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EXPLORING THE TRANSITION TO PARENTHOOD AS A PATHWAY TO DESISTANCE

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ABSTRACT

Desistance is a flourishing topic in criminology, and while criminologists know a great deal about how marriage and employment affect criminal behavior, the effects of parenthood remain equivocal. This study uses data from The Pathways to Desistance Study to test whether the transition to parenthood leads to criminal desistance and reductions in substance use. It contributes to the existing literature in three specific ways. First, it tests the transition to parenthood, including pregnancy, parenthood without pregnancy, and additional pregnancies as a parent. The ability to capture behavioral changes at each distinct stage in the transition to parenthood is an improvement over studies which often rely on a binary measure of whether the individual is a parent or not. Second, it explores the context of residency and how parenthood, paired with residency or nonresidency, affects behavior. Third, it tests a theoretically important mechanism of desistance – parental orientation. Despite the centrality of this mechanism in theories of desistance, measures of attachment to parenthood are noticeably absent in empirical tests of parenthood, criminal offending, and substance use. This study finds that a binary measure of parenthood is often insufficient for exploring the effects of parenthood. Rather, the contextual nature of parenthood, particularly being a parent who resides with a child, is negatively related to one's offending and substance use. Further, for women, substance use significantly declines during pregnancy, and often continues to decline as a woman becomes further embedded in motherhood. Finally, parental orientation does not seem to be a better predictor of criminal desistance or of substance use than a binary indicator of parenthood.

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Chapter 1

Life Course Theory and Desistance

Criminologists have long been concerned with the etiology of crimes (i.e. what causes someone to commit crimes), yet the equally important question of what causes people to *reduce* committing crimes has become the focus of research only relatively recently. The surge in desistance research can be attributed to Hirschi and Gottfredson's (1983) seminal piece on the age distribution of crime. One of the most widely acknowledged and replicated findings in criminology[1] (Blokland and Nieuwbeerta 2005), the age-crime relationship shows delinquency and criminal offending peaking during adolescence and then rapidly decreasing in the early twenties.

There have been several developmental and life course criminological theories that have attempted to explain this pattern, such as Farrington's (2003) Integrated Cognitive Antisocial Potential (ICAP) Theory, Catalano and Hawkins' (1996) Social Development Model (SDM), LeBlanc's (1997) integrative multilayered control theory, and Thornberry and Krohn's (2001) interactional theory. However, three of the most popular theories of the age-crime curve are Gottfredson and Hirschi's (1990) general theory of crime, Moffitt's (1993) theory of life-course-persistent offending, and Laub and Sampson's (1990, 2003) age-graded informal social control theory.

According to Gottfredson and Hirschi, crime results from low self-control. Self-control is developed early in life through inconsistent and ineffective parenting, and once

[1] See Steffensmeier, Allan, Harer, and Streifel (1989) for their critique of Hirschi and Gottfredson's invariance argument.

set, remains stable throughout one's life. They argue that ordinary life events, such as getting married, losing a job, and becoming a parent, are outcomes related to one's self-control, and as such, have little effect on criminal behavior. Furthermore, they argue that crime rates decline with age whether or not these events occur. Rather than attributing desistance to situational influences, institutional influences, or to life course events, desistance is largely attributed to the natural process of physical and mental maturation paired with deprivation of criminal opportunities (Glueck and Glueck 1974; Hirschi and Gottfredson 1990). Despite their claims that the age effect is inexplicable and that no variable can account for age effects, the tautological argument that individuals desist when they mature and one is adequately mature when one desists from crime, has left many criminological scholars unsatisfied.

Moffitt (1993) attempts to explain the age-crime curve with a dual taxonomy of offending behaviors. Her taxonomy is couched in a developmental perspective which proposes that early childhood biological risks interact with environmental and social risks which results in a pathological personality and life course persistent offending. Life course persistent offenders (LCPs) are theoretically different from adolescent limited offenders (ALs), Moffitt's second theoretical offender type group. ALs only engage in antisocial behavior during their adolescence. However, LCPs begin to engage in antisocial behavior in early childhood and continue into adulthood. The great influx of new offenders during adolescence is responsible for the corresponding increase in the age-crime curve relationship. Once ALs begin to transition into adulthood, they abandon antisocial behaviors, and the age-crime curve declines. LCPs, on the other hand, continue to engage in antisocial activities, thus the age-crime curve does not completely

disappear. ALs suffer from a gap between their biological and social maturity. They begin to mimic LCPs who, due to their antisocial behavior and resulting precocity, do not seem to suffer a maturity gap. Over time, new opportunities and behaviors become more valued than narrowing the maturity gap and antisocial behavior wans.

Although compelling and generally supported (Piquero and Moffitt 2004), Moffitt's theory has often been criticized for being too deterministic (Laub and Sampson 2003). As Sampson and Laub have pointed out, even those who Moffitt would describe as LCPs often desist. This type of criticism is reflective of the growing criminological dissatisfaction with adolescent limited criminological (ALC) theories – theories that ignore what happens in childhood and adulthood to a great extent and focuses exclusively on what occurs during adolescence (Cullen 2011). Cullen (2011) argues that despite the success of ALC over the past 50 years, it has reached the end of its utility in criminology, and that the field should recognize that criminology is now life course criminology. Life course criminology acknowledges that life course events, in childhood and adulthood, can have impressive effects on individuals' lives, particularly their criminal careers. This paradigm is built on the foundation of life course theory (Elder et al. 2003) and has been incorporated into criminological theories of desistance, particularly Laub and Sampson's (1990, 2003) age-graded informal social control theory.

In short, Elder et al. (2003) describe the life course as "age-graded patterns that are embedded in social institutions and history" (p. 4) and draws upon five main principles. The first is the principle of life span development. Individuals do not stop developing at age 18; rather they continue to be affected by changes that occur throughout their life spans. For instance, individuals are likely to experience several

types of transitions in young adulthood, such as beginning post-secondary education, employment, and moving away from home (Shanahan 2000); however, they are less likely to experience family role transitions, such as marriage and parenthood, until their late twenties. Even in later life stages individuals experience transitions, such as retirement and becoming grandparents.

The second is the principle of agency. This principle emphasizes that individuals are actors and take an active role in the construction of their own life course. Although individuals may be limited in their opportunities and constrained in their choices due to their location in the social structure, they still engage in 'planful competence' (Clausen 1993) and actively construct their life course through their actions and choices. The third is the principle of time and place. Individuals are located in specific social time and locations, and the transitions they experience will vary in meaning and substance depending on when and where they occur. The fourth is the principle of timing. This principle recognizes that the same transitions can vary in their consequences and effects for different people due to when they occur in their life spans. The fifth is the principle of linked lives. This principle stresses that lives are not lived independently of one another, and that people's shared relationships affect their life courses.

Turning points – transitions that can substantially change the direction of one's life and are often accompanied by significant cognitive and behavioral changes – are a key component of life course theory. Because these transitions have the power to bring about significant behavioral change, many criminological scholars have begun to incorporate and conceptualize desistance within a life course framework. Sampson and Laub's age-graded social control theory (1990, 2003) is the quintessential example of

how life course theory and desistance research has been integrated. Unlike the work of the Gluecks (1974), Hirschi and Gottfredson (1990), and Moffitt (1993), the work of Sampson and Laub (1990, 2003) takes the effect of life course events as a given.

Age-graded informal social control theory (Sampson and Laub 1990; 1993; 2003) emphasizes the relationship between the strength of a person's bond to social institutions, such as family, school, and work, and criminal involvement. When an individual's bonds are weak, he or she is more likely to be involved in criminal activities. However, when these bonds are strong, he recognizes that further criminal involvement can put these valued relationships and bonds in jeopardy. This recognition can lead to significant behavioral changes. But how do these bonds form? According to age-graded informal social control, these bonds develop through social role transitions. When an individual experiences a social role transition, he or she has new and different role expectations than he or she did previously. For example, a man who experiences the turning point of marriage now has new role expectations as a husband, and these expectations are different from the expectations of him when he was merely a boyfriend.

However, age-graded informal social control theory is more complex than merely "experience a transition, experience behavior change." For Sampson and Laub, it is not enough to merely experience a role transition, for some criminal men continue offending even after such transitions. Instead, behavioral change is predicated on role attachment and agency, a key point incorporated from life course theory. Individuals change their behavior when they *choose* to fulfill the new role's expectations. This means that an individual must care about – be attached to – the new role and purposefully *choose* to enact that role.

Another nuance in Sampson and Laub's theory is that not all social role transitions offer the same prosocializing possibilities. In their reanalysis of the Glueck data and in their later in-depth interview follow-ups, they found that men who experienced transitions into marriage, employment, and the military experienced the most significant behavioral changes. These transitions perhaps offer the largest differences between old and new role expectations. As husbands, full-time employees, and military personnel, men are provided vastly different routine activities than they had previously. They are now accountable to other people, and significant other people. These individuals and obligations provide these men opportunities to "knife off" from previous associations or behaviors that put these new roles and stakes in conformity in jeopardy. When men experience these transitions, are attached to their new roles, and exercise their agency in order to fulfill these new roles, significant prosocial behavior change occurs.

There is considerable support for this perspective, as research shows robust effects of employment and marriage on criminal offending (see Siennick and Osgood 2008 for a review). The literature on employment and desistance, for instance, generally finds that entry into full-time employment decreases offending. However, these employment effects are often only found for particular types of offenders and offenses (Siennick and Osgood 2008). Inconsistent effects in this literature are often attributed to selection bias (i.e., those who move into full-time employment are also most likely to desist regardless of employment status; see Gottfredson and Hirschi 1990). However, Uggen (1999; 2000) has consistently used methodological tools to control for selection into employment to test whether the transition into employment has an effect on criminal behavior.

For instance, Uggen (2000) has used the gold standard for addressing selection – an experimental model of employment. Using data from the National Supported Work Demonstration Project, a national work experiment for criminal offenders, Uggen found that those aged 27 or older were less likely to report crime and arrest when provided with marginal employment opportunities than when such opportunities were not provided. However, among participants in their teens and early twenties, the experimental job treatment had little effect on crime. Work thus appears to be a turning point for older, but not younger, offenders.

Similar quality of employment and age-graded effects of employment are found in other studies that address self-selection as well. In particular, Staff and Uggen (2003) explored the relationship between delinquency and several dimensions of adolescent employment, including learning opportunities, freedom and autonomy, social status, demands and stress, wages, and compatibility between work and school. They found the lowest rates of delinquency among adolescents who were employed in positions that supported their academic roles and provided opportunities to learn new things. When adolescents held jobs that replaced their academic roles and were more typical of adult jobs (characterized by autonomy, social status and wages) delinquency in adolescence appeared to increase. Thus, there appears to be particular qualities or conditions of employment that affect offending more than employment *per se* (Horney, Osgood, and Marshall 1995; Staff and Uggen 2003; Uggen 1999, 2000).

Transitioning into marriage seems to have the strongest and most consistent effect on offending. Despite differences across studies in the measures of crime, population type, age range, and methodology, there is overall support for a marriage effect (Siennick

and Osgood 2008). These findings are most robust for men, who typically make up the sample population (Giordano, Cernkovich, and Rudolph 2002). However, similar to employment studies, selection is always a concern when exploring what effect marriage has on behavior. One way scholars have combatted selection is through propensity score matching (King, Massoglia, and MacMillan 2007). This method uses background variables to model a respondent's propensity to marry and then assesses the effect of marriage on crime for respondents who are matched based on those propensity scores. This method approximates the conditions of an experiment so that the treatment variable (marriage) can be treated as though it occurred at random and that the individuals in the analysis are homogenous on all other factors except the treatment variable. The authors found that marriage suppressed offending for males, even after their likelihood to marry had been accounted for. Furthermore, males who are least likely to marry seem to benefit most from marriage. Another method that controls for selection is inverse probability of treatment weighting. Exemplified by Sampson, Laub, and Wimer (2006), this method weights each person-period by the inverse of the predicted probability of receiving the treatment status that they actually received in that period. By comparing the average causal effect of being married to being unmarried for the *same* person, this strategy acts like an experiment. The authors found that being married is associated with an average reduction of approximately 35 percent in the odds of crime compared to nonmarried states for the same man.

Whether women experience and benefit from a marriage effect is still under debate (Bersani, Laub, Nieuwbeerta 2009; Leverentz 2006; Monsbakken, Lyngstad, and Skardhamar 2012). Although Bersani et al. (2009) find support that marriage indeed

reduces offending across gender, they use a dataset from the Netherlands, the Criminal Career and Life Course Study (CCLS). Another study using data from Norway also finds that both men and women change their offending behavior before marriage (Monsbakken et al. 2012). This pre-transition effect is hypothesized to stem from strong selection mechanisms and a reciprocal relationship between desistance and marriage, where only those who desist are considered suitable partners. For partners with a recent criminal history, a change in offending does not follow from marriage, although there is some evidence that partners have similar criminal trajectories and can desist from crime together.

This process of co-desistance is highlighted in Leverentz's (2006) study of 49 women who lived in halfway houses in Chicago after their release from prison. Although most studies assume that romantic partners, whether dating or spouses, exert prosocial influences only when they themselves are prosocial, Leverentz noted that even partners *with* a criminal history can act as conventionalizing influences if they are also in the process of desistance. Women who were in romantic relationships with individuals who were also in the process of recovering from drug addiction found their partners to be a source of social support, encouraging each other through a process of mutual desistance. However, women who were dating current drug users had a much more difficult time staying clean and would often backslide in their recovery.

The debate about whether marriage is a prosocializing transition for women partly centers on the idea that 'men marry up,' while 'women marry down' (Bersani et al. 2009). Because men are more likely to have a criminal and delinquent history than women, it is more likely that men will marry conventional and law-abiding women more

often than women will marry conventional and law-abiding men. Thus, men have more chances to capitalize on their partner's prosocial influence and become conventional, yet women may actually increase their risk of offending if they marry a man with a criminal history. Feminist criminologists have long argued that women's pathways into criminal offending are often shaped and encouraged by intimate relationships with men (Daly 1992; Steffensmeier and Allan 1996). Accordingly, the marriage effect may have more to do with the partner's characteristics than with marriage or the marriage bond (Giordano et al. 2002; Leverentz 2006).

With the development of the second demographic change in which individuals are marrying at later ages and cohabitation becomes more common, desistance scholars have begun to explore whether cohabitation and marriage have similar effects. For example, Duncan et al. (2006) used the NLSY 1979 to estimate changes in binge drinking, marijuana use, and cigarette smoking surrounding young adults' first experiences of cohabitation and marriage. They found that both marriage and cohabitation are accompanied by decreases in some risk behaviors, but reductions surrounding marriage are larger and most consistent, particularly for men. Binge drinking and marijuana use decrease at both life events, especially marriage, but smoking does not. Both marriage and cohabitation appear to reduce binge drinking for women, whereas women's marijuana use is unaffected by either of these events. Another study by Horney, Osgood, and Marshall (1995) collected calendar data from a sample of 658 newly convicted male offenders in Nebraska. Using event calendars, the authors were able to capture "local life circumstances," such as whether the individual was on probation or parole, attending school, working, living with a wife, living with a girlfriend, heavily using alcohol, and

using illicit drugs. They found that living with a wife was associated with lower odds of committing an assault, but living with a girlfriend was associated with a 64 percent increase in the odds of committing any crime as well as committing a drug crime. These results suggest that there is something unique about marriage that results in stronger prosocial effects than cohabitation.

Despite the overall prosocial effects of transitioning into employment and marriage for offenders, what is less clear is whether transitioning to parenthood has a similar effect. Although parenthood has often been cited as a potentially significant turning point for offenders (Giordano, Cernkovich, and Rudolph 2002; Monsbakken et al. 2013; Siennick and Osgood 2008), the field has only recently begun to see a surge in empirical studies that explore the relationship between parenthood and crime. While qualitative studies seem to find robust effects of parenthood on offending, quantitative studies remain equivocal. I will consider these quantitative and qualitative studies separately and then offer several critiques that may explain some of the disparate findings in quantitative analyses.

Parenthood, Criminal Desistance, and Reductions in Substance Use

Over the past decade, there has been a gradual growth in the literature regarding the transition to parenthood and its effects on criminal behavior and substance use. Both qualitative and quantitative studies generally suggest that parenthood has the potential to lead to desistance and reductions in substance use; however, the effects of parenthood are

far from consistent. I will describe the effects found in quantitative studies first and then discuss qualitative findings.

Quantitative Research with U.S. Samples

Most quantitative results either suggest a null relationship between parenthood and crime or a blend of null and prosocial effects. For instance, Staff and colleagues (2010) used data from Monitoring the Future, a nationally representative multi-wave longitudinal dataset, to explore how family social role changes affect substance use during the transition to adulthood. Their hierarchical linear models showed that when a woman was pregnant, her rate of alcohol use was lower than when she was not. Men also drank alcohol on fewer occasions when their spouse or girlfriend was pregnant (compared to when she was not). However, men's cigarette, marijuana, and cocaine use was unaffected by their partners' pregnancies. Women's substance use decreased when they were mothers compared to when they were nonmothers. The greatest reduction in substance use occurred for women living with their child. Once a woman became a mother, she used substances less than when she was not a mother, and the reduction in substance use was greatest when the woman was residing with her child. Similarly, men's rates of alcohol, marijuana, and cocaine use were significantly lower when they lived with their child compared to when they did not. Somewhat surprising is the finding that men's rate of alcohol use declined even for fathers who were not residing with their children. Unsurprisingly, nonresidential fathers' rates of cigarette, marijuana, and cocaine use were unaffected.

Several studies have examined how the transition to pregnancy and motherhood affects drug use. In both Gilchrist et al.'s (1996) study with unmarried pregnant adolescents, and in Morrison et al.'s study (1998) of women who were under 17 years old during pregnancy, they found that when women were pregnant they had very low levels of drug use. An increase in alcohol, tobacco, and marijuana use post-pregnancy was evidenced in Morrison et al. (1998); however, because the women were not interviewed prior to pregnancy, it is difficult to tell whether these rates of use are lower than their pre-pregnancy rates. Despite this limitation, the drug use that Morrison et al. (1998) are capturing is common and mostly legal (with the exception of marijuana). It should be noted that alcohol use was far more frequent than tobacco or marijuana use, and that marijuana was the least frequently used drug. Although drug use did rebound for the women in Gilchrist et al. (1996), the rates of drug use remained lower than pre-pregnancy rates. Both of these studies suggest that pregnancy and motherhood have potentially long-term benefits, and even when drug use occurs in motherhood, it is less likely to involve serious drugs.

Uggen and Kruttschnitt's (1998) study used data from the National Supported Work Demonstration Project. The project attempted to provide a basic work opportunity to members of four disadvantaged population groups: welfare recipients, hardcore drug users, recently released ex-offenders, and youth dropouts. This data is considered well suited to study desistance because it adequately captures a population of serious and high-risk offenders. The authors found that women with children had reduced risks of entering a period of illegal earnings. However, having children resulted in null effects for men entering periods of illegal earnings.

These studies highlight what Giordano and colleagues have called "the lack of inevitability" of parenthood" (2002). Using a mixed-methods approach, the authors explored how adult social role transitions affected criminal behavior for formerly incarcerated respondents in the Ohio Longitudinal Study. They found that despite the positive narratives surrounding children and how some respondents attributed their prosocial life changes to the "hooks" that parenthood provided, their quantitative analysis found no relationship between attachment to children and criminal behavior. However, their quantitative analysis had a relatively small sample (N=197). Furthermore, they used a Likert item to measure attachment to children. This item asked respondents how much they agreed with the following statement: "I'm closer to my kid(s) than a lot of people my age are to theirs." This variable provides a subjective relative measure of attachment to children compared to other parents and fails to capture any change in commitment to conventional values upon entering parenthood.

Several of the most recent studies have added nuance to the parenthood-crime relationship, particularly exploring disadvantage (Kreager et al 2010; Giordano et al 2011), wantedness of the child (Giordano et al. 2011), parent-child relationship quality (Ganem and Agnew 2007), race differences (Craig 2014), and implications of different desistance measures (Massoglia and Uggen 2007).

Giordano et al. (2011) explored whether parenthood's effect on self-reported crime and drug use was moderated not only by economic disadvantage, but also by the wantedness of the pregnancy. Using data from the Toledo Adolescent Relationships Study, they found that the more advantaged individuals were more likely to benefit from becoming a parent. They also found that regardless of disadvantage, mothers who

wanted their children also experienced lower levels of criminal involvement. Highly disadvantaged women and men, as well as women with unwanted children showed no appreciable change in their criminal involvement after becoming parents.

Giordano et al.'s (2011) finding that highly disadvantaged individuals were less likely to benefit from becoming a parent contradicts the qualitative work of Edin and Kefalas' (2005). In their qualitative book *Promises I Can Keep*, Edin and Kefalas challenge the assumption that motherhood derails poor women from pursuing a life that involves additional schooling and stable employment. Rather, their work highlights how these women use motherhood as a means to introduce order, purpose, and joy into their lives which previously felt chaotic, aimless, and self-destructive.

The assumption that motherhood is more likely to provide a prosocial hook for disadvantaged women has been tested by Kreager et al. (2010). Using the female subsample of the Denver Youth Survey, sampled from high-risk Denver neighborhoods, and a fixed-effects model, they found that women had lower levels of delinquency, marijuana use, and alcohol use as mothers compared to when they were not mothers. Decreases in delinquency, marijuana use, and alcohol use also occurred when women became pregnant. The authors also tested whether these family transitions resulted in complete cessation of criminality and drug use. Overall, the results were similar to the continuous fixed-effects models. However, in the logistic models, they found that teen motherhood was a strong predictor of delinquency and marijuana cessation, and pregnancy was a strong predictor of temporary alcohol cessation.

Two studies have used the Adolescent Health (Add Health) data. Using a female-only sample, Hope et al. (2003) compared juvenile delinquency rates between those who

were never-pregnant, those who became pregnant, and whether those who became pregnant decided to raise their child, place the baby for adoption, or have an abortion. They found that ever-pregnant women had higher levels of substance use than their never-pregnant counterparts. Before pregnancy, women who chose to parent their baby had higher rates of smoking and marijuana use than those never-pregnant. After pregnancy, however, those same respondents had lower levels of substance use than their never-pregnant peers. Women who chose to terminate their pregnancy had higher rates of substance use both pre- and post-pregnancy. Furthermore, women who placed their children up for adoption as well as those women who terminated their pregnancies exhibited higher levels of delinquency than those who decided to raise their children. These results are echoed in Giordano et al.'s (2011) study of wantedness described previously.

Ganem and Agnew (2007) used data from the National Youth Survey, a nationally representative sample, to test the relationship between crime and the quality of the parent-child relationship. They measured the quality of the parent-child relationship with three items: 1 - How much (in the past year) have you enjoyed being with your child(ren)? 2 - How satisfied have you been with your relationship with your child(ren)? 3 - How much stress/pressure is there in your relationship with your child(ren)? The authors found that parents with high-quality parent/child relationships were significantly less likely to be involved in crime when compared to non-parents, and that high-quality parent-child relationships appear to be beneficial for both males and females. Specifically, high-quality parent-child relationships were negatively associated with the likelihood of criminal involvement for both genders, as well as the extent of criminal

activity for females. Low-quality parent-child relationships were problematic, especially for males. These relationships positively predicted involvement in crime as well as the extent of crime for fathers in the sample.

