

Legacies Denied: The Intergenerational Dimension in Crime and Punishment

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## **ABSTRACT**

Michael Everett Roettger: *Legacies Denied: The Intergenerational Dimension In Crime and Punishment*  
(Under the direction of Ted Mouw)

Does having an incarcerated parent adversely affect the outcomes of children? Using the National Longitudinal Study of Adolescent Health (Add Health), I explore if incarceration of a biological father leads to increased probability of criminal behavior and arrest among adult offspring. Analysis suggests that adult children of incarcerated parents are more likely to engage in criminal behavior and face encounters with the criminal justice system. With 2 million individuals serving time in prison or jail in 2000 and the emergence of incarceration as a life-course event among less-educated males and minorities, intergenerational patterns of crime and incarceration may provide new context to the rapidly expanding prison population and the transmission of social disadvantage from parents to children.

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## Chapter 1

### INTRODUCTION

“Why do so many young American men commit crimes, and what might we do about it?” asked the economist Richard Freeman, in a call to stimulate research in his discipline (Freeman 1996). For economists, criminal behavior has largely remained an individual, rational act weighed against labor force participation (Becker 1968; Sampson and Laub 2003). Public policy over the last three decades has seemingly adopted this “rational” and “individualistic” approach to deal with crime. State and federal governments declared a broad “War on Crime” in the 1980s, with massive expansion of the criminal justice system and increased punishment of criminals and illegal behaviors (Western and Beckett 1999; Mauer 2003). Accompanying these policies has been an unprecedented expansion of the criminal justice system; between 1980 and 2000, the incarcerated population rose from 500,000 to 2 million. At present incarceration rates, 6% of white males, 17% of Hispanic males, and one-third of black males will spend a year or more in state or federal prison (Bonczar 2003). As public expenditures for criminal justice and prison populations continue to expand, incarceration has become a common life-course event among less-educated males and minorities (Pettit and Western 2004).

Research outside of mainstream economics has demonstrated that (1) criminal behavior is associated with many causes and (2) that adverse consequences to offenders result

for offenders, communities, and societies. Criminal behavior is linked to residential segregation, family structures, joblessness, and the lack of educational and cultural resources in inner city areas (McLeod 1996; Hannon 2003; Pettit and Western 2004; Harris 1999; Wilson 1996). Biological and familial crime patterns have been observed among individuals exhibiting criminal, violent, and sociopathic behaviors (Robbins 1966; Rowe and Farrington 1997; Caspi, et al 2002). However, due to limitations of nationally-representative datasets measuring criminal behavior, factors leading adolescents to become “at risk” for incarceration as young adults remains largely unstudied (Pettit and Western 2004).

The adverse consequences of arrest and incarceration also have widespread consequences for offenders, families, minorities, and communities. Criminal records result in long-term decreased earnings and job discrimination by employers (Western and Beckett 1999; Pager 2003). Communities and minorities also suffer from losses of income sources, permanent disenfranchisement of felons, and fragmented families (Watts and Nightingale 1996; Uggens and Manza 2002). Incarceration strains marriages and romantic relationships and significantly alters family structure (Western, Lopoo, and McLanahan 2004; Johnson and Waldfogel 2002). As Johnson and Waldfogel (2002) note, relatively little is known about consequences of a parental arrest and detention on children.

This paper contributes to understanding the factors that influence patterns of criminal behavior and emerging consequences of mass incarceration. The link between an incarcerated father and adult child’s life-events that include criminal behavior and arrest suggests transmission of social disadvantage between parent and child. As a risk factor in adult criminal behavior and arrest, the significance of father’s incarceration also suggests that forces, other than unconditional rational choice, shape the decisions individuals make when



engaging in criminal behavior. Using the National Longitudinal Study of Adolescent Health (Add Health), I test if incarceration of a biological father leads to increased probability of criminal behavior and incarceration among adult offspring. The Add Health dataset is unique in having data on father's incarceration and a longitudinal, nationally-representative sample that follows individuals from adolescence into young adulthood. Thus, I also use the dataset to further explore the role of adolescent family structure and individual-level variables on adult criminal behavior and arrest.

In this analysis, I adopt a life-course model for understanding and testing the role that these variables and paternal incarceration may play in leading an individual into the criminal justice system. Life-course theorists focus on "onset" and "desistence" of criminal behavior as discrete events in the lives of offenders (Sampson and Laub 2003; Uggen and Massoglia 2003). This framework helps to identify mechanisms through which the individual may transmit disadvantage as the individual engages in criminal behavior, becomes involved with the criminal justice system, and eventually desists from criminal behavior. By doing so, I explore how forces beyond the individual-level may stimulate the onset criminal behavior, encounters with the criminal justice system, and release into society, while simultaneously generating disadvantage among children.

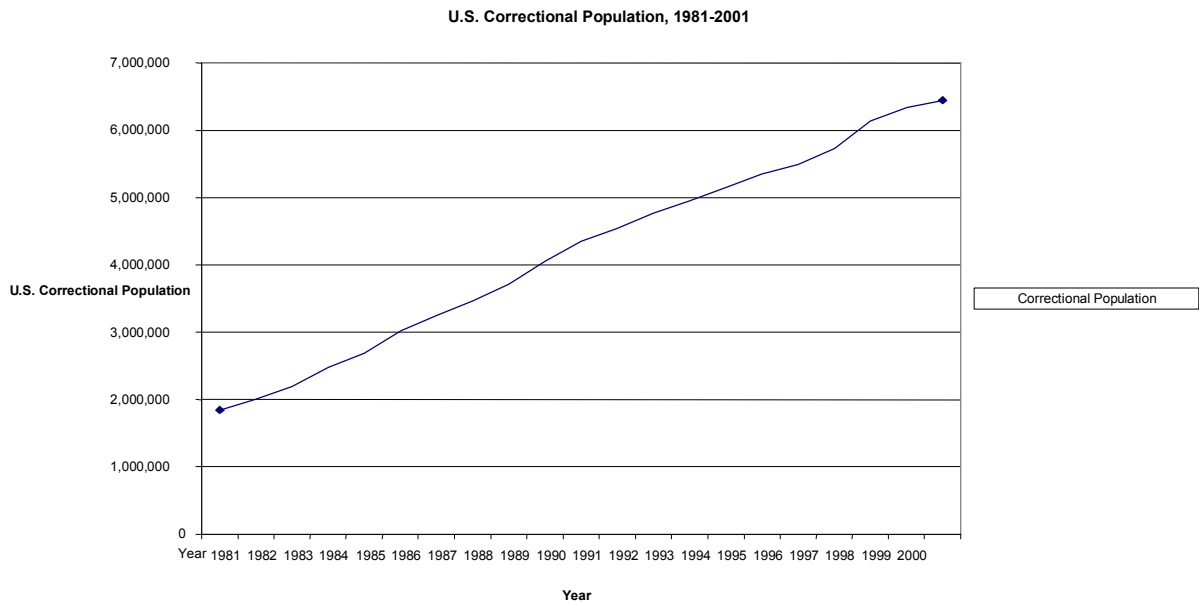
## **Chapter 2**

### **BACKGROUND**

Petit and Western (2004) recently have documented that incarceration has become a life-course event in U.S. society among less-educated men and minorities. They estimate that, for individuals born between 1960-1964 lacking a high school education, 10% of all males and 59% of black males have served a year or more in prison by age forty. Today, approximately 5% of all males, seventeen percent of Hispanic males, and one-third of black males will spend one year or more in state or federal prison (Bonczar 2003). As Mauer (2003) notes, the U.S. leads the world in the arrest and detention of individuals, as a percentage of the population. Figure 1 shows the rapid growth of the U.S. correctional population (those residing in prison or jail, on probation, or on parole) between 1980 and 2001. In 1980, the total correctional population numbered 2.1 million, while by the end of 2001, the correctional population stood at 6.45 million (Harrison and Beck 2002). The rise in incarceration has undergone

similar trends, with the number of incarcerated individuals rising from 500,000 to 2,000,000 between 1980 and 2000<sup>1</sup>. As Figure 2 demonstrates, incarceration rates have continued to rise, even as crime rates have stabilized and declined in preceding decades (U.S. Census 2002).

