (0.02)
Foreign Born		-0.05*** (0.01)	-0.03 (0.03)	-0.01 (0.02)
Prison: Father*Not Close to Father			0.28 (0.02)	
Prison Father*Not Close to Mother				0.05* (0.04)
Constant	1.06*** (0.01)	2.53*** (0.04)	2.53*** (0.04)	2.53*** (0.04)
Random effects				
Level 2 (Neighborhood Disadvantage)	0.09*** (0.01)	0.04*** (0.02)	0.04*** (0.02)	0.04*** (0.02)
Level 1	0.70 (0.004)	0.63 (0.004)	0.63 (0.004)	0.63 (0.004)
ICC	0.01	0.01	0.1	0.1
N	3861	3861	3861	3861

Note: + = $p < .10$, * = $p < .05$, ** = $p < .01$, *** = $p < .001$, (two-tailed test).

Table 8: Multilevel Mixed Effects Linear Regression: Maternal Incarceration, Parent-Child Gender and Crime.

N=14,584	Model 1	Model 2	Model 3
	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)
Mother Ever Incarcerated		0.06*** (0.02)	0.11** (0.03)
Sex: Female		-0.14*** (0.01)	-0.14*** (0.01)
Not Close to Mother		0.02* (0.02)	0.02* (0.01)
Not Close to Father		0.01+ (0.02)	0.01+ (0.01)
Emotionally Abused Before Age 18		0.05*** (0.02)	0.05*** (0.01)
Physically Abused Before 18		0.08*** (0.01)	0.08*** (0.01)
Sexually Abused Before 18		0.07*** (0.02)	0.07*** (0.03)
Delinquency Scale		0.01* (0.001)	0.01*** (0.001)
Self-Control Scale		-0.01*** (0.0001)	-0.01*** (0.001)
Drugs in Childhood Home		0.06** (0.03)	0.06** (0.02)
Household: Other		0.03 (0.01)	-0.002 (0.01)
Respondent's Education		-0.01*** (0.01)	-0.01*** (0.01)
Father's Education		0.004** (0.001)	0.004** (0.001)
Race: Black		0.05*** (0.001)	0.05*** (0.01)

Table 8: Multilevel Mixed Effects Linear Regression: Maternal Incarceration, Parent-Child Gender and Crime (continued).

Race: Other		0.01 (0.01)	0.01 (0.01)
Foreign Born		-0.05*** (0.01)	-0.05*** (0.01)
Prison: Mother*Sex: Female			-0.07* (0.04)
Constant	0.18*** (0.004)	0.50*** (0.03)	0.50*** (0.03)
Random effects			
Level 2 (Neighborhood Disadvantage)	0.05*** (0.01)	0.03*** (0.01)	0.03*** (0.01)
Level 1	0.45 (0.003)	0.42 (0.003)	0.42 (0.003)
ICC	0.01	0.01	0.01
N	3861	3861	3861

Note: + = $p < .10$, * = $p < .05$, ** = $p < .01$, *** = $p < .001$, (two-tailed test).

Table 9: Multilevel Mixed Effects Linear Regression: Paternal Incarceration, Parent-Child Gender and Crime.

N=14,584	Model 1	Model 2	Model 3
	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)
Father Ever Incarcerated		0.05*** (0.01)	0.01 (0.02)
Sex: Male		0.14*** (0.01)	0.12*** (0.01)
Not Close to Mother		0.02** (0.01)	0.02** (0.01)
Not Close to Father		0.01 (0.01)	0.01 (0.01)
Emotionally Abused Before 18		0.05*** (0.01)	0.05*** (0.01)
Physically Abused Before 18		0.08*** (0.01)	0.08*** (0.01)
Sexually Abused Before 18		0.07*** (0.02)	0.07*** (0.02)
Delinquency Scale		0.01*** (0.001)	0.01*** (0.001)
Self-Control Scale		-0.01*** (0.001)	-0.01*** (0.001)
Drugs in Childhood Home		0.05** (0.02)	0.05** (0.02)
Household: Other		-0.001 (0.01)	-0.001 (0.01)
Respondent's Education		-0.01*** (0.001)	-0.01*** (0.01)
Father's Education		0.004** (0.001)	0.004** (0.001)
Race: Black		0.05*** (0.01)	0.05*** (0.01)

Table 9: Multilevel Mixed Effects Linear Regression: Paternal Incarceration, Parent-Child Gender and Crime (continued).