Craig (2014) also used Add Health to explore whether parenthood's effect varies by race. For this analysis, the author used two measures of parenthood. The first was based on whether the respondent reported if they ever had children. The second was a measure of residential parenthood – whether the respondent lived with at least one of his/her children. Craig found that both measures of parenthood were associated with decreases in delinquency. However, when racial group differences were examined, the benefits of being a parent were only found for whites – marginally so for parenthood, but stronger for residential parenthood. A limitation of this study is that the analysis measured between individual differences, thus the results are not looking at how behavior changes for an individual over the transition to parenthood but rather how parents compare to nonparents. Furthermore, this study did not explore gender differences in parenthood.

Massoglia and Uggen (2007) tested the correlates of four different types of desistance measures with the Youth Development Study. These desistance outcomes included two established measures – changes in arrest and self-reported crime – as well as two new measures – subjective desistance and reference desistance. Subjective desistance characterizes respondents' self-reports of whether they are engaged in more, less, or approximately the same amount of delinquent activities they were engaged in five years ago. Reference group desistance asks respondents to report whether they are engaged in more, less, or approximately the same amount of delinquent activities relative

to others their age. They found that parents were significantly more likely to report reference group desistance (that they were engaged in delinquency less than others their age), but significantly less likely to report official desistance (more likely to be arrested). Having children was unrelated to either subjective or behavioral (self-report) desistance measures. The authors suggest that among the most disadvantaged individuals (those with repeated arrest), parenthood may create an earning imperative that increases the motivation for economic crime (Uggen and Thompson 2003). Although Massoglia and Uggen introduce a nuanced view of desistance in their study, parenthood remains a fairly simple construct – a yes/no indicator of whether the respondent has children. Parenthood's nuances such as whether the parent resides with the child, the quality of the parent-child relationship, type of offending that parenthood is related to (aggressive or economic) are acknowledged but untested in the study.

Quantitative Research with International Samples

Several recent quantitative studies regarding parenthood and crime have been based on non-US samples. Blokland and Nieuwbeerta (2005) used nationally representative data from a Dutch national crime survey as well as data on official convictions from the Criminal Career and Life-Course Study (CCLS), which follows a sample gathered from Dutch convictions in 1977, to test parenthood's effect on self-reported crime. In both datasets, participants were allocated into trajectory groups. Both samples included groups of sporadic and low-rate offenders, and the CCLS also included groups of moderate- and high-rate offenders. Parenthood was measured as three dummy

variables: parent (non-separated, non-single), single parent, and separated parent. In the within-individual analyses of the CCLS, being a co-parent was associated with a significant increase in offending for sporadic offenders, and being a single parent was associated with a significant decrease in offending for low-rate offenders. The within-individual analyses for the nationally representative sample showed no significant effects for any of the parent variables.

Savolainen (2009) analyzed data from a Finnish sample of recidivists (men who had at least three prior felony convictions). Using parenthood to predict new convictions, Savolainen found that becoming a parent significantly reduced the number of new convictions, and that those who became a parent while in a union (married or cohabiting) also experienced a significant reduction in the number of new convictions. Furthermore, the effect of having a child within a union is stronger than merely the effect of having a child or being in a union alone, which suggests that parenthood has a cumulative effect when it occurs within a "full family package" or what Giordano et al. (2002) have called the "respectability package."

Zoutwelle-Terovan et al. (2012) used data on 540 high-risk respondents, born between 1969-1977, who were institutionalized during their adolescent years in a juvenile justice institution and then observed until 2007 in the Netherlands. Due to national record-keeping, several measures of parenthood were available: whether the respondent was a parent; an indicator for the age years when respondents were parents of a single child; an indicator of the age years when respondents were parents of two or more children. Three more dichotomous variables captured the parenthood-relationship status of the respondent (married but not a parent, parent but not married, married and parent).

Within-individual changes demonstrated that becoming a parent led to significant decreases in serious offending for men, but had no effect on women's serious offending. The effect of children on offending for men was only present for the first child and not for multiple children, indicating that the initial transition into fatherhood is associated with significant behavioral change. Single fathers as well as married fathers also saw significant decreases in offending, although the effect of being in a union with children was associated with the most significant change. Married men without children and all women, regardless of union or motherhood status, did not experience any significant changes in offending.

Monsbakken et al. (2013) analyzed administrative Norwegian register data which encompasses the total population of resident persons in Norway. Data on committed offenses were drawn from police records on "solved" cases. Although these cases may not have been solved through conviction, "solved" does indicate that some kind of legal decision had been taken. The sample was divided into three groups: those who became a parent within marriage, those who became a parent with cohabitation, and those who became a parent without cohabitating with the other parent. Using within-person analyses, they found that men and women began desisting up to five years prior to the birth of a child. The exception to this finding is for men who did not reside with the other parent, but their offending levels were fairly low and stable in the five years prior to the birth of the child. All women experienced a significant drop in offending during the year prior to the birth of the child (i.e., in the months preceding and during the pregnancy). After the birth of the child, the offending levels of men in unions (both marital and cohabitating) stabilized at low levels. The offending levels of men not residing with the

other parent continued to decrease post birth. Women in every type of relationship status experienced some increase in their offending post-birth; however, when offending levels at 5 year post-birth are compared to those 5 years pre-birth, the post-birth rate is nearly half of the pre-birth rate. Thus, even when mothers continued to offend, they did so at much lower levels that they did pre-birth. This reduction in offending is still desistance and suggests significant behavioral change due to motherhood. The most significant limitation to this study is that within-union parenthood is never measured separately from the union itself, confounding the effects of relationship status and parenthood.

While many of these studies focus on general measures of delinquency and crime, particularly those which include drug use, a much smaller literature has focused exclusively on violent crime within gangs. In their quantitative study of gang girls in Champagne, Illinois, Fleisher and Kreinert (2004) found that self-reported violent behavior was most consistently predicted by active gang membership. Despite the fact that motherhood did not significantly predict violence in the analytic model, over 60% of their sample said that pregnancy was their initial reason for becoming inactive gang members. Even women who remained "active" members reported that they stopped "hanging out, fighting, and 'being crazy'" (p. 619). A more recent quantitative study used the Pathways to Desistance Study to examine whether fatherhood was a reason for men to exit gangs. This study showed no effect of children on gang disengagement (Sweeten, Pyrooz, and Piquero 2012). Together, these two studies highlight the physical limitations and concerns that mothers have for children both during and after pregnancy, which are largely absent for men.

Qualitative Research

Qualitative research sheds some light on why the quantitative results have been so equivocal. Overall, they emphasize the paradoxical nature of parenthood – that it is simultaneously one of the most rewarding and joyful experiences of a person's life while also one of the most stressful. Most of the stress from parenting is due to strains on multiple types of resources: time, money, and energy. This relationship is further complicated and stress inducing for those with a criminal history or a history of substance use. In both of her two studies based on 100 formerly incarcerated mothers in New York City, Michalsen (2011, 2013) found that women's reasons for desistance were less related to children than expected. Although parenting and the mother identity were very important to these women, they also explained how children were sources of great stress, particularly when women were trying to deal with their own personal issues such as sobriety. Furthermore, structural barriers such as poverty, victimization, and social marginalization made reuniting with their children and achieving the mother identity difficult. Some mothers felt these obstacles were too great to overcome and avoided reunification with their children. However, they maintained that even though they had given up hope for reunification with their children, they still felt as though they were good mothers because they had made the best decision for their children.

Ferraro and Moe's (2003) work similarly highlights the structural difficulties of being "good" mothers for women who have been involved in the criminal justice system. In their interviews with 30 women incarcerated in jail, Ferraro and Moe found that the gendered expectations of child care, combined with economic marginality and domestic

violence, led some women to choose drug dealing or economic crimes as alternatives to hunger and homelessness. In these cases, women resorted to crime in order to provide for their children and to make up for the lack of their own financial resources. Other women experienced despair and psychological pain due to the loss of custody of their children, which led to drug- or alcohol-related offenses. Most striking in their findings is that many women were incarcerated for minor probation violations that were often related to conflicts between work, child care, and probation requirements. For instance, a woman named Alicia described how her probation requirements put her child in physical risk. If her daughter were to have an asthma attack in the middle of the night, she would have to wait for approval from her probation officer before going to the hospital, otherwise she would be violating her probation. Many women were forced to weigh the requirements of good motherhood against those of the criminal justice system. While most women's initial crimes were motivated by a desire to provide for their children, it was minor violations of probation terms that caused the greatest problems for them. In the end, complying with probation requirements, or drug court requirements, placed tremendous demands on the resources of single mothers, which were already strained.

Baker and Carson's (1999) work describes how mothers rationalize their "bad" mothering behaviors. Their sample included 17 substance-abusing mothers in treatment programs. Based on cultural standards, the authors argue that any substance-abusing mother is "bad," for it is assumed that the search for, and the use of, substances, makes her inattentive, self-indulgent, and negligent rather than single-mindedly focused on her children's needs. The mothers in their sample were indeed aware of how their substance use negatively affected their children – by exposing them to danger, being unavailable

(physically, financially, and emotionally) due to drugs, and failing to provide proper discipline to their children; however, they also detailed several ways in which they were *good* mothers, even when they were using drugs. For instance, if a substance-using mother can take care of her children's practical needs, such as food, cleanliness, and education, she is a good mother. If she can protect her children from harm or cope with everyday struggles without losing her temper, she is a good mother. In fact, all the women in their study perceived themselves as good mothers, in some aspect or another, even when they were using. These studies show that motherhood and criminality are not necessarily exclusive from one another; in fact, *being a good mother may even necessitate criminal behavior*, especially for those who are already involved with the criminal justice system or substance use.

Other qualitative work showcases how parenthood, and particularly the transition to parenthood, can lead to subjective changes in identity which encourage desistance. In a study of 43 women who were newly released from prison and living in communities under parole supervision, Opsal (2011) found identifying as a good mother was one of three narrative strategies that women used in order to distance themselves from their stigmatized identity and recast their past, present, and future on their own terms. They recast their past by describing how their previously "bad" mothering practices actually benefited their children (i.e., by making their children resilient and tough), thereby making them good mothers. They constructed their present by focusing on regaining custody and reunifying with their children. Although this prospect served as a motivating factor for women to be successful on parole or stay away from drugs, as time passed and the arduous process of regaining custody post-prison proved difficult – if not impossible

– the reality of achieving the motherhood narrative slipped further and further away from realization. While women who continued to strongly identify as mothers were more likely to view desistance and reentry optimistically, women who became less likely to use the mother narrative were less optimistic about reunification and were more likely to develop a sense of generalized hopelessness about being on the outside. For some of these women, this hopelessness led to reengagement with illegal activities, particularly illegal drug use.

The process of accepting a motherhood identity was described in Hunt et al.'s (2005) study of 118 homegirls (gang-girls). Although these women reported that they were initially shocked to find out that they were going to become mothers, they gradually came to accept this new role and viewed motherhood as a positive force in their lives. Upon realizing that they were pregnant, most homegirls stopped hanging out on the corner and began adopting healthier lifestyles and activities, including the cessation or reduction of alcohol consumption. During pregnancy, the girl's reshaped their closest networks to include more family members, particularly mothers, rather than friends. After the birth of the child, the girls typically resumed drinking; however, the context of their drinking was dramatically different. Motherhood altered the women's, as well as others' perceptions of her, as an adult who deserved respect. In this new adult context, drinking became more privatized, occurring at home with significant others and family members more than friends, and became a method of relaxation. This context is drastically different than drinking patterns before pregnancy which centered on excessive partying. In spite of the strains of motherhood for these women, particularly financial and emotional, almost every mother agreed that having children had changed their lives

in very positive ways. They found that they had much more stability in their lives, had calmed down, were now able to set goals for themselves, and view themselves as role models for their children – a responsibility that they were willing to assume. Motherhood thus facilitated their adoption of a new identity as more capable, more confident, more responsible, and more mature people.

A few qualitative studies have focused exclusively on men and fatherhood. Peled et al. (2012) interviewed 12 substance-dependent Israeli men about their paternal identity. These men described a four-stage process of parental identity formation that began with an awareness of their absence in their children's lives. This absence was not only physical but emotional as well. The second stage involved an "awakening" in which fathers developed a new understanding of what it meant to be a father and the significance of their lengthy absences. At this point, the men set out to remake their paternal identity. Once they took responsibility, the third stage, men became resolved in reforming themselves as fathers. They became emotionally and physically available to their children, and these positive interactions with children further reinforced their desire to fulfill their new father role.

Edin, Nelson, and Paranal's (2004) study explored how fatherhood and incarceration can act as potential turning points in the criminal careers of unskilled men. Their interviews with approximately 200 low-income noncustodial fathers demonstrated that children are among the most valued resources these fathers had. Men often described how they used their role as a father to exit criminal offending and become legitimate workers in the formal economy. However, due to unstable or part-time work in the formal economy, some fathers occasionally participated in criminal activities in

order to supplement their income. For many, the fear of imprisonment and missing out on the important parts of their children's lives was enough to make some men exit criminal careers. For fathers who were already incarcerated, the chance of reconnecting with children once released was often a motivating factor to leave crime behind. Despite the narratives that men used to describe their role as a father and their intentions to change, these changes in fathers' offending patterns and involvement in the legal economy only came about once fathers choose to activate the fathering role. Thus, some men did not capitalize, or realize they could capitalize, on their role as a father until later in life or after they had several children.

Fatherhood has also been shown to affect gang membership. In interviews with 91 male gang members from the San Francisco Bay area, Moloney et al. (2009) found that fatherhood initiated important subjective and affective transformations that led to changes in outlook, priorities and future orientation. The fathers in this study took great pride and highly valued their father identity. This pride even extended to fathers who didn't reside with their children, and for many these emotions provided motivation to desist. However, desistance was gradual and not immediate. While some men activated the father role immediately once they learned of a pregnancy or once the child was born, some men came to think of themselves and accept the responsibility of being a father only after a spell of incarceration or multiple children. Despite this role activation and desire to move into a legitimate lifestyle, many men, with criminal records, low education and limited job training, found it difficult to secure stable legitimate work, and would often supplement their legitimate income with drug sales to support their children. Those who did find ways to support oneself and one's family with legal income were more

likely to desist – especially when they began to limit their time on the streets. Although this "knifing off" is a key piece to desistance, it is not always easy and takes an emotional toll on fathers. They must leave behind their gang, find new sources of respect, and develop a new identity rooted in fatherhood and work. When fathers could support their family with legal income and limit their time in the streets, they were much more likely to behaviorally accomplish their subjective changes.

Criticisms of Current Research

This review of the quantitative and qualitative studies regarding parenthood's effect on crime highlights the equivocal and conditional nature of parenthood's effect on criminal offending. There are several possible reasons for the mixed quantitative results and the "lack of inevitability" of parenthood (Giordano et al. 2002). The first is that parenthood may facilitate desistance for a very particular population. As Kreager et al. (2010) and Edin and Kefalas (2005) have suggested, parenthood may be a more critical transition for young, disadvantaged women than the general population because they have fewer legitimate opportunities for upward mobility. For these women, motherhood is a highly valued and legitimate role in which they can be successful, and is valued above all other roles. However, becoming a mother can encourage them to pursue other legitimate activities such as education or employment in order to fulfill their roles as good mothers. If the parenthood effect has appreciable effects for this target population, the positive effects of parenthood may be too small to pick up in studies that use nationally representative samples (Ganem and Agnew 2007; Hope et al. 2003). Despite

the value typically placed on nationally representative samples, using them to detect a parenthood effect may not be best, particularly if the population most likely to benefit from such a transition – disadvantaged women and those engaging in significant amounts of criminal activity – are such a small proportion of the overall sample.

Second, some studies use rather short longitudinal designs (Gilchrist et al. 1996; Morrison et al. 1998) which are useful for capturing relatively quick changes in behavior but not as useful for long-term changes in behavior. Although shorter designs are more economical and feasible than long-term multi-year designs, most do not have detailed and extensive data nor enough statistical power to control for selection. While Gilchrist et al. (1996) and Morrison et al. (1998) use short longitudinal designs which do find effects of motherhood on drug use post-birth, they cannot tell us about long-term behavioral change. For instance, does the decrease in drug use still remain after 1, 2, or even 5 years?

Third, it is possible that some of the mixed results regarding parenthood, crime, and substance use may be due in part to the operationalization of these outcomes and predictors. For instance, parenthood may differentially impact the types of crimes in which individuals are engaging as well as frequency and variety of offending, yet most studies often combine drug use, personal crimes, and property crimes together into an overall measure of crime, or only look at one specific offense type and fail to include a comparison type. Furthermore, most quantitative studies simply measure the presence or absence of children rather than the characteristics and qualities of parenthood. Although this operationalization is often due to data limitations, it is likely that the characteristics

and qualities of parenthood may significantly condition parenthood's conventionalizing potential in important ways.

Finally, parenthood is often read and explored as *motherhood*. Fathers are either completely excluded from the study or are partitioned into separate studies. Rarely are fatherhood and motherhood compared to one another with similar measurements. When gender effects are compared in the same study, these comparisons are minimal at best. In one of the more sophisticated studies, Monsbakken et al. (2013) used a within-person analysis to test whether the transition to parenthood affected the offending patterns of men and women. They also explored whether offending patterns varied for parents by relationship status (marital, cohabiting, no relationship between parents). While illuminating in several respects and offering a more complex view of the transition to parenthood, the authors cannot capture other aspects of the parent-child relationship, such as parental identity, quality of parenting, or even the quality of relationship between parents. Nor were the authors able to estimate the effects of parenthood separately from the effects of being in a union. These characteristics are extremely important as they may indicate the underlying process behind the patterns they find. For instance, why does single men's likelihood of offending continue to decrease post birth while men in cohabiting or marital relationships stabilize at low levels? And why do women's likelihood of offending resume at lower levels rather than continuing to decline? Perhaps these parents are not as invested as others in the parental role or perhaps offending is seen as a part of their parental role (Ferraro and Moe 2003). As Sampson and Laub would argue, it is the *attachment* to a role that brings about change, and this integral concept is

rarely operationalized, let alone measured, even in the more sophisticated studies regarding parenthood and crime.

Qualitative studies are not without limitations as well. Principally, they are not generalizable and often focus on one or two types of behavior (i.e., drug use) which offer us a very limited understanding of how criminal behavior changes due to parenthood. Additionally, these studies may suffer from retrospective bias, in which people retrospectively define why their behavior changed. However, qualitative studies offer us insight to the lived parenthood experience which can shed light on the equivocal results regarding the relationship between parenthood and crime. The question becomes what mechanisms may be responsible for desistance or persistence among parents? Several empirical and theoretical mechanisms have been proposed. The following section will explore these mechanisms in more detail and discuss possible gender differences where relevant.

Mechanisms of Desistance

Informal social control (Sampson and Laub 1990) is a popular mechanism used to explain the prosocial effects of marriage, employment, and parenthood on criminal behavior and drug use. As with other social control theories, Sampson and Laub suggest that all individuals have a propensity to engage in illicit behavior. It is one's bonds to others and to society – their stakes in conformity – that force them to inhibit their behavior. As individuals age, they undergo transitions that foster stronger informal social control, such as relationships with intimate others who exert informal control over the

individual's behavior. As individuals accumulate more social bonds, they chose to inhibit their criminal behavior or substance use because they do not want to jeopardize these bonds.

While young children cannot exert direct social control since they do not monitor behavior as an intimate partner would, they do affect an individual's lifestyle and identity. When individuals value their parental status and the positive feelings they receive from being a parent, they choose not to engage in crime in order to maintain their parental status and their parent-child relationship. While informal social control generally applies to both women and men, there is reason to think that the informal social control of parenthood may affect fathers more than mothers. Because women's lives are already more closely controlled than men's, and because they are expected to invest in children (Bottcher 2001; Steffensmeier and Allan 1996), parenthood and the parental social bond may only result in significant behavioral changes for men (Ganem and Agnew 2007).

If a person adopts a new role and becomes attached to it, the person is likely to experience a shift in identity, described by Giordano, Cernkovich, and Rudolph (2002) as *cognitive shifts* within individuals. They suggest that individuals must cognitively decide that an offending lifestyle is not rewarding anymore and make a decision to distance themselves from being an "offender" to being conventional, or a "desister." Transitions then are not enough to promote desistance since desistance is contingent upon this cognitive change. Transitions merely provide the "hooks for change" that individuals may capitalize upon in order to change their behavior and trajectories. These cognitive shifts have been well documented in qualitative studies of parenthood and appear

important for both mothers and fathers (Giordano et al. 2002; Peled et al. 2012; Rumgay 2004). Empirical quantitative evidence of this cognitive shift can be found in studies that focus on the wantedness of the pregnancy (Giordano, Seffrin, Manning, Longmore 2011; Hope et al. 2003). Hope et al. (2003) found that adolescent girls who gave birth and raised their child compared to those who miscarried, aborted, or placed their child for adoption, experienced dramatic declines in smoking and marijuana use. With the exception of those who miscarried, this study was built to compare those who *chose* to become mothers to those who *chose* not to be, and this choice is a clear indication that a cognitive shift among these women has occurred. Furthermore, Giordano et al. (2011) found that the prosocial effect of parenthood is conditioned upon the wantedness of pregnancy, such that a wanted pregnancy brings about more prosocial behavior than an unwanted pregnancy. Although unmeasured, it can be argued that those women who wanted a pregnancy were cognitively ready to accept a parental role and were more open to make prosocial behavioral changes. Although an important mechanism, parental identity is rarely included in empirical studies of parenthood and crime.

Giordano and colleagues (2002) have also suggested a more complex possibility, namely that a respectability package is necessary for desistance. The concept of the respectability package is based on the idea that transitions work in tandem, and that parenthood does not have a strong effect on offending unless it co-occurs with marriage and employment. Perhaps it is the lack of this "respectability package" (Giordano et al. 2002) rather than a lack of a parenthood effect that has resulted in some studies' null findings. The second demographic transition has been characterized by the deinstitutionalization of marriage (Cherlin 2004), and the labor system of the United

States has undergone a significant shift since the 1950s when manufacturing and production industries were booming to the current labor market which relies heavily on service sector positions which has much lower stability and rates of pay (Bell 1973). While these trends make achieving the "respectability package" difficult for some, they make it nearly impossible for others, particularly poor and minority women (Kreager et al. 2010; Edin and Kefalas 2005). What may be more fruitful is to conceptualize a new respectability package that includes other aspects and expectations for parents, such as residency with a child.

Another potential mechanism may be the *antisocial influence between parents or partners*. When integrating partner characteristics and the relationship between two individuals into studies of desistance, one must acknowledge that partner influence may operate differently for men and women and that the definition of a "conventional" partner may vary. For instance, scholars often argue that men "marry up" while women "marry down" (Bersani, Laub, and Nieuwbeerta 2009). Because men are more likely to have a criminal history, the chances that women will marry a truly conventional man (one without any history of criminality) is low, particularly for minority women and those in disadvantaged communities. Men are more likely to marry a truly conventional woman and may be more able to capitalize on their partner's conventionalizing influence. Furthermore, scholars such as Leverentz (2006) have noted that even partners *with* a criminal history can act as conventionalizing influences if they are also in the process of desistance. In this case, partners act as a support network for each other and engage in a process of mutual desistance. However, women who were dating current drug users had

a much more difficult time staying clean and would often backslide in their recovery. Thus, it's clear that one's partner can influence an individual's desistance process.