**Figure 1: U.S. Correctional Population, 1981-2001**

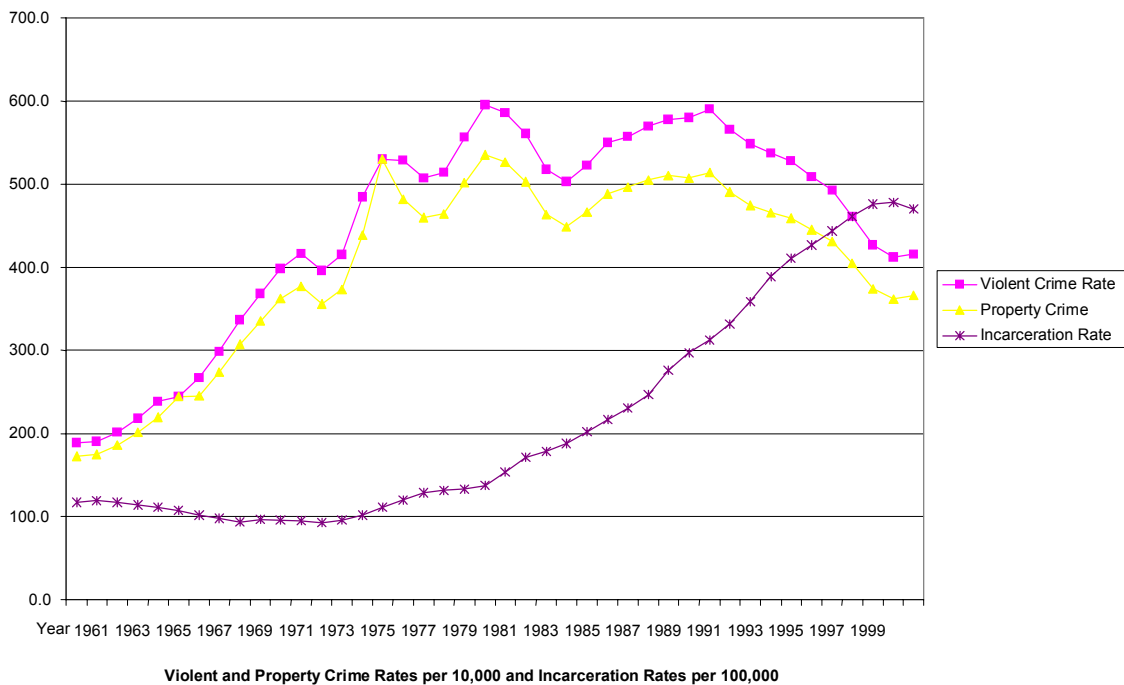


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<sup>1</sup> In comparison, the U.S. population grew from 228 million to 281 million between 1980 and 2000, or a net population increase of 23.2% (U.S. Census 2005).

similar trends, with the number of incarcerated individuals rising from 500,000 to 2,000,000 between 1980 and 2000<sup>2</sup>. As Figure 2 demonstrates, incarceration rates have continued to rise, even as crime rates have stabilized and declined in preceding decades (U.S. Census 2002).

**Figure 2: Violent Crime, Property Crime, and Incarceration Rates, 1960-2001**



The documentation and explanation of crime and incarceration trends remains an active area of research (Western and Beckett 1999; Pettit and Western 2004). Recidivism rates among former offenders are between 60%-70% for most crimes, with the average offender serving approximately 60 months in prison. One-tenth of the incarcerated

<sup>2</sup> In comparison, the U.S. population grew from 228 million to 281 million between 1980 and 2000, or a net population increase of 23.2% (U.S. Census 2005).

population consists of offenders serving life sentences (Bonczar 2003). Career-persistent offenders and sociopathic behavior are distinguished as groups in empirical research (Robins 1966; Moffitt 1994), but they comprise a minority of all offenders that engage in crime. Excluding these groups, criminal behavior is generally restricted to the early portion of the life-course (Sampson and Laub 1993) and is viewed as an alternative to entering the traditional labor market (Becker 1968). Developmental theorists speak of onset and desistance of offenders<sup>3</sup> to mark periods of entry and exit from criminal behavior (Sampson and Laub 2003), while cultural theorists view criminal behavior as part of the “culture of poverty” (Wilson 1996) and reproduction of disadvantage among lower statuses (McLeod 1995). The scope of theories is broad, providing a number of insights into explanations for criminal behavior.

Yet, despite many theoretical insights and much research, the emerging social problem of widespread incarceration remains largely unexplained in empirical research (Freeman 1996; Wacquant 2001). Sociological theorists, such as Foucault (1977), emphasize the emergence of imprisonment as a social process of punishment and rehabilitation. As Uggen and Massoglia (2003) note, the criminal behavior of the individual and sanction of offenders by the state remain separate acts in criminal justice processes. Beginning in the 1980’s, the “War on Drugs” and “War on Crime” marked periods of increased punishment for criminal acts within the criminal justice system, resulting in increased prosecution and

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<sup>3</sup> In the process of “onset” and “desistance” of criminal behavior, timing plays a key role. Important distinctions are groups of “early-onset” and “late-onset” offenders. These subsets of offenders deviate from the normal crime-age relationship (Moffitt 1994). “Early-onset” offenders, who begin committing criminal acts in early adolescence, are demographically much more frequent than “late-onset” offenders, who begin criminal activity in their late twenties or early thirties. Those statistically small, “late-onset” offenders demonstrate that the crime-age relationship is not universal, as some criminologists have argued (e.g., Hirashi and Gottfredson 1983).

sanction of individuals committing criminal acts (Western and Beckett 1999; Wacquant 2001; Western, Kleycamp and Rosenfeld 2003).

Given increased punitive action, the demographic/social trends outlined above, and high costs associated with offending (Pager 2003; Cohen 1998), research on offenders and associated social contexts have become increasingly important. Two existing strands of research examining the social context of criminal behavior and incarceration are (1) the plight of children of incarcerated parents and (2) factors leading to criminal behavior as adults. The plight of children of incarcerated parents, due to limited datasets linking incarcerated parents and children, is a subject that has been given little quantitative research (Western and McLanahan 2000; Johnson and Waldfogel 2002). While studies like the Fragile Families dataset have recently begun to measure risk factors among “unstable” or “at risk” households at the period of family formation, panel data is essentially non-existent for later adult outcomes of prisoners (Western and McLanahan 2000; Arditti, Lambert-Shute, and Joest 2003). Twin studies, such as Environmental Risk Longitudinal Twin Study (E-risk), have found long-term patterns of anti-social behavior between parent and children, but fail to study incarceration’s effects on family<sup>4</sup> (Jaffe, et al 2003). By U.S. Department of Justice estimates, over one-half of all prisoners in 1997 were biological parents; nearly 1.5 million children under 18, approximately 2.1% of all minors<sup>5</sup> in the United States had a mother or father serving time in state or federal prison (Mumola 2000).

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<sup>4</sup> Jaffe, et al’s (2003) study provides evidence that anti-social fathers transmit increased risk for anti-social behavior to young children. The study of twins in England and Wales, however, may limit applicability to U.S. offenders and children due to sample selection and large variance with social factors in the U.S., such as concentration of poverty in neighborhoods, racial disparities in incarceration, and the U.S.’s high comparative level of arrest and conviction. Analysis of children in the E-risk sample in a fifteen year follow-up study may study parent behaviors with adult-child outcomes, including encounters with the criminal justice system.

<sup>5</sup> As Mumola (2000) documents, this statistic does not represent large disparities present by race. Among whites, 0.8% of all children had an incarcerated parent; in contrast, among Hispanics and blacks, respectively,

In general, relatively little is also known about demographic factors that may contribute to criminal behavior and incarceration as adults (Pettit and Western 2004). One recurring theme among criminological studies is the intergenerational pattern of deviant behavior and incarceration between parents and offspring (Robins 1966; Sampson and Laub 1993; Rowe and Farrington 1997). These studies, however, are limited to relatively small, geographically-centered subpopulations identified with psychiatric disorders or early delinquency. As an emerging life-course and intergenerational event within U.S. society, incarceration requires generalization from larger, nationally-representative samples.

