

**ABSENT FATHER TIMING, CRIMINAL BEHAVIOR,
AND ARREST ACROSS THE LIFE COURSE**

by

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THESIS

Submitted in partial fulfillment of the requirements
For the degree of Master of Arts in Criminology and Criminal Justice
at The University of Texas at Arlington
May 2020

Arlington, Texas

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ABSTRACT

Although prior research has examined the link between having an absent biological father and self-reported delinquency, few studies have assessed the influence of the timing of paternal absence (i.e., the child's age when father leaves). Using data from the National Longitudinal Study of Adolescent to Adult Health (Add Health), the present study examines the impact of the timing of biological father absence on delinquency and arrest across the life course. Results of negative binomial regression reveal that biological father absence before birth, early in childhood, (birth to age 5) and late adolescence (age 14 to 18) was significantly related to delinquency and arrest in adulthood. Paternal absence occurring during middle childhood (age 6 to 13), however, was only predictive of arrest in adulthood. These findings suggest that paternal presence prior to teenage years may serve as a protective factor against delinquency later in the life course. Examining the link between child age at paternal absence and delinquency may provide insight into underlying developmental mechanisms influencing behavioral outcomes across the life course.

ACKNOWLEDGMENTS

I would like to express my sincerest thanks to all those who have helped throughout my academic career. Firstly, to my Committee Chair, Dr. Michael F. TenEyck, who has been a wealth of information and inspiration. Thank you for your continued work, support, and encouragement to push further and pursue avenues I never thought to pursue. I cannot begin to express the amount of gratitude I have for your belief in me and my abilities; I will thank you always. To my committee members—Dr. Robert L. Bing, III, Dr. Sarah A. El Sayed, and Dr. Anne E. Nordberg—thank you for your advice, feedback, and encouragement in writing this thesis, as well as the work I have been privileged to work on with you. Finally, I want to send a huge thank you to Dr. Kent R. Kerley, Dr. Jaya B. Davis, and the entire UTA Criminology and Criminal Justice Department faculty and staff. It has been an absolute pleasure to learn from you and work with you on various projects. I have gained something from each of you that I will take with me as I leave UTA and continue in my academic career.

Though the majority of youth under the age of 18 live in two-parent homes, the United States Census Bureau reports that over 20 percent live in single-mother headed households (U.S. Census, 2016). In 2018, this amounted to over 18,000,000 living in single-mother homes (U.S. Census, 2018). Much criminological research has focused specifically on this population, with many finding that father absence is a risk factor for delinquent involvement, among other negative outcomes (Harper & McLanahan, 2004; McLanahan, Tach, & Schneider, 2013; Rebellon, 2002; Shenk & Scelza, 2012).

The role of family in an individual's development has long been of interest to social scientists (Durkheim, 1888; Freud, 1909; Hirschi, 1969; Merton, 1968). Research suggests that the family, particularly parents, plays an essential role in the socialization of youth (Hirschi, 1969). This socialization occurs through the enactment of control—and if effective—constrains youth from engaging in antisocial behaviors. It is posited that this control is greater amongst intact family structures (i.e., both parents living together) than in families in which at least one parent is absent (Demuth & Brown, 2004; Nye, 1958). The breakdown of the family structure has been found to impede the ability to enact and maintain control, both direct and indirect, thus resulting in a higher likelihood of youth engaging in antisocial behaviors (Gottfredson & Hirschi, 1990; Hirschi, 1969; Nye, 1958; Reiss, 1951). Much research has been devoted to this topic, with many researchers examining the effects of family breakdown on negative life outcomes (Demuth & Brown, 2004; Heard, 2007; Juby & Farrington, 2001; Kierkus & Hewitt, 2009; Wells & Rankin, 1991). In particular, substantial research has assessed the impact of father absence on these outcomes (Austin, 1978; Harper & McLanahan, 2004; McLanahan et al., 2013; TenEyck, El Sayed, & Barnes, 2019).

Studies have found that biological father absence is linked to an array of negative outcomes for youths including: lower school engagement (Heard, 2007), lower educational attainment and success (Ermisch, Francesconi, & Pevalin, 2004; Radl, Salazar, & Cebolla-Boado, 2017), increased depressive symptoms (Markowitz & Ryan, 2016), higher likelihood of juvenile convictions (Juby & Farrington, 2001), increased likelihood of early childbearing (Ermisch et al., 2004), and delinquency (Demuth & Brown, 2004; Juby & Farrington, 2001; Kierkus & Hewitt, 2009; Mott, Kowaleski-Jones, & Menaghan, 1997; Rebellon, 2002; Wells & Rankin, 1991). Although considerable research has examined the link between having an absent biological father and negative life outcomes, few studies have assessed the influence of the timing of paternal absence (i.e., the child's age when the father leaves) on self-reported delinquency. Examining the link between child age at paternal absence and delinquency may provide insight into underlying developmental mechanisms influencing behavioral outcomes across the life course.

A central principle of developmental and life-course (DLC) criminology is that the impact of a life course event is dependent upon the period of time in which the change occurs (Elder, 1998; Farrington, 2003). In particular, DLC scholars maintain that individuals experience transitions that alter the trajectory their life follows (Elder, 1998; Heard, 2007; Moffitt, 1993; Sampson & Laub, 1990). Trajectories are developmental pathways which span the life course (Sampson & Laub, 1990). Along these pathways, life events, transitions, and/or turning points occur and shift the outcome of the pathway. As Heard (2007) indicates, the family structure is a life course trajectory. The departure of a parent alters this trajectory, and depending on when the departure occurs, the impact may be consequential in the development of antisocial behaviors across the life course. To be sure, having an absent biological father may alter one's trajectory in

such a way that it can increase their delinquency throughout their life course. For instance, as indicated earlier, individuals with an absent father may have less direct and indirect control, impacting their bonds with adults (Hirschi, 1969) and lowering their self-control (Gottfredson & Hirschi, 1990), leading to delinquency. These individuals may also experience greater financial strain (Fronstin, Greenberg, & Robins, 2001; Shenk & Scelza, 2012) and myriad other risk factors in childhood and adolescence. In turn, these early risk factors can then negatively impact these individuals throughout their life course.

In order to provide a deeper understanding of the impact of the timing of father absence, the current study will use a nationally representative longitudinal sample to examine the effects of timing of biological father absence on delinquency and arrest across the first three decades of the life course. This will allow us to unpack the specific impact of father absence at different developmental periods. Before discussing the influence of absent father timing on delinquency, it is first necessary to briefly review the literature on the topic of father absence and delinquency.

Father Absence and Criminal Behavior

The relationship between family structure and delinquency has amassed considerable research since the 20th century (Demuth & Brown, 2004; Kierkus & Hewitt, 2009; Rodney & Mupier, 1999; Wells & Rankin, 1991). While there are many family structure variables that have been examined, the concept of the “broken home”—defined as a living situation in which at least one of the biological parents is absent from the home—is one of the oldest and most assessed (Rebellon, 2002; Wells & Rankin, 1991). An early meta-analysis found a 10 to 15 percent difference in delinquency rates for youths who live in broken homes versus intact homes (Wells & Rankin, 1991). In a later study, however, Rebellon (2002) found the effect of broken homes on delinquency to be much larger, ranging from a 75 percent increase to a 267 percent increase,

dependent upon the disruption and delinquency measures. Importantly though, the discrepancy in findings may be due in part to inconsistencies in the methodological practices of earlier studies (Wells & Rankin, 1991).