A final consideration is that there is no mechanism through which parenthood works. This perspective argues that any effect that parenthood has on desistance is merely due to selection effects – that there is something about individuals that increase their chances of desisting, regardless of life transitions such as parenthood. Gottfredson and Hirschi (1990) are two of the most adamant supporters of this argument. They argue that all differences in crime are due an individual's level of self-control which is set from a very early age and does not change over time. Individuals with low self-control are characterized as individuals who seek out immediate and easy gratification of desires, pursue excitement, are unable to appreciate long-term consequences, and lack perseverance in achieving goals. They are impulsive, insensitive, nonverbal, and prone to taking risks including, but not limited to, crime. They would argue that any individual who becomes a parent and desists from crime merely has higher levels of self-control than another parent who does not desist.

Although randomization via experimental methods would be the best approach to extinguish selection effects, the ethical implications of randomly assigning pregnancy and parenthood are extreme. Thus, empirical studies have used several methodological and statistical tools in order to account for selection as thoroughly as possible. For instance, Sampson, Laub and Wimer (2006) used a counterfactual approach that applies inverse probability of treatment weighting (IPTW) to yearly longitudinal data on marriage, crime, and shared covariates in a sample of 500 high-risk boys followed prospectively from adolescence to age 32. IPTW methods weight each person-period by

the inverse of the predicted probability of receiving the treatment status that they actually received in that period. Thus, this strategy "thinks" like an experiment by comparing the average causal effect of being married to being unmarried for the *same* person. Analogous to survey weights, IPTW models create a "pseudo-population" of weighted replicates, allowing one to compare times when one does and does not experience the "treatment" of marriage without making distributional assumptions about counterfactuals.

Kreager et al. (2010) offer another way to control for selection. In their case, they calculated fixed effects estimators of panel data. This method involves using a pooled-time series data set with an observation for every person-period data point. These models controlled for unobserved individual heterogeneity resulting from time-stable characteristics, which might be correlated with included regressors. This control is afforded by the properties of the model which are based on calculating change for each unique individual; what does not change is not contributing to the model. Thus, an individual's race or gender is not captured by the model because it does not produce change (although the moderating effects of time-stable traits can be assessed through interactions with time-stable traits). The estimates are affected by time-varying predictors such as important life transitions like parenthood. Both of these methods address selection by making within-individual comparisons. If Gottfredson and Hirschi are correct and low self-control is stable and does affect behavior, these methods effectively render self-control (as well as any other stable individual trait) extraneous to the observed effects of life transitions.

Mechanisms of Persistence

Although parenthood is widely touted as a fulfilling role (Hansen 2012) and generally assumed to be conventionalizing (Laub and Sampson 2003), it can also be extremely stressful (Hoffenaar, van Balen, and Hermanns 2010; Twenge, Campbell, and Foster 2003). Children are very taxing on resources and often negatively affect relationship satisfaction between parents. These strains and stresses are often compounded for those who have a criminal history (Michalsen 2011). As Ferraro and Moe (2003) point out, some mothers may continue offending in order to gain resources which would be unavailable otherwise. Despite the fact that continued criminal involvement may endanger the lives of their own children, or at least put them in danger of being swept into the child protective service system, mothers rationalize that their illegal behavior is necessary in order to provide for their children. In essence, *criminal behavior may become necessary to be a good mother*. Other mothers remain involved in criminal activity and are aware that they are exposing their children to violence and drug use – recognized as "bad" mothering practices – yet neutralize their offending as well as these negative parenting practices by explaining how they are good mothers in other respects – taking care of children's practical needs, keeping their tempers in check, and protecting their children from harm and visible drug use (Baker and Carson 1999).

Mothers with a criminal history or continued offending also face strict repercussions from the criminal justice system. Once parents have entered the criminal justice system, they may lose their parental rights or face strict probation requirements. These requirements are often difficult to balance with child care responsibilities,

particularly for mothers who work in inflexible, low-income jobs (Ferarro and Moe 2003). In fact, this balance is so tenuous that mothers often return to the system due to their inability to fulfill or maintain probation requirements rather than new offenses (Ferarro and Moe 2003).

It is necessary to take a moment to discuss how parenthood may encourage persistent criminal behavior and substance use differently for women and men. Due to gendered parental role expectations, women may engage in escapist drug use more frequently than other forms of crime because they are more likely to experience the time-intensive requirements of childcare whereas men may engage in financial crimes more than other types of crime because they are more likely to feel pressured to financially provide for children. It is also worth noting that a man's criminal offending may also be completely unaffected by fatherhood if he feels no strong inclination to provide for the child (whether through legitimate or illegitimate means). This disengagement may be even more pronounced for non-resident fathers who spend less time interacting with the child (Hawkins, Amato, and King 2006) and are, consequently, less likely to assume a fatherly role and identity.

Parenthood may also fail to promote desistance if an individual's partner is not conventional or desisting. Intimate relationships with criminal men are often cited as an important pathway into crime for women (Daly 1989; Steffensmeier and Allan 1996; Giordano 2009), and the positive effect of marriage for criminal men seems to be absent when they marry criminal women (Sampson, Laub, and Wimer 2006). Furthermore, the quality of relationship between parents is likely to play an important role in whether parenthood leads to desistance for men, particularly when they are not living with their

children. Mothers are often recognized as gatekeepers to children (Doherty, Kouneski, and Erickson 1998; Edin et al. 2004; Mauer, Pleck, and Rane 2001), and fathers with poor relationships with mothers may not benefit from the conventionalizing aspects of fatherhood if they are denied the opportunity to fulfill such a role. It is vital to remember that individuals do not exist in a vacuum; they are enmeshed in relationships with others and these others can have profound impacts on an individual's behavior and self-concept (Adamsons 2010; McBride, Brown, Bost, Shin, Vaughn, and Korth 2005).

Thus, persistent criminal offending may occur among parents as responses to resource deprivation, inability to avoid the criminal justice system, methods of escapism, lack of parental identity, and negative or antisocial relationships between parents and partners.

Current Study

As evidenced above, desistance is a flourishing topic in criminology, and while we know a great deal about how marriage and employment affect criminal behavior, we do not know much about how the transition to parenthood affects offending. This is particularly true for the effect of parenthood as both quantitative and qualitative studies indicate equivocal results. This is likely due to methodological issues between studies as well as the multiple and complex mechanisms through which parenthood could affect behavior. Detailed, long-term longitudinal datasets on criminal behavior and parenthood are few and far between, thus we know very little about how parenthood affects particular types of offending behavior, and how parenthood affects male and female offenders.

This study seeks to overcome some of the limitations described above and add to our knowledge about parenthood and criminal offending. This study is an improvement over previous research in several ways. First, it uses the Pathways to Desistance Study (Schubert et al. 2004), a longitudinal dataset based on a recent cohort (2000's). This dataset is unique because it includes individuals most likely to benefit from parenthood – namely, those who are engaged in serious and frequent offending. Both adolescent men and women are included in the sample, which allows for more detailed gender comparisons than most other quantitative studies. Offending is also disaggregated into aggressive and income offenses which allows for a nuanced analysis of how parenthood affects particular criminal behaviors rather than an overall summary effect. This dataset has been unexplored in regards to parenthood although it has detailed measures of family and life transitions, such as pregnancy and parenthood status, parental orientation, and relationship characteristics. Additionally, using a prospective quantitative dataset is a strength of this study and overcomes the possibility of retrospective bias – a common limitation among qualitative studies. All of these factors make this data particularly appealing to studying how the transition to parenthood affects criminal behavior.

Second, this study explores and compares specific effects of parenthood for mothers and fathers. As previously discussed, the effects of parenthood for men and women are not often discussed in relation to one another, rather they are studied as two separate literatures. Because of this spilt, the parenthood effect is often read as the *motherhood* effect. This study brings men back into the picture and highlights the gendered context of parenthood and criminal behavior.

Third, this study goes beyond conceptualizing parenthood as merely an event. It takes seriously the idea that parenthood may be a package deal and that behavioral changes only occur when parenthood is accompanied by co-residence with a child. Furthermore, it adds nuance to the transition to parenthood by accounting for changes in behavior that occur during pregnancy separately from changes in behavior while parenting after the birth.

Fourth, the richness of the data allows for a thorough investigation of several important mechanisms through which parenthood may work. The first of these mechanisms is parental orientation. This mechanism taps into how strongly a person identifies as a parent as well as how important and central parenthood is to the respondent, and represents the cognitive change process as well as one's attachment to one's role as a parent. The second mechanism tested in this study is the role of one's romantic partner's antisocial influence. Parenthood's effect may only by present, or more pronounced, for individuals who are in a relationship which does not encourage antisocial behavior. Other life transitions such as enrollment in school and employment are also included in order to isolate the effects of parenthood.

Fifth, this study follows the example of scholars such as Kreager et al. (2010) by using fixed effect models to estimate parenthood's effect on criminal behavior. It is highly likely that individuals who become parents in this sample have other individual traits that make between-person comparisons inappropriate. As briefly described earlier and more fully in the next chapter, fixed effect models control for spurious stable individual influences by using each individual as his or her own control (Johnson 1995). Addressing selection is an important issue when experimental methods are not possible.

Hypotheses

Below, I will reiterate the important aspects of the parenthood-crime literature and how they inform the hypotheses for this study. Because analyses are within-individual, hypotheses are stated as comparing an individual at a later time point to the same individual at an earlier time point (i.e. Person A's behavior at Time 2 when a parent to Person A's behavior at Time 1 when not a parent).

First, we know little about how the transition to parenthood affects criminal behavior. While there is evidence that this role transition has potentially prosocial effects, particularly for disadvantaged women (Kreager et al. 2010; Edin and Kefalas 2005), the literature remains equivocal regarding parenthood effects. Thus, I hypothesize that for this study's sample, a sample of adolescents involved in serious criminal behavior, that parenthood does have a prosocial effect on behavior. Furthermore, due to gendered role expectations, particularly gendered parental role expectations (Abele and Spurk 2011; Doherty, Kouneski, and Erickson 1998), I posit that the transition to motherhood will have a stronger prosocial effect than the transition to fatherhood.

H1: Individuals will have lower odds of offending when they are parents compared to when they are nonparents.

H2: The transition to motherhood will have stronger negative effects on offending than the transition to fatherhood.

Second, significantly more is known about substance use among parents (Staff et al. 2010, Gilchrist et al. 1996, Morrison et al. 1998). These studies consistently find that substance use among women decreases during pregnancy and often remains at low levels post-birth. However, men's substance use is less affected by fatherhood. Thus, I believe

that women will have lower levels of substance use when they are mothers and that women will experience the greatest declines in substance use while they are pregnant. I do not believe that men's substance use will be affected by their transition to fatherhood.

H3: A woman will have lower rates of substance use when she is a mother compared to when she is not a mother.

H4: A woman will have lower rates of substance use when she is pregnant compared to when she is not pregnant.

H5: A man's substance use as a father will not be significantly different from his substance use when he is not a father.

Second, residency appears to be a significant factor in fulfilling one's parental role (Hawkins, Amato, and King 2006), and may be a key feature to a "parental respectability package" (Giordano et al. 2002). Residential parenthood may operate similarity to marriage in the fact that this transition brings about changes in one's routine activities (Warr 1998), and makes parenthood a central identity for an individual. Thus, I hypothesize that living with a child will be an important addition to parenthood which will further encourage desistance and decrease substance use.

H6a: An individual will have lower odds of offending when he/she lives with a child compared to when he/she is not a parent.

H6b: An individual will have lower rates of substance use when he/she lives with a child compared to when he/she is not a parent.

Third, scholars know little about the context of parenting and how an individual's parental identity, or the importance of being a parent, effects criminal behavior. Although living up to identity standards is related to behavior and behavior modification, it is unclear whether parental identity has an effect on offending. I hypothesize that when an individual reports the highest level of parental orientation, he/she will have the lowest

odds of offending and substance use compared to when they did not have a parental orientation (were not a parent).

> H7: When a parent has high parental orientation, he/she will have the lowest odds of offending and substance use compared to when she/she was not a parent.

Fifth, criminal behavior and desistance are often influenced by significant others, particularly romantic partners (Leverentz 2006). Parenthood is also influenced by one's romantic partner through reflected appraisals (Adamsons 2010). Thus, any effect of parenthood must be separated from the effect of being in a romantic relationship, as well as being in a relationship with a partner who encourages antisocial behavior.

> H8: The effect of parenthood on offending and substance use will be stronger when one's romantic partner's antisocial influence, rather than simply partnership status, is controlled.

This chapter has summarized the pertinent literature regarding the relationship between the transition to parenthood and desistance. Chapter 2 will begin with a description of the Pathways to Desistance Study followed by descriptions of analytic variables. It will conclude by describing the analytic strategy used in this study, fixed effect logistic regression. Chapter 3 is the first analytic chapter and begins with a comparison of two logistic models (one without and one with a lagged dependent variable) and a fixed effect logistic model in order to demonstrate the benefits of using fixed effects. Next, I will present the results which describe how family and life transitions affect aggressive and income offending for men and women. These Chapter 4 is the second analytic chapter and will introduce two important mechanisms, romantic partner's antisocial influence and parental orientation, that may explain the results from Chapter 3. Chapter 5 will include a summary of the findings in this study, discuss the

implications of the findings and how they relate to the existing literature, and discuss the limitations of the study.

Chapter 2

Data and Methods of Analysis

The Pathways to Desistance Study

The Pathways to Desistance Study is a longitudinal dataset that followed 1,354 serious adolescent offenders over seven years (Schubert et al. 2004). Youths were enrolled from two locations, Phoenix, Arizona and Philadelphia, Pennsylvania. These two locations were chosen due to (a) high enough rates of serious crime committed by juveniles; (b) a diverse racial/ethnic mix of potential participants; (c) a sizable enough number of female offenders; (d) a contrast in the way the systems operate; (e) political support for the study and cooperation from the practitioners in the juvenile and criminal justice systems; and (f) the presence of experienced research collaborators to oversee the data collection.

Youth were selected for potential enrollment after a review of court files in each locale revealed that they had been adjudicated (found guilty) of a serious offense. Eligible crimes included all felony offenses with the exception of less serious property crimes, as well as misdemeanor weapons offenses and misdemeanor sexual assault. Drug offenses constitute a large proportion of all offenses committed by youth, and males comprise the vast majority of youth who are charged with drug offenses. Therefore the study instituted a capped proportion of males with drug offenses to 15 percent of the sample at each site. This cap was not instituted for females, and all females who met the age and adjudicated

crime requirements, or any youth whose case was being considered for trial in the adult court system, were eligible for enrollment regardless if the charged crime was a drug offense.

During the enrollment period (November 2000 to January 2003) 10,461 individuals who met the age and petitioned charge criteria were processed in the court systems in Philadelphia and Phoenix. In 5,382 of these cases (51 percent) the youth was found not guilty or had the charges reduced below a felony-level offense at adjudication. Another 1,272 cases were dropped (12 percent) from consideration because the court data were insufficient to determine the person's eligibility status at adjudication. Of the remaining 3,807 eligible cases 1,799 (47 percent) were excluded from consideration due to potential case overload of the local interviewer or the 15 percent threshold of drug offenders was close to being breached. This resulted in 2,008 youths who were approached for inclusion into the study. Of those youths who were approached 1,354 consented and participated (67 percent).

For the first three years, follow-up interviews were conducted every six months, and then yearly. Including the baseline interview, there are 11 total waves. Depending on when the respondent was enrolled, the final follow-up survey was collected between 2007 and 2010. Tables 1 and 2 represent the completion rates for each wave as well as the overall retention rate, respectively. This table highlights the impressive retention rate of The Pathways to Desistance Study. Eighty-four percent of the original sample participated in the final interview of the study, and almost 80% completed at least 9 of 10 possible interviews.

For those in the juvenile justice system, the baseline interview was conducted within 75 days after their adjudication, and for those in the adult system, the baseline interview was conducted within 90 days after their decertification hearing in Philadelphia or adult arraignment in Phoenix. The baseline as well as the follow up interviews tapped several dimensions of the youths' lives including (a) background characteristics (e.g., demographics, academic achievement, psychiatric diagnoses, offense history, neurological functioning, psychopathy, personality), (b) indicators of individual functioning (e.g., work and school status and performance, substance abuse, mental disorder, antisocial behavior), (c) psychosocial development and attitudes (e.g., impulse control, susceptibility to peer influence, perceptions of opportunity, perceptions of procedural justice, moral disengagement), (d) family context (e.g., household composition, quality of family relationships), (e) personal relationships (e.g., quality of romantic relationships and friendships, peer delinquency, contacts with caring adults), and (f) community context (e.g., neighborhood conditions, personal capital, social ties, and community involvement).

Table 1. Completion Rates by Wave

	Complete/Partial %
Baseline	100%
Follow-up 1	93%
Follow-up 2	93%
Follow-up 3	91%
Follow-up 4	91%
Follow-up 5	91%
Follow-up 6	91%
Follow-up 7	90%
Follow-up 8	89%
Follow-up 9	87%
Follow-up 10	84%

Table 2. Cumulative Retention Rates

	Percent
0/10 interviews completed	1.33
1/10 interviews completed	0.74
2/10 interviews completed	0.81
3/10 interviews completed	0.81
4/10 interviews completed	1.33
5/10 interviews completed	1.55
6/10 interviews completed	2.88
7/10 interviews completed	4.43
8/10 interviews completed	7.31
9/10 interviews completed	17.58
10/10 interviews completed	61.23

Table 3 provides the key demographics of the baseline sample. As with most criminological studies, the baseline sample is predominantly male. Blacks are the largest race category in the sample (41.43%), followed by Hispanics (33.53%), whites (20.24%), and a very small percentage of other races (4.8%). A slightly larger percentage of respondents are from Philadelphia (51.7%). Further, due to enrollment criteria, the ages of respondents are quite young – 61.22% are 16 years old or younger. There are several measures that indicate the disadvantaged background of respondents. Nearly 80% of the sample reported having had a family member arrested, and of those with a family member arrested, 84% reported the family member had spent time in jail or prison. Moreover, 34% of respondents reported having one parent who had been arrested and/or jailed, and 9% reported that *both* parents had been arrested and/or jailed. Respondents also report experiencing disciplinary action at school – 90% of the sample reported having ever been suspended from school. Only 15% of respondents report that their biological parents are currently married to one another. Mother's and father's education levels are low (77.96% of mothers and 81.82% of fathers have a high school education or less) and both mothers and fathers hold lower-level occupations (only 23.61% of mothers and 15.04% of fathers are administrative personnel, owners of small businesses, minor professionals, or other more prestigious occupations). Descriptively, these measures indicate that this sample is highly disadvantaged.

Table 3. Baseline Demographics

Variable	N	%*
Race		
White	274	20.24
Black	561	41.43
Hispanic	454	33.53
Other race	65	4.8
Gender		
Male	1170	86.41
Female	184	13.59
Location		
Philadelphia	700	51.7
Phoenix	654	48.3
Age		
14	162	11.96
15	255	18.83
16	412	30.43
17	413	30.5
18	111	8.2
19	1	0.07
Had a family member arrested		
No	292	21.63
Yes	1,058	78.37
Had a family member that had been in jail/prison		
No	159	15.13
Yes	892	84.87
Parental arrest/incarceration		
Neither bio parent arrested or jailed	764	56.43
Both bio father and mother were arrested or jailed	127	9.38
One biological parent arrested, but not both	463	34.19
Ever been suspended from school		
No	122	9.01
Yes	1,232	90.99

Variable	N	%
Biological parents marital status		
Never married to each other	621	46.76
separated/Divorce from each other	429	32.30
Married to each other	203	15.29
Widowed from each other	48	3.61
One or both remarried	25	1.88
Both deceased	2	0.15
Mothers education level		
Some grad or prof school/prof or grad school	11	0.86
College graduate	50	3.89
Business or trade school/some college/grad of 2-yr college	222	17.29
High school diploma	414	32.24
Some high school	434	33.80
Grade school or less	153	11.92
Fathers education level		
Some grad or prof school/prof or grad school	12	1.31
College graduate	35	3.83
Business or trade school/some college/grad of 2-yr college	119	13.03
High school diploma	388	42.50
Some high school	226	24.75
Grade school or less	133	14.57
Mother's current job		
Higher executives of large concerns, proprietors, and major professionals	10	1.33
Business managers, proprietors of medium-sized businesses, and lesser professionals	103	13.66
Administrative personnel, owners of small businesses, and minor professionals	65	8.62
Clerical and sales workers, technicians, and owners of little businesses	303	40.19
Skilled manual employees	32	4.24
Machine operators and semiskilled employees	106	14.06
Unskilled employees	135	17.90
Father's current job		
Higher executives of large concerns, proprietors, and major professionals	18	3.19
Business managers, proprietors of medium-sized businesses, and lesser professionals	15	2.65
Administrative personnel, owners of small businesses, and minor professionals	52	9.20
Clerical and sales workers, technicians, and owners of little businesses	96	16.99
Skilled manual employees	116	20.53
Machine operators and semiskilled employees	134	23.72
Unskilled employees	134	23.72

*Valid percent reported

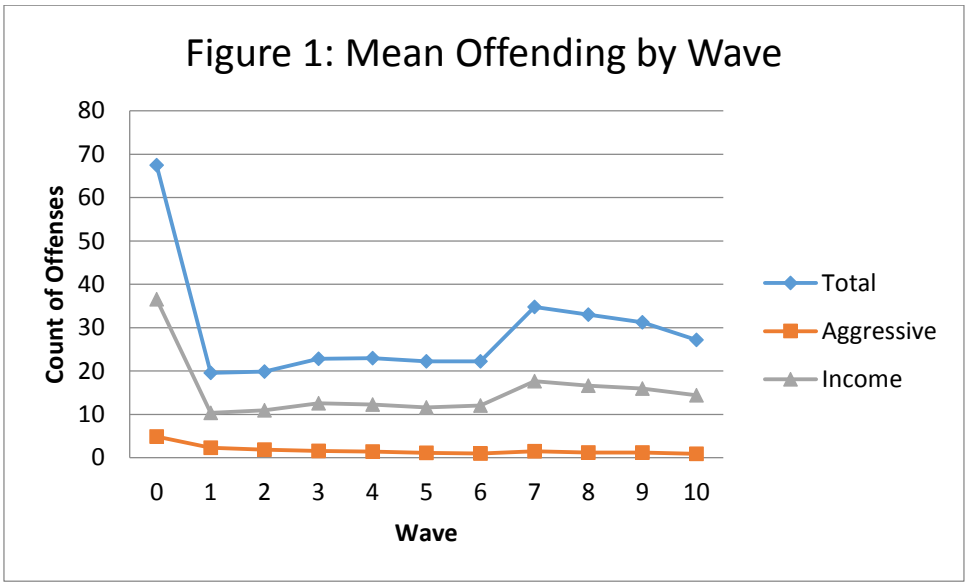
Measures

Dependent Variables

Delinquency - The Self-Reported Offending measure (Huizinga, Esbensen, & Weihar, 1991) was adapted for this study to measure the adolescent's account of involvement in antisocial and illegal activities. The SRO consists of 24-items which elicit subject involvement in different types of crime. Three measures of delinquency are used in the following analyses. *Any offending* – This variable is a binary outcome of whether the respondent engaged in any of the twenty-four acts listed in the self-report battery during the recall period. *Aggressive offending* – This variable is a binary outcome of whether the respondent engaged in any of the eleven aggressive offenses during the recall period. *Income offending* – This variable is a binary outcome of whether the respondent reported engaging in any of the ten income offenses during the recall period. All outcomes are coded 0 – no, 1 – yes. The full list of offenses in each measure is available in Appendix A. It should be noted that desistance can be conceptualized in several ways: total desistance (i.e. cessation), reduction in number of offenses, and reductions in seriousness of offenses (Brame, Bushway, and Paternoster 2003). Total cessation of offending is impossible to definitively determine while an individual still lives, thus, for the purposes of this study, desistance is conceptualized and operationalized as cessation in a *given wave*.