In this paper, I use data from the National Longitudinal Study of Adolescent Health (Add Health) to test for links between paternal incarceration and the criminal justice altercations of adult children. By doing so, I investigate two key questions in existing criminological research: (1) what are the adverse outcomes for adult children with an incarcerated parent and (2) do intergenerational linkages exist as an emerging societal problem. The Add Health data set provides a nationally-representative sample<sup>6</sup> of adolescents and young adults with a variety of health and behavioral outcomes measured by self-reported data in both adolescence and young adulthood. Using a sample of respondents with a known history of a biological father's incarceration<sup>7</sup>, I test if adult offspring exhibit

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2.6% and 7.0% of all children had a biological parent in prison. Also, while only 2.1% of all children in the U.S. have a parent in prison, the proportion of children with a parent ever serving time in state or federal prison may be much higher due to non-measured fertility among former inmates.

<sup>6</sup> As I will further discuss, the sample I use is a representative population of adult males from ages 19-24. Due to selection effects that occur when individuals are arrested and incarcerated by the criminal justice system, there is significant truncation of the arrested population as age increases. Results of this truncation are downwardly biased, since the aggregate effect of disproportionately removing those undergoing arrest and conviction increases the proportion of the non-arrested in the sample population. For this reason, type II errors may lead to underestimates or non-significant results in our models for criminal behavior and arrest.

<sup>7</sup> Incarcerated biological fathers are analyzed in this analysis due to Add Health data's limits on knowledge of incarceration of other father-types. The biological and social fathers of a child may be quite distinct. Biological fathers contribute to the genetic identity of a child while the social father is involved in a child's upbringing.

increased criminality and risk for criminal justice encounters. Given the recent emergence of mass incarceration as social sanction for criminal activity, empirical results suggest that intergenerational effects of incarceration may be passed between fathers and children as a form of social disadvantage.

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This analysis focuses on the relationship of the biological father and child's incarceration and criminal activity. Due to lack-of-knowledge about respondent's social father's incarceration, it is currently not to compare the influence of biological and social factors between father-child crime and incarceration patterns. This analysis hence focuses on intergenerational father-crime empirical links, not the explicit social and biological roles that link father-child patterns in crime and incarceration.



## **Chapter 3**

### **INTERGENERATIONAL CRIME AND PUNISHMENT**

As previously noted, only small scale studies have examined intergenerational components to criminal behavior and adult incarceration. Robins (1966), using a sample of St. Louis delinquents reaching adulthood in the 1920's and 1930's, found that early criminal behavior was disproportionately observed among parents that had children diagnosed with sociopathic behaviors. Rowe and Farrington (1997) used data from the Cambridge Study of Delinquent Development to assess environmental and genetic factors contributing to criminal behavior exhibited between parents and their children. Sampson and Laub (1993; 2003) make use of data from Glueck's early study of 1940's Boston-area delinquents, finding that parental behavior increased risk of delinquency among offspring, primarily mediated through familial processes (e.g., not direct genetic factors). While these studies provide strong evidence that criminal behavior may have intergenerational components, small sample size, early research methods, and regional as well as time-specific effects limit applicability to contemporary, societal level trends. The result, as Johnson and Waldfoegel (2002) note, is that existing data is notably lacking and hampers efforts to (1) identify factors of causation and (2) specify what factors predispose children of incarcerated parents to disadvantage in the criminal justice system.

As Figure 2 demonstrates, dramatic increases in crime and incarceration rates have made criminal behavior emerging societal trends/issues. Crime and incarceration are, empirically, linked to emerging changes in economic/social inequality and increased punitive policy (Freeman 2001; Western, Kleycamp and Rosenfield 2004). While the link between genetic factors and criminal behavior are well-documented (Robins 1966; Farrington and Rowe 1997), the increases in criminal behavior and incarceration in preceding decades also constitute large changes in American social structure. Hence, social patterns linking criminal behavior and incarceration are of central importance for understanding wide-spread crime and incarceration which we observe in American society.

Parent-child incarceration logically implies intergenerational continuance of disadvantage within a family, but the pathways through which comparative disadvantage in the family is transferred<sup>8</sup> remains unclear. The rise of mass-incarceration has occurred with major changes in both formation and composition of families between 1960-2000 (Willis 2000). Incarceration is an event known to cause significant changes in relationships between partners and subsequent living arrangements of children (Western, Lopoo and McLanahan 2004; Johnson and Waldfogel 2002). While empirical results suggest that family structure does not impact delinquency (McLanahan and Sandefur 1994), intergenerational crime may be mediated through family structure (Sampson and Laub 1993; Rowe and Farrington 1997). Existing studies such as the 1979 National Longitudinal Study of Youth lack detailed variables and measurements of family structure which may correlate with criminal behavior

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<sup>8</sup> From the vantage of sociological theory, Bourdeau's theory of cultural capital implies that cultural advantages and disadvantages may be transferred from one generation to the next (MacLeod 1995). Hence, the incarceration of a parent, paired with lack of other cultural benefits such as family wealth or access to quality education, may constitute a reproduction/transfer of parent-child outcomes.

in later life (Freeman 2000; Hannon 2003). Parent-Child criminal behaviors may also result from sociopathic disorders or a co-existing phenomenon linked to drug and alcohol dependency (Robins 1966; Farrington and Rowe 1997; Cohen 1998). To identify if intergenerational transmission of criminal behavior is a distinct social event, I introduce controls for early family structure, delinquency, and substance abuse that may mediate observed father-child crime/incarceration links. Given my belief that social factors other than these variables effect societal trends in crime and incarceration, I hypothesize that father-child relationships are an additional mechanism linking crime and incarceration.

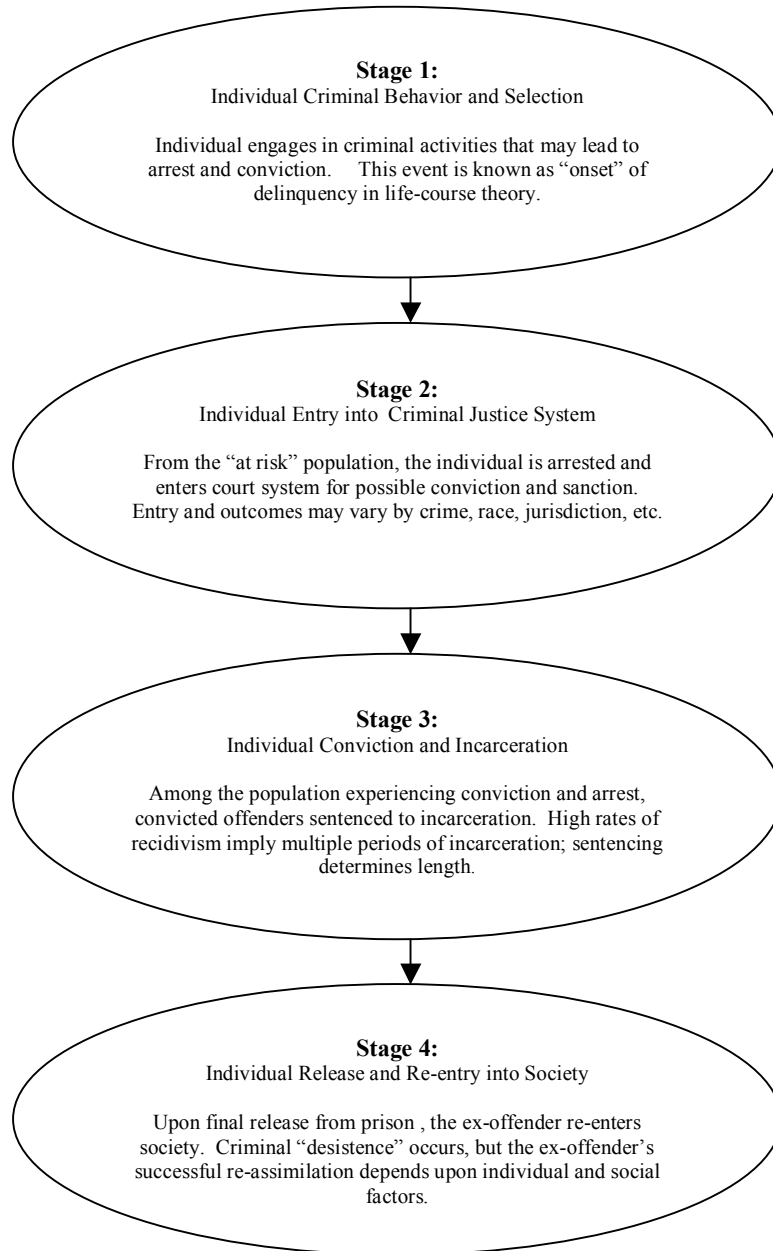
When considering parent-child linkages in criminal behavior as an intergenerational transmission of disadvantage, it is helpful to utilize a life-course framework in the lives of offenders. Life-course theorists uniquely focus on the process of “onset” and “desistance” from criminal behavior (Sampson and Laub 2003). Generalizing the “onset” and “desistance” to individuals with incarceration as a life-course event, as Pettit and Western (2004) propose, we may specify mechanisms of how social disadvantage transfers itself to individuals. Here, the sanction of incarceration is assumed to be given by the state to individuals engaging in criminal behavior. The adverse social treatment and outcomes for ex-offenders are partially a consequence of both state actions and societal norms and values that influence treatment of former offenders, in addition to self-determined actions (Uggen and Massoglia 2003). Hence, an individual engaging in criminal behavior, whether a consequence of genetic disposition, social environment, and/or free choice, is identified and sanctioned by the state in a series of actions.