More recent research tends to find a positive relationship between family structure and delinquency (Heard, 2007; Kierkus & Hewitt, 2009). Kierkus and Hewitt (2009)—for example—found that youth from nontraditional family structures were more likely to engage in delinquent behaviors than youth from intact families. In addition, they found no contextual influence of gender, SES, race/ethnicity, or place of residence. Kierkus and Hewitt (2009) did, however, find that older adolescents living in single-parent or biological/step-parent households were at an increased risk of using illicit substances the longer they lived in the home. Demuth and Brown (2004) also found youth from single-parent and step-parent families to be significantly more delinquent than youth from two-parent biological families. When characteristics of family processes were controlled for, however, the effects of family structure became insignificant. In contrast to previous studies, Demuth and Brown (2004) conclude that family process mediates family structure, suggesting that the absence of a parent does not matter when factors such as parental monitoring, involvement, and closeness are considered.

Juby and Farrington (2001) found that family disruption was predictive of delinquency. After controlling for factors such as low socioeconomic status (SES), family size, and parental criminal behavior, family disruption continued to significantly predict juvenile convictions and juvenile self-reported delinquency—but not adult convictions. McLanahan et al. (2013) reviewed 27 studies that examined the effects of father absence or divorce on externalizing behavior, finding that 19 studies reported a positive and significant relationship, with the other eight reporting no significance. In addition, five out of six studies analyzing father absence and

substance use found a positive correlation. Although some scholars have found null results (Paschall, Ringwalt, & Flewelling, 2003), the general agreement within the literature is that intact families may act as a protective factor preventing youth from engaging in criminal behavior throughout their life course, while growing up in a “broken home” acts as a risk factor.

Some researchers have investigated whether parent or child characteristics may influence the observed effects of paternal absence. In particular, research has assessed the potential for race and gender differences. For example, Austin (1978) tested four hypotheses which suggest that the effect of father absence on involvement in personal and property offenses differ by race and gender. Using a sample of 4,077 junior and senior high school students, results indicated that father absence only affected personal offenses for white girls and all other hypotheses were rejected. Mott et al. (1997) examined the extent to which a child’s gender impacts the emergence of both internalizing and externalizing behavior upon the departure of the biological father. The results showed that, prior to controls, the effects of paternal absence on externalizing behaviors was significant for both boys and girls—once controls were added, the significance was lost for girls and only remained significant for boys (age 7 to 9) with the follow-up data. Both boys and girls also reported internalizing behavior, but once controls were added, the effects of father absence were modest at best.

Looking specifically at male youth, Harper and McLanahan (2004) determined that adolescents in father-absent homes are at an increased risk for serious delinquency and incarceration. They noted that youth in father-absent homes are also often plagued by other disadvantages, such as low socioeconomic status. Notably, Paschall et al. (2003) found that low socioeconomic status and delinquency were more closely linked for youth from absent father homes; however, they determined that father absence on its own was not correlated with

delinquency. Similar results were found by Kim and Glassgow (2018), who concluded that while living in a disadvantaged neighborhood directly impacts a child's aggression, the relationship is mediated by family function and structure, specifically the presence or absence of a father. Effects of paternal absence on aggression differed by model with fixed effects showing no relation and a hybrid model indicating a positive relationship. Kim and Glassgow (2018) suggested that contextual factors may be influencing the observed relationship—as well as possibly predisposing certain groups to living situations that would affect family structure, function, and behavior.

Taken together, results suggest the absence of the biological father negatively affects various behavioral outcomes for youth. Delving deeper, contextual factors surrounding the absence may further impact the observed outcome. In particular, there may be an interaction between the child's age at absence and the absence itself, which causes the effect to be more severe. While substantial research has considered how absence affects youth outcomes, there is limited research on the effects of timing of father absence.

Timing of Father Absence and Delinquency

While the research is suggestive of a positive effect of father absence on delinquency, findings from literature examining the effects of timing of father absence on delinquency are mixed (Juby & Farrington, 2001; Markowitz & Ryan, 2016). Although research on the subject may be grouped based on findings concerning the age at which paternal departure is most impactful, as a whole, there is little consensus on when the departure is most significant. For example, Juby and Farrington (2001) suggest disruption of the family structure when the child is under the age of 5 and between the ages of 10 and 14 has a greater effect on delinquency than if the disruption occurs between the ages of 5 and 9. Results from later research are in partial

concurrency with these findings. Markowitz and Ryan (2016) found that departure occurring later in childhood (between the ages of 6 and 14) was associated with delinquency in adolescence, but that departure in early childhood (under age 5) was not associated with adolescent delinquency. Others have found that, in general, the timing of the disruption does have an effect—and this effect is not limited specifically to the age in which the disruption occurs. For example, in investigating the effects of parental separation, divorce, and remarriage on adolescent delinquency, Rebellon (2002) found that distal divorce or separation was associated with status, property, and violent offending. Contrarily, Mott et al. (1997) discovered that recent paternal absence had a more notable effect on behavior in late childhood, particularly for boys.

Researchers have also found that the timing of father absence has negative effects on additional outcomes. For example, Luo, Wang, and Gao (2012) examined the effects of father absence and timing on anxiety and self-esteem in Chinese schoolchildren. Their results indicated that absence between the ages of 7 and 12 was associated with higher anxiety. In addition, for middle school girls, paternal absence before 2 years of age was associated with lower self-esteem. In a UK based study, father absence occurring earlier in childhood was also linked to increased depressive symptoms in girls (Culpin, Araya, Melotti, & Joinson, 2013). Finally, Shenk and Scelza (2012) examined the longitudinal impact of father's death on a variety of outcomes, including education, income, and marriage. Results reveal that paternal death negatively affects children's long-term outcomes, such as educational attainment, income, and marriage. More specifically, paternal death between the ages of 6 and 15 strongly impacts these outcomes. The authors suggest that this time period may be notable because events occurring during this time position the individual for the future.

Despite a general acknowledgment of the negative impact of father absence on delinquency, the actual impact remains in question. A meta-analysis by Wells and Rankin (1991) suggests that the difference between delinquency rates of youth in broken homes and intact homes ranges from 10 to 15 percent. More recent studies, however, have found no correlation (Paschall et al., 2003) or suggest a much larger one (Rebellon, 2002). Due to myriad methodological variations, such as delinquency and broken home measurements, a consensus on the actual impact still has not been reached (Wells & Rankin, 1991). Although much literature has been centered on this line of research, few studies have investigated if the timing of paternal absence also has an effect on delinquency.