Due to concerns about the validity of offending in the baseline interview, all analyses exclude this time point. This concern stems from a potential coding error for

frequency of offending during the baseline interview[2] (see Figure 1: Mean Offending by Wave). The summary statistics for the offending outcomes by gender, excluding the baseline, are presented in Table 4, and Figure 2 presents the trends for each offending measure by gender and age. Both show that men are engaging in crimes more often than women and that for both men and women, aggressive offenses occur more often than income offenses.



[2] In personal correspondence with Carol Shubert – "In regard to the SRO frequencies at Baseline, … They [sic] counts can be very high for some of the items (e.g. selling drugs) if the interviewer recorded the number of times the youth made a sale versus the number of days that the subject sold drugs. We caught on that some interviewers were doing this and tried to correct it in later waves…."

Table 4. Summary Statistics for Offending Outcome Measures, by gender

	Obs	Mean	Std. Dev.	Min	Max
Males					
Any offense	10420	0.47	0.50	0	1
Aggressive offense	10420	0.37	0.48	0	1
Income offense	10420	0.26	0.44	0	1
Females					
Any offense	1728	0.30	0.46	0	1
Aggressive offense	1728	0.21	0.41	0	1
Income offense	1728	0.13	0.34	0	1

*excludes baseline

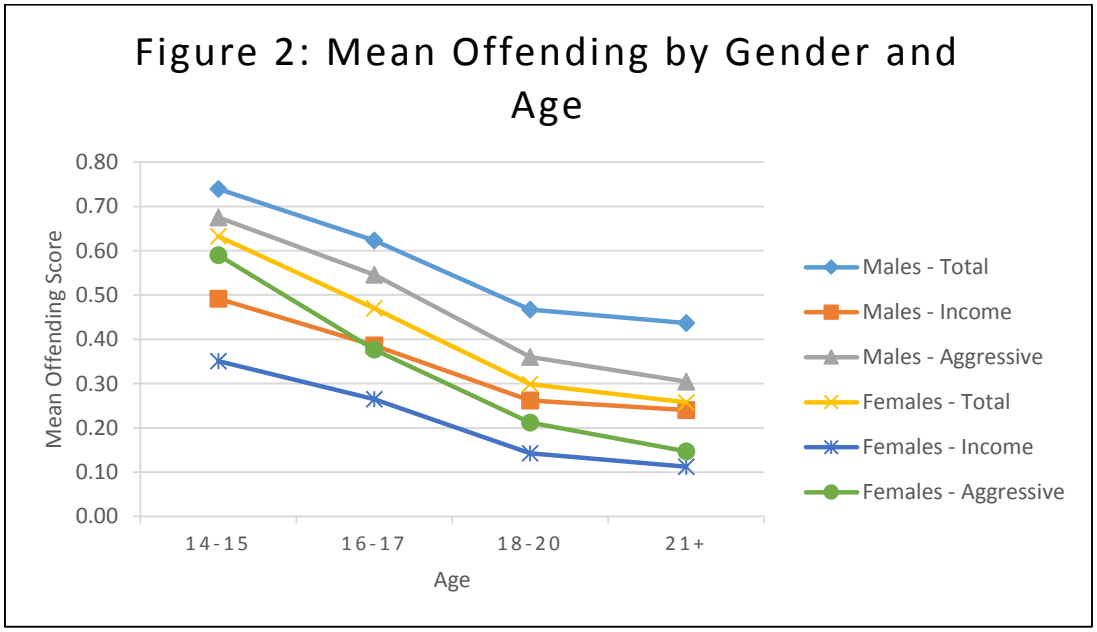


Figure 2 is peculiar in the fact that it does not represent the traditional age crime curve. Both men's and women's offending – regardless of type of offense – declines at each progressive age category. This pattern contradicts the predicted pattern that criminal behavior would continue to increase until the late teens to early twenties and *then* begin to decline. There are two possible reasons for this discrepancy. First, respondents may become savvy and respond to the structure of the survey in ways that reduce the time it takes to administer the survey (Lauritsen, 1998).

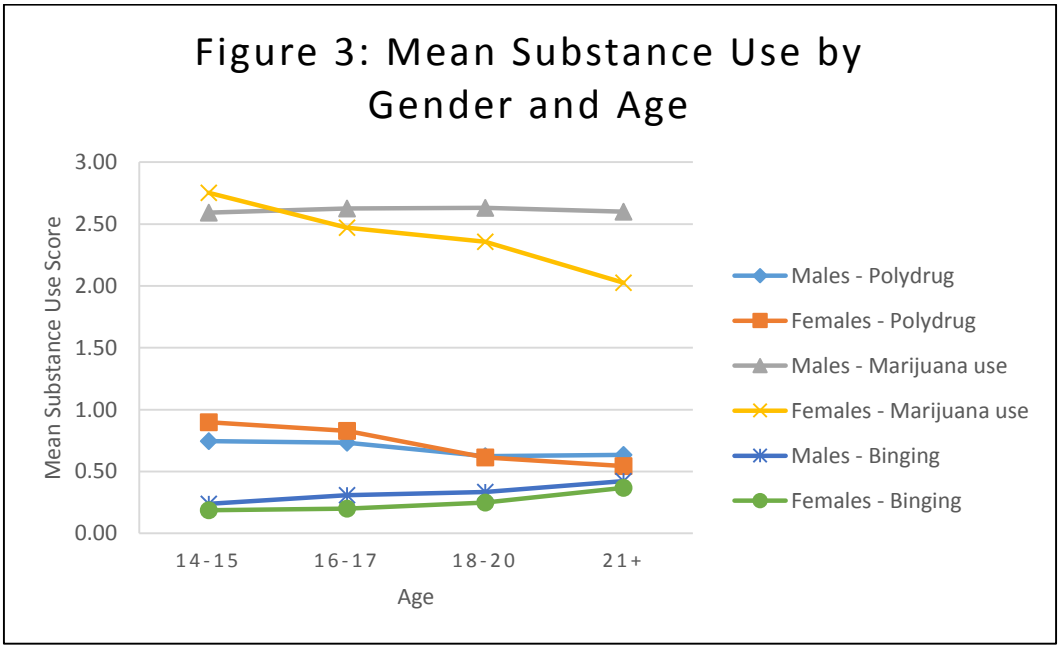
For instance, if respondents recognize that a report of non-crime engagement corresponds to a skip pattern that reduces survey participation time (because no follow-up questions can be asked), respondents may report more non-crime occasions. A second possibility is that these respondents have already reached their offending peak. Perhaps these respondents reach the peak of their offending careers earlier than others – after all, all respondents in the study have been convicted of a felony. Respondents with convictions for serious crimes at such early ages may not follow a traditional age-crime curve.

Substance use – Three measures of substance use will also be used as outcomes. The substance use outcomes do not suffer from this same coding error as the offending measures do; however, to maintain symmetry across models, I will exclude the baseline from the current analyses (supplementary analyses that include the baseline interview for substance use can be found in Appendix D). *Binge drinking* is a binary variable that indicates whether a respondent binged at least once in the recall period (1) or not (0). *Frequency of marijuana* has 8 possible response values: not at all (1), less than once a month (2), once a month (3), 2-3 times per month (4), once per week (5), 2-3 times per week (6), 4-5 times per week (7), and every day (8). Lastly, *number of drugs* is a count variable of the number of illegal drugs a respondent used during the recall period that ranges from 0-9. Table 5 presents the summary statistics for the substance use outcomes by gender, and Figure 3 presents the mean of each substance use outcome by age. On average, respondents use 1-2 drugs, use marijuana a little less often than once a month. Thirty four percent of male cases and 26 percent of female cases reported binge drinking during the recall period.

Table 5. Summary Statistics for Substance Use Measures, by gender

Males	Obs	Mean	Std. Dev.	Min	Max
Number of drugs	10416	0.61	1.08	0	9
Binged	10412	0.34	0.47	0	1
Frequency of marijuana use	10411	2.50	2.49	1	8
Females					
Number of drugs	1729	0.58	1.07	0	9
Binged	1729	0.26	0.44	0	1
Frequency of marijuana use	1729	2.18	2.23	1	8

*excludes baseline



Independent variables

Parenthood status – Although detailed parenthood measures are not available at this time (the Pathways to Desistance calendar data has yet to be publicly released), number of children acts as a proxy for parenthood status. *Parenthood status* is a dichotomous variable for whether the respondent reported having, at least, one child (1)

or none (0). Each individual is coded 1 after a respondent indicates his or her initial transition into parenthood. Although respondents can and do move in and out of parenthood over time according to the original variable due to death of child, termination of parental rights, or a break up with the biological parent of the child, analyses will use a measure that treats parenthood as constant once the individual indicates a first transition to parenthood.

Pregnancy – As suggested by Kreager et al. (2010), short-term changes in behavior may be related to other time-varying covariates such as becoming and being pregnant. Controlling for pregnancy status is important in order to isolate the effects of motherhood. Female respondents indicated whether they were *currently pregnant* (0, no; 1, yes) as well as if they were *pregnant during the recall period* (0, no; 1, yes).

Additional pregnancy – A variable was created in order to capture whether a woman was currently pregnant *in addition* to already having a child. A caveat to this measure is that it is only accounting for the effect of additional pregnancies, and does not distinguish between how many children an individual already has. For example, if a respondent reports having one child at Time 1, reports having one child and being pregnant at Time 3, has the second child in the recall period, and at Time 7 reports having two children and her third pregnancy, her change score is calculated based on her criminal offending at Time 1 (one child), Time 3 (one child and pregnant), and at Time 7 (two children and pregnant).

Dummy variable groups were made for each possible combination of pregnancy and parenthood, and additional pregnancy status in order to simplify interpretation of results and make comparisons between each of these transitions. Thus, analyses will

indicate how a respondent's behavior changes when she is (1) not a parent and not pregnant, (2) pregnant for the first time, (3) a parent but not pregnant, (4) a parent with an additional pregnancy. Men are excluded from analyses that explore pregnancy.

Living with a child – This variable captures whether the respondent reported living with a child during the recall period. Although the child may not necessarily be his or her own, a dummy variable group was created in order to test differences between (1) non-parenthood, (2) being a parent and living with a child, and (3) being a parent and not living with a child. Similar to the pregnancy dummy variable groups, dummy groups were also created in order to test each combination of parenthood and residency for men, and parenthood, pregnancy, and residency for women.

Another pertinent measure is *romantic partnership status*. This variable was based on a measure of antisocial partner influence. Subjects could only respond to this measure if they had a romantic partner. Subjects without romantic partners were identified by the skipped coding schema. Although it could be argued that marital status or cohabitation status, rather than partnership status, is more important when accounting for desistance, marital status and detailed cohabitation (such as length of cohabitation) are currently unavailable in the public use data. However, given the young age of the sample and the fact that there has been a growing acceptance of non-marital childbearing and cohabitation (i.e., the "second demographic transition" in the United States), it is unlikely that this sample is experiencing marriage at an appreciable rate. This low occurrence of marriage is quite different from Sampson and Laub's (2003) study which used a cohort of men from the 1950s when marriage was much more common, especially at younger ages.

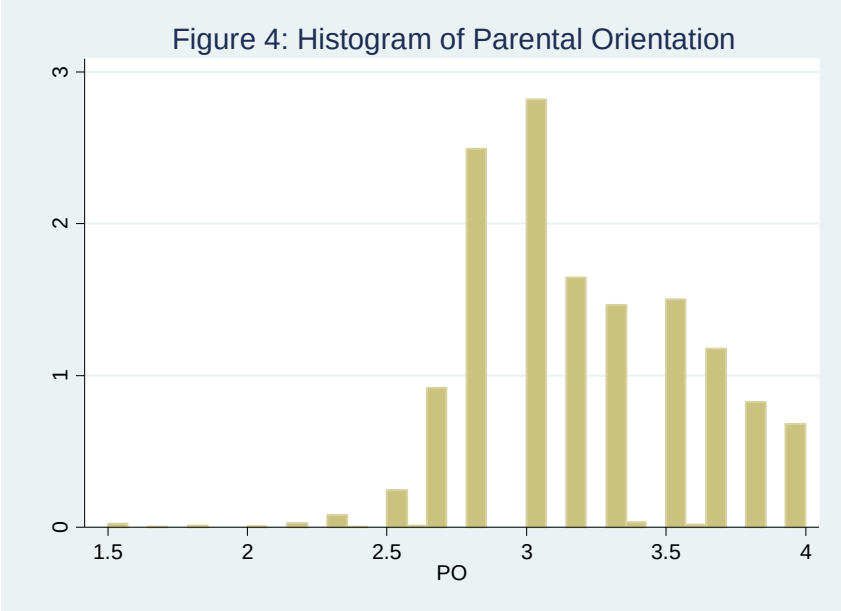
Furthermore, the only available measure of cohabitation is an indicator of whether "a significant other (spouse, fiancé, boyfriend/girlfriend, parent of child) [was] living in the household". This measure cannot distinguish between those who are in a cohabiting dating relationship from a cohabiting marital relationship. Nor does this measure provide insight as to the reasons why individuals might be cohabiting (lack of other options, financial restrictions, etc.). Partnership status is less likely to be affected by these issues (i.e. an individual may choose to remain single than be in an unfavorable relationship).

Demographics: Because fixed effect models control for time-stable traits, such as gender and race, these are not explicitly controlled for in the models. However, models are presented separately for men and women in order to explore possible gender differences that may be obscured if the sample was analyzed as a whole. *Age* – At the baseline interview, individuals ranged in age from 14 to 19 (individuals were 14-18 years old at the time of the offense which made them eligible for recruitment in this study). This variable has already been recoded by the Pathways to Desistance Study team so that the age represents the interview date minus the subject's date of birth truncated to a whole number. Although age can be included as a continuous variable in fixed effect models, age was recoded into several dummy groups in order to compare age effects. The age dummy groups are 14-15 (reference group), 16-17, 18-20, and 21 and older.

Other time-varying life transitions that are also controlled for include school, work, and proportion of time available for offenses to occur. *School* measures whether the respondent was enrolled in school during the recall period (0, no; 1, yes). *Work* measures whether the respondent had worked in any legal community or under-the-table job (0, no; 1, yes) during the recall period. Exposure time – With any study that explores

the frequency or variety of criminal offending an individual commits, it is important to control for the available time that one has to commit these crimes. For this measure, I use a variable that captures the proportion of time spent in the streets during the recall period minus the proportion of time spent in secure settings (those with no community access; i.e. drug/alcohol, psychiatric, jail/prison, detention center, ydc/adjc, contracted residential general and mental health facilities).

Parental orientation – this measure is a 6-item scale that asks participants to rank from 1 to 4 (1=Agree Strongly to 4=Disagree Strongly) the degree that each statement corresponds to their view of parenthood, with higher scores indicating greater parental orientation. The 6 items were adapted from Silverberg and Steinberg's (1990) subscale of Adult Role Orientation, and are: When spending time with friends or neighbors, I talk mostly about my child/children [Reverse coded]; Parenting takes up more of my time than I would really like it to; I tend to think about my child/children when I am not with them [R]; Fathers/Mothers my age should devote most of their time and energy to rearing their child/children. [R]; The satisfaction I get from life come mostly from my role as a parent [R]; Doing a good job as a parent is one of the most important things to me now [R]. The scale ranges from 1.5 to 4 (in panel form). A histogram of the original parental orientation variable is presented in Figure 4. Because most parents report a high level of parental orientation (nearly 75% at least agreed), dummy variables were created in order to compare no parental orientation (when the respondent is not a parent) to when the respondent has a low (less than 3), moderate (3–3.4), or high (3.5 or greater) parental orientation score.



Partner's antisocial influence – This scale is based on a subset of items used by the Rochester Youth Study (Thornberry et al. 1994) to assess the degree of antisocial influence of the respondent's romantic partner. An example item is: "Has X suggested that you should sell drugs?"). This variable is a count of 7 items, and a higher score indicates greater antisocial influence from the respondent's romantic partner. This variable was recoded into two dummy variables to test the effects of having an antisocial influencing partner (*partner with ASI*), having a partner who does not exert antisocial pressure (*partner without ASI*), compared to being single.

Descriptively, in each of the models, women are slightly more likely to be parents than men are. Men report being fathers in about 30% of male person-waves and women are mothers in about 40% of female person-waves. When context of parenthood is included, mothers are much more likely to be living with children than fathers. In stark comparison to one another, about a quarter of all person-waves for men report nonresident fatherhood whereas nonresident motherhood only occurs in about 10% of the

cases. Men are more likely to have a moderate level of parental orientation, while women have a high level in almost all of the samples. Women are more likely to be in a romantic relationship (70% compared to men at roughly 50%), and the majority of person-waves in which a respondent was in a relationship, the partner did not encourage the respondent to participate in antisocial activities. Finally, around half (50%) of each analytic sample for both men and women report being enrolled in school as well as having worked in the recall period. Due to the descriptive consistency across analytic samples, Figure 5 is provided as a representative illustration of each sample by illustrating the time in each transition for those in the first analytic model (the likelihood of committing any offense, by gender).

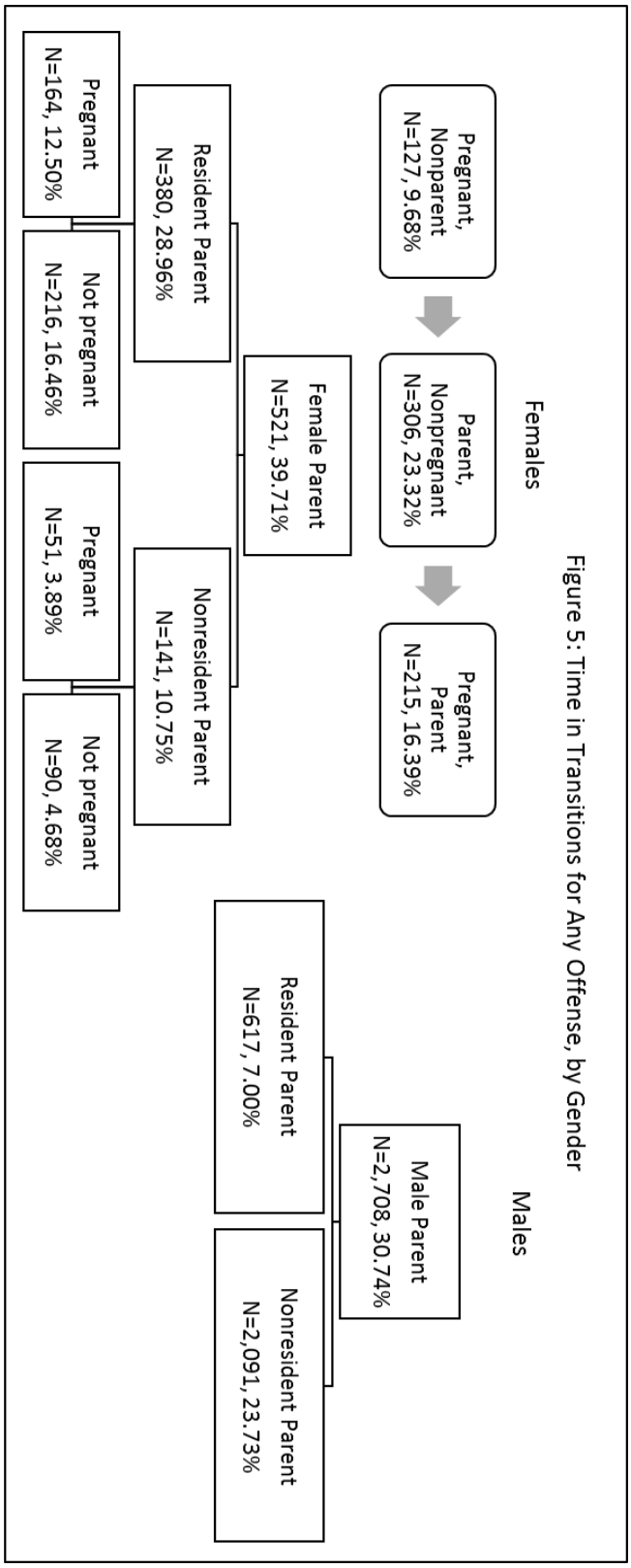


Figure 5: Time in Transitions for Any Offense, by Gender
Females
Pregnant, Nonparent N=127, 9.68%
Parent, Nonpregnant N=306, 23.32%
Pregnant, Parent N=215, 16.39%
Female Parent N=521, 39.71%
Resident Parent N=380, 28.96%
Pregnant N=164, 12.50%
Not pregnant N=216, 16.46%
Nonresident Parent N=141, 10.75%
Pregnant N=51, 3.89%
Not pregnant N=90, 4.68%
Males
Male Parent N=2,708, 30.74%
Resident Parent N=617, 7.00%
Nonresident Parent N=2,091, 23.73%

Analytic Strategy

This study is based on studying change over time and how the transition to parenthood affects one's criminal behavior and substance use. With two or more waves of panel data, and a continuous dependent variable, researchers have several models from which to choose, including: (1) regression with lagged dependent variables, (2) structural equation models with reciprocal and lagged effects, (3) repeated measures analysis of variance, (4) growth curve and hierarchical effects models, and (5) fixed and random effects regressions (Johnson, 1995). Although each has advantages as well as limitations, this study will explore change over time using fixed effects due to its ability to control for unmeasured exogenous variables. In the following section, I will describe the fixed effects model, and in the beginning of Chapter 3 I will present results from a basic logistic regression model, a logistic model with a lagged dependent variable (LDV), and a logistic fixed effects (FE) model in order to highlight the differences and superiority of the fixed effects approach.

Fixed Effects Model

A fixed effects model is appropriate when two or more waves of data are available and the researcher wants to measure change over time in a dependent variable and wishes to explore the effect of time-varying predictors and events on individual outcomes. In order to perform a fixed effects analysis, the data must meet two basic requirements. The first is that the dependent variable must be measured for each individual on at least two occasions so that change can be estimated. These measures

must have the same metric and meaning so they are directly comparable. Second, the predictor variables of interest must change in value across multiple occasions for some substantial portion of the sample.