Figure 3 depicts the “life cycle” of an individual incarcerated by the state. The initiation or “onset” of criminal behavior by the individual places him “at risk” for arrest in

period one. As the individual is identified by the state for committing crime, he is placed under arrest and processed by the criminal justice system in the second period. If the individual is convicted, resulting in a third period of incarceration and the labeling of the individual as a “felon”. If criminal behavior continues (as often does given the 60-80% recidivism rate for ex-felons), a repeat of periods one through three may occur until “desistance” from criminal behavior occurs. Once a convicted felon “desists” from criminal behavior and sanctions by the state end, the individual is released back into society. The offender then attempts to reintegrate back into society, but social influences (e.g., employer discrimination or social stigmatization) or individual factors (e.g., decision to remain homeless or work in underground economy) may prevent re-assimilation.

This “life cycle” model is simplistic in assuming no wrongful convictions, constant treatment by the state, differentiating between types of offenses (felony drug conviction versus child molestation) and offenders (black vs. white males), the social treatment of ex-offenders by the state, etc. However, given relative uniformity in criminal justice procedures (Steffensmeier and Demuth 2000; Mauer 2003) and the large number of individuals being incarcerated for at least one year in state or federal prison (Bonczar 2003), this life cycle model illustrates how a criminal offender (1) may suffer disadvantage as a consequence of sanctioning and (2) can potentially pass this disadvantage onto biological children.

**Figure 3: Life-Cycle Model Among Incarcerated Offenders**



As discussed above, criminal behavior of a father exposes children to anti-social behavior and potential risks that may accompany parental substance abuse, potential violence, and quality of neighborhood environment. Arrest and detention for offenders signify lost earnings from employment, removal and isolation from families for periods of incarceration. For children, this creates a social environment where family structure may be disrupted, loss of resources from direct financial support or child support payments, and loss of contact with the parent. The social marginalization, high rates of joblessness and decreased earnings, and altered relationships that ex-offenders face may continue these effects for children even after a parent's release from prison. Given that environmental influences, such as the stigma of having an incarcerated father, poverty, single-parent homes, lack of access to educational and social resources, and residential location in crime-prone areas, may increase the propensity for children to engage in criminal behavior, children with incarcerated fathers face social disadvantages relative to children without a father in prison.

By linking father incarceration with adult children's criminal behavior and arrest, the life-course framework provides a model through which fathers and their children undergo similar life-course patterns. Given the similarity of patterns that criminal offenders undergo in their treatment by the state and society, I argue that this constitutes a form of social disadvantage. More generally, I argue that as inheritance laws (e.g., estate taxes) and customs (e.g., the custom of leaving property and assets to children) may perpetuate social advantages between parents and their children, the lack of social policies that intervene in the lives of children with incarcerated parents perpetuates social disadvantages between incarcerated parents and children. As

American society maintains its focus on punishment of crime, lack-of-focus on father-child links in criminal behavior and arrest essentially ignores a crucial dimension in addressing the social problem of crime in society.

## **Chapter 4**

### **DATA AND METHODS**

#### **Data and Sample**

For this paper, we utilize data from the National Longitudinal Study of Adolescent Health (Add Health) to test if an incarcerated father increases propensity to engage in criminal behavior and incur arrest in later life. As has been previously noted, the lack of national samples measuring long-term criminal behavior between adolescents and adulthood have been a major limitation of research (Sampson and Laub 2003; Western and Pettit 2004). Add Health, as a data source with sections devoted to deviant behavior in both adolescence and young adulthood, provides the opportunity for measuring criminal behavior. Its measures of health, friendship networks, and community-level measures also make it a unique resource for how social environment may also effect long-term behavior at the individual, family, and community levels (Harris et al 2003).

Add Health is currently a three wave sample. Initially, Wave I interviews consisted of approximately 90,000, 7<sup>th</sup>-12<sup>th</sup> grade adolescents during in-school interviews and a subsequent, in-home interview for a sub-sample consisting of approximately 20,000 students and their parents. Two follow-up studies of the in-home sample were conducted a year later in the second wave of data collection and five years later during



the third wave of data collection. During the second wave of Add Health, approximately 15,000 interviews were conducted with respondents from Wave I enrolled in grades 8-12. This sub-sample removed older individuals from the longitudinal sample, creating a cohort with five years of age variance in the process. During the third wave of Add Health, approximately 15,000 individuals were interviewed. Respondents ranged predominately in ages between 18-26 and were interviewed on all occasions when found by the funding agency. (Harris, et al 2003). Our sub-sample consists of 15,000 respondents in the 7<sup>th</sup>-12<sup>th</sup> grade sample during Wave I that possess complete data for a set of self-reported criminal behaviors for waves one and three. Of these individuals, 7,050 males ages 18-27 were present at time of Wave III interview<sup>9</sup>.

To determine correlates leading to a wide variety of exhibited criminal behavior, I adopted a delinquency scale based upon scales for Add Health data on delinquency utilized by Haynie (2003) and Hagan and Foster (2003). These scales are a variation of a more-widely used set of 13 questions tested and used in contemporary research on criminal behavior (Hannon 2003; Caspi, et al 1994) and used in the 1979 National Longitudinal Survey of Youth. Given our previously-stated interest in crime and deviance, we wish to examine criminal behaviors that may result in incarceration. Since incarcerated offenders are sentenced based both upon type of crime and prior arrest/criminal history, both type of crime and frequency of behaviors are taken into account by the scale.

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<sup>9</sup> As Hagan and Foster (2003) document, the Add Health sample is a multi-stage clustered design that implies individual cases are neither randomly selected nor independent. Using STATA 8's survey commands, regional and school clustering are combined with individual probability weights to generate a representative population of males ages 18-23 for the U.S. STATA 8's 'survey' regression commands are used in data analysis to derive regression results for this population.

The questions and scaling weights used to create the scale are given in Table 1 and described as the “Criminal Activity Scale” (CAS) for Wave III of the Add Health data. The CAS, like other commonly used scales, measures a wide array of behaviors that result in state sanction of arrest, conviction, and incarceration. To control for emergence of early-onset/sociopathic criminal behavior, the dataset is limited to individuals that completed delinquency sections in Waves I and Wave III of data collection. The data structure of this design creates a sample of individuals ages 18-27 at time of interview. However, because of significant decline in the sample size of individuals over age 24 and a decline in mean probability of ever being arrested after age 23<sup>10</sup>, cases older than age 24 were removed from the dataset. This action reduces sample bias, but selection factors downwardly biasing estimates of arrests and criminal behavior still remain<sup>11</sup>. The sample population also decreased to 6,552 males, or 6,182 males with nonzero weights in the representative survey sample. The resulting sample is evenly distributed by age, representing a male cohort ages 18-24 at time of the Wave III interview.