Similar to literature on father absence, results from current available literature examining the timing of absence are mixed regarding actual effects. As the research reviewed above demonstrates, timing is influential in a variety of outcomes including self-esteem (Luo et al., 2012), depressive symptoms (Culpin et al., 2013), and delinquency (Juby & Farrington, 2001; Markowitz & Ryan, 2016; Rebellon, 2002). There is less agreement as to which time period during an individual's development the absence of a father has the greatest impact, if any, on delinquency and arrest. As discussed previously, the departure of the biological father may act as a life course transition, altering the trajectory an individual's life follows. Elder (1998) notes, "the developmental impact of a succession of life transitions or events is contingent on when they occur in a person's life" (p. 3). In other words, the impact on the individual may differ depending on the age of the individual when the transition takes place. Timing of father absence may have differing effects on delinquency and these differing effects may be consequential to future life events and transitions (Elder, 1998). Additionally, recall that the breakdown of the family structure impedes the formation or maintenance of indirect and direct control, thus, timing

of father absence will likely affect how control is enforced. To be sure, the age at which the father leaves may have differential effects on delinquency such that fathers who are present for more of the child's life can exert more control and, in turn, reduce delinquency. An exploration of the age range at which father absence is most detrimental will allow for a more in-depth examination of possible developmental mechanisms at work.

Current Study

Although the topic of father absence and delinquency has generated much research, there still remains an uncertainty concerning the observed effect sizes. Wells and Rankin (1991) state that due to variation in methodological practices, early results on the link between broken homes and delinquency provided inconclusive evidence on the actual, substantive impact. For example, they note that the common sampling technique of using officially identified delinquents may introduce bias. In addition, the wide variety of broken home measurements introduces complexities that likely result in different findings (Wells & Rankin, 1991). Variations in these areas resulted in fluctuations of reported effects, which caused difficulty in evaluating and presenting definitive effects. The variations in these observed effects has carried over into the limited research on timing of father absence.

The purpose of the current study is to examine the impact of the timing of father absence on self-reported delinquency and arrest across the life course. Specifically, father absence refers to the father no longer residing in the same home as the child. Though some prior research has assessed the link between timing of father absence and delinquency (Juby & Farrington, 2001; Markowitz & Ryan, 2016; Mott et al., 1997; Rebellon, 2002), the current study will add to the literature by analyzing data spanning over 20 years of development including the adolescence-to-adulthood transition period (Add Health). In addition to the use of a nationally representative

sample, the study will assess the impact of absent father timing on self-reports of delinquency throughout adolescence and adulthood as well as a lifetime measure of arrest. The use of self-reports may capture instances of delinquency that would not necessarily be indicated in official records, as prior research suggests official records of delinquency likely underestimate actual delinquency rates (Juby & Farrington, 2001; Wells & Rankin, 1991). Finally, McLanahan et al. (2013) noted that research examining the effects of father absence into adulthood is limited. By using a longitudinal data set, the current study seeks to assess the long-term consequences of paternal absence on criminal behavior and arrest. Specifically, this study tests the hypothesis that the age of the child when the father departs will have varying effects of delinquency across the life course.

Methods

Data

The current study uses data from the National Longitudinal Study of Adolescent to Adult Health (Add Health; Harris, 2009; Harris et al., 2009). The Add Health is a five-wave longitudinal study. Add Health uses a nationally representative sample of youth in grades 7 through 12 during the 1994-1995 academic year. Sampling began with 80 high schools selected from a sampling frame of 26,666. After the high schools were chosen, feeder schools were selected, resulting in 145 middle, junior high, and high schools participating in the study. From the participating schools, 90,118 students completed an in-school survey, which focused on demographic information, school, peers, and general health. From this sample, a subset of students was selected to complete the in-home surveys.

During selection, Black students with college-educated parents, Cuban and Puerto Rican students, Chinese students, and physically disabled students were oversampled. The resulting

sample consisted of 20,745 students and 17,670 parents. Wave 1 data was collected through completion of 45-minute student and parent interviews. Respondents were asked questions pertaining to demographic information, peers, familial structure, antisocial behaviors, risk and protective factors, health, and education. One year later, Wave 2 in-home interviews were conducted. For this follow-up, the Wave 1 sample was retained, with the exception of the sample of physically disabled students and those who were in grade 12 the year prior. The Wave 2 sample included 14,738 students in grades 8 through 12. Wave 3 follow-up took place in 2001-2002. At the time of follow-up, respondents were between the ages of 18 and 26. The follow-up interview was completed by 15,197 respondents and 1,507 of their romantic partners. Respondents were asked about binge-drinking attitudes, familial and romantic relationships, peer contact, and antisocial behaviors. Wave 4 follow-up occurred in 2008, when cohort members were between 24 and 32 years old. 15,701 respondents participated in a 90-minute computer-based survey and 30-minute biomarker collection. Data collection for Wave 5 was completed in 2018. The current study will use data from Waves 1 through 4.

Measures

Dependent Variables.

Delinquency Wave 1. During Wave 1 in-home interviews, respondents were asked if and how often they had engaged in 17 delinquent activities during the past 12 months. Respondents were asked if they had: painted graffiti, deliberately damaged property, lied to their parents about their location or who they were with, stolen from a store, gotten into a serious fight, hurt someone badly enough they needed medical attention, run away from home, stolen a car, stolen something worth more than 50 dollars, broken into a house or building, used or threatened someone with a weapon to get something from them, sold drugs, stolen something worth less

than 50 dollars, engaged in a group fight, acted loud or unruly in a public space, carried a weapon in school, and used a weapon in a fight. All but two items were coded such that 0 = *never*, 1 = *1 or 2 times*, 2 = *3 or 4 times*, 3 = *five or more times*. The items concerning carrying a weapon in school and using a weapon in a fight were coded such that 0 = *never*, 1 = *once*, 2 = *more than once*. Scores for each item were summed together to create the Wave 1 delinquency scale, with higher scores representing greater delinquent involvement.

Delinquency Wave 2. During Wave 2 in-home interviews, respondents were asked the same questions asked in Wave 1 pertaining to delinquent involvement. Many items referred to non-violent activities such as lying to parents, stealing, and damaging property. Respondents were also asked about involvement in violent delinquent activities, such as fighting or hurting someone else. All but two items were coded such that 0 = *never*, 1 = *1 or 2 times*, 2 = *3 or 4 times*, 3 = *five or more times*. The items concerning carrying a weapon in school and using a weapon in a fight were coded dichotomously such that 0 = *no* and 1 = *yes*. These scores were summed together with higher scores being indicative of more delinquent involvement.

Delinquency Wave 3. During Wave 3 in-home interviews, respondents were once again asked questions concerning delinquent involvement. Many questions are similar to those asked in the previous Waves, but due to the age of respondents, some questions were different so that the question was relevant to the respondents' age. To create the Wave 3 scale, 12 items referencing the respondent's delinquent involvement were used. Similar to Waves 1 and 2, respondents were asked if they stole anything worth less than 50 dollars, stole anything worth more than 50 dollars, used or threatened someone with a weapon, sold drugs, stole a car, fought, or carried a weapon. Respondents were also asked if they had deliberately written a bad check or used someone's credit card without their permission in the last 12 months. All items were coded

such that 0 = *never*, 1 = *1 or 2 times*, 2 = *3 or 4 times*, 3 = *five or more times*. Scores for each item were summed together to create the Wave 3 scale, with higher scores representing greater involvement in delinquent behavior.