The Pathways to Desistance Study data satisfy both of these requirements. The dependent variable, whether the respondent offended during the recall period, is measured at each time point (all 11 waves) and is comparable across waves. The main predictor variable, parenthood, also varies over time with 121 individuals reporting being a parent at the baseline interview and 755 reporting being a parent at the last follow-up interview. This means that 634 individuals became parents during the course of the study (see Table 6). Table 7 presents the age when individuals first became parents. Of the 184 women in the sample, 77 became parents before the age of 19, which results in a birth rate of 418 births per 1,000 women. This rate is much higher than the national birth rate to women 10-19, which was approximately 42 per 1,000 in 2008 (US Census Bureau, 2012).

Table 6. Parent status, by gender and wave

	Males		Females		Full Sample	
Wave	N	%	N	%	N	%
0	97	8%	24	13%	121	9%
1	144	13%	29	17%	173	14%
2	173	16%	35	20%	208	16%
3	197	18%	46	27%	243	20%
4	244	23%	60	35%	304	24%
5	301	28%	66	38%	367	29%
6	344	32%	72	40%	416	33%
7	428	40%	90	51%	518	41%
8	505	47%	106	60%	611	49%
9	581	55%	118	66%	699	56%
10	629	61%	126	70%	755	62%
Total	3,643		772		4,415	

*includes baseline and all follow-ups

Table 7. Age at first birth, by gender

	Males		Females		All	
	N	%	N	%	N	%
15	9	1.43	-	-	9	1.19
16	41	6.52	16	12.7	57	7.55
17	108	17.17	22	17.46	130	17.22
18	92	14.63	21	16.67	113	14.97
19	90	14.31	18	14.29	108	14.3
20	97	15.42	12	9.52	109	14.44
21	76	12.08	17	13.49	93	12.32
22	64	10.17	13	10.32	77	10.2
23	31	4.93	5	3.97	36	4.77
24	15	2.38	2	1.59	17	2.25
25	6	0.95	-	-	6	0.79
Total	629	100	126	100	755	100
Sample total	1170	54	184	68	1354	56

In a fixed effects model, the unobserved variables are allowed to have associations with the observed variables, essentially treating the unobserved variables as fixed parameters (Allison 2009). This means that each individual serves as his or her own control. Because each person is his or her own control, all stable (time invariant)

variables that are not explicitly observed in the model or even measured in the data, are controlled for as if they had been measured and included (Allison 2009). The ability to control for unobserved variables is perhaps the most attractive advantage of a fixed effects model. Other advantages include being able to handle different time intervals between waves (a characteristic of the Pathways to Desistance Study), the ability to include respondents who contributed to some, but not all, waves without added complexity, and the ability to include time differences between the waves as an independent variable in order to measure the change in the dependent variable over time (Johnson 1995).

Formally, the fixed effect model (for binary dependent variables) is simply a change score model. The basic model is:

$$\log\left(\frac{p_{it}}{1-p_{it}}\right) = \mu_t + \beta x_{it} + \gamma z_i + \alpha_i, \quad t = 1, 2, \ldots, T$$

in which p_{it} is the probability that the response variable is equal to 1, x_{it} is a vector of time-varying predictors, z_i is a vector of time-invariant predictors, and a_i represents the combined effects of all unobserved variables that are constant over time. For a two-period case, the change score model is:

$$\log\left(\frac{p_i}{1-p_i}\right) = (\mu_1 - \mu_2) + \beta(x_{i2} - x_{i1})$$

Because the time invariant predictors do not change over time, z_i is eliminated from the equation. Similarly, a_i is also eliminated from the equation since these effects, though unobserved, are constant over time. This model can be extended to multiple waves and a pooled data structure, and is available through commercial statistical packages such as xtlogit in Stata.

Despite its numerous advantages, the fixed effects model does have some limitations. The first is that time-invariant variables cannot be included in the model as independent variables; however, it is possible to estimate the effects of the interaction of time-invariant and time-varying measures, such as gender x parent status (Allison 2009; Johnson 1995). The second limitation is that there is typically some loss of statistical power with a fixed effect model. The loss of statistical power can be attributed to the fact that the model measures within-individual change rather than between-individual change which results in discarding the information about the covariation among the variables that falls between individuals (Johnson 1995). While this loss may result in less efficient estimates since they are based on a restricted amount of information, the lost efficiency will depend on several other factors, such as how much of the variation in the variables lies within and between individuals (Johnson 1995). However, the gain in the ability to control for all measured and unmeasured stable individual characteristics afforded by fixed effect more than balances the loss of efficiency.

Chapter 3

The Transition to Parenthood's Effect on Criminal Offending and Substance Use

This chapter first tests several analytic techniques that might be used to explore the effects of parenthood on crime and substance use. Several analyses that explore the effects of parenthood on criminal behavior and substance use are then presented. These analyses take into account a simple binary status measure of parenthood (when one is or is not a parent) as well as the context of parenthood (whether one lives with a child; whether the respondent is pregnant). All analyses are presented separately for men and women, and offending outcomes are presented separately from substance use outcomes.

Several analytic strategies that could be used to test whether a parenthood effect exists are presented in Table 8. Because these analyses are descriptive in nature and used for the sake of comparison, they are fairly simple models. The first column presents results from a traditional cross-sectional logistic regression model (based on the last wave of data, Wave 10). These results are based on between-individual differences and are thus comparisons between the offending behaviors of nonparents and parents, not when the same individual makes the transition from non-parenthood to parenthood. These results indicate that parents have slightly higher (but not significantly higher) odds of engaging in a crime during the recall period than do non-parents. Women and blacks have significantly lower odds of committing a crime compared to males and whites, respectively.

Table 8. Logistic regression comparison models

	Any Offense at Time 10	Any Offense at Time 10, with LDV	Any Offense Fixed Effect[1]
Parent	1.22	1.16	
	[0.94,1.58]	[0.88,1.53]	
Time 10 Age	0.91	0.91	
	[0.81,1.01]	[0.82,1.03]	
Time 10 School	1.22	1.29	
	[0.89,1.68]	[0.92,1.81]	
Time 10 Work	1.32	1.31	
	[0.94,1.85]	[0.91,1.88]	
Time 10 Street time	0.4 ***	0.47 **	
	[0.26,0.61]	[0.30,0.74]	
Female	0.57 **	0.67	
	[0.39,0.84]	[0.45,1.02]	
Black	0.59 **	0.62 **	
	[0.42,0.82]	[0.44,0.89]	
Hispanic	0.75	0.81	
	[0.53,1.05]	[0.57,1.16]	
Other race	0.63	0.67	
	[0.34,1.18]	[0.34,1.34]	
Time 7 SRO		3.18 ***	
		[2.44,4.14]	
Parent (v. Not a parent)			0.91
			[0.74,1.12]
16-17 (v. 14-15)			0.66 **
			[0.50,0.87]
18-20			0.43 ***
			[0.31,0.58]
21+			0.39 ***
			[0.28,0.55]
Attending school (v. Not attending school)			1.12
			[0.97,1.29]
Working (v. Not working)			1.08
			[0.97,1.20]
Exposure time			1.08
			[0.92,1.26]
N	1125	1073	10221
chi2	53.4	125.33	108.14

Note: Exponentiated coefficients; 95% confidence intervals in brackets

*p < .05; **p < .01; ***p < .001 (two-tailed tests)

1. Pooled data, N represents person-waves

The second column of Table 8 presents a lagged dependent variable analysis. Overall, Column 2 results are quite similar to the logistic model without the lagged dependent effect (Column 1). However, Column 2 indicates that the lagged variable (the odds of committing a crime during the recall at Wave 7) is highly significant, and controlling for previous criminal behavior is important. In fact, controlling for prior behavior mediates the gender effect, such that there is no significant difference in the odds of committing a crime between men and women once prior behavior is controlled.

Column three of Table 8 represents the results from the fixed effects analysis. Similar to the OLS and LDV models, the effect of being a parent is not significant. However, the coefficient is interpreted differently than those in the OLS and LDV models because it is a within-person analysis. Thus, when an individual makes the transition from being a nonparent to a parent, there is no significant change in that person's frequency of criminal offending. Despite the lack of statistical significance for parenthood in any of these models, the odds ratios suggest quite different patterns. The logistic and lagged logistic models suggest that parents are at higher odds of committing an offense (odds are greater than 1), just not significantly higher odds. The fixed effect model shows quite the opposite. Still non-significant, the odds of committing a crime when a person is a parent is lower than when he or she is not a parent (OR=.91). Notably, being enrolled in school or participating in paid work do not significantly affect the odds of offending. Unlike the first three models, the FE model does not include variables for gender or race because they are time-stable traits and offer no contributory change to the model. Although not included here, time-stable traits can be assessed through interactions with time-varying variables.

In sum, if the data did not have a longitudinal component, the cross-sectional logistic analysis would have to suffice; however it is very limited in what it can tell us – merely between-individual differences and associations. It cannot speak to any type of causal inference nor can it address how the *transition* into parenthood (a within-individual change) affects behavior. The LDV model is an improvement over the logistic model due to its ability to control for past behavior and allows for a modicum of causal inference. However, the causal assumption implicit in the model is best for examining changes that occur over relatively short time frames, for while past criminal behavior is predictive of future criminal behavior, it is unlikely that an individual's prior offending is causally related to one's current offending especially when these time periods cover a long lag time as in the example above. Moreover, these results are still between-individual analyses and do not speak to how the transition to parenthood affects an individual; it can only describe the differences between parents and nonparents.

The fixed effects analytic model offers superiority over traditional methods such as cross-sectional logistic or LDV models[3]. First, it controls for all unmeasured time-stable traits whether measured or not and provides some protection against selection. Second, it is a within-person analysis which is necessary when trying to determine how such a potentially life changing event such as becoming a parent affects an individual's behavior. Third, it uses all available information (that contributes change) in order to calculate estimates. This is an improvement over the LDV model which can only calculate change between the dependent variable and its lag at one previous time point,

[3] A Hausman test was also performed on preliminary models and indicated that a fixed effects model is also superior to a random effects model.

and the cross-sectional model which cannot account for change at all. It is also an improvement over LDV models which are at risk of bias if there is measurement error – even random error – in the dependent variable. The FE model is not biased in this way. The largest threat to fixed effects models is that model misspecification can occur if the model does not include some time-varying variable that affects the dependent variable.

As evidenced by this discussion and the example analyses presented above, a fixed effects approach is the best method for studying the transition to parenthood and its effect on criminal behavior. Furthermore, this approach is consistent with other studies that have explored the parenthood-crime relationship (Kreager, Matsueda, Erosheva 2010; Monsbakken, Lyngstad, and Skardhamar 2013).

Results: Parenthood's Effect on Offending Outcomes

I will now present the findings regarding the effects of family, relationship, and life transitions on the odds of having committed any offense, any aggressive offense, and any income offense within the recall period in Tables 9-12. Findings are presented for each offending outcome and are presented separately for men and women. As previously explained, the transition to parenthood could operate differently for men and women and may differentially affect types of criminal behavior, thus disaggregating the findings in such a way is theoretically motivated. Results are presented as odds ratios, and can be interpreted as a percent change since predictor variables are binary (a rate less than one represents a decrease in offending, a rate of one represents no change, and a rate greater than one indicates an increase in offending).

Table 9 presents the results of how the transition to parenthood predicts each offending type by gender. Becoming a parent does not have any significant association with offending, regardless of the offense type or the respondent's gender. These results do not support Hypothesis 1 which stated that individuals will have lower rates of offending when they are parents compared to when they are non-parents. However, most of the results are in the expected direction. With the exception of aggressive offending for women, parenthood – for men and women – is associated with decreases in the odds of offending in all other models. Hypothesis 2, which stated that the transition to motherhood would have stronger negative effects on offending compared to fatherhood, is also not supported in these results. Although the rate of total offending shows a larger decrease for mothers than for fathers, this pattern is reversed when predicting the odds of committing an aggressive offense, and the odds of committing an income offense are relatively equal for mothers and fathers. Furthermore, these results are not statistically significant from one another (see Appendix E for z-tests).

Being in a romantic relationship is associated with *increases* for men and women across all crimes types, and although work is not related to men's offending, work is associated with increases in odds of committing any offense for women. This means that a female respondent is significantly more likely to report engaging in a criminal offense if she has worked during the recall period. Being in school has non-significant effects on criminal offending for both men and women. Age is significant in all of the male models, and in both male and female models, age is negatively related to offending. For example, compared to the likelihood of offending at age 14-15, a man's odds of committing any

Table 9. Fixed Effect Logistic Regression of Offending Outcomes and Parent Status, by Gender

	Any Offense		Any Aggressive Offense		Any Income Offense	
	Males	Females	Males	Females	Males	Females
Parent (v. Not a parent)	0.89	0.80	0.84	1.14	0.81	0.88
	[0.75,1.05]	[0.51,1.25]	[0.71,1.01]	[0.66,1.99]	[0.65,1.01]	[0.39,1.96]
In Partnership (v. Single)	1.49 ***	1.26	1.34 ***	1.38	1.58 ***	1.64 *
	[1.33,1.68]	[0.89,1.79]	[1.20,1.49]	[0.96,1.97]	[1.33,1.89]	[1.02,2.66]
16-17 (v. 14-15)	0.63 **	0.82	0.67 *	0.76	0.60 ***	0.84
	[0.47,0.84]	[0.38,1.80]	[0.49,0.91]	[0.32,1.80]	[0.46,0.80]	[0.31,2.30]
18-20	0.40 ***	0.65	0.36 ***	0.54	0.42 ***	0.75
	[0.29,0.54]	[0.31,1.37]	[0.26,0.50]	[0.21,1.41]	[0.29,0.60]	[0.29,1.98]
21+	0.37 ***	0.54	0.29 ***	0.31 *	0.41 ***	0.54
	[0.27,0.52]	[0.23,1.26]	[0.20,0.41]	[0.11,0.84]	[0.28,0.60]	[0.18,1.64]
Attending school (v. Not	1.13	1.00	1.14	1.02	1.03	1.09
attending school)	[0.99,1.29]	[0.64,1.55]	[0.98,1.32]	[0.70,1.47]	[0.91,1.16]	[0.73,1.63]
Working (v. Not working)	0.99	1.32 *	1.02	1.17	0.90	1.25
	[0.89,1.11]	[1.02,1.70]	[0.89,1.18]	[0.83,1.65]	[0.75,1.07]	[0.89,1.76]
Exposure time	1.05	0.47 *	0.71 ***	0.43 *	2.18 ***	1.04
	[0.86,1.28]	[0.25,0.89]	[0.58,0.87]	[0.20,0.91]	[1.79,2.66]	[0.41,2.60]
N	8810	1312	8642	1140	7240	788
chi2	104.84	24.67	207.64	37.21	159.25	24.86

Note: Exponentiated coefficients; 95% confidence intervals in brackets

*p < .05; **p < .01; ***p < .001 (two-tailed tests)

offense decreases by 37% when 16-17, by 60% when 18-20, and by 63% when 21 or older.

Because parenthood is not a universal experience, Table 10 adds complexity to one's parenthood status by taking residency into account. These models compare a respondent's offending when he or she: (1) is not a parent (reference category), (2) is a parent *and* lives with a child (roughly 29% of the time), (3) is a parent and *not* living with a child (roughly 10% of the time; see Figure 5). As in Table 10, these models are presented for each offending outcome by gender.

Overall, resident parenthood is associated with significant declines in the odds of offending for men (regardless of offense type) as well as women's odds of any offending and any income offending. When a man is a father and living with a child his odds of committing an aggressive offense decrease by 38% and his odds of committing an income offense decrease by 39%. Although nonsignficant, the odds of committing any offense and any income offense are in the expected negative direction for women. Nonresidency is not associated with offending for women or men. These results support Hypothesis 6a, which posited that an individual will have lower rates of offending when he or she lives with a child compared to when the respondent is not a parent.

The age patterns described for Table 9 also hold for Table 10. Age is significantly and negatively related to all offending outcomes for men, such that as a man ages, he is less likely to commit any crime, an aggressive offense, and an income offense at each age category. Although age effects are not significant for women, the same negative relationship to offending exists. Being in a romantic relationship is still significantly and positively related to all types of offending for men and women. Work

and school are generally not related to offending for either men or women (with the exception of a significant increase in aggressive offending for men when they report attending school during the recall period).

As Kreager et al. (2010) have suggested, the transition to motherhood for women is complicated by pregnancy – a time when women begin to anticipate the expectations of motherhood. Because women are concerned with the safety of the pregnancy, they may drastically alter their behavior, especially their involvement in violent criminal offending and substance use. Table 11 compares a respondent's odds of offending when she is: (1) not pregnant and not a parent (reference category), (2) pregnant and not a parent (first-time pregnancy, roughly 10%), (3) not pregnant but a parent (roughly 23%), and (4) a parent *and* pregnant (roughly 16%, see Figure 5). Although nonsignficant, the results for all pregnancy-motherhood states are consistently in the expected negative direction.

Table 10. Fixed Effect Logistic Regression of Offending Outcomes and Parent-Resident Status, by Gender

	Any Offense		Any Aggressive Offense		Any Income Offense	
	Males	Females	Males	Females	Males	Females
Resident, parent (v. Not a parent)	0.74 * [0.55,0.99]	0.75 [0.45,1.25]	0.62 *** [0.47,0.82]	1.09 [0.65,1.81]	0.61 ** [0.43,0.84]	0.71 [0.30,1.71]
Nonresident, parent	0.95 [0.77,1.19]	0.95 [0.52,1.75]	0.95 [0.74,1.21]	1.35 [0.78,2.32]	0.90 [0.73,1.11]	1.31 [0.49,3.50]
In Partnership (v. Single)	1.51 *** [1.32,1.73]	1.27 [0.90,1.78]	1.36 *** [1.21,1.52]	1.39 [0.97,1.98]	1.60 *** [1.36,1.90]	1.63 * [0.96,2.76]
16-17 (v. 14-15)	0.63 *** [0.48,0.82]	0.82 [0.38,1.76]	0.67 * [0.49,0.92]	0.76 [0.34,1.70]	0.60 ** [0.43,0.83]	0.83 [0.32,2.17]
18-20	0.39 *** [0.31,0.50]	0.64 [0.28,1.49]	0.35 *** [0.24,0.52]	0.54 [0.23,1.25]	0.41 *** [0.30,0.57]	0.75 [0.25,2.22]
21+	0.37 *** [0.28,0.49]	0.55 [0.22,1.34]	0.28 *** [0.19,0.41]	0.31 * [0.12,0.80]	0.41 *** [0.29,0.58]	0.57 [0.17,1.92]
Attending school (v. Not attending school)	1.13 [1.00,1.28]	1.00 [0.73,1.35]	1.14 * [1.00,1.29]	1.02 [0.76,1.36]	1.03 [0.89,1.19]	1.09 [0.68,1.75]
Working (v. Not working)	1.00 [0.85,1.17]	1.32 [0.99,1.75]	1.03 [0.91,1.18]	1.17 [0.87,1.57]	0.91 [0.77,1.07]	1.27 [0.89,1.82]
Exposure time	1.07 [0.89,1.30]	0.49 * [0.24,1.00]	0.73 *** [0.60,0.87]	0.44 * [0.24,0.82]	2.25 *** [1.83,2.77]	1.13 [0.48,2.67]
N	8810	1312	8642	1140	7240	788
chi2	202.53	21.46	226.22	26.02	148.91	14.06

Note: Exponentiated coefficients; 95% confidence intervals in brackets

*p < .05; **p < .01; ***p < .001 (two-tailed tests)

Table 11. Fixed Effect Logistic Regression of Offending Outcomes and Parent-Pregnancy Status (females only)

	Any Offense	Any Aggressive Offense	Any Income Offense
Pregnant, nonparent (v. Not pregnant and not a parent)	0.61 [0.34,1.09]	0.54 [0.28,1.02]	0.80 [0.39,1.64]
Parent, nonpregnant	0.92 [0.55,1.54]	1.08 [0.60,1.97]	0.96 [0.42,2.18]
Pregnant, parent	0.46 * [0.24,0.86]	0.72 [0.38,1.37]	0.65 [0.26,1.63]
In Partnership (v. Single)	1.37 [0.96,1.96]	1.47 [0.99,2.20]	1.70 * [1.03,2.82]
16-17 (v. 14-15)	0.86 [0.38,1.97]	0.80 [0.41,1.55]	0.86 [0.33,2.25]
18-20	0.69 [0.30,1.61]	0.60 [0.28,1.29]	0.78 [0.28,2.16]
21+	0.59 [0.22,1.55]	0.35 ** [0.16,0.76]	0.56 [0.18,1.77]
Attending school (v. Not attending school)	0.96 [0.68,1.34]	0.99 [0.68,1.42]	1.06 [0.67,1.69]
Working (v. Not working)	1.29 [0.94,1.78]	1.16 [0.83,1.64]	1.24 [0.85,1.82]
Exposure time	0.51 [0.25,1.05]	0.47 * [0.23,0.97]	1.07 [0.48,2.38]
N	1312	1140	788
chi2	25.59	52.20	14.93

Note: Exponentiated coefficients; 95% confidence intervals in brackets
*p < .05; **p < .01; ***p < .001 (two-tailed tests)

Perhaps the transition to motherhood is even more nuanced and shaped by the combination of pregnancy *and* residence status. These relationships are presented in Table 12. A woman's odds of committing any offense decline significantly when she is a pregnant mother and lives with her child. Other motherhood states are nonsignificantly related to offending, yet are in the expected direction, with the exception of nonresidential, nonpregnant motherhood.

Table 12. Fixed Effect Logistic Regression of Offending Outcomes and Parent-Pregnancy-Resident Status (females only)

	Any Offense	Any Aggressive Offense	Any Income Offense
Pregnant, nonparent (v. Not pregnant, and not a parent)	0.60 [0.35,1.04]	0.53 [0.28,1.00]	0.77 [0.42,1.41]
Pregnant, resident, parent	0.43 ** [0.23,0.80]	0.70 [0.35,1.39]	0.52 [0.20,1.37]
Pregnant, nonresident, parent	0.52 [0.23,1.19]	0.81 [0.31,2.15]	0.93 [0.23,3.70]
Nonpregnant, resident, parent	0.84 [0.46,1.52]	1.00 [0.45,2.22]	0.74 [0.27,2.04]
Nonpregnant, nonresident, parent	1.18 [0.56,2.49]	1.36 [0.59,3.17]	1.44 [0.51,4.06]
In Partnership (v. Single)	1.38 [0.93,2.05]	1.48 [0.96,2.29]	1.69 * [1.08,2.65]
16-17 (v. 14-15)	0.86 [0.39,1.89]	0.79 [0.37,1.72]	0.85 [0.34,2.14]
18-20	0.69 [0.28,1.71]	0.59 [0.23,1.54]	0.78 [0.32,1.87]
21+	0.60 [0.22,1.64]	0.35 [0.12,1.02]	0.59 [0.23,1.52]
Attending school (v. Not attending school)	0.96 [0.69,1.33]	0.99 [0.70,1.39]	1.06 [0.69,1.61]
Working (v. Not working)	1.30 [0.95,1.77]	1.16 [0.85,1.59]	1.26 [0.89,1.80]
Exposure time	0.53 [0.24,1.17]	0.48 * [0.24,0.97]	1.17 [0.49,2.80]
N	1312	1140	788
chi2	33.95	25.65	13.06

Note: Exponentiated coefficients; 95% confidence intervals in brackets
*p < .05; **p < .01; ***p < .001 (two-tailed tests)

Results: Parenthood's Effect on Substance Use Outcomes

I turn now to consider the relationship between the transition to parenthood and substance use. Table 13 presents the results of being a parent on the number of drugs the

respondent uses (a count outcome), whether or not the respondent has binged on alcohol since the last interview (a binary outcome), and how often the respondent uses marijuana (an ordinal variable), by gender. Because number of drugs is a count outcome, a fixed effect Poisson model was used, and the results are presented as incident rate ratios. All binging models were analyzed with a logistic fixed effects model, and the effects are reported as odds ratios. Frequency of marijuana use was analyzed with a fixed effects OLS regression and effects are reported as b-coefficients.