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<sup>10</sup> Mean probabilities of ever being by arrested for ages 18-24 are, respectively, .123, .113, .166, .141, .169, .161, .141. The probability of ever being arrested for the sample population should increase monotonically by age, as does the cumulative probability of incarceration for the general population (Bonczar 2003).

<sup>11</sup> Chantala, et al (2004) estimate that selling drugs, carrying a weapon and shooting or stabbing someone are underrepresented by ~5% in the Wave III data relative to the Wave I population. In general violence measures and criminal activities are, respectively, underestimated in the Wave III sample by an average of 2.5% and 1%. Approximately one-hundred individuals in Wave III were not interviewed due to incarceration. Sample attrition due to non-response is disproportionately likely for chronic offenders and those incarcerated as adults, causing an age truncation of this population in the sample. Our models of arrest and criminal behavior are hence downwardly biased in the sample for independent variables in the regression analysis that positively correlate with criminal behavior and arrest.

## **Table 1: Criminal Activity Scale**

**(based on Haynie 2003; Hannon 2003; Hagan and Foster 2003)**

1. In the past twelve months, how often did you use a weapon in a fight? <sup>A</sup>
2. In the past twelve months, how often did you hurt someone badly enough to need bandages or care from a doctor or nurse? <sup>A</sup>
3. In the past twelve months, how often did someone hurt you badly enough to need bandages or care from a doctor or nurse? <sup>A</sup>
4. In the past twelve months, how often did you use or threaten to use a weapon to get something from someone? <sup>A</sup>
5. In the past twelve months, how often did you take part in a fight where a group of your friends was against another group? <sup>A</sup>
6. In the past twelve months, how often did you steal something worth more than \$50? <sup>A</sup>
7. In the past twelve months, how often did you steal something worth less than \$50? <sup>A</sup>
8. In the last twelve months, how often did you deliberately damage property that didn't belong to you? <sup>A</sup>
9. In the past twelve months how often did you carry a handgun to school or work? <sup>A</sup>
10. In the past twelve months, how often did you go into a house or building to steal something? <sup>A</sup>
11. In the past twelve months, how often did you sell marijuana or other drugs? <sup>A</sup>
12. In the past twelve months, how often did you buy, sell, or hold stolen property? <sup>A</sup>
13. In the past twelve months, how often did you deliberately write a bad check? <sup>A</sup>
14. In the past twelve months, have you shot or stabbed someone? <sup>B</sup>
15. In the past twelve months, have you pulled a knife or gun on someone? <sup>B</sup>

<sup>A</sup> For this question, scores values are coded in the following manner: Question value is zero if event did not occur in past 12 months. Question value is one if event occurred once or twice in past 12 months. Question value is two if event occurred three or four times in past 12 months. Question value is three if event occurred five or more times in past 12 months.

<sup>B</sup> For this question, scores values are recorded in the following manner: Question value is zero if event did not occur in past 12 months. Question value is one if event did occur once or more during past 12 months.

For the Wave III CAS, the standardized Cronbach's alpha was  $\alpha=.773$ . This alpha-value compares to criminal behavioral reliabilities for scales utilized by Hagan and Foster (2003), Haynie (2003), and Hannon (2003) in analysis of NYSL79 and Add Health data. Given that the twelve items of the scale were chosen as measures of criminal offending typically categorized as felony or misdemeanor behavior, the Criminal Activity Scale is a measure of criminal behavior. While Hagan and Foster (2003) utilize a scale with a Cronbach's alpha of  $\alpha=.86$ , their scale includes minor vandalism or lying to parents/guardian, acts more typically viewed as part of common adolescent deviance. Both Hagan and Foster and Haynie utilized violence scales with Cronbach's alpha of  $\alpha\approx.64$ . The CAS, by limiting measures to felony or misdemeanor behaviors (which are classified as either violent or non-violent offenses) in the time period of young-adulthood, focuses on criminal behavior potentially leading to arrest and conviction within the criminal justice system. This focus allows for analysis to capture criminal behavior "at risk" for arrest and conviction as an adult. Individuals with more than five missing responses were excluded from analysis to increase data reliability<sup>12</sup>.

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<sup>12</sup> The scores of individuals with missing responses were also proportionally rescaled to fit a 15-item metric. Individuals with more than five missing responses (those who either gave no-response or refused to answer the given question) were dropped from the sample. These procedures, though more stringent than rescaling methods used by Hagan and Foster (2003), attempted to minimize cases with missing data while reducing bias due to non-response. Comparing mean deviance between rescaled and non-adjusted scale scores, the mean rescaled deviance score is 1.407 while the mean non-adjusted scale score was 1.395 or a difference of 0.8%.

## Methods/Analysis

For analysis, we separately address questions of (1) ‘Do children of offenders display propensities for increased criminal behavior as adults relative to children of non-offenders?’ and (2) ‘Do children of incarcerated parents face increased risk for encounters with the criminal justice system?’ To address the first question, we utilize the CAS outlined in the previous section. Using respondents Wave III answer to “Has your father ever served time in jail or prison?” as an independent variable, we use negative binomial regression to test for correlation with a respondent’s CAS score<sup>13</sup>. Basic controls for an individual’s SES, race, sex, and age are included, given their known correlations with behavioral outcomes (Hannon 2003). Basic statistical information for these variables, along with others discussed below, is contained in Table 2.

Along with these controls, as mentioned in the previous section, we also introduce variables for family structure, substance abuse, relationship and work patterns, and a history of criminal juvenile delinquency. These variables act as both controls and pathways through which criminal behavior may be transferred across generations. For example, by creating unstable family structures or having predisposition to formation of informal romantic relationships, children of incarcerated parents may be more likely to engage in criminal behavior. Likewise, patterns of substance and alcohol abuse have been demonstrated to have genetic components, implying that transfer of criminal behavior may result from patterns of father-child drug dependency or behavioral

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<sup>13</sup> In our test for criminal behavior, I regress individual CAS scores using multivariate, negative-binomial regression. The negative binomial regression is used here due to the non-normal shape of the dependent variable and to account for the weighting of the crime scale that measures both number of offenses and the frequency of occurrence for particular types of behavior. By fitting the regression to model both zero and nonzero scores in the “count” of crime scale scores, we are able to better look at factors that correlate with committing overall criminal behavior (Long 1997).

**Table 2: Variable Summary Statistics**

Variable	Sample- Weighted Mean	Sample Weighted Standard Error	Minimum Value	Maximum Value
Wave 3 SCS Score	1.494	.0651	0	38
Respondent Ever Arrested as Adult	0.1516	0.0073	0	1
Respondent's Father Ever Incarcerated	0.1379	0.0066	0	1
Respondent's Education	12.953	0.0917	6	21
Native American	0.0222	0.0041	0	1
Black	0.1528	0.0200	0	1
Hispanic	0.1171	0.0172	0	1
Asian	0.0413	0.0088	0	1
Other Racial Category	0.0113	0.0025	0	1
Respondent's Age at Wave 3 Interview	21.63	0.1141	18	24
Single Mom	0.1842	0.0104	0	1
Single Dad	0.0349	0.0031	0	1
Non-Biological Two Parent	0.1613	0.0060	0	1
Other Family Arrangement	0.0456	0.0046	0	1
Log Household Income, Wave 1	4.0482	0.0390	0	9.21
Heavy Alcohol Usage, Wave 1	0.1167	0.0072	0	1
Substance Abuse, Wave 1	0.2893	0.0142	0	1
Respondent's Job Tenure (in months)	17.1299	0.5690	0	191
Respondent Ever Married Only	0.0609	0.0056	0	1
Respondent in Both Married and Cohabiting Relationships	0.0557	0.0051	0	1
Respondent Ever in Only Cohabiting Relationship	0.2947	0.0111	0	1
Respondent Missing Income Variable from Wave 1	0.1172	0.0087	0	1
Respondent Uncertain if Biological Father Ever in Jail or Incarcerated	0.0577	0.0049	0	1

disorders<sup>14</sup>. Sampson and Laub (1993), identify work attachment and relationships as key factors in altering criminal behavior. It is plausible, given the self-selection process that occurs among offenders in mate selection (Caspi, et al 1994; Rowe and Farrington 1997), that intergenerational crime patterns result from mate selection. These variables also test if patterns of drug abuse or family structure may explain intergenerational patterns of domestic violence (Caspi, et al 2003).