Delinquency Wave 4. During Wave 4 in-home interviews, respondents were asked how many times they had engaged in delinquent behaviors in the past 12 months. The Wave 4 scale consists of 12 items concerning delinquent involvement such as: deliberately damaged property, stole something worth less than 50 dollars, stole something worth more than 50 dollars, sold drugs, got into physical fights, used another person's credit card without their permission, or deliberately wrote a bad check. All items were coded such that 0 = *never*, 1 = *1 or 2 times*, 2 = *3 or 4 times*, 3 = *five or more times*. Scores for each item were summed together to create the Wave 4 scale, with higher scores representing greater involvement in delinquent behavior.

Arrest Wave 4. During the Wave 4 in-home interviews, respondents were asked if they had ever been arrested. The item was coded dichotomously such that 0 = *no* and 1 = *yes*.

Key Independent Variables.

Biological Father Absence. During Wave 1 in-home interviews, respondents were asked how old they were when their father last lived with them. No respondents reported being over 18 years old when they last lived with their biological father. Thus, responses were coded into a series of dummy variables capturing the following: *father always present*, *father always absent* (i.e., the father left before birth), *father left from birth to age 5*, *father left from ages 6 to 13*, *father left from ages 14 to 18*. The variable was then recoded into a series of dummy variables reflecting these categories. The *father always present* group will serve as the reference group for the analyses.

Covariates.

Low Self-Control. A 23-item scale was used to capture low self-control during Wave 1 interviews. Respondents were asked if they made decisions without thinking too much about the consequences, go out of their way to avoid dealing with difficult problems in their life, criticize others, or argue with anyone. Items were coded such that 5 = *strongly agree*, 4 = *agree*, 3 = *neither agree nor disagree*, 2 = *disagree*, 1 = *strongly disagree*, with higher values indicating lower self-control.

Victimization. Victimization was measured using a 5-item scale from Wave 1. Respondents were asked if, in the last 12 months, they had: seen someone be shot or stabbed; had a knife or gun pulled on them; been shot; been cut or stabbed; or been jumped. Items were coded such that 0 = *never*, 1 = *once*, 2 = *more than once*. These items were summed together with higher scores representing greater victimization.

Depression. Depression was measured using 18 items in Wave 1. Respondents were asked how often in the past week: they had a poor appetite; felt lonely; felt depressed; were bothered by things that did not usually bother them; and felt that their life had been a failure. Items were coded such that 0 = *never/rarely*, 1 = *sometimes*, 2 = *a lot of the time*, 3 = *most/all of the time*. These items were summed together with higher scores indicating greater depression.

Low Self-Esteem. During Wave 1, respondents were asked whether they had a lot of good qualities, if they like themselves just the way they are, if they had a lot to be proud of, and if they felt loved and wanted. Items were coded such that 1 = *strongly agree*, 2 = *agree*, 3 = *neither agree nor disagree*, 4 = *disagree*, 5 = *strongly disagree*. Items were summed to create the scale, with higher values indicating lower self-esteem.

Low Social Support. Taken from the Wave 1 in-home interviews, seven items were used to measure low social support. Respondents were asked how much they felt adults and friends

cared about them, if people in their family understood them, if they had fun with their family, and how much their family paid attention to them. Items were coded such that 5 = *not at all*, 4 = *very little*, 3 = *somewhat*, 2 = *quite a bit*, 1 = *very much*. Items were summed to create the scale, with higher values indicating lower social support.

Delinquent Peers. Three items were used to create the delinquent peer scale. During Wave 1, respondents were asked how many of their three best friends smoked one cigarette a day, drank alcohol at least once a month, and used marijuana at least once a month. Variables were coded such that 0 = *no friends*, 1 = *1 friend*, 2 = *2 friends*, 3 = *3 friends*.

Time Spent with Peers. During Wave 1, respondents were asked how often they hung out with friends during the last week. Responses were coded such that 0 = *never*, 1 = *1 or 2 times*, 2 = *3 or 4 times*, 3 = *five or more times*.

Low Maternal Attachment. Two items from Wave 1 were used to measure maternal attachment. Respondents were asked how close they felt to their mother and how much they thought their mother cared about them. Items were coded such that 1 = *not at all*, 2 = *very little*, 3 = *somewhat*, 4 = *quite a bit*, 5 = *very much*.

Parental Permissiveness. Parental permissiveness was measured using seven items from Wave 1. Respondents were asked whether or not they were allowed to make their own decisions concerning: their bedtime; their curfew; their friends; their clothes; their diet; what they watched on television; and how much television they watched. All items were coded dichotomously (0 = *no*, 1 = *yes*). Responses were summed together so that higher values indicated more parental permissiveness.

Low Socioeconomic Status (SES). Low SES was measured during Wave 1 in-home interviews. Respondents were asked if their mother received welfare. Responses were coded dichotomously such that 0 = *did not receive welfare* and 1 = *received welfare*.

Age. Age was measured during Wave 1. Responses ranged from 11 to 21.

Race. Race was measured at Wave 1 and was coded so that 0 = *non-black* and 1 = *black*.

Sex. Respondent's biological sex was obtained during Wave 1 and coded such that 0 = *female* and 1 = *male*. Descriptive statistics for all variables used in the current study can be found in Table 1.

Table 1 about here

Analytic Plan

The analysis will unfold in a series of interrelated steps. In all, 10 different models will be analyzed. The first five models will examine the effects of absent father timing on delinquency at Wave 1 (i.e., model 1), Wave 2 (i.e., model 2), Wave 3 (i.e., model 3), Wave 4 (i.e., model 4), and a lifetime measure of arrest taken at Wave 4 (i.e., model 5). These models, however, will not take into account the influence of other covariates that may impact the relationship between absent father timing and criminal behavior. With this in mind, the next five models will adjust for a host of theoretically informed covariates. Just as before, the second set of five models will examine the effects of absent father timing on delinquency at Wave 1, Wave 2, Wave 3, Wave 4, and a lifetime measure of arrest taken at Wave 4.

Negative binomial regression and logistic regression will be used to estimate the impact, if any, of father's absence at four different time points during youths' development on various measures of delinquency and arrest (i.e., measured at different waves), adjusting for a variety of covariates. Since the delinquency variables are skewed count data, negative binomial regression

accounts for overdispersion (Long, 1997).¹ Importantly, incident risk ratios (IRR) will be used to interpret the magnitude of the effect. Incident risk ratios can be calculated by converting the coefficient estimates from the negative binomial model and exponentiating them: $IRR = e^{\beta_{tk}}$, where β_{tk} represents the estimated relationship between covariate k and Y at time t . This allows for it to be interpreted as a percentage change in the *rate* of delinquency as a function of a one-unit change in the independent variable. An *IRR* of 1.00 indicates no association, whereas an *IRR* below 1.00 indicates negative association, and an *IRR* above 1.00 indicates positive association. Logistic regression will be utilized to examine the effects of absent father timing on arrest since arrest is a binary measure (i.e., the respondent either had been arrested by Wave 4 or they had not been arrested). Furthermore, odds ratio (*OR*) allows for the examination of the outcome likelihood, and thus, will be used to interpret the magnitude of the effect. Similar to *IRR*, an *OR* of 1.00 indicates no association, an *OR* below 1.00 indicates negative association, and an *OR* above 1.00 indicates a positive association. To account for the oversampling of students in Wave 1, survey weights will be used in all analyses.