Parenthood is significantly and negatively related to the number of drugs a woman uses as well as how frequently she uses marijuana. Men's substance use and women's odds of binging are not affected by the transition to parenthood. These results support Hypotheses 3 and 5. These hypotheses stated that a woman will have lower rates of substance use when she is a mother, and that a man's substance use will not change significantly when he becomes a father, respectively. When a woman is a mother, the number of drugs she uses decreases by 45%, her odds of binge drinking decrease by 31%, and the frequency of her marijuana use decreases by .69 units. All three measures of men's substance use are associated with significant increases when they are in a romantic relationship; thus a man is more likely to binge drink, use a greater number of drugs, and use marijuana more frequently when he is in a relationship compared to when he is not. For females, partnership status is unrelated to their substance use. When males are attending school, they are significantly more likely to curb their use of marijuana; however, working significantly increases the odds of binge drinking for both men and women.

Table 13. Fixed Effect Models of Substance Use Outcomes and Parent Status, by Gender

	Number of Drugs (IRR)		Binged on Alcohol (OR)		Frequency of Marijuana Use (b-coef)	
	Males	Females	Males	Females	Males	Females
Parent (v. Not a parent)	1.01	0.55 ***	1.00	0.69	-0.01	-0.69 **
	[0.89,1.13]	[0.41,0.75]	[0.80,1.24]	[0.42,1.14]	[-0.21,0.19]	[-1.10,-0.27]
In Partnership (v. Single)	1.17 ***	0.95	1.42 ***	1.13	0.21 ***	0.03
	[1.08,1.26]	[0.77,1.17]	[1.21,1.65]	[0.74,1.73]	[0.12,0.30]	[-0.18,0.25]
16-17 (v. 14-15)	0.96	1.06	1.57 *	1.24	0.05	0.05
	[0.77,1.19]	[0.61,1.87]	[1.11,2.24]	[0.51,3.00]	[-0.18,0.28]	[-0.56,0.66]
18-20	0.94	1.05	2.24 ***	2.78 *	0.21	0.34
	[0.75,1.18]	[0.61,1.80]	[1.51,3.32]	[1.05,7.37]	[-0.06,0.49]	[-0.28,0.97]
21+	0.99	1.10	4.09 ***	6.37 ***	0.20	0.21
	[0.78,1.26]	[0.60,2.03]	[2.65,6.31]	[2.29,17.76]	[-0.09,0.48]	[-0.46,0.87]
Attending school (v. Not	0.94	1.11	1.13	1.22	-0.26 ***	0.13
attending school)	[0.87,1.02]	[0.89,1.37]	[0.98,1.30]	[0.87,1.71]	[-0.36,-0.16]	[-0.11,0.37]
Working (v. Not working)	1.03	1.02	1.73 ***	1.44 *	-0.12	0.03
	[0.95,1.13]	[0.82,1.26]	[1.47,2.02]	[1.04,1.99]	[-0.25,0.00]	[-0.16,0.23]
Exposure time	1.86 ***	2.07 **	6.09 ***	2.88	1.57 ***	1.16 ***
	[1.61,2.14]	[1.22,3.52]	[4.86,7.63]	[0.96,8.61]	[1.37,1.77]	[0.67,1.66]
Constant	-	-	-	-	1.41 ***	1.08 *
					[1.14,1.69]	[0.19,1.97]
N	8232	1320	7478	1184	10311	1687
chi2	157.76	34.08	471.55	53.46	415.10	42.34

Note: 95% confidence intervals in brackets

*p < .05; **p < .01; ***p < .001 (two-tailed tests)

As suggested previously, perhaps the context of parenthood affects substance use. Table 14 presents the effects of parenthood and residence on substance use. For women, being a mother – regardless of whether she lives with a child or not – is associated with significant reductions in the number of drugs she uses as well as how often she uses marijuana. When a man is a father and living with a child, the number of drugs he uses, as well as how frequently he uses marijuana, significantly decrease. These results partially support Hypothesis 6b which states that an individual will have lower rates of substance use when he/she lives with a child.

Next, Table 15 presents the effects of pregnancy-parenthood states on women's substance use. Although a woman's first pregnancy does not significantly affect the number of drugs she uses (IRR=.80, $p>.05$), she does use significantly fewer drugs once her child is born and she is a mother (IRR=.6, $p<.01$), as well as, when she becomes pregnant again (IRR=.42, $p<.001$). Her odds of binge drinking decrease significantly whenever she is pregnant, whether it is her first pregnancy (OR=.45, $p<.01$) or an additional pregnancy (OR=.36, $p<.001$). Furthermore, her frequency of marijuana use significantly decreases through all of these states. Together, these patterns demonstrate that women curb their substance use as they become mothers. Women particularly curb their use of heavy alcohol consumption during pregnancy, as well as how frequently they use marijuana as they become more entrenched in motherhood (as they move from first pregnancy, to mother of a first child, to mother with an additional pregnancy). These results support Hypothesis 4 which indicated that a woman will have lower rates of substance use when she is pregnant.

Table 14. Fixed Effect Models of Substance Use Outcomes and Parent-Resident Status, by Gender

	Number of Drugs (IRR)		Binged on Alcohol (OR)		Frequency of Marijuana Use (b-coef)	
	Males	Females	Males	Females	Males	Females
Resident, parent (v. Not a parent)	0.77 ** [0.65,0.91]	0.53 *** [0.37,0.75]	0.81 [0.55,1.18]	0.70 [0.38,1.29]	-0.38 ** [-0.62,-0.13]	-0.63 *** [-0.97,-0.29]
Nonresident, parent	1.12 [0.95,1.32]	0.61 * [0.39,0.95]	1.10 [0.84,1.44]	0.66 [0.31,1.43]	0.14 [-0.04,0.33]	-0.87 ** [-1.45,-0.29]
In Partnership (v. Single)	1.18 *** [1.07,1.30]	0.95 [0.77,1.17]	1.44 *** [1.22,1.70]	1.13 [0.84,1.53]	0.23 *** [0.12,0.34]	0.03 [-0.23,0.29]
16-17 (v. 14-15)	0.96 [0.79,1.16]	1.06 [0.64,1.74]	1.58 * [1.11,2.23]	1.24 [0.42,3.69]	0.04 [-0.23,0.31]	0.06 [-0.65,0.77]
18-20	0.93 [0.74,1.17]	1.04 [0.61,1.78]	2.24 *** [1.49,3.35]	2.78 [0.86,8.99]	0.20 [-0.07,0.47]	0.35 [-0.41,1.10]
21+	0.98 [0.78,1.23]	1.10 [0.61,1.99]	4.08 *** [2.73,6.10]	6.36 ** [1.88,21.54]	0.18 [-0.08,0.45]	0.19 [-0.55,0.94]
Attending school (v. Not attending school)	0.94 [0.86,1.03]	1.10 [0.90,1.35]	1.13 [0.99,1.28]	1.22 [0.87,1.71]	-0.26 *** [-0.38,-0.15]	0.13 [-0.10,0.36]
Working (v. Not working)	1.04 [0.96,1.13]	1.02 [0.83,1.25]	1.73 *** [1.49,2.01]	1.44 * [1.01,2.05]	-0.11 * [-0.22,-0.01]	0.03 [-0.20,0.26]
Exposure time	1.90 *** [1.69,2.14]	2.11 ** [1.21,3.68]	6.25 *** [5.08,7.69]	2.85 * [1.11,7.34]	1.60 *** [1.40,1.80]	1.12 *** [0.62,1.62]
Constant	-	-	-	-	1.38 *** [1.09,1.67]	1.12 ** [0.31,1.92]
N	8232	1320	7478	1184	10311	1687
chi2	192.78	26.90	978.40	65.77	378.57	75.13

Note : 95% confidence intervals in brackets

*p < .05; **p < .01; ***p < .001 (two-tailed tests)

Table 15. Fixed Effect Models of Substance Use Outcomes and Parent-Pregnancy Status (females only)

	Number of Drugs (IRR)	Binged on Alcohol (OR)	Frequency of Marijuana Use (b-coef)
Pregnant, nonparent (v. Not	0.80	0.45 **	-0.41 *
pregnant and not a parent)	[0.59,1.09]	[0.27,0.74]	[-0.75,-0.08]
Parent, nonpregnant	0.60 **	0.66	-0.70 **
	[0.41,0.87]	[0.37,1.19]	[-1.18,-0.21]
Pregnant, parent	0.42 ***	0.36 ***	-1.01 ***
	[0.28,0.63]	[0.20,0.66]	[-1.48,-0.55]
In Partnership (v. Single)	0.98	1.22	0.09
	[0.78,1.22]	[0.80,1.84]	[-0.18,0.36]
16-17 (v. 14-15)	1.08	1.35	0.09
	[0.71,1.66]	[0.55,3.31]	[-0.59,0.76]
18-20	1.08	3.20 *	0.40
	[0.67,1.74]	[1.09,9.41]	[-0.25,1.06]
21+	1.14	7.62 ***	0.27
	[0.71,1.83]	[2.43,23.93]	[-0.39,0.94]
Attending school (v. Not	1.09	1.19	0.11
attending school)	[0.88,1.34]	[0.80,1.76]	[-0.10,0.32]
Working (v. Not working)	1.00	1.39	0.02
	[0.82,1.23]	[0.99,1.95]	[-0.20,0.23]
Exposure time	2.13 **	3.26 *	1.21 ***
	[1.33,3.40]	[1.10,9.68]	[0.74,1.69]
Constant	-	-	1.06 **
			[0.28,1.83]
N	1320	1184	1687
chi2	60.24	77.34	55.88

Note: 95% confidence intervals in brackets
*p < .05; **p < .01; ***p < .001 (two-tailed tests)

Finally, Table 16 presents the results of pregnancy, parenthood, and residence status for women only. The number of drugs that a woman uses is significantly and negatively associated resident motherhood , regardless of pregnancy status. However, the greatest rate decrease in the number of drugs a woman uses occurs when she is currently a mother, pregnant again, and lives with a child (IRR=.37, p<.001). All three states of pregnancy are significantly and negatively related to binge drinking. Binge drinking is not significantly affected when a woman is not pregnant. Thus, binge drinking is only

affected when mothers are pregnant, and this effect is great enough to overshadow other contexts of a woman's motherhood, such as residency status – further supporting Hypothesis 4. A woman's frequency of marijuana use is negatively related to all of the motherhood states. However, the largest effect is when a woman is a mother, experiencing an additional pregnancy, but *not* living with a child (b= -1.31, p<.001).

Table 16. Fixed Effect Models of Substance Use Outcomes and Parent-Pregnancy-Resident Status (females only)

	Number of Drugs (IRR)	Binged on Alcohol (OR)	Frequency of Marijuana Use (b-coef)
Pregnant, nonparent (v. Not	0.80	0.44 *	-0.41 *
pregnant, and not a parent)	[0.56,1.13]	[0.23,0.87]	[-0.76,-0.06]
Pregnant, resident, parent	0.37 ***	0.40 *	-0.92 ***
	[0.22,0.62]	[0.16,0.97]	[-1.40,-0.43]
Pregnant, nonresident, parent	0.52	0.25 **	-1.31 ***
	[0.27,1.00]	[0.10,0.64]	[-1.89,-0.73]
Nonpregnant, resident, parent	0.59 *	0.61	-0.69 **
	[0.39,0.89]	[0.26,1.43]	[-1.12,-0.25]
Nonpregnant, nonresident, parent	0.61	0.94	-0.69 *
	[0.35,1.07]	[0.40,2.19]	[-1.35,-0.03]
In Partnership (v. Single)	0.98	1.21	0.08
	[0.79,1.22]	[0.81,1.80]	[-0.15,0.31]
16-17 (v. 14-15)	1.07	1.36	0.09
	[0.63,1.83]	[0.53,3.50]	[-0.57,0.75]
18-20	1.07	3.21 *	0.40
	[0.61,1.86]	[1.10,9.36]	[-0.29,1.09]
21+	1.13	7.79 ***	0.26
	[0.60,2.14]	[2.73,22.25]	[-0.44,0.97]
Attending school (v. Not attending	1.08	1.20	0.11
school)	[0.89,1.32]	[0.88,1.63]	[-0.08,0.30]
Working (v. Not working)	1.00	1.39 *	0.02
	[0.80,1.27]	[1.01,1.92]	[-0.19,0.23]
Exposure time	2.17 **	3.50 *	1.19 ***
	[1.36,3.45]	[1.06,11.60]	[0.72,1.66]
Constant	-	-	1.08 **
			[0.36,1.79]
N	1320	1184	1687
chi2	37.84	92.18	70.40

Note: 95% confidence intervals in brackets

*p < .05; **p < .01; ***p < .001 (two-tailed tests)

In summary, these analyses demonstrate that a binary measure of parenthood is not adequate for capturing behavioral changes, particularly for criminal offending. Neither motherhood nor fatherhood brings about significant behavioral changes regarding the odds of criminal offending, and this null finding is consistent across offense types – total, aggressive, and income offending. Yet, the odds of committing any criminal offense, an aggressive offense, and an income offense are in the anticipated negative direction (with the exception of aggressive offending for women). Residency seems to be a better indicator of how criminal behavior relates to parenthood. For instance, being a parent and living with a child is associated with significantly decreased odds of committing any of the three types of offenses for men.

Substance use is clearly affected by the transition to parenthood, particularly among women. This finding is consistent with previous literature (Kreager et al. 2010; Morrison et al. 1998; Gilchrist et al. 1996). Women seem to experience an overall benefit of motherhood regarding substance use, with significant declines in frequency of marijuana use and the number of drugs she uses. This pattern holds even for women who do not live with their children. For a man, resident fatherhood was significantly associated with how often he uses marijuana and the numbers of drugs he uses. Furthermore, pregnancy states are associated with significant declines in a woman's odds of binge drinking, and the number of drugs she uses significantly declines after her initial transition to motherhood post-birth. Frequency of marijuana use is also negatively and significantly associated with each stage of the transition to motherhood. The benefits of being a mother are present even when a mother is *not* living with a child. The fact that

women are experiencing periods of desisted substance use even when they do not reside with a child may suggest that they are trying to "clean up" their act in order to reunite with their child (Opsal 2011). It may also suggest that women are simply more ego invested in the parental role (Allen & Hawkins, 1999) and are able to use it capitalize on their behavior even when significant barriers (such as non-residency) exist.

An unexpected finding regarding pregnancy is that it is a *subsequent* pregnancy rather than the *first* pregnancy that results in stronger behavioral effects. Although mothers are concerned for the safety of their pregnancies and often limit drug use due to these concerns, perhaps the stronger effects of subsequent pregnancies are more indicative of stricter routine activities rather than pregnancy per se. A pregnant mother is likely taking care of household responsibilities – such as childcare, laundry, housekeeping, etc. – that are, as yet, less pressing (or nonexistent) for first-time pregnant women. This effect could also be due to the operationalization of subsequent pregnancy since it does not distinguish between a second or fourth additional pregnancy – only that it occurs *after* the first.

Even though the effects of the transition to parenthood as well as the context of parenthood (residency) were estimated separately for males and females, a comparison of these effects is warranted in order to test whether these effects are significantly different for men compared to women. A z-test of the main effects was calculated for each model presented here. There are no significant gender differences when a binary measure of parenthood status is used to predict offending outcomes; however, gender differences do exist when predicting substance use outcomes, particularly polydrug use and frequency of marijuana use, with the binary parenthood indicator. Once residency was taken into

account, both of these gender differences remain for nonresident parenthood only. There were no significant gender differences among the offending outcome models. A summary of all z-tests is available in Appendix E. Several supplemental analyses were also performed in order to test the robustness of these results. First, race subgroup analyses were performed and are available in Appendix B. I will briefly describe some of the race results here. First, whites (both males and females) were the most likely to respond prosocially to parenthood, followed by Hispanics. Blacks, particularly black women, were not likely to cease offending due to the transition to parenthood. Second, being a nonresident-nonpregnant-mother was associated with increased offending for all women, regardless of race. Third, residency generally resulted in decreased substance use for all groups while nonresidency was associated with increased substance use among black males. Fourth, binge drinking decreased among resident black and Hispanic mothers although not among white mothers. Fifth, romantic relationships generally increase substance use. Two other supplemental results are located in Appendices C and D. In Appendix C presents results of logged outcomes with a fixed effect ordinary least squares model (xtreg), and Appendix D presents analyses of substance use including the baseline as well as a binary measure of number of drugs being used. Results presented in Appendices C and D are consistent with the findings presented in this chapter.

The next chapter will explore two additional contexts of parenthood that may further explain these effects. First, I will introduce relationship context. As demonstrated, partnership is associated with significant increases in one's odds of offending as well as substance use. Dating a partner who encourages participation in criminal activity has long been associated with female participation in offending

(Steffensmeier and Allan 1996; Leverentz 2006), and accounting for whether a romantic partner is influencing the behavior of the respondent is important and a more nuanced conceptualization of partnership. Second, I will incorporate parental orientation. This measure captures how important the parental identity is to the respondent. It is this identity salience that desistance researchers argue should be the most important in bringing about behavioral change (Giordano et al. 2002; Sampson & Laub 1990, 2003).

Chapter 4

Exploring Complexity of Parenthood: Parental Orientation and Antisocial Romantic Partner

This chapter presents models that add complexity to the relationship status indicator as well as parenthood status. Figure 6 represents the time that females and males spend in each transition (by person-waves). Similarly to Figure 5 in Chapter 3, women report having a parental orientation (at any level) more often than males (37.42% to 26.88%, respectively). Males with parental orientation report a moderate level of parental orientation (11.72%) more frequently than a high (7.10%) or low level (8.15%). Females with parental orientation report a moderate (14.12%) or high (14.12%) parental orientation more frequently than a low level (9.17%). Women report being in relationships more often than men (70.94% to 51.98%, respectively). When in relationships, both females and males report dating partners who do not exert antisocial influence more often than dating partners who encourage antisocial behavior (52.74% compared to 17.73% for females, and 44.56% to 7.62% for males, respectively). Compared to Figure 5, there is a small loss of person-waves for both women and men (loss of 23 person-waves for women and 367 person-waves for men). This loss is due to the utilization of two different measures for parenthood status and parental orientation, as well as, the operationalization of the parent status indicator. Individuals were coded as parents for all following waves once they reported having a child. However, individuals do move in and out of parenthood (due to the death of the child, termination of parental

rights, etc.). If an individual reports at Time 3 that he or she is a parent, but for some reason does not report having a child at Time 5, he or she is counted as a parent from Time 3 on, yet skips the parental orientation measure at Time 5. This means that the same individual could be counted as a parent while at the same time reporting no parental orientation at Time 5. In order to avoid this issue, the analyses in this chapter use a binary measure of parental orientation (any level of parental orientation versus none) rather than the binary parent indicator (which was used in Chapter 3 analyses).

The findings for this chapter will be presented in a series of models. First, I will present the results when partnership is dummied into partnership with an antisocial influencing partner or with a partner that does not exert any antisocial influence and parental orientation is a binary dummy indicator of whether the respondent had any level of parental orientation or not. This model is similar to those presented in Table 9, Chapter 3. Second, I will present the results when parental orientation is disaggregated into three separate levels (low, moderate, and high) and relationship status is a binary indicator of whether the respondent is in a relationship or not. Third, I will present the results when both parental orientation and partnership are disaggregated.