Race: Other		0.02 (0.01)	0.02 (0.01)
Foreign Born		-0.05*** (0.01)	-0.05*** (0.01)
Prison: Father*Sex: Male			0.08*** (0.02)
Constant	0.18*** (0.004)	0.50*** (0.03)	0.50*** (0.03)
Random effects			
Level 2 (Neighborhood Disadvantage)	0.05*** (0.01)	0.03*** (0.01)	0.03*** (0.01)
Level 1	0.45 (0.003)	0.43 (0.003)	0.43 (0.003)
ICC	0.01	0.01	0.01
N	3861	3861	3861

Note: + = $p < .10$, * = $p < .05$, ** = $p < .01$, *** = $p < .001$, (two-tailed test).

Table 10: Multilevel Mixed Effects Linear Regression: Maternal Incarceration, Parent-Child Gender and Depression.

N=14,584	Model 1	Model 2	Model 3
	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)
Mother Ever Incarcerated		0.04* (0.03)	0.10* (0.04)
Sex: Female		0.14*** (0.01)	0.14*** (0.01)
Not Close to Mother		0.05* (0.02)	0.05* (0.02)
Not Close to Father		0.03+ (0.02)	0.03+ (0.02)
Emotionally Abused Before Age 18		0.17*** (0.01)	0.17*** (0.01)
Physically Abused Before 18		0.05*** (0.01)	0.05*** (0.01)
Sexually Abused Before 18		0.11*** (0.02)	0.11*** (0.02)
Delinquency Scale		0.002* (0.001)	0.002* (0.001)
Self-Control Scale		-0.03*** (0.0001)	-0.03*** (0.0001)
Drugs in Childhood Home		0.03 (0.03)	0.03 (0.03)
Household: Other		0.03* (0.01)	0.03* (0.01)
Respondent's Education		-0.03*** (0.01)	-0.02*** (0.01)
Father's Education		0.03 (0.001)	0.03 (0.001)
Race: Black		0.10*** (0.02)	0.10*** (0.02)

Table 10: Multilevel Mixed Effects Linear Regression: Maternal Incarceration, Parent-Child Gender and Depression (continued).

Race: Other		0.07*** (0.01)	0.07*** (0.01)
Foreign Born		-0.01 (0.04)	-0.01 (0.04)
Prison: Mother*Sex: Female			-0.11** (0.06)
Constant	1.06*** (0.01)	2.53*** (0.04)	2.53*** (0.04)
Random effects			
Level 2 (Neighborhood Disadvantage)	0.09*** (0.01)	0.04*** (0.02)	0.04 (0.02)
Level 1	0.70 (0.004)	0.63 (0.003)	0.63 (0.003)
ICC	0.01	0.01	0.01
N	3861	3861	3861

Note: + = $p < .10$, * = $p < .05$, ** = $p < .01$, *** = $p < .001$, (two-tailed test).

Table 11: Multilevel Mixed Effects Linear Regression: Paternal Incarceration, Parent-Child Gender and Depression.

N=14,584	Model 1	Model 2	Model 3
	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)
Father Ever Incarcerated		0.05*** (0.01)	0.05** (0.02)
Sex: Male		-0.14*** (0.01)	-14*** (0.01)
Not Close to Mother		0.05** (0.01)	0.05** (0.01)
Not Close to Father		0.02+ (0.01)	0.02+ (0.01)
Emotionally Abused Before 18		0.17*** (0.01)	0.17*** (0.01)
Physically Abused Before 18		0.05*** (0.01)	0.05*** (0.01)
Sexually Abused Before 18		0.11*** (0.02)	0.11*** (0.02)
Delinquency Scale		0.0002*** (0.001)	0.0002*** (0.001)
Self-Control Scale		-0.03*** (0.001)	-0.03*** (0.001)
Drugs in Childhood Home		0.02 (0.03)	0.02 (0.03)
Household: Other		0.02* (0.01)	0.02* (0.01)
Respondent's Education		-0.07*** (0.01)	-0.07*** (0.01)
Father's Education		0.004 (0.001)	0.004 (0.001)
Race: Black		0.10*** (0.01)	0.10*** (0.01)

Table 11: Multilevel Mixed Effects Linear Regression: Paternal Incarceration, Parent-Child Gender and Depression (continued).

Race: Other		0.07*** (0.02)	0.07*** (0.02)
Foreign Born		-0.01 (0.02)	-0.01 (0.02)
Prison: Father*Sex: Male			-0.01 (0.03)
Constant	1.06*** (0.01)	2.53*** (0.04)	2.53*** (0.04)
Random effects			
Level 2 (Neighborhood Disadvantage)	0.09 (0.01)	0.04 (0.02)	0.04 (0.02)
Level 1	0.70 (0.004)	0.64 (0.004)	0.64 (0.004)
ICC	0.01	0.01	0.01
N	3861	3861	3861

Note: + = $p < .10$, * = $p < .05$, ** = $p < .01$, *** = $p < .001$, (two-tailed test).