Results

The impact of father absence on criminal behavior and arrest throughout the life course, without adjusting for theoretically informed covariates, is presented in Table 2. The first column lists the independent variables of biological father absence, all of which are taken from Wave 1. Of note, the variable of *father always present* is left out as the reference category. The second, third, fourth, and fifth columns report the relationship between the independent variables and Wave 1 delinquency, Wave 2 delinquency, Wave 3 delinquency, and Wave 4 delinquency,

¹ While Poisson regression may also be used to analyze count data, it was not utilized as its strict assumption that the conditional variance of the dependent variable has to be smaller than the conditional mean is often violated (see Long, 1997). For this reason, negative binominal regression was used.

respectively. The final column reports the relationships between the independent variables and arrest.

Table 2 about here

The second column reports the relationships between the predictor variables and Wave 1 delinquency. As can be seen, biological father absence at any time is positive and significantly ($p<0.05$) related to delinquency in Wave 1. Recall that during Wave 1 of data collection, respondents were in grades 7 through 12. Results from model 1 indicate that father absence at any point is related to a 15 to 27 percent increase in the rate of delinquent involvement in early adolescence.

Model 2 reports the relationships between the predictor variables and Wave 2 delinquency. Column 3 reveals that biological father absence between birth and age 5 (i.e., *father left early*) is statistically significant and related to a 31 percent increase in delinquency in Wave 2 ($IRR=1.31, p<0.05$). In addition, father absence between age 6 and 13 (i.e., *father left middle*) is associated with a 21 percent increase in the rate of delinquency between grades 8 and 12 ($IRR=1.21, p<0.05$).

The fourth column reports the relationships between the predictor variables and Wave 3 delinquency. Unlike the previous models, model 3 reveals no significant association between father absence and Wave 3 delinquency. This result suggests that father absence at any point is not significantly related to delinquency between the ages of 18 and 26.

The fifth column reports the relationships between the predictor variables and Wave 4 delinquency. Model 4 indicates that father absence before birth (i.e., *father always absent*) is related to a 73 percent increase in the rate of delinquency in adulthood ($IRR=1.73, p<0.05$). Father absence between birth and age 5 is significantly related to a 57 percent increase in Wave 4

delinquency ($IRR=1.57, p<0.05$). In addition, father absence between ages 6 and 13 is related to a 53 percent increase in Wave 4 delinquency ($IRR=1.53, p<0.05$).

Model 5 reports the relationships between the predictor variables and Wave 4 arrest. The sixth column reveals that father absence at any time is positive and significantly related to an increase in the likelihood of arrest. Father absence before birth increases the likelihood of arrest by 54 percent ($OR=1.54, p<0.05$). Father absence between birth and age 5 is related to a 68 percent increase in the likelihood of arrest ($OR=1.68, p<0.05$) and absence between age 6 and age 13 is related to a 67 percent increase in arrest ($OR=1.67, p<0.05$). Finally, father absence between age 14 and age 18 (i.e., *father left late*) is related to a 119 percent increase in arrest ($OR=2.19, p<0.05$). Importantly, these results do not take into account the impact of other covariates. This will be accomplished in Table 3.

Table 3 about here

Table 3 details the effects of biological father absence on delinquency and arrest across the life course, while adjusting for a variety of covariates. Similar to the previous Table, Table 3 can be read from top to bottom, moving from left to right. The first column presents the independent variables and covariates taken from Wave 1. Column 2 presents the relationships between these variables and Wave 1 delinquency, while the third column presents the relationships between these variables and Wave 2 delinquency, and so on.

Looking at column 2, it can be seen that father absence is no longer significantly related to delinquency in Wave 1, after the introduction of the aforementioned covariates. Several covariates, however, are significantly related to Wave 1 delinquency. A one-unit increase in low self-control is associated with a 4 percent increase in the rate of delinquency ($IRR=1.04, p<0.05$), while a one-unit increase in prior victimization is related to a 24 percent increase in the rate of

delinquency ($IRR=1.24, p<0.05$). Likewise, a one-unit increase in delinquent peers is related to an 11 percent increase in the rate of Wave 1 delinquency ($IRR=1.11, p<0.05$). Age ($IRR=0.95, p<0.05$) is negatively related to delinquency while both race ($IRR=1.10, p<0.05$) and sex ($IRR=1.27, p<0.05$) are positively related to Wave 1 delinquency.

The third column reports the effects of father absence on Wave 2 delinquency, while adjusting for various covariates. Similar to results shown in column 2, father absence is not significantly related to Wave 2 delinquency. Once again, several covariates, such as low self-control ($IRR=1.03, p<0.05$) and victimization ($IRR=1.18, p<0.05$), are significantly related to delinquency. Every one-unit increase in low social support is related to a 2 percent increase in the rate of Wave 2 delinquency ($IRR=1.02, p<0.05$). A one-unit increase in delinquent peers is related to an 8 percent increase in the rate of Wave 2 delinquency ($IRR=1.08, p<0.05$). Age ($IRR=0.89, p<0.05$) and sex ($IRR=1.23, p<0.05$) are significantly related to Wave 2 delinquency.

The fourth column reveals that father absence is not significantly related to Wave 3 delinquency. A one-unit increase in low self-control is related to a 2 percent increase in delinquency ($IRR=1.02, p<0.05$), while a one-unit increase in victimization is related to a 10 percent increase ($IRR=1.10, p<0.05$) in delinquency at Wave 3. Delinquent peers are positive and significantly associated with delinquency, suggesting that a one-unit increase in delinquent peers increases the rate of delinquency by 5 percent ($IRR=1.05, p<0.05$). Age ($IRR=0.79, p<0.05$) and race ($IRR=1.33, p<0.05$) are significantly related to delinquency at Wave 3. In addition, being a male ($IRR=3.11, p<0.05$) is related to a 211 percent increase in the rate of Wave 3 delinquency.

As can be seen in column 5, father absence at three separate time points is positive and significantly related to delinquency in adulthood (i.e., Wave 4). Biological father absence prior to birth is associated with a 51 percent increase in adult delinquency ($IRR=1.51, p<0.05$).