Results: Effects of Parental Orientation and Antisocial Romantic Relationship Influence on Offending Outcomes

Table 17 demonstrates that for a man, merely having a romantic partner increases the odds of committing a criminal offense, regardless of whether his partner is an antisocial influence or not. However, the results do show that the associated increase in

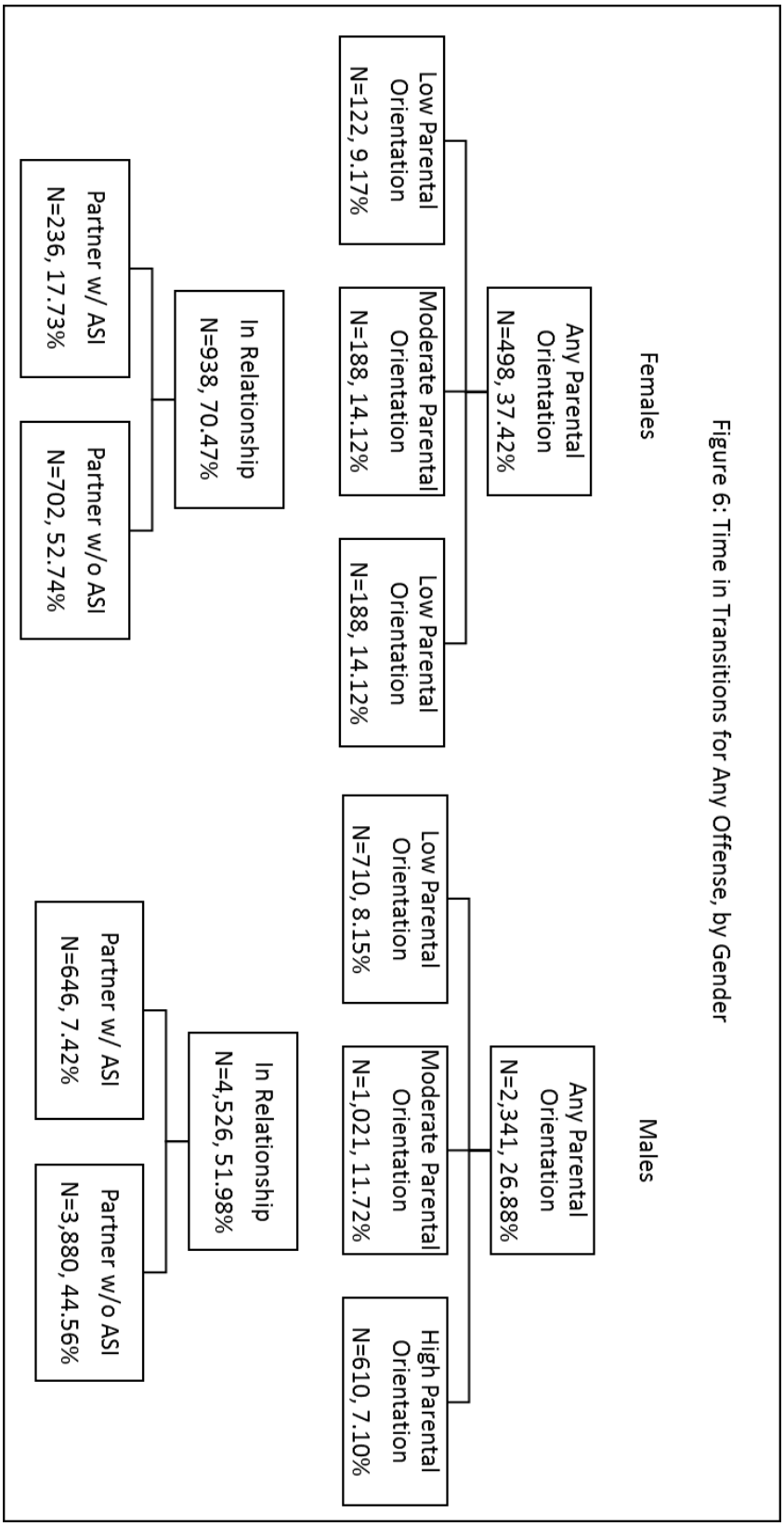


Figure 6: Time in Transitions for Any Offense, by Gender
Females
Any Parental Orientation N=498, 37.42%
Low Parental Orientation N=122, 9.17%
Moderate Parental Orientation N=188, 14.12%
Low Parental Orientation N=188, 14.12%
In Relationship N=938, 70.47%
Partner w/ ASI N=236, 17.73%
Partner w/o ASI N=702, 52.74%
Males
Any Parental Orientation N=2,341, 26.88%
Low Parental Orientation N=710, 8.15%
Moderate Parental Orientation N=1,021, 11.72%
High Parental Orientation N=610, 7.10%
In Relationship N=4,526, 51.98%
Partner w/ ASI N=646, 7.42%
Partner w/o ASI N=3,880, 44.56%

Table 17. Fixed Effect Logistic Regression of Offending Outcomes, Any Parental Orientation, and Antisocial Relationship Influence, by Gender

	Any Offense		Any Aggressive Offense		Any Income Offense	
	Males	Females	Males	Females	Males	Females
Any PO (v. No PO)	0.91	0.67	0.88	1.05	0.81 *	0.65
	[0.75,1.10]	[0.40,1.13]	[0.72,1.08]	[0.65,1.71]	[0.65,1.00]	[0.28,1.52]
Partner w/ ASI (v. Single)	2.53 ***	2.25 **	1.87 ***	2.49 ***	2.44 ***	3.10 ***
	[2.01,3.18]	[1.33,3.80]	[1.48,2.38]	[1.51,4.10]	[1.87,3.17]	[1.70,5.68]
Partner w/o ASI	1.38 ***	1.10	1.26 ***	1.19	1.44 ***	1.20
	[1.20,1.57]	[0.76,1.59]	[1.11,1.43]	[0.72,1.96]	[1.23,1.70]	[0.68,2.14]
16-17 (v. 14-15)	0.62 ***	0.89	0.66 **	0.78	0.59 **	0.99
	[0.49,0.79]	[0.35,2.24]	[0.49,0.91]	[0.39,1.54]	[0.42,0.84]	[0.40,2.50]
18-20	0.39 ***	0.64	0.35 ***	0.51 *	0.42 ***	0.84
	[0.30,0.52]	[0.25,1.67]	[0.25,0.50]	[0.27,0.95]	[0.28,0.61]	[0.29,2.44]
21+	0.37 ***	0.59	0.28 ***	0.32 **	0.41 ***	0.71
	[0.27,0.50]	[0.21,1.65]	[0.19,0.39]	[0.14,0.72]	[0.27,0.63]	[0.21,2.44]
Attending school (v. Not attending school)	1.14	0.95	1.14 *	0.95	1.04	1.13
	[0.99,1.30]	[0.67,1.35]	[1.00,1.30]	[0.66,1.38]	[0.88,1.22]	[0.70,1.83]
Working (v. Not working)	0.99	1.31	1.01	1.19	0.89	1.19
	[0.86,1.13]	[0.98,1.74]	[0.89,1.14]	[0.84,1.68]	[0.76,1.05]	[0.91,1.57]
Exposure time	1.05	0.45 *	0.71 ***	0.40 *	2.19 ***	1.04
	[0.87,1.27]	[0.24,0.85]	[0.59,0.86]	[0.19,0.84]	[1.75,2.73]	[0.50,2.14]
N	8708	1331	8533	1155	7156	809
chi2	165.88	32.64	213.14	48.68	131.68	28.98

Note : Exponentiated coefficients; 95% confidence intervals in brackets

*p < .05; **p < .01; ***p < .001 (two-tailed tests)

his odds of offending is greater when his partner is an antisocial influence. For example, a man's odds of committing an income offense in the recall period when he is with a partner who exerts no antisocial influence is associated with a 44% (OR=1.44, p<.001) increase; yet, when he is partnered with an antisocial influencing partner, the odds of committing an offense are associated with a 244% (OR=2.44, p<.001) increase. This pattern holds across all of the outcomes for men. For women, the results are quite clear that having an antisocial influencing partner is associated with significant increases in her odds of offending. In fact, the effect of an antisocial influencing partner is fairly consistent at nearly two and half times her odds when she is single. For income offending, her odds increase threefold. The effect of having a parental orientation (here as a measure of parenthood) is not significantly related to offending, yet results are generally in the anticipated negative direction. These parenthood results are similar to those in Table 9, and do not support Hypothesis 8, which hypothesized that the effect of parenthood would be stronger when the antisocial influence of one's partner was controlled.

Table 18 presents the results when partnership returns to a dichotomous variable, but parenthood is disaggregated by parental orientation. Previous results did not find a significant effect of being a parent on the odds of offending, and the results in Table 18 do not show any consistent effects based on one's level of parental orientation either. These results do not support Hypothesis 7 which stated that when a parent has high parental orientation, he or she will have the lowest odds of offending.

Table 18. Fixed Effect Logistic Regression of Offending Outcomes and Parental Orientation, by Gender

	Any Offense		Any Aggressive Offense		Any Income Offense	
	Males	Females	Males	Females	Males	Females
No PO (v. Low PO)	1.14	1.41	1.15	1.15	1.17	1.53
	[0.88,1.48]	[0.76,2.64]	[0.89,1.48]	[0.64,2.08]	[0.90,1.51]	[0.68,3.44]
Moderate PO	1.01	0.90	1.01	1.36	0.90	1.17
	[0.76,1.34]	[0.56,1.43]	[0.81,1.27]	[0.68,2.73]	[0.70,1.14]	[0.61,2.25]
High PO	1.09	0.86	1.01	1.14	0.89	0.77
	[0.80,1.47]	[0.45,1.66]	[0.74,1.37]	[0.60,2.16]	[0.66,1.21]	[0.36,1.68]
In Partnership (v. Single)	1.49 ***	1.32	1.34 ***	1.42	1.58 ***	1.62 *
	[1.31,1.69]	[1.00,1.74]	[1.19,1.51]	[0.95,2.12]	[1.35,1.85]	[0.99,2.66]
16-17 (v. 14-15)	0.62 ***	0.88	0.67 **	0.79	0.60 ***	0.94
	[0.48,0.82]	[0.41,1.89]	[0.51,0.87]	[0.47,1.33]	[0.44,0.81]	[0.39,2.28]
18-20	0.39 ***	0.66	0.35 ***	0.53	0.42 ***	0.82
	[0.29,0.53]	[0.31,1.41]	[0.25,0.49]	[0.27,1.07]	[0.28,0.62]	[0.34,1.94]
21+	0.37 ***	0.59	0.28 ***	0.32 **	0.41 ***	0.65
	[0.27,0.51]	[0.23,1.51]	[0.20,0.39]	[0.14,0.76]	[0.28,0.61]	[0.23,1.89]
Attending school (v. Not	1.14 *	0.95	1.15 *	0.95	1.03	1.10
attending school)	[1.01,1.29]	[0.62,1.46]	[1.02,1.29]	[0.64,1.41]	[0.88,1.21]	[0.70,1.73]
Working (v. Not working)	1.00	1.31 *	1.02	1.19	0.90	1.16
	[0.85,1.17]	[1.00,1.71]	[0.88,1.18]	[0.87,1.63]	[0.78,1.05]	[0.84,1.59]
Exposure time	1.06	0.46 *	0.71 **	0.41 ***	2.18 ***	1.07
	[0.88,1.28]	[0.23,0.90]	[0.58,0.88]	[0.25,0.68]	[1.72,2.76]	[0.56,2.05]
N	8708	1331	8533	1155	7156	809
chi2	173.36	31.73	191.37	37.74	110.61	14.96

Note : Exponentiated coefficients; 95% confidence intervals in brackets

*p < .05; **p < .01; ***p < .001 (two-tailed tests)

Table 19 includes both the antisocial influence of one's partner and one's level of parental orientation. The effects of parental orientation change very little when the antisocial influence of one's partner is controlled. Based on these results and those from the previous chapter, the context of parenthood (such as residency with a child) seems to be a better predictor of offending behavior than parental orientation. Revisiting Hypothesis 8, even when parenthood is disaggregated into varying levels of parental orientation, these effects do not become stronger once partner's antisocial influence is included.

Results: Effects of Parental Orientation and Antisocial Romantic Relationship Influence on Substance Use Outcomes

The same model progression from Tables 17—19, is repeated for substance use outcomes in Tables 20—22. Table 20 demonstrates the relationship between the simple dichotomous parental orientation indicator and substance use while controlling for the antisocial influence of the subject's romantic partner. Results indicate that having a parental orientation (i.e. the person is a parent) is associated with a significant decrease in the number of drugs a woman uses (IRR=.57, $p<.001$), as well as a .60 unit decrease in her frequency of marijuana use. Although not significant, the likelihood of binge drinking is in the anticipated direction as well (OR=.67, $p>.05$). When a woman is in a relationship with an antisocial influencing partner her odds of binge drinking increase significantly (OR=2.24, $p<.01$), and she uses marijuana significantly more frequently (b=.61, $p<.001$). Although not statistically significant, the number of drugs she uses also appears to increase when she dates an antisocial influencing partner (IRR=1.26, $p>.05$).

Table 19. Fixed Effect Logistic Regression of Offending Outcomes, Parental Orientation, and Antisocial Relationship Influence, by Gender

	Any Offense		Any Aggressive Offense		Any Income Offense	
	Males	Females	Males	Females	Males	Females
No PO (v. Low PO)	1.13	1.37	1.14	1.11	1.15	1.50
	[0.87,1.46]	[0.74,2.53]	[0.92,1.41]	[0.66,1.85]	[0.88,1.50]	[0.54,4.18]
Moderate PO	1.01	0.89	1.01	1.34	0.89	1.14
	[0.80,1.28]	[0.50,1.56]	[0.78,1.31]	[0.72,2.48]	[0.67,1.18]	[0.53,2.44]
High PO	1.08	0.89	1.00	1.13	0.88	0.77
	[0.82,1.44]	[0.52,1.50]	[0.74,1.37]	[0.63,2.05]	[0.63,1.23]	[0.36,1.66]
Partner w/ ASI (v. Single)	2.53 ***	2.25 ***	1.87 ***	2.47 ***	2.44 ***	3.08 ***
	[2.03,3.15]	[1.50,3.38]	[1.55,2.27]	[1.59,3.84]	[1.91,3.12]	[1.65,5.76]
Partner w/o ASI	1.38 ***	1.10	1.26 ***	1.18	1.45 ***	1.19
	[1.22,1.56]	[0.79,1.53]	[1.11,1.43]	[0.78,1.79]	[1.24,1.69]	[0.65,2.19]
16-17 (v. 14-15)	0.62 ***	0.89	0.66 *	0.78	0.59 ***	1.01
	[0.47,0.82]	[0.40,1.99]	[0.48,0.92]	[0.33,1.86]	[0.44,0.80]	[0.33,3.11]
18-20	0.39 ***	0.64	0.35 ***	0.51	0.42 ***	0.85
	[0.27,0.56]	[0.29,1.43]	[0.25,0.49]	[0.19,1.36]	[0.29,0.59]	[0.27,2.68]
21+	0.37 ***	0.59	0.28 ***	0.32 *	0.41 ***	0.71
	[0.25,0.53]	[0.24,1.41]	[0.20,0.39]	[0.10,0.97]	[0.28,0.60]	[0.21,2.48]
Attending school (v. Not	1.14 *	0.95	1.14	0.95	1.04	1.13
attending school)	[1.01,1.28]	[0.70,1.30]	[1.00,1.31]	[0.65,1.39]	[0.88,1.22]	[0.74,1.73]
Working (v. Not working)	0.99	1.30	1.01	1.19	0.89	1.17
	[0.86,1.13]	[0.96,1.77]	[0.86,1.18]	[0.88,1.62]	[0.75,1.06]	[0.82,1.69]
Exposure time	1.05	0.45 *	0.71 **	0.40 **	2.18 ***	1.04
	[0.88,1.26]	[0.24,0.84]	[0.57,0.88]	[0.21,0.78]	[1.79,2.67]	[0.41,2.61]
N	8708	1331	8533	1155	7156	809
chi2	224.7	50.58	344.85	61.32	172.4	32.42

Note: Exponentiated coefficients; 95% confidence intervals in brackets

*p < .05; **p < .01; ***p < .001 (two-tailed tests)

Table 20. Fixed Effect Models of Substance Use Outcomes, Any Parental Orientation, and Antisocial Relationship Influence, by Gender

	Number of Drugs (IRR)		Binged on Alcohol (OR)		Frequency of Marijuana Use (b-coef)	
	Males	Females	Males	Females	Males	Females
Any PO (v. No PO)	1.01	0.57 ***	1.02	0.67	-0.06	-0.60 ***
	[0.89,1.16]	[0.41,0.79]	[0.77,1.35]	[0.37,1.21]	[-0.21,0.09]	[-0.95,-0.25]
Partner w/ ASI (v. Single)	1.34 ***	1.26	2.59 ***	2.24 **	0.57 ***	0.61 ***
	[1.19,1.51]	[1.00,1.59]	[2.09,3.19]	[1.26,4.00]	[0.38,0.76]	[0.28,0.95]
Partner w/o ASI	1.11 *	0.81	1.26 **	0.88	0.16 ***	-0.11
	[1.02,1.21]	[0.62,1.06]	[1.09,1.46]	[0.59,1.33]	[0.07,0.25]	[-0.39,0.17]
16-17 (v. 14-15)	0.96	1.09	1.55 *	1.32	0.04	0.10
	[0.79,1.17]	[0.68,1.74]	[1.05,2.30]	[0.56,3.12]	[-0.17,0.25]	[-0.43,0.63]
18-20	0.95	1.04	2.26 ***	2.90 *	0.22 *	0.32
	[0.76,1.19]	[0.63,1.72]	[1.50,3.39]	[1.16,7.24]	[0.02,0.43]	[-0.27,0.90]
21+	1.00	1.10	4.10 ***	6.80 ***	0.21	0.18
	[0.77,1.28]	[0.62,1.97]	[2.72,6.19]	[2.62,17.64]	[-0.04,0.46]	[-0.48,0.84]
Attending school (v. Not	0.94	1.10	1.13	1.10	-0.27 ***	0.13
attending school)	[0.87,1.03]	[0.93,1.30]	[0.98,1.31]	[0.77,1.58]	[-0.39,-0.16]	[-0.08,0.34]
Working (v. Not working)	1.03	1.03	1.74 ***	1.50	-0.13 *	0.05
	[0.93,1.15]	[0.84,1.25]	[1.48,2.05]	[0.99,2.25]	[-0.24,-0.01]	[-0.15,0.26]
Exposure time	1.87 ***	2.14 **	6.14 ***	2.53	1.55 ***	1.15 ***
	[1.64,2.13]	[1.29,3.55]	[4.82,7.83]	[0.91,7.05]	[1.35,1.76]	[0.72,1.58]
Constant	-	-	-	-	1.43 ***	1.04 **
					[1.18,1.67]	[0.40,1.68]
N	8117	1340	7383	1198	10209	1708
chi2	194.82	53.32	591.05	68.45	544.34	61.16

Note: 95% confidence intervals in brackets

*p < .05; **p < .01; ***p < .001 (two-tailed tests)

Again, for a man, being in a relationship – whether one with an antisocial influencing partner or not – is significantly and positively related to all substance use outcomes even though these effects are much larger for negatively influencing relationships. Similar to the offending model comparison, the substance use model estimates are nearly identical to those from Table 13 in Chapter 13, in which partner's antisocial influence is not controlled.

In Table 21, when partnership is collapsed into a dichotomous variable and parenthood is disaggregated by level of parental orientation, the overall negative association of not having a parental orientation, polydrug use, and frequency of marijuana use is apparent for women. While low parental orientation is not significantly different from moderate and high parental orientation, low parental orientation *is* significantly different from having no parental orientation. This indicates that merely having a parental orientation is a better predictor of substance use than one's level of parental orientation. These results are similar to results with a binary indicator of parenthood from Chapter 3. For a man, substance use is not significantly affected by his level of parental orientation. These results do not support to Hypothesis 7 – that rates of substance use will be lowest with a high level of parental orientation.

In Table 22, when both parental orientation and relationship influence are included in the model, there remains a significant and positive relationship between the number of drugs a woman uses, as well as how frequently she uses marijuana, and no parental orientation. Again, there are no signs that parental orientation significantly affects a man's substance use. Rather, a man's substance use is positively and significantly related to being in a romantic relationship (both antisocial influencing

Table 21. Fixed Effect Models of Substance Use Outcomes and Parental Orientation, by Gender

	Number of Drugs (IRR)		Binged on Alcohol (OR)		Frequency of Marijuana Use (b-coef)	
	Males	Females	Males	Females	Males	Females
No PO (v. Low PO)	0.97	1.72 *	0.96	1.25	0.07	0.64 **
	[0.86,1.09]	[1.01,2.95]	[0.73,1.27]	[0.55,2.82]	[-0.13,0.26]	[0.20,1.08]
Moderate PO	0.97	1.10	0.96	0.95	0.04	0.11
	[0.85,1.11]	[0.69,1.74]	[0.72,1.28]	[0.48,1.91]	[-0.14,0.21]	[-0.23,0.45]
High PO	0.95	0.92	0.93	0.64	-0.06	-0.07
	[0.79,1.13]	[0.61,1.38]	[0.69,1.27]	[0.28,1.48]	[-0.25,0.13]	[-0.40,0.26]
In Partnership (v. Single)	1.16 ***	0.94	1.41 ***	1.13	0.22 ***	0.03
	[1.06,1.27]	[0.76,1.15]	[1.19,1.68]	[0.76,1.68]	[0.11,0.33]	[-0.20,0.27]
16-17 (v. 14-15)	0.96	1.07	1.56 *	1.20	0.04	0.07
	[0.79,1.17]	[0.69,1.65]	[1.09,2.25]	[0.42,3.48]	[-0.19,0.28]	[-0.57,0.72]
18-20	0.95	1.02	2.24 ***	2.64	0.22	0.32
	[0.73,1.23]	[0.65,1.62]	[1.59,3.16]	[0.86,8.13]	[-0.03,0.47]	[-0.30,0.94]
21+	0.99	1.04	4.08 ***	6.12 **	0.21	0.18
	[0.76,1.28]	[0.65,1.66]	[2.75,6.07]	[1.88,19.96]	[-0.05,0.46]	[-0.48,0.84]
Attending school (v. Not	0.94	1.11	1.13	1.13	-0.27 ***	0.14
attending school)	[0.86,1.04]	[0.89,1.38]	[0.98,1.30]	[0.82,1.54]	[-0.38,-0.16]	[-0.04,0.31]
Working (v. Not working)	1.04	1.02	1.76 ***	1.45 *	-0.12 *	0.06
	[0.96,1.12]	[0.81,1.30]	[1.48,2.09]	[1.02,2.06]	[-0.23,-0.01]	[-0.16,0.27]
Exposure time	1.86 ***	2.14 ***	6.15 ***	2.58	1.55 ***	1.15 ***
	[1.64,2.11]	[1.44,3.19]	[4.79,7.90]	[0.97,6.86]	[1.40,1.71]	[0.59,1.70]
Constant	-	-	-	-	1.43 ***	1.06 **
					[1.18,1.67]	[0.36,1.76]
N	8117	1340	7383	1198	10209	1708
chi2	211.43	62.27	557.43	61.23	605.15	60.85

Note : 95% confidence intervals in brackets

*p < .05; **p < .01; ***p < .001 (two-tailed tests)

Table 22. Fixed Effect Models of Substance Use, Parental Orientation, and Antisocial Relationship Influence, by Gender

	Number of Drugs (IRR)		Binged on Alcohol (OR)		Frequency of Marijuana Use (b-coef)	
	Males	Females	Males	Females	Males	Females
No PO (v. Low PO)	0.96	1.74 **	0.93	1.19	0.05	0.60 **
	[0.84,1.09]	[1.18,2.56]	[0.63,1.36]	[0.50,2.84]	[-0.15,0.26]	[0.20,1.00]
Moderate PO	0.96	1.07	0.93	0.92	0.03	0.09
	[0.85,1.09]	[0.75,1.54]	[0.69,1.26]	[0.51,1.66]	[-0.14,0.20]	[-0.28,0.46]
High PO	0.94	0.93	0.91	0.63	-0.07	-0.08
	[0.79,1.12]	[0.64,1.34]	[0.61,1.34]	[0.30,1.31]	[-0.25,0.11]	[-0.37,0.22]
Partner w/ ASI (v. Single)	1.34 ***	1.25	2.59 ***	2.24 ***	0.57 ***	0.61 **
	[1.19,1.52]	[0.99,1.59]	[2.07,3.25]	[1.44,3.48]	[0.35,0.79]	[0.22,1.00]
Partner w/o ASI	1.11 **	0.81	1.26 **	0.88	0.16 **	-0.11
	[1.03,1.20]	[0.64,1.03]	[1.09,1.46]	[0.57,1.36]	[0.04,0.27]	[-0.37,0.14]
16-17 (v. 14-15)	0.96	1.09	1.55 *	1.31	0.04	0.10
	[0.77,1.20]	[0.67,1.78]	[1.04,2.31]	[0.61,2.81]	[-0.17,0.25]	[-0.53,0.73]
18-20	0.95	1.04	2.26 ***	2.88 *	0.22	0.32
	[0.74,1.23]	[0.64,1.71]	[1.48,3.44]	[1.02,8.20]	[-0.03,0.48]	[-0.35,0.99]
21+	1.00	1.10	4.10 ***	6.80 ***	0.21	0.19
	[0.77,1.29]	[0.63,1.92]	[2.61,6.47]	[2.53,18.28]	[-0.07,0.49]	[-0.52,0.89]
Attending school (v. Not	0.94	1.10	1.13	1.12	-0.27 ***	0.13
attending school)	[0.87,1.03]	[0.88,1.38]	[0.99,1.29]	[0.78,1.60]	[-0.40,-0.15]	[-0.10,0.36]
Working (v. Not working)	1.03	1.03	1.74 ***	1.48 *	-0.13 *	0.05
	[0.97,1.10]	[0.82,1.28]	[1.49,2.04]	[1.04,2.11]	[-0.25,-0.00]	[-0.16,0.27]
Exposure time	1.87 ***	2.14 **	6.13 ***	2.52	1.55 ***	1.15 ***
	[1.67,2.09]	[1.32,3.48]	[4.94,7.61]	[0.99,6.39]	[1.35,1.75]	[0.67,1.63]
Constant	-	-	-	-	1.43 ***	1.04 **
					[1.18,1.68]	[0.31,1.77]
N	8117	1340	7383	1198	10209	1708
chi2	254.54	60.97	984.86	82.97	493.42	97.71

Note: 95% confidence intervals in brackets

*p < .05; **p < .01; ***p < .001 (two-tailed tests)

relationships as well as non-influencing relationships, although the effects are much larger for negatively influencing relationships). For a woman, being in a negatively influencing relationship is associated with significant increases in binging and frequency of marijuana use. Furthermore, a comparison of estimates of parental orientation across Tables 21 and 22 reveals that these estimates are very similar when antisocial influence is and is not included in the models, contrary to Hypothesis 8.