In addition to intergenerational patterns of crime, we also explore whether patterns of intergenerational criminal justice encounters are observed. We test if paternal incarceration increases risk for arrest<sup>15</sup>. Since adult arrest is coded for any arrest above age eighteen, we eliminate concurrent, time-dependent variables from the previous regression that may alter criminal behavior, such as adult relationship status and work history. These variables also violate assumptions of time-order (if marriage at age 19, for instance, deters future arrest of an individual previously arrested at age 18). This eliminates potential time-bias in the logistic regression (Long 1997), but removes potential explanations of concurrent explanations for crime. I limit analysis to variables from adolescence, testing if Wave I individual or family variables predict (future) adult arrest. With these variables, we test to see if father's incarceration is linked to increased probability of adult arrest.

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<sup>14</sup> With drug or alcohol abuse, criminal behavior may result from familial family patterns of addiction or heritable traits. Criminal behavior may correlate with alcohol or substance abuse by increasing aggression or by motivating illegal activities like theft or dealing needed to raise money to support a habit. These sources may make patterns of intergenerational incarceration appear, while not explaining the recent rise of crime and incarceration in the U.S.

<sup>15</sup> The arrest of individuals has the benefit of being a much easier measure to categorize and measure as a discrete event. As Freeman 2000 notes, some researchers consider self-reported criminal behavior less accurate for than arrest and conviction in measuring criminal behavior. For the 1979 National Longitudinal Survey of Youth (NLSY79), Freeman notes that blacks underreport criminal behavior in self-reports, while whites tend to more closely self-report actual levels of criminal behavior. In general Freeman argues that self-reports do not appear substantially more biased than other forms of measurement of criminal behavior. I make the same assumption in this analysis.

With tests of the effects of paternal incarceration's independent effect on criminal behavior and adult incarceration, we are able to establish evidence for intergenerational models of crime and confrontations with the criminal justice system. However, because significant occurrence of incarceration among Add Health respondents is lacking, our results do not (1) directly establish correlation between parent-child patterns of incarceration and (2) establish potential significance of intergenerational components in explaining the expansion and rapid growth of the criminal justice system. These data, however, still provide a unique ability for empirically-based calculations to infer how early influences may stimulate criminal behavior in later life and observe how variables in early life influence adult arrest or contact with the criminal justice system.



## Chapter 5

### EMPRICIAL RESULTS

To establish the occurrence of intergenerational transmission of crime and associated confrontations with the criminal justice system, we wish to examine the effects of a father's incarceration on his offspring's criminality and probability of incarceration. Using four models, we first regress CAS score on father's incarceration. Results of regression with these four models are displayed in Table 2. For Model 1 and Model 2, we test for significance of father's incarceration as a sole predictor and with basic controls of respondent's education, race, sex, and age<sup>16</sup>. Father's incarceration in Model 1 and Model 2, respectively, increases the expected CAS score by a factor of  $\exp(.552)=1.74$  and  $\exp(.486)=1.63$ . These coefficients are significant at the .001 level. In model two, being black increases expected deviance score by a factor of 1.26 relative to whites; this is significant at the .05 level<sup>17</sup>. Each year of age decreases criminal behavior score by a factor of 0.865 and is significant at the .001 level. These results are

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<sup>16</sup> For the negative binomial and logistic regressions used in our sample, we tested for non-linear effects of age, given that the crime-age curve is known to increase until late-adolescence before rapidly declining in adulthood (Hirashi and Gottfredson 1983). We found no nonlinear effects in our regression analyses, while age was found to have a linear effect for criminal behavior. This suggests that the crime-age relationship is linear for our sample.

<sup>17</sup> For model 2, the p-value=.0106. In all four models including race, blacks have higher expected levels of criminal behavior relative to whites significant at the .02 level.

consistent with expectations of traditional controls known to effect criminal behavior (Sampson and Laub 1993; Hannon 2003).

The alpha-value of 3.11 for the negative binomial regression is significantly different from zero, indicating that a Poisson regression would lead to biased standard errors in model estimation. Given that all five models differ significantly from zero, the negative binomial regression model is considered superior for estimating CAS scores relative to a Poisson regression model (Long 1997).

In Model 3, we keep controls instituted in model two, while adding contextual family variables from Wave 1 in the Add Health data. These effects examine adolescent family structure on adult criminal behavior. With these variables, father's incarceration results in expected criminal behavior by a factor of 1.68 for an individual's CAS score, significant at the .001 level. African Americans remain more likely than whites to engage in criminal behavior and age is associated with a similar level of decline in expected levels of criminal behavior. We find that, with the exception of the "Other Family" category<sup>18</sup>, family structure does not seem to affect CAS score relative to two-parent biological family households<sup>19</sup>. This suggests that single parent and remarried families do not increase expected criminal behavior scores relative to two-parent biological families. This is consistent with McLanahan and Sandefur's (1994) findings

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<sup>18</sup> The Other Family category includes foster homes, grandparents, and other forms of household structure. This category represents a sample of ~200 individuals (e.g., slightly over three percent of the total sample). Hence, while this family category has a significant effect in magnitude almost equal to having a father in prison, the variety of family structures and small number of cases included in this category make these results difficult to substantively interpret.

<sup>19</sup> When the variable for an incarcerated father is removed, families headed by a single-mother positively correlate with criminal behavior at the .05 level. . A similar effect, with significance at the .10 level, is found for single-parent families headed by fathers. No effect is found for remarried families. This suggests that, if biological father's incarceration is not taken into account, children in single-parent households have higher expected levels of criminal behavior than two-parent biological families.

that single-parent households are not associated with increased levels of criminal behavior.

In Model 4, I also examine the effect of juvenile substance abuse and heavy alcohol consumption at Wave I, minus variables for family structure present in Model 3. These results suggest that both substance abuse and binge drinking in Wave I increase expected CAS score by a factor of approximately 1.64. The effect of a biological father in prison in Model 4 increases expected CAS score by a factor of 1.44; this suggests that early alcohol and substance abuse reduce the impact of having an incarcerated father in prison. Adolescent alcohol and substance abuse may represent pathways through which genetic factors influence adult criminal behavior (Robbins 1966), but do not act to remove the effect of having an incarcerated father in prison.

In Model 4, we also test for the effect of work and relationship variables found to influence criminal behavior in later life (Sampson and Laub 1993). Relationship status among respondents shows that (with individuals with no cohabitation or marriage histories as reference group) marriage is associated with a reduction in expected criminal behavior score by a factor of 0.48. Those who cohabit and marry show no expected decline in expected criminal behavior relative to the comparison group. Those only reporting cohabiting relationships are associated with higher, but non-significant levels of criminal behavior. These findings suggest that possible assortive mating occurs among different types of relationships or that relationship formation may also lead to changes in criminal behavior patterns<sup>20</sup>. We find that each month of tenure is also highly significant in reducing

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<sup>20</sup> As Rowe and Farrington (1997) note, male and females engaged in anti-social or criminal behavior are self-selective in mating patterns. The criminal justice system or self-selection related to behavioral