Likewise, father absence between birth and age 5 is associated with a 45 percent increase in delinquency ($IRR=1.45, p<0.05$), while absence between age 14 and age 18 is associated with a 76 percent increase in adult delinquency ($IRR=1.76, p<0.05$). Similar to prior Waves, low self-control ($IRR=1.03, p<0.05$), victimization ($IRR=1.10, p<0.05$), and delinquent peers ($IRR=1.09, p<0.05$) remain positive and significantly related to delinquency. A one-unit increase in low self-control is associated with a 3 percent increase in adult delinquency ($IRR=1.03, p<0.05$), while a one-unit increase in victimization is related to a 10 percent increase in delinquency ($IRR=1.10, p<0.05$). Each one-unit increase in delinquent peers is related to 9 percent increase in delinquency ($IRR=1.09, p<0.05$). Once again, age ($IRR=0.81, p<0.05$), race ($IRR=1.33, p<0.05$), and sex ($IRR=2.98, p<0.05$) are all significantly related to Wave 4 delinquency.

The sixth column reports the effects of father absence on arrest, while adjusting for various covariates. As can be seen, father absence at any point is significant and positive in relation to arrest. Father absence before birth is associated with a 29 percent increase in arrest ($OR=1.29, p<0.05$) and absence between birth and age 5 is associated with a 58 percent increase in arrest ($OR=1.58, p<0.05$). Father absence between age 6 and age 13 is related to a 32 percent increase in arrest ($OR=1.32, p<0.05$), while father absence between age 14 and age 18 is related to a 91 percent increase in arrest ($OR=1.91, p<0.05$). Low self-control ($OR=1.03, p<0.05$), victimization ($OR=1.17, p<0.05$), and delinquent peers ($OR=1.13, p<0.05$) are positive and significantly related to arrest. A one-unit increase in low self-control is related to a 3 percent increase in arrest ($OR=1.03, p<0.05$), while a one-unit increase in victimization is related to a 17 percent increase in arrest ($OR=1.17, p<0.05$). A one-unit increase in delinquent peers is related to a 13 percent increase in arrest ($OR=1.13, p<0.05$). Finally, age ($OR=0.91, p<0.05$), race ($OR=1.64, p<0.05$), and sex ($OR=3.69, p<0.05$) are all significantly related to arrest.

To examine whether there were any statistically significant differences between the estimated coefficients, a coefficient test was applied to all statistically significant coefficients. The purpose was to determine if there were any differences among the groups representing when father's absence occurred (i.e., early, middle, late). Recall from Table 3 that Wave 4 delinquency and arrest were the only models to have significant coefficients for timing of father's absence. A series of coefficient tests indicated that there were no statistically significant differences among the coefficients measuring timing of father's absence. In other words, the coefficient tests indicate that there is no difference in the measures for timing of father's absence.

Although prior literature was utilized to determine the age cutoffs for when the biological father leaves, one could argue that the age cutoffs are somewhat arbitrary. For this reason, a series of sensitivity tests were analyzed where the age cutoffs will be slightly different. Recall that the original age groups ranged from 0-5 years old for leaving early (9.31% of the entire sample), 6-13 years old for middle childhood through early adolescence (11.82%), and 14-18 years old for leaving in late adolescence (5.36%). Specifically, three sensitivity tests were performed. First, all models were reanalyzed with the categories altered so that they started a year earlier, for instance, early was defined as ages 0-4 (now 7.30% of the entire sample), middle was 5-12 (12.06%), and late was ages 13-18 (7.01%). Second, all models were reanalyzed with the age groups changed to a year later, such that early was 0-6 (now 10.65% of the entire sample) years old, 7-14 (11.83%) years old for middle, and 15-18 (3.87%) years old for late. Third, a completely new age spread was analyzed in which the groups ranged from 0-3 (5.88% of the entire sample) for early, 4-10 for middle (10.46%), and 11-18 for late (10.04%). Results from these analyses remained relatively unchanged from those reported above. Importantly, the overall findings remain the same. Mainly that father absence was related to criminal behavior

early and later in life before adjusting for additional covariates. However, once these were controlled for, father absence was only related to delinquency in adulthood (i.e., Wave 4) and the lifetime measure of arrest.

Additionally, it could be that although the biological father is absent, the presence of another male fulfilling the role of a father figure would nullify the effects of biological father absence. In order to address the argument, the models were reanalyzed controlling for father figure. During Wave 1, youth were asked to provide a roster of individuals that made up their household and to best describe their relationship with each individual. To construct the variable “father figure,” a summated measure was created from all non-biological male figure responses—including stepfather, adoptive father, step/adoptive father, and foster father. All five models were reanalyzed with father figure being added to each model. Two key findings emerged: 1) Father figure was not significant in any model and 2) the results from these analyses remained relatively unchanged from those above (i.e., the significance of key variables remained unchanged after accounting for the presence of a non-biological father figure).

Discussion

Much research has been devoted to assessing the influence of varying family structures on delinquency, with findings indicating that youth in broken homes have a higher probability of delinquent involvement than youth in intact homes (Demuth & Brown, 2004; Kierkus & Hewitt, 2009; Rebellon, 2002; Wells & Rankin, 1991). A subset of family structure literature has focused specifically on youth in father absent homes, with results suggesting that biological father absence negatively impacts youth behavioral outcomes (McLanahan et al., 2013; Rebellon, 2002). Despite the large amount of literature on the subject, there remains inconclusive evidence on the actual effects of father absence (Austin, 1978; Harper & McLanahan, 2004; Kim &

Glassgow, 2018; McLanahan et al., 2013; Mott et al., 1997). In addition, little research has examined the influence of timing of father absence as a youth and its impact on future behavioral outcomes. Those who have examined timing of father's absence have reported mixed results concerning when paternal departure is most impactful—suggesting that more research is needed (Juby & Farrington, 2001; Markowitz & Ryan, 2016).

Thus, the current study adds to the literature by analyzing a nationally representative sample, who has been followed for over 20 years. The use of longitudinal data allows for an examination of the long-term effects of father absence, an area which has not been thoroughly examined as of yet (McLanahan et al., 2013). Results illustrate the importance of examining both the *timing* of father absence and its longitudinal impacts (including both delinquency and arrest), as opposed to simply examining the effect of father absence on adolescent delinquency.

The current study sought to examine whether biological father absence impacted the rate of criminal behavior and the likelihood of arrest across the life course generally and if the impact of biological father absence on criminal behavior and arrest would not be constant across the life course. Results revealed that father absence at all points was related to delinquency across the life course. Once theoretically informed covariates were added to the model, however, father absence was only related to an increase in adult delinquency (i.e., Wave 4) and a lifetime measure of arrest. Such findings highlight the necessity to examine criminal behavior across the life course, as conducting the same analysis without analyzing adult outcomes would have suggested that biological father absence is of little to no importance. The results also demonstrate the importance of looking at arrest in addition to general delinquency.