Table 12: Multilevel Mixed Effects Linear Regression: Timing of Maternal Incarceration and Crime.

Individual level variables	Full Sample N=428		Females N=257		Males N=170	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)
R's Age at Mother's First Incarceration		0.001* (0.01)		-0.01* (0.01)		0.01+ (0.01)
Not Close to Mother		-0.06 (0.09)		0.02 (0.11)		-0.12 (0.19)
Not Close to Father		-0.02 (0.10)		-0.02 (0.11)		-0.05 (0.24)
Emotionally Abused Before Age 18		-0.10+ (0.07)		-0.16* (0.07)		0.005 (0.12)
Physically Abused Before 18		0.13* (0.06)		0.11+ (0.07)		0.07 (0.11)
Sexually Abused Before 18		0.08 (0.08)		0.07 (0.09)		0.09 (0.18)
Delinquency Scale		0.01** (0.004)		0.02*** (0.01)		0.013* (0.01)
Self-Control Scale		-0.02*** (0.004)		-0.01*** (0.004)		-0.02*** (0.01)
Drugs in Childhood Home		0.03 (0.12)		0.26* (0.12)		-0.34+ (0.21)

Table 12: Multilevel Mixed Effects Linear Regression: Timing of Maternal Incarceration and Crime (continued).

Household: Other		-0.03 (0.06)		-0.06 (0.06)		0.003 (0.11)
Respondent's Education		-.02 (0.01)		0.001 (0.01)		-0.04 (0.10)
Father's Education		-0.001 (0.01)		-0.01 (0.01)		-0.001 (0.02)
Sex: Male		0.17*** (0.06)		--		--
Race: Black		-0.02 (0.06)		0.03 (0.06)		-0.06 (0.11)
Race: Other		0.08 (0.12)		0.12 (0.12)		0.07 (0.23)
Foreign Born		0.07 (0.18)		0.50* (0.25)		-0.28 (0.29)
Constant	0.31*** (0.03)	0.96*** (0.20)	0.22*** (0.03)	0.60*** (0.23)	0.45*** (0.05)	1.35*** (0.33)
Random effects						
Level 2 (Neighborhood Disadvantage)	0.15 (0.13)	0.12 (0.13)	0.003 (1.5)	0.00 (0.00)	0.01 (0.07)	0.00 (0.00)
Level 1	0.55 (0.03)	0.52 (0.03)	0.48 (0.03)	0.44 (0.03)	0.64 (0.08)	0.59 (0.06)
ICC	0.01	0.01	0.01	0.01	0.01	0.01
N		350		226		153

Note: + = $p < .10$, * = $p < .05$, ** = $p < .01$, *** = $p < .001$, (two-tailed test).

Table 13: Multilevel Mixed Effects Linear Regression: Timing of Maternal Incarceration and Depression.

	Full Sample N=428		Females N=257		Males N=170	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)
R's Age at Mother's First Incarceration		-0.01* (0.01)		-0.03*** (0.01)		0.01+ (0.01)
Not Close to Mother		0.09 (0.11)		0.13 (0.13)		0.09 (0.18)
Not Close to Father		-0.01 (0.13)		-0.07 (0.16)		0.06 (0.17)
Emotionally Abused Before Age 18		0.05 (0.09)		0.06 (0.12)		-0.003 (0.13)
Physically Abused Before 18		0.14* (0.08)		0.05 (0.11)		0.27* (0.12)
Sexually Abused Before 18		-0.03 (0.10)		-0.06+ (0.12)		0.11 (0.20)
Delinquency Scale		0.00001 (0.01)		0.001 (0.01)		-0.001 (0.01)
Self-Control Scale		-0.03*** (0.004)		-0.04*** (0.01)		-0.03 (0.01)
Drugs in Childhood Home		-0.12 0.14		-0.08 (0.19)		-0.19 (0.23)

Table 13: Multilevel Mixed Effects Linear Regression: Timing of Maternal Incarceration and Depression (continued).