**Table 3: Negative Binomial Regression Coefficients for Wave 3 Criminal Behavior Scale Score**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Respondent's Father Ever Incarcerated	0.552*** (0.096)	0.464*** (0.092)	0.474*** (0.097)	0.363*** (0.093)	0.386*** (0.096)
Intercept for Missing Father's Incarceration	0.093 (0.137)	0.104 (0.138)	0.135 (0.132)	0.005 (0.121)	0.054 (0.118)
Intercept for Missing Wave 1 Income			-0.027 (0.094)	0.026 (0.099)	
Respondent's Education		-0.030 (0.018)	-0.034 (0.019)	-0.010 (0.020)	-0.017 (0.020)
Respondent's Age at Wave 3 Interview		-0.145*** (0.020)	-0.142*** (0.021)	-0.186*** (0.021)	-0.181*** (0.021)
<b>Respondent's Racial Category (White Omitted)</b>					
Native American		-0.180 (0.196)	-0.166 (0.196)	-0.246 (0.207)	-0.247 (0.206)
Black		0.256* (0.107)	0.249* (0.110)	0.243* (0.097)	0.264* (0.103)
Hispanic		0.013 (0.105)	0.014 (0.109)	0.043 (0.104)	0.043 (0.104)
Asian		-0.258 (0.165)	-0.231 (0.168)	-0.191 (0.144)	-0.179 (0.143)
Other Racial Category		0.294 (0.235)	0.291 (0.226)	0.442+ (0.262)	0.460 (0.260)
<b>Wave 1 Household Composition (Two-Parent Biological Omitted)</b>					
Single Mom			0.117 (0.089)		-0.006 (0.084)
Single Dad			0.242 (0.159)		-0.035 (0.157)
Non-Biological Two Parent			-0.019 (0.091)		-0.080 (0.088)
Other Family Arrangement			-0.408*** (0.153)		-0.535*** (0.155)
Log Household Income, Wave 1			0.018 (0.025)	0.006 (0.024)	0.007 (0.024)
Heavy Alcohol Usage, Wave 1				0.463*** (0.101)	0.467 (0.100)
Substance Abuse, Wave 1				0.464*** (0.076)	0.468 (0.075)
Respondent's Job Tenure (in months)				-0.003* (0.0014)	-0.004* (0.001)
<b>Respondent's Relationship Variables</b>					
Respondent Ever Married Only				-0.739*** (0.166)	-0.740*** (0.166)
Respondent in Both Married and Cohabiting Relationships				-0.106 (0.190)	-0.106 (0.186)
Respondent Ever in Only Cohabiting Relationship				0.137 (0.080)	0.145+ (0.080)
Model Intercept	0.300*** (0.0423)	3.766*** (0.460)	3.657*** (0.477)	4.158** (0.445)	4.200** (0.451)
N	6148	6148	6148	6148	6148
Pseudo Log-Likelihood	-15759833	-15605789	-15589940	-15333739	-15319337
Alpha	3.114*** (0.138)	2.956*** (0.131)	2.937*** (0.129)	2.707*** (0.125)	2.689*** (0.124)

+p<.10 \*p<.05 \*\*p<.01 \*\*\*p<.001

activities may cause crime-prone individuals to engage in less formal relationships relative to non-offenders. In the absence of common criminality, racial differences in marriage rates may illustrate how females are aggregately less likely to choose marriage when faced with a shortage of men lacking criminal records and possessing significant economic earnings from the labor market.

CAS score by a factor of 0.997. This suggests that having a job for one year would lead to a decrease in expected criminal behavior by 3.6%. The significance of marriage and work tenure suggest that adolescent and adult variables both affect adult criminal behavior.

In Model 5, we test all independent variables simultaneously on individual CAS score. The overall model fit is superior to Model 3 and Model 4, but the magnitude and significance of variables does not significantly change. Cohabitation becomes associated with an expected increase in criminal behavior that is significant at the .10 level. The effect of a biological father's incarceration increases expected criminal behavior by a factor of 1.47. This suggests that the effect of a father's incarceration on adult criminal behavior remains highly significant, implying that intergenerational patterns of criminal behavior exist, while controlling for family background, substance abuse, race, sex, education, age, relationship and work status, and early criminal behavior as additional factors in explaining criminal behavior.

As we have previously noted, criminal behavior and sanction by the state with arrest or incarceration remain distinctly different outcomes for individuals. Differences in culture, criminal ability, prosecution and sentencing, etc. may all make outcomes for children of prisoners different than the criminal behavior they engage in. Arrest and incarceration also remain discrete events more easily measured than actions such as criminal behavior, where the wide array of types of criminal offenses complicate accurate measurement and interpretive analysis. Hence, finding determinants leading to arrest or incarceration remain preferable, in some ways, to scale measurements of criminal behavior (Freeman 2000). For these reasons, we use logistic regression to

determine if incarceration by a father increases probability of an adult arrest in the Add Health sample.

In Table 4, we consider five models leading to respondent's adult arrest. Odds ratios and odds ratio standard errors are reported. To avoid issues of endogeneity, we exclude variables that may have occurred after arrest, such as marriage or work. Instead, we focus on measurements for Wave I analysis and controls (Model 2). Results for Model 5 suggest that individuals with a parent incarcerated are 86% more likely than those without an incarcerated biological parent to be arrested as an adult when family structure, age, education, race, and alcohol and substance abuse are considered. These findings suggest that having a father ever incarcerated is a significant determinant in adult arrest.

The results from Table 4 also give some surprising findings. While blacks were found to increase expected criminal behavior relative to whites in Table 2, African Americans are only more likely to be arrested than whites in Model 2 and Model 4. Native Americans, in contrast are less likely to be arrested in the full model. Family structure and drug and alcohol abuse explain away most of the increased odds blacks face when race is the only explanatory variable considered. However, these results substantially deviate significantly from the expected norm, given that blacks are six times more likely to serve one year or more in state or federal prison and have arrest rates two to three times higher than whites than the general population (Maguire and Pastore 2003; Bonczar 2003). Our results for race may stem from sample attrition that disproportionately removes blacks from the sample population or underreporting of arrest in the sample, as has been found in the NLSY79 dataset (Freeman 2000). Given

**Table 4: Odds Ratios Affecting Whether Respondent Ever Arrested As Adult**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Respondent's Father Ever Incarcerated	2.153*** (0.239)				1.862*** (0.215)
Respondent missing father's incarceration data	1.331 (0.262)				1.188 (0.236)
Respondent's Education			0.893*** (0.022)	0.893** (0.021)	0.899*** (0.021)
Respondent's Age at Wave 3 Interview			0.974 (0.031)	0.969* (0.031)	0.974 (0.032)
<b>Respondent's Racial Category (White Omitted)</b>					
Native American		0.715 (0.230)		0.543+ (0.188)	0.472* (0.161)
Black		1.348* (0.190)		1.286+ (0.177)	1.257 (0.175)
Hispanic		0.961 (0.145)		0.839 (0.130)	0.806 (0.126)
Asian		0.598+ (0.167)		0.713 (0.195)	0.736 (0.205)
Other Racial Category		0.755 (0.523)		0.854 (0.652)	0.894 (0.681)
<b>Wave 1 Household Composition (Two-Parent Biological Omitted)</b>					
Single Mom			1.058 (0.131)	0.971 (0.132)	0.877 (0.123)
Single Dad			1.176 (0.281)	1.154 (0.274)	1.128 (0.270)
Non-Biological Two Parent			1.080 (0.148)	1.061 (0.149)	0.956 (0.137)
Other Family Arrangement			1.014 (0.241)	0.932 (0.222)	0.841 (0.199)
Log Household Income, Wave 1			0.967 (0.032)	0.967 (0.031)	0.971 (0.032)
Missing Household Income, Wave 1			0.962 (0.138)	0.984 (0.139)	0.968 (0.139)
Heavy Alcohol Usage, Wave 1			1.519** (0.207)	1.548*** (0.208)	1.595*** (0.220)
Substance Abuse, Wave 1			2.596*** (0.317)	2.635*** (0.323)	2.550*** (0.312)
Log-Likelihood	-4215268.8	-4252157.5	-3985630.2	-3970214.5	-3939651.6
N	6137	6137	6137	6137	6137

+p<.10 \*p<.05 \*\*p<.01 \*\*\*p<.001

employer discrimination patterns in hiring (Pager 2003), African Americans also have incentive to not disclose criminal records.

While not found to be associated with criminal behavior in the negative binomial models utilized in Table 3, education remains a highly significant predictor reducing probability of arrest among adults. On average, each year of education decreases odds of arrest by 10%. This finding is consistent with incarceration patterns among high school dropouts, high school graduates, and college graduates observed by Pettit and Western (2004). The fact that education remains insignificant as a predictor of criminal behavior while remaining a predictor of arrest suggests that education is not, in itself, indicative of Becker's (1968) hypothesis that crime is directly associated with labor market alternatives. Factors, such as disproportional arrest rates in impoverished neighborhoods (e.g., Wilson (1996)) may alternatively explain why education-arrest patterns occur.