In terms of the effect of timing of biological father absence, there was little variation in the effect of age at which the individual was when their biological father left. This may be for a

couple of reasons. First, recall that it is presumed that intact family structures hold an increased ability to enact and maintain control over youth behavior (Gottfredson & Hirschi, 1990; Hirschi, 1969; Nye, 1958; Reiss, 1951). Along this line of thinking, it could then be posited that father absence at any point in time would decrease the likelihood of direct and indirect control being established. In other words, regardless of when the absence occurs, parental control will either never be established or will fail to be maintained, thus increasing the likelihood of youth engaging in delinquent behaviors. Second, and in the same vein, Hirschi (1969) asserts that a strong bond of attachment to prosocial others decreases the likelihood of delinquency. When this bond is weak or broken, however, delinquency is more likely to occur. Assuming the biological father is a prosocial individual, his absence at any point in time would cause such a bond to never form, or would weaken a bond that was already established, thus, increasing the likelihood of delinquent involvement.

Findings from the current study demonstrate the importance of looking at longitudinal data—no effect would have been seen if cross-sectional data had been used (Rutter, 1988). Notably, once theoretically informed covariates were added to the model, father absence remained significant in adulthood but was no longer significant in childhood. One explanation for this lies in the concept of cumulative disadvantage—that is, the coalescence of disadvantages across the life course result in larger effects in adulthood (Sampson & Laub, 1997). In other words, father absence has small effects in childhood that result in the larger observed effects in adulthood. For example, the father’s absence may lead to a lower household income which forces the youth to work in adolescence rather than focusing on school or causes them to have insufficient funds to continue their education. Thus, the father’s absence may be a negative turning point or transition which alters their life trajectory, affecting them later in life. Findings

indicate that father absence at any point may act as this turning point, as no one time period was more impactful than the other.

In addition to using longitudinal data, the current study also highlights the importance of adjusting for additional control variables. Some effects of father absence were found in the unconditional model that were not present in the full model. Had the additional controls not been added to the model, the current findings would suggest that there was an effect of father absence in childhood, which, as the full model shows, is not the case. While the full model adjusted for several variables, the finding that father absence predicted adult criminal behavior and arrest could also be a sign that there may be residual confounding that could not be accounted for by other covariates. In other words, there may be a variable that was not controlled for that could impact the relationship between father absence and adult criminal behavior. For instance, the current study did not control for sibling delinquency. Research suggests that sibling delinquency may be a risk factor for delinquency, as delinquent behavior may be learned and subsequently imitated (Craine, Tanaka, Nishina, & Conger, 2009; Fagan & Najman, 2003; Walters, 2018). Although not assessed here, it is possible that the addition of sibling delinquency to the model may affect the observed outcomes. While it is beyond the scope of this study to control for all variables, it is important to address that there may be additional factors that may be impacting the relationship.

Although this study adds to the current literature concerning father absence, there are a few limitations that must be acknowledged. First, recall that for this study, father absence refers to the father no longer residing in the same home as the child. While this study examines the effects of father absence on behavioral outcomes, it does not control for father involvement. Prior research has found increased father involvement to be related to delinquency reduction

(Coley & Medeiros, 2007; Harris, Furstenberg, & Marmer, 1998; Thomas, Farrell, & Barnes, 1996). Future research should take into consideration the possible impact of nonresident father involvement on youth behavior. Second, the current study does not control for genetic influences. Research indicates that genetics account for around 50 percent of the variance of all traits (Polderman et al., 2015). By not accounting for genetic factors, a complete picture of the mechanisms influencing the observed outcome behaviors fails to be seen. Third, the current study assesses the impact of father absence, in general, on delinquency and arrest but does not distinguish between reasons for the absence. Prior literature has examined varying absences (i.e., death, divorce/separation, incarceration, etc.) and have often found differing effects based on absence type (Juby & Farrington, 2001; Harper & McLanahan, 2004; Rebellon, 2002). An examination of varying absence types may yield results different than those found here. Additionally, delinquency is measured in terms of general delinquency and does not categorize delinquent acts into specific offense types such as personal, property, or violent offenses. While the current study provides a glimpse at how father absence, and more specifically, timing of father absence, affects delinquency in general, an investigation of how this absence impacts specific types of offenses may uncover certain nuances within the relationship between father absence and delinquency.

Despite these limitations, findings from the current study highlight the importance of examining behavior across the life course. An adolescent-limited view fails to reveal the long-term effects of family disruption and may diminish the prioritization of family preservation programming (Cullen, 2011). Results suggest that programs aimed at reducing delinquency take into account the long-term impact of biological father absence. The implementation of early psychoeducation emphasizing parenting skills and healthy relationships may prove beneficial in

establishing a secure foundation for familial relationships. Additionally, it is suggested that more father-focused parenting programs be developed that are accessible for fathers prior to, and years after, the birth of the child. Programs focused on increasing absent father involvement may also have long-term benefits for youth behavior and psychological well-being (Howard Caldwell, Bell, Brooks, Ward, & Jennings, 2011). Currently, the Office of Family Assistance, run by the U.S. Department of Health and Human Services, funds over 30 organizations providing Responsible Fatherhood programming (Office of Family Assistance [OFA], 2019). New Pathways for Fathers and Families under the Claims Resolution Act of 2010 emphasizes father-child relationships, healthy co-parenting, and economic stability (OFA, 2019). It is important that care be taken by policy and program implementors to consider factors that may impede successful program delivery such as accessibility, socioeconomic status, stigma, and diversity. Introduced in 2019, the Keep Families Together Act demonstrates the need to address current issues regarding diverse populations (S. 292, 2019). The Bill aims to eliminate the separation of families immigrating into the United States, while keeping in place safeguards to protect children in the event such separation is necessary to ensure child safety—such as from abuse, neglect, or trafficking. A report by the United States Department of Health and Human Services (HHS) Office of the Inspector General outlines reports by care facilities housing youth in HHS custody (U.S. Department of Health and Human Services Office of the Inspector General [OIG], 2019). The report details the challenges faced caring for these youth, specifically concerning mental health issues developed through the trauma of the journey immigrating into the United States and losing contact with family. Youth in custody exhibited increased mental health and behavioral issues the longer they remained in HHS custody (OIG, 2019). The Keep Families Together Act seeks to eliminate unnecessary family separation, which could aid in the short-term and long-

term reduction of traumatization and decrease subsequent mental health and behavioral issues. Despite the utility of this Bill in promoting public welfare, it remains in the introduction stage of the law enactment process. The Bill's passing could mitigate long-term consequences of the separation of families. Sampson and Laub (1990) held that adult deviant behavior was associated with childhood delinquency not only through characteristics of the individual, but also through events experienced throughout the life course. Individual characteristics associated with delinquency, coupled with traumatic familial separation, will likely lead to long-term, far-reaching issues for individual and public safety if not addressed.

Policies and programs focused on enhancing parenting skills and practices may also increase self-control. Recall that low self-control was significantly related to increased delinquency in all Waves, as well as arrest. An emphasis on parenting skills may lead to early increases in self-control, which may be beneficial to long-term life outcomes (Gottfredson & Hirschi, 1990). Moffitt et al. (2011) found levels of self-control in childhood to be predictive of health, financial, and criminal outcomes in adulthood. Participants with low self-control were more likely to experience myriad health issues, have lower financial stability, and more criminal convictions at age 32 (Moffitt et al., 2011). Additionally, as the current study found delinquent peers and time spent with peers to increase delinquency and likelihood of arrest, programs aimed toward reducing this exposure could be beneficial in reducing involvement in delinquency. After school or mentor-based programs focused on building prosocial skills and relationships may prove effective for delinquency reduction.