Household: Other		0.04 (0.08)		0.09 (0.10)		-0.02 (0.11)
Respondent's Education		-0.03* (0.02)		-0.02 (0.02)		-0.02 (0.03)
Father's Education		0.003 (0.01)		0.02 (0.02)		-0.01 (0.02)
Sex: Male		0.01 (0.07)		--		--
Race: Black		0.13* (0.07)		0.07 (0.09)		0.21+ (0.11)
Race: Other		0.04 (0.15)		0.03 (0.201)		0.22 (0.25)
Foreign Born		0.12 (0.23)		-0.07 (0.36)		0.40+ (0.30)
Constant	1.25*** (0.04)	2.78*** (0.25)	1.23*** (0.05)	3.06*** (0.36)	1.26*** (0.06)	2.40*** (0.35)
Random effects						
Level 2 (Neighborhood Disadvantage)	0.00 (0.00)	1.40 (1.31)	0.12 (0.46)	1.72 (1.00)	1.03 (2.41)	0.001 (0.05)
Level 1	0.74 (0.03)	0.67 (0.03)	0.73 (0.07)	0.67 (0.03)	0.74 (0.04)	0.63 (0.07)
ICC	0.01	0.01	0.01	0.01	0.01	0.01
N		350		226		153

Note: + = $p < .10$, * = $p < .05$, ** = $p < .01$, *** = $p < .001$, (two-tailed test).

Table 14: Multilevel Mixed Effects Linear Regression: Timing of Paternal Incarceration and Crime.

	Full Sample N=1,455		Females N=769		Males N=686	
	Model 1 <i>b</i> (SE)	Model 2 <i>b</i> (SE)	Model 3 <i>b</i> (SE)	Model 4 <i>b</i> (SE)	Model 5 <i>b</i> (SE)	Model 6 <i>b</i> (SE)
R's Age at Father's First Incarceration		-0.002 (0.003)		-0.01* (0.003)		0.001 (0.004)
Not Close to Mother		-0.10* (0.05)		-0.03 (0.04)		-0.191* (0.10)
Not Close to Father		-0.003 (0.04)		0.001 (0.05)		-0.01 (0.08)
Emotionally Abused Before Age 18		0.06* (0.03)		0.02 (0.03)		0.08+ (0.06)
Physically Abused Before 18		0.08** (0.03)		0.02 (0.04)		0.15** (0.06)
Sexually Abused Before 18		0.04 (0.05)		0.01 (0.04)		0.19+ (0.11)
Delinquency Scale		0.02*** (0.002)		0.02*** (0.002)		0.017*** (0.004)
Self-Control Scale		-0.01*** (0.002)		-0.01*** (0.002)		-0.01**** (0.004)
Drugs in Childhood Home		0.12* (0.06)		0.18* (0.07)		0.06 (0.10)

Table 14: Multilevel Mixed Effects Linear Regression: Timing of Paternal Incarceration and Crime (continued).

Household: Other		0.04 (0.03)		0.05+ (0.03)		0.02 (0.05)
Respondent's Education		-0.01 (0.01)		-0.01 (0.01)		-0.01+ (0.01)
Father's Education		0.01 (0.01)		0.01 (0.04)		0.01 (0.01)
Sex: Male		0.23*** (0.03)		--		--
Race: Black		0.07* (0.033)		0.07* (0.03)		0.03 (0.06)
Race: Other		0.06 (0.07)		0.08 (0.06)		0.06 (0.11)
Foreign Born		-0.03 (0.07)		-0.09 (0.07)		0.03 (0.11)
Constant	0.29*** (0.02)	0.52*** (0.11)	0.16*** (0.02)	0.46*** (0.11)	0.43*** (0.03)	0.78*** (0.18)
Random effects						
Level 2 (Neighborhood Disadvantage)	0.09 (0.07)	0.05 (0.11)	0.01 (0.33)	0.00 (0.00)	0.21 (0.09)	0.20 (0.09)
Level 1	0.56 (0.02)	0.52 (0.01)	0.42 (0.01)	0.40 (0.01)	0.64 (0.03)	0.60 (0.03)
ICC	0.01	0.01	0.01	0.01	0.01	0.01
N		878		545		485

Note: + = $p < .10$, * = $p < .05$, ** = $p < .01$, *** = $p < .001$, (two-tailed test).

Table 15: Multilevel Mixed Effects Linear Regression: Timing of Paternal Incarceration and Depression.