A history of alcohol and substance abuse in adolescence also leads to large increases in risk of arrest. While Wave I alcohol and substance abuse are associated with similar expected increases of criminal behaviors in Wave III, there are striking differences in probability for arrest for Wave I alcohol and substance abuse. Those with a history of substance abuse in Wave I are 2.5 times more likely to be arrested as adults; in contrast, those reporting alcohol abuse in Wave I are 59.5% more likely to be arrested as adults. These results are consistent with the heavy emphasis on criminal prosecution for drug possession in the "War on Drugs" (Western and Beckett 1999).

Even when father's incarceration is not present in Model 3, family structure is found to have no substantive differences in probability of adult arrest. Relative to those in two-parent biological homes, those in single-parent father and mother homes are not



more likely to be arrested as adults. The significance of having a father incarcerated, in contrast, is a significant predictor of adult arrest. Given that fifty percent of felons in 1997 were parents (Mumola 2000), children of incarcerated parents are likely to experience disruption in family structures and decreased contact with an incarcerated parent. While better studies are needed to determine if family disruption from paternal incarceration leads to increased probability of arrest as an adult, these results suggest that factors associated with an incarcerated father (and not family structure, in itself) increase probability of arrest as an adult. Since the timing of the father's incarceration, however, is not known, it is unclear if family disruption at varying times and circumstances in the lives of children may correlate with future criminal behavior and arrest as an adult.

## **Chapter 6**

### **CONCLUSION**

For this project, we have conducted analysis examining if an incarcerated biological father is a risk factor for adult males ages 18-24 to (1) engage in adult criminal behavior and (2) being arrested as an adult. These results provide strong evidence that a paternal incarceration leads to both increased probability of criminal behavior and adult arrest. Individuals with an incarcerated father are 47% more like to engage in criminal behavior when controlling for adolescent family structure, alcohol and substance abuse, education, age, race, work history, and early relationship type. Individuals with an incarcerated father are also 86% more likely to be arrested as an adult when considering respondent's education, race, alcohol and substance abuse, adolescent family structure, and age. These findings point to the fact that having an incarcerated father is a significant risk factor for an individual to commit criminal behavior and enter the criminal justice system as an adult.

The findings of this paper also help to place these findings in context of other risk factors, such as substance abuse or dropping out of high school. Table 5 contains the

predicted marginal probabilities<sup>21</sup> and percentage baseline changes of adult arrest associated with dropping out of high school<sup>22</sup> and having a father ever incarcerated as an adult<sup>23</sup>. The marginal probability of arrest for a male with his biological father ever incarcerated was .216, while the marginal probability of arrest for a male dropping out of high school was .188. By comparison, the predicted marginal probability of arrest for the overall sample was 0.134. Thus, having a father ever incarcerated increased the baseline probability of arrest by 56.5% while dropping out of high school increased baseline probability of arrest by 36.2%. This suggests that having an incarcerated father is more significant than the risk of dropping out of high school. This is surprising, given that the proportion of individuals ever incarcerated increases substantially as education declines among men (Pettit and Western 2004).

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<sup>21</sup> Here, predicted marginal probability of arrest is derived by assigning the property of interest to everyone in the dataset while holding other independent variables at their means. The predicted probability for arrest reported is the mean predicted probability of arrest calculated in STATA while using the coefficients from the logistic regression results from Model 5 in Table 4. Thus, for example, in deriving the marginal predicted probability of arrest if individuals had a father in prison, I calculated the mean predicted probability of arrest by 1) assigning the property of having an incarcerated by father to everyone in the dataset while 2) collapsing all other variables to their sample means. This results in the predicted effect of an incarcerated father on individuals that otherwise have average sample characteristics. By using this method, I look at average linear effects for independent variables and also attempt to minimize nonlinear effects that may occur for clusters of factors (e.g., a white college graduate with no history of drug abuse or a black male with a history of substance abuse that lives in an urban ghetto) that disproportionately insulate or expose individuals to risk of arrest.

<sup>22</sup> To model the effects of dropping out of high school, I substituted a dummy variable for dropping out of high school for highest grade of education completed; high school dropouts were found to be 51% (p-value<.01) more likely to be arrested than those with at least a high school education. The general education variable, instead of the dummy variable for dropping out of high school, is used in the logistic regressions reported in Table 4 since it more fully captures the effects that continuing education beyond high school have in reducing probability for arrest. The effects of dropping out of high school are tested as predictors of arrest, due to Pettit and Western's (2004) findings that the effects of incarceration are highly stratified by education.

<sup>23</sup> To control for possible interaction effects between dropping out of high school and having an incarcerated father, I used the STATA 'xi' command to create interaction terms when calculating marginal probabilities. While the interaction terms were not significant, their presence contributes to the non-additive effects which appear in Table 5 for calculating probabilities of arrest resulting from dropping out of high school *and* having an incarcerated father. The code and output for the interaction effects of dropping out of high school and having an incarcerated father are available upon request.

Table 5 also provides evidence that father’s incarceration and dropping out of high school have a cumulative effect on probability of arrest. The predicted probability of arrest for respondents 1) with a father ever incarcerated and 2) dropping out of high school is 0.271, a 102.9% increase over the baseline probability of arrest. In contrast, males without a father in prison that have also graduated from high school have a predicted probability of arrest that 0.116, a figure that is 13.2% lower than the overall predicted probability for the sample. The latter estimate includes all individuals with at least twelve grades

**Table 5: Predicted Sample Marginal Probabilities and Baseline Percentage Changes for Incurring Adult Arrest Associated With Male Respondent Dropping Out of High School Or If Father Ever Incarcerated**

(based on sample predicted probability results from logistic regression results from Model 5)

<b>Risk Factors:</b>	<b>Marginal Predicted Probability</b>	<b>Percentage Increase from Baseline</b>
Overall Sample Baseline	0.134	0.0%
Respondent High School Graduate Without Father Ever Incarcerated	0.116	-13.2%
Respondent With Father Ever Incarcerated	0.216	56.5%
Respondent High School Dropout	0.188	36.2%
Respondent Both High School Dropout and With Father Ever Incarcerated	0.278	102.9%

of education. Thus, associated probabilities may further differentiate as educational levels increase. These results are consistent with Sampson and Laub’s (1997) theory of cumulative disadvantage in that father’s incarceration and educational outcomes combine to increase risks for arrest. However, a design comparing the effect of multiple factors is needed to formally test if a number of factors may collectively increase deviance.

These results do not also consider the effects of increased incarceration that may result from having a father in prison. Existing Add Health data does not contain a sufficient incarcerated population or long-term observation of potential offenders in adulthood to accurately measure differences in incarceration that may result for adults with an incarcerated parent. Statistical and demographic techniques such as those used by Lochner and Moretti (2001) may derive estimates to directly calculate the (1) probability of incarceration for children with a father in prison and (2) the effects of a father's incarceration on an expanding prison population. By utilizing basic such demographic techniques, further research may determine how a population of incarcerated parents, over time, may aggregately influence incarcerated population growth.

This paper, by linking father's incarceration with increased criminal behavior and arrest among adult male offspring, provides evidence that intergenerational patterns of crime and incarceration operate within American society. These findings raise issues of the role of biology and social environment in shaping criminal behavior. While mixed empirical research suggest that biology may or may not play a role in linking adult-child criminal behavior (Rowe and Farrington 1997; Duncan, Harris, and Boisjoly 2001; Caspi, et al 2003), this paper fills a gap by providing evidence that criminal behavior between father's and children is related. Along with other studies, this paper challenges social policies that treat crime as based on rational calculation and individualistic choice.

These findings also suggest that, at the national level, the consequences of criminal behavior and incarceration extend well beyond that of the criminal offender. Even as "desistance" may occur in the life of a criminal offender, inequality arising from

intergenerational patterns of crime and arrest persists. As previously discussed, sanctions for criminal behavior that often result in incarceration remain across the life-course, with repercussions to families, communities, and the larger society in general. Sanctions may be a result of naïve policy, modern forms of racism (Wacquant 2001; Pettit and Western 2004), mechanisms for controlling voting behavior (Uggen and Manza 2002; Behrens, Uggen, and Manza 2003) or institutional mechanisms for controlling excess labor (Western and Beckett 1999), but their consequence remains the same: inequality and disadvantage are observed across generations.

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