Early investments in parenting programs may pay dividends in the long run. For example, in a 15-year follow-up of a nurse home visitation program, Olds et al. (1998) found early parenting education reduced long-term criminal justice contact for participant's children.

Participants of the home visitation program were young unmarried pregnant women. Participants were randomly assigned into one of three groups, with each group receiving a specific treatment. The first group received specialized development screenings when the child was 12 months and 24 months. In addition to these screenings, the second group also received home visits from a nurse during pregnancy. The third group received the screenings plus the nurse visitation up until the child's second birthday. During the visitations, nurses provided basic education on childcare and parenting skills (Olds et al., 1998). Findings from the follow-up showed that the nurse visitation program was beneficial for both groups, with Group 3 exhibiting the best outcomes, particularly in terms of lower substance related delinquency and criminal justice involvement. The nurse visitation program may serve as a guide to the development of universal programs aimed at enhancing early parenting practices. The implementation of focused and intentional policies and programs may have long-term benefits for individuals, families, and communities. Criminal behavior is not limited to adolescence, and as this study shows, neither are the effects of father absence.

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Table 1. Descriptive Statistics (N = 7,161)

	Mean	SD	Min.	Max.	α
<i>Dependent Variables</i>					
Delinquency Wave 1	4.25	5.22	0	47	0.86
Delinquency Wave 2	3.21	4.37	0	47	0.83
Delinquency Wave 3	0.74	1.86	0	24	0.76
Delinquency Wave 4	0.39	1.33	0	20	0.75
Arrest Wave 4	0.26	0.43	0	1	----
<i>Independent Variables</i>					
Father Always Present	0.62	0.49	0	1	----
Father Always Absent	0.13	0.34	0	1	----
Father Left Early	0.09	0.29	0	1	----
Father Left Mid	0.12	0.32	0	1	----
Father Left Late	0.03	0.18	0	1	----
<i>Covariates</i>					
Low Self-Control	29.13	7.73	3	71	0.75
Victimization	0.43	1.05	0	10	0.73
Depression	10.01	7.01	0	51	0.87
Low Self-Esteem	3.10	2.42	0	16	0.80
Low Social Support	7.66	3.94	1	26	0.79
Delinquent Peers	2.28	2.55	0	9	0.76
Time Spent with Peers	1.98	0.99	0	3	----
Low Maternal Attachment	1.59	1.08	1	9	----
Maternal Disengagement	8.92	3.44	5	25	0.84
Parent Permissiveness	5.05	1.53	0	7	0.64
Low SES	0.09	0.28	0	1	----
<i>Control Variables</i>					
Age	15.21	1.57	11	20	----
Race	0.20	0.40	0	1	----
Sex	0.44	0.50	0	1	----

Note: SE = Standard Deviation.

Table 2. The Unconditional Impact of Father Absence on Criminal Behavior and Arrest ($n = 7,161$)

	Delinquency W1		Delinquency W2		Delinquency W3		Delinquency W4		Arrest 4	
	IRR	SE	IRR	SE	IRR	SE	IRR	SE	OR	SE
Father Always Absent	1.15*	(0.07)	1.10	(0.07)	0.83	(0.09)	1.73*	(0.23)	1.54*	(0.17)
Father Left Early	1.27*	(0.09)	1.31*	(0.09)	1.18	(0.14)	1.57*	(0.25)	1.68*	(0.19)
Father Left Middle	1.26*	(0.07)	1.21*	(0.07)	1.08	(0.12)	1.53*	(0.21)	1.67*	(0.17)
Father Left Late	1.25*	(0.12)	1.07	(0.10)	0.76	(0.14)	1.55	(0.41)	2.19*	(0.36)

* $p < .05$; Note: IRR = Incidence Risk Ratio; OR = Odds Ratio; SE = Linearized Standard Error

Table 3. The Impact of Father Absence on Criminal Behavior and Arrest ($n = 7,161$)

	Delinquency 1		Delinquency 2		Delinquency 3		Delinquency 4		Arrest 4	
	IRR	SE	IRR	SE	IRR	SE	IRR	SE	OR	SE
Father Always Absent	0.94	(0.05)	0.99	(0.06)	0.90	(0.11)	1.51*	(0.21)	1.29*	(0.15)
Father Left Early	1.04	(0.06)	1.13	(0.07)	1.19	(0.14)	1.45*	(0.26)	1.58*	(0.21)
Father Left Middle	1.00	(0.05)	1.04	(0.07)	1.05	(0.14)	1.17	(0.16)	1.32*	(0.15)
Father Left Late	0.89	(0.09)	0.94	(0.10)	0.99	(0.19)	1.76*	(0.50)	1.91*	(0.38)
Low Self-Control	1.04*	(0.01)	1.03*	(0.01)	1.02*	(0.01)	1.03*	(0.01)	1.03*	(0.02)
Victimization	1.24*	(0.02)	1.18*	(0.02)	1.10*	(0.03)	1.10*	(0.05)	1.17*	(0.05)
Depression	1.01*	(0.01)	1.00	(0.01)	0.99*	(0.02)	1.00	(0.01)	0.99	(0.01)
Low Self-Esteem	0.96*	(0.01)	0.97*	(0.01)	0.97	(0.02)	0.94	(0.03)	0.99	(0.02)
Low Social Support	1.03*	(0.01)	1.02*	(0.01)	1.02	(0.01)	1.03	(0.02)	1.02	(0.01)
Delinquent Peers	1.11*	(0.01)	1.08*	(0.01)	1.05*	(0.02)	1.09*	(0.02)	1.13*	(0.02)
Time Spent with Peers	1.12*	(0.02)	1.10*	(0.02)	1.04	(0.04)	0.97	(0.06)	1.21*	(0.05)
Low Maternal Attachment	1.01	(0.02)	1.00	(0.02)	1.09*	(0.04)	0.97	(0.04)	1.07	(0.06)
Maternal Disengagement	1.02*	(0.01)	1.02	(0.01)	1.02	(0.01)	1.03	(0.02)	0.98	(0.02)
Parental Permissiveness	1.01	(0.01)	1.03*	(0.01)	1.03	(0.03)	1.06	(0.03)	0.99	(0.02)
Low SES	1.01	(0.06)	0.92	(0.07)	0.90	(0.11)	1.05	(0.14)	1.42*	(0.21)
Age	0.95*	(0.01)	0.89*	(0.01)	0.79*	(0.02)	0.81*	(0.03)	0.91*	(0.03)
Race	1.10*	(0.05)	0.94	(0.05)	1.33*	(0.16)	1.33*	(0.16)	1.64*	(0.24)
Male	1.27*	(0.04)	1.23*	(0.06)	3.11*	(0.26)	2.98*	(0.30)	3.69*	(0.35)

* $p < .05$; Note: IRR = Incidence Risk Ratio; OR = Odds Ratio; SE = Linearized Standard Error