	Full Sample N=1,455		Females N=769		Males N=686	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)
R's Age at Father's First Incarceration		-0.001 (0.003)		-0.007+ (0.004)		0.001 (0.004)
Not Close to Mother		0.14* (0.06)		0.20** (0.07)		-0.19* (0.10)
Not Close to Father		0.02 (0.06)		0.02 (0.07)		-0.01 (0.08)
Emotionally Abused Before Age 18		0.17*** (0.04)		0.15** (0.05)		0.08 (0.06)
Physically Abused Before 18		0.07* (0.04)		0.04 (0.06)		0.15+ (0.06)
Sexually Abused Before 18		0.03 (0.06)		0.001 (0.07)		0.19** (0.11)
Delinquency Scale		0.01* (0.003)		0.01 (0.005)		0.02+ (0.004)
Self-Control Scale		-0.03*** (0.003)		-0.03*** (0.004)		-0.012*** (0.004)
Drugs in Childhood Home		-0.05 (0.08)		0.026 (0.11)		0.06*** (0.10)

Table 15: Multilevel Mixed Effects Linear Regression: Timing of Paternal Incarceration and Depression (continued).

Household: Other		0.003 (0.04)		0.03 (0.05)		0.02 (0.05)
Respondent's Education		-0.02* (0.001)		-0.02 (0.01)		-0.02+ (0.01)
Father's Education		-0.02 (0.04)		0.01 (0.001)		0.003 (0.01)
Sex: Male		0.16*** (0.04)		--		--
Race: Black		0.06+ (0.04)		0.01 (0.05)		0.03 (0.06)
Race: Other		0.08 (0.09)		0.16+ (0.13)		0.06 (0.12)
Foreign Born		-0.09 (0.09)		-0.03 (0.13)		0.03 (0.11)
Constant	1.20*** (0.02)	2.64*** (0.13)	1.28*** (0.03)	2.76*** (0.18)	0.43*** (0.03)	0.78*** (0.18)
Random effects						
Level 2 (Neighborhood Disadvantage)	0.09* (0.06)	0.10** (0.05)	0.13 (0.09)	0.0001 (0.002)	0.21** (0.09)	0.20** (0.09)
Level 1	0.70 (0.02)	0.64 (0.01)	0.70 (0.02)	0.64 (0.02)	0.64 (0.03)	0.60 (0.03)
ICC	0.01	0.01	0.01	0.01	0.01	0.01
N		878		545		485

Note: + = $p < .10$, * = $p < .05$, ** = $p < .01$, *** = $p < .001$, (two-tailed test)

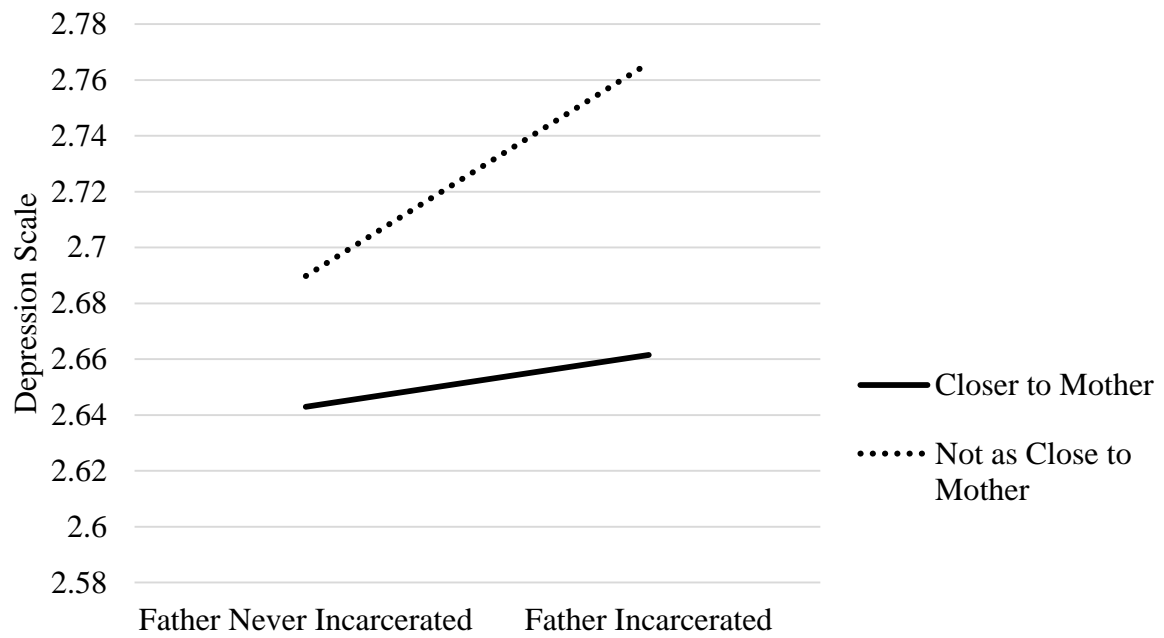


Figure 1: Moderating Effects of Maternal Closeness on Paternal Incarceration's Impact on Depression