In summary, these models tease out often unmeasured aspects of parenthood as well as romantic relationships. Rather than using simple dichotomous measures of parenthood and partnership, these models disaggregate parenthood into three levels of parental orientation and classify one's romantic relationship by degree of antisocial influence. Several important findings emerge from these results.

First, motherhood (regardless of one's level of parental orientation) is associated with significant decreases in the number of drugs a woman uses as well as how frequently she uses marijuana. And although not statistically significant, a woman's odds of binge drinking are in the expected negative direction with motherhood as well. Paired with the results from Chapter 3, binge drinking seems to be much more affected by whether or not a woman is pregnant rather than her level of parental orientation. The results for men are much less promising. A man's level of parental orientation is not significantly associated with any change in any of the three substance use measures. While fatherhood and parental orientation are not associated with decreases in substance use, it is also important to note that fatherhood is not associated with increases in substance use either.

Romantic relationships do not seem to inhibit men's substance use either. Even in relationships with a partner who does not exert any antisocial influence on the respondent, a man's substance use significantly increases. There are several possible reasons for these results. First, perhaps this sample of high-risk men simply does not respond to romantic relationships in the same ways that other samples of men would. Second, perhaps these men are in romantic relationships with other substance users or those who do not disapprove of substance use. In this case, the partner may not actively encourage the subject to engage in antisocial activities, but may not actively discourage substance use either. At the very least, this type of relationship could create an environment in which substance use is seen as appropriate, and at worst lead to a couple engaging in substance use together; however, in neither instance is the romantic partner encouraging the subject to engage in antisocial behaviors (such as selling drugs). Third, perhaps these men would be more responsive to partners if they were cohabitating, and merely accounting for the partner's antisocial influence is not enough. While cohabitation has been shown to lead to reductions in crime and substance use (Duncan et al. 2006; Lonardo et al. 2010), cohabitation among this sample does not lead to the expected declines shown in other studies (analyses not shown). In fact, among these supplemental cohabitation analyses, cohabitation was not statistically different from partnership.

On the other hand, romantic relationships seem to play a significant role in women's substance use. Antisocial influencing partners are particularly bad for women, as they are associated with significant increases in all measures of substance use as well as significant increases the odds of committing any of the three types of criminal

offenses. This finding supports a long history of feminist criminology literature that demonstrates that significant men (family members, romantic partners, and friends) are key facilitators of women's criminal offending and substance use (Steffensmeier and Allan 1996; Leverentz 2006; Giordano 2009). Fourth, having a parental orientation (i.e. being a parent) does not significantly affect the odds of committing a criminal offense for either men or women. Parenthood remains insignificant even when partner antisocial influence is controlled. More surprising is that parental orientation – a measure that taps into the importance of one's role as a parent – is not significantly related to one's odds of offending, even when disaggregated into varying levels.

The effects of one's parental orientation as well as the antisocial influence of one's partner were estimated separately for males and females; however, a comparison of these effects is warranted in order to test whether these effects are significantly different for men compared to women. A z-test of the main effects was calculated for each model presented here. Significant gender differences occur for no parental orientation and romantic partnership with a partner who exerts no antisocial influence in models which predict polydrug use and frequency of marijuana use. There were no significant gender differences among the offending outcome models. A summary of all z-tests is available in Appendix E. Several supplemental analyses were also performed in order to test the robustness of these results. These supplemental results include: race subgroup analysis, logged outcomes using a fixed effect ordinary least squares model (xtreg), and analysis of substance use including the baseline as well as binary measure of drug use (Appendices B, C, and D, respectively). While the results in Appendices C and D are consistent with the findings presented in this chapter, there are several race differences I will briefly

describe here. First, as with the supplemental race analyses of Chapter 3, whites (particularly males) were the most likely to respond prosocially to parenthood. Second, romantic partners who encourage antisocial behavior are negative influences and increase offending among all race-gender subgroups, but particularly for Hispanic females. Third, higher levels of parental orientation are generally associated with decreases in substance use for all groups and all types of substance use (except for frequency of marijuana use).

In the following chapter, I will summarize the key findings and how they relate to the literature regarding the parenthood-desistance literature. I will also describe some of the limitations to this study and explore future directions to this research question.

Chapter 5

Discussion, future directions

There were several goals to this study. First, it set out to explore the relationship between parenthood and desistance among a contemporary sample of high risk US adolescents. Theoretically, this sample stands to gain the most from parenthood by capitalizing on the "hook for change" that this role provides. As Kreager et al. (2010) and Edin and Kefalas (2005) argue, the effects of motherhood may be stronger among some samples than others, particularly disadvantaged women for motherhood is a role they feel they can fulfill. The current study's sample is not only disadvantaged, but is also engaged in serious offending. If parenthood were to have any prosocial effect on criminal behavior, it is likely to occur among this sample because their behavior has the potential to change dramatically (unlike other samples of minor and sporadic offenders whose behavior does not have the potential to change as dramatically upon becoming a parent).

Second, it sought to explore the effects of parenthood for men and women in the same study. Most studies of US samples have explored motherhood and fatherhood separately, and have not been able to compare effects between women and men (Kreager et al. 2010; Hope et al. 2003). Several non-US samples have been able to include both men and women in the same study (Blokland and Nieuwbeerta 2005; Zoutwelle-Terovan et al. 2012; Monsbakken et al. 2013). While important to the literature, these studies can only inform, rather than speak for, other studies that use a US population. Although the Pathways to Desistance Study does have a relatively small sample of women compared to

men, statistically significant results do occur, indicating that motherhood has a strong effect on women's behavior, particularly their substance use.

Third, it expands the conceptualization of parenthood beyond an "event". Not all parents are created equally, nor do they experience parenthood in the same way. Thus, this study uses a series of dummy variables to explore the different stages and contexts of parenthood. These stages highlight how behavior may begin changing prior to the birth of a child and how it may change after the birth of a child. Thus, it explores how one traverses the stages from non-parenthood, to pregnancy, to parenthood, and to additional pregnancies. Furthermore, it explores the context of parenthood, particularly residential parenthood and parental orientation, which may operate differently for men and women and have varying associations with multiple outcomes. These analyses also control for other life transitions that could simultaneously affect parenthood's relationship to crime and substance use, namely relationship status, antisocial influence from a romantic partner, school, and work. Fourth, this study uses a fixed-effect model in order to control for all individual time-stable traits. This model and its statistical controls not only address potential selection effects, but it also affords a greater degree of causal inference. This quantitative approach also provides a prospective rather than a retrospective explanation of how the transition to parenthood relates to changes in behavior.

The results of this study have provided several additional pieces to the parenthood-desistance literature. I will briefly readdress the most important findings and how they relate to the current body of literature. First, when measured as a dichotomous measure, parenthood does not affect criminal offending. Second, although accounting for pregnancy and pregnant-residency states did not result in many significant findings for

criminal offending, there were general negative associations that support previous findings. Unlike the offending results, several significant findings appeared in the substance use models. Women showed significant declines in the number of drugs they used when they were parents (regardless of pregnancy status), and showed a significant and large decline when they were a pregnant mother living with a child. Binge drinking was negatively and significantly related to all states in which women were pregnant (regardless of parent status and resident status). All motherhood states (regardless of pregnancy, resident, or parent status) were also associated with significant declines in frequency of marijuana use. These findings replicate, in part, Kreager et al. (2010), Gilchrist et al. (1996), and Staff et al. (2010). In all three of these studies, substance use was negatively and significantly associated with the transition to motherhood and when the respondent lived with a child. Unlike Kreager et al. (2010) which found a significant negative association between motherhood and delinquency, fighting, and stealing, there were no effects of the transition to motherhood on offending in this study.

Third, when context of parenthood is taken into account, particularly whether the respondent lives in residence with a child, several parenthood findings appear. Living with a child is associated with significant decreases in all types of offending for fathers. Fathers and mothers residing with a child also demonstrate significant declines in the number of drugs they use as well as the frequency with which they use marijuana. Moreover, non-resident mothers also experience declines in substance use, but non-resident fathers experience no significant change in substance use.

These results are similar to other studies that highlight how motherhood and residency are often perceived as a "package" deal. For example, one study found that

custodial fathers were viewed as superheroes, custodial mothers and noncustodial fathers were viewed as being ‘‘normative,’’ and noncustodial mothers were viewed less favorably than convicted felons (Dolan & Hoffman, 1998). It is no wonder then that even when women are involved in their non-resident children's lives, they often feel they are missing out or not completely fulfilling their role as a mother, and why formerly incarcerated mothers often express intense desires to reunite with their children (Opsal 2011). This desire may be intense enough to drive women to modify their substance use even in the face of obstacles (such as non-residency), and failing in such an important role can lead to persistence in crime, particularly drug use (Opsal 2011). Residency and fatherhood are much less tied to one another, especially in disadvantaged populations. In cases of non-resident fatherhood, the relationship between the mother and father plays a key role in the development of the relationship between the father and child. Mothers are often recognized as gatekeepers to children (Doherty, Kouneski, and Erickson 1998; Edin et al. 2004; Mauer, Pleck, Rane 2001), and fathers with poor relationships with mothers may not benefit from the conventionalizing aspects of fatherhood if they are denied the opportunity to fulfill such a role.

Fourth, as Leverentz (2006) has noted, romantic partners can play an important role in the offending behavior of an individual. This study attempted to capture if the antisocial influence of one's partner is associated with criminal and substance use behavior and if this influence is suppressing potential parenthood effects. It is clear that even when the antisocial influence of one's romantic partner is accounted for that parenthood still does not have an association with offending. It is also clear that being in a relationship with a partner who does exert antisocial influence is significantly and

positively related to all offending measures and substance use outcomes for men and women. Even relationships in which the partner does not exert this antisocial influence is related to increases in offending and substance use for men, indicating that romantic relationships may not lead to prosocial changes for the men in this sample. These findings support previous feminist criminological literature (Daly 1989; Steffensmeier and Allan 1996; Giordano 2009) by highlighting that dating an antisocial influencing partner is related to large and statistically significant increases in offending and substance use for women. The finding that partnerships do not negatively influence men's offending and substance is not without basis. For example, Sampson et al. (2006) found that the positive effect of marriage for criminal men seems to be absent when they marry criminal women (Sampson, Laub, and Wimer 2006). Due to the potential bias inherent in asking a subject about another person's behaviors, the criminal behavior of one's partner is not included in these analyses. However, one may assume that these women are, at least in part, aware of their partner's antisocial behavior and even if they do not encourage it, may condone it. This acceptance would not inspire men to become prosocial counterparts.

To this point, the analyses focused on external factors related to one's parenthood (residency, romantic relationship status, and romantic partner's antisocial influence). The last set of analyses explored whether one's offending and substance use was associated with one's level of parental orientation. Several desistance scholars have argued that it is the adoption, integration, and importance of one's role that brings about behavioral change (Sampson and Laub 1990, 2003; Giordano et al. 2002), yet many studies do not include a measure of parental identity. The fifth finding in this study is that parental

orientation is not significantly related to offending for men or women. Unexpectedly, the odds ratios of maternal parental orientation and aggressive offending are somewhat positive in nature. It is likely that aggressive offending is less responsive to parenthood because these types of crimes are more likely to be spontaneous and situational (Felson and Steadman 1983).

On the other hand, having no parental orientation is significantly and positively related to women's substance use. Having even a low parental orientation is associated with significant declines in the number of drugs that women use as well as how frequently they use marijuana. Low parental orientation is not significantly different from higher levels of parental orientation, thus it appears that the relationship between parental orientation and substance use is the same as that between a binary measure of parenthood and substance use. These results do not support Giordano et al.'s (2002) argument that a cognitive transformation must take place before behavioral change can occur. It also does not support Sampson and Laub's (1990, 2003) argument that one must be *attached* to one's new social role in order to choose to change one's behavior. Although not explicitly tested in quantitative studies, qualitative studies time and again highlight this cognitive change and the value placed on one's "mother" identity (Edin and Kefalas 2005; Giordano et al. 2002). However, in this test, it does seem that parental orientation is just a proxy for parenthood status. For men, parental orientation has no effects on substance use.

There are, of course, limitations to this study. First, I was unable to explore effects of cohabitation and marriage. Detailed cohabitation and marriage data is not yet publicly available. This is unfortunate because of the clear emphasis in desistance

literature on these particular types of relationships. However, exploratory analyses indicated that the simple measure of cohabitation was not significantly different from a measure that indicated the respondent was in a dating relationship but was significantly different from being single. Thus, partnership was collapsed to encompass those who were in a dating relationship regardless of cohabitation status. Furthermore, with recent marital trends (i.e. later age at first marriage and the rise of cohabitation) and the young age of this sample, it is unlikely that marriage is occurring at an appreciable rate in this sample. These reasons lead me to believe that the lack of strong cohabitation data or marital status is a small limitation.

Second, there are several measurement issues that could be affecting the overall pattern of findings. For instance, the parenthood indicator is based on how many children the respondent reports having; however, it is unclear whether all children who are reported are biological children of the respondent. Thus, this study is unable to explore different types of family forms, as well as how different family forms affect parenting behavior, criminal behavior, and substance use. Low-income mothers often report being "othermothers" to their romantic partners' other children (Burton and Hardaway 2012), as well as recruiting their romantic partners and other father figures to assist in the care-taking of their own children (Roy and Burton 2007). Similar family formations and processes are likely occurring in this disadvantaged sample as well. However, there is no reason to believe that non-biological children cannot bring about prosocial behavioral changes – particularly when respondents are claiming (reporting) the child as their own in the survey. It is likely that respondents report having a child only when he or she is responsible for some portion of parenting responsibilities, and considers him or herself to

be the child's parent (even if only temporarily). However, if attachment to non-biological children differs from attachment to biological children, this study is able to account for this difference since it specifically measures attachment in the mediating models (Chapter 4).

Additionally, some effects for additional pregnancies may be conflated with number of children. The measure for additional pregnancy was created using an indicator for whether the respondent was currently pregnant as well as whether the respondent has already made the initial transition to parenthood. Additional pregnancy may indicate a second, third, fourth or even fifth pregnancy with several children already present. However, the majority of respondents (552 people – 82% of those who are parents) reported having two children or less. Binge drinking is another variable that is potentially biased. As indicated in the descriptive statistics (Table 5), only 34% of males and 26% of females reported binge drinking during a recall period – a period of 6 months to a year. It is likely that binge drinking is occurring at higher rates, but that respondents cannot accurately recall such an incident up to a year after it has occurred. Other measures, such as frequency of drinking or average number of drinks consumed would be a potentially better indicator of drinking behavior.

Third, this study was unable to explore differences among racial subgroups. Evidence suggests that parenthood does operate differently by race (Craig 2014), and the supplemental analyses for these models (Appendix B) suggests that whites may be more likely to benefit from parenthood and that resident parenthood is beneficial for almost all race-gender subgroups. Yet, the small sample sizes for each of these analyses makes stronger assertions about parenthood effects by race possible. Despite these limitations,

the findings do reflect those of previous studies and adds to our existing knowledge about the parenthood-desistance relationship.

Fourth, this study does not explore all theoretically important mechanisms that could account for parenthood's effect, or lack thereof, on offending and substance use. For instance, it could be that changes in parents' routine activities and peer associations are responsible for the decline in offending for parents. Parenthood reduces the amount of time that one can spend with friends or in unsupervised activities outside the home, when crime is more likely to occur (Osgood Wilson, O'Malley, and Bachman 1996; Osgood and Anderson 2004). The consequent time constraints placed upon parents through childcare often reduces how much time one spends outside the home and, in turn, limits ones' opportunities to engage in delinquent or criminal behavior. In a related vein, parenthood also limits the amount of time spent with friends and this reduction in peer association may lead to less offending (Warr 1993, 1998).

Due to gender role expectations and socialization, parenthood may affect mothers' routine activities and peer networks significantly more than fathers'. Motherhood is central to contemporary gendered expectations for women (Ridgeway and Correll 2004), thus women may embrace or accept the behavioral change that parenthood offers more readily than men. While men may also embrace and accept fatherhood, the expected roles of mothers and fathers differ to such an extent that they may engage in behaviors that fulfill financial responsibilities rather than caretaking responsibilities. Fulfilling financial obligations often requires men to work outside of the home providing men more opportunities to engage in crime. Thus, these role expectations may have gendered consequences for parents' routine activities and peer networks which could result in

different desistance patterns for mothers and fathers (Edin et al 2004; Graham and Bowling 1995; Peled et al. 2012). However, the breadwinner-homemaker household is no longer the norm for American families. With the rise of the dual-earner household (Waite and Nielsen 2001) and gender-role attitudes for both men and women becoming less traditional and more egalitarian (Rogers & Amato, 2000; Spain & Bianchi, 1996; Thornton, 1989), it is widely acknowledged that women will have a stronger role in financial contributions to the family and men will have a stronger role in caretaking responsibilities (Amato and Rivera 1999; Tremblay and Pierce 2011). Due to these changes in family structure and societal expectations, changes in routine activities and peer networks may be more similar between mothers and fathers than in previous years. This study also lacks a measure that could be responsible for both the transition to parenthood and reductions in criminal offending, such as maturation. Although fixed effects methods control for all time stable traits, maturation is a potential time-varying variable that is not accounted for in the specified models. Furthermore, although this study tested the antisocial influence of one's romantic partner, it is possible that this influence is moderated by the quality of one's relationship. Through a process of action, reflected appraisals, role adaptation, and behavior modification, parents and partners dynamically affect one another's behavior and identity (Adamsons 2010; Tremblay and Pierce 2011). Adamsons (2010) has documented that the reflected appraisals of one's partner about one's role performance as a parent can bring about changes in parenting behavior. If a subject's partner is reflecting that the subject's parenting behavior is inappropriate then the subject may adjust his or her own role expectations in order to alter the reflected appraisal. Likewise, if a parent is engaging in appropriate role behavior, his

or her reflected appraisals are often positive. Parents act as guides for one another, regulating each other's behavior in order to protect or provide for their child (Adamsons 2010; Tremblay and Pierce 2011). A key condition for this process to occur relies on the relationship between partners since it can be assumed that adaptation due to reflected appraisals only comes about if the person *cares* about their partner's perception of him or her. Thus, the quality of the relationship may be extremely important in bringing about behavioral change. Relationship characteristics and partner influence have yet to be thoroughly explored in studies of parenthood and crime, and this study has attempted to begin such as exploration. Fifth, although this sample was hypothesized as being the most likely group of offenders to be able to use parenthood as a prosocial hook for change, it is possible that this group is the *least* able to do so because they are so high risk (both socially and criminally). It could be that these individuals will continue to offend regardless of which life course transitions they make, particularly if transitions occur unplanned. Unintended pregnancy occurs more often among high-risk and disadvantaged samples (Logan, Holcombe, Manlove, and Ryan 2007). Thus, the respondents in this study may not be prepared to accept the hook for change that parenthood presents.

Additionally, this sample does not conform to expectations regarding criminal behavior and age. Despite the general reliability of self-report data (Thornberry and Krohn 2000), longitudinal self-report data is at risk of survey fatigue (Lauritsen 1998), and this survey fatigue may be driving the general trend of desistance. Alternatively, this sample of high-risk adolescents may not follow the traditional age-crime curve; perhaps these individuals had already reached their criminal career peak at the time they were enrolled in this study, and as such, can only show declines thereafter.

Future studies can build upon this work and continue to parse out the relationship between parenthood, offending, and substance use. One of the key limitations to this area is the lack of detailed longitudinal data that captures all the key aspects and mechanisms that have been hypothesized to lead to behavioral changes among parents. Even so, researchers would be wise to further explore how the transition to parenthood affects US men and women in the same study as well as attempting to include some measure of cognitive change. Exploring race differences would also be a fruitful avenue of study, as would strong theoretically-driven sample selections.

Appendix A

List of Total, Aggressive, and Income Offending Items

Total	Aggressive	Income	Offense
X	X		Destroyed/damaged property
X	X		Set fire to house/building/car/vacant lot
X		X	Entered building to steal
X		X	Shoplifted
X		X	Bought/received/sold stolen property
X		X	Used checks/credit cards illegally
X		X	Stolen car/motorcycle
X		X	Sold marijuana
X		X	Sold other illegal drugs
X			Carjacked someone
X			Drove drunk or high
X		X	Been paid by someone for sex
X	X		Forced someone to have sex
X	X		Killed someone
X	X		Shot someone (where bullet hit)
X	X		Shot at someone (pulled trigger)
X	X	X	Took something by force using weapon
X	X	X	Took something by force no weapon
X	X		Beaten up somebody badly needed doctor
X	X		Been in fight
X	X		Beaten up someone as part of gang
X			Carried a gun
X			Broke into car to steal something
X			Gone joy-riding (stole car to ride around)

Appendix B

Race Models

The following tables present race and gender subgroups models for all six outcomes (three offending and three substance use measures). For parsimony, only main effects of interest are presented; however, age, school, work, and street time are controlled for in each of the analyses. (Standard errors have not been bootstrapped.)

Table 23. Chapter 3 Models, Any Offending by Race and Gender, OR

	Whites		Blacks		Hispanics	
	Males	Females	Males	Females	Males	Females
Parent (v. Not a parent)	0.61 *	0.35 *	0.98	1.53	0.92	0.97
In Partnership (v. Single)	1.34 *	0.81	1.58 ***	1.12	1.53 ***	2.20 *
N	1775	369	3630	489	3074	372
chi2	27.05	11.03	52.97	26.35	88.27	8.17
Resident, parent (v. Not a parent)	0.49 *	0.25 **	0.91	1.55	0.75	0.84
Nonresident, parent	0.70	0.71	1.00	1.45	1.04	1.36
In Partnership (v. Single)	1.36 *	0.81	1.59 ***	1.12	1.56 ***	2.24 *
N	1775	369	3630	489	3074	372
chi2	28.28	14.76	53.20	26.36	91.27	9.19
Pregnant, nonparent (v. Not pregnant and not a parent)	-	0.65	-	0.73	-	0.52
Parent, nonpregnant	-	0.66	-	1.74	-	0.88
Pregnant, parent	-	0.12 ***	-	1.04	-	0.62
In Partnership (v. Single)	-	0.89	-	1.21	-	2.26 *
N	-	369	-	489	-	372
chi2	-	22.76	-	28.76	-	10.54
Pregnant, nonparent (v. Not pregnant, and not a parent)	-	0.65	-	0.73	-	0.49
Pregnant, resident, parent	-	0.09 ***	-	1.00	-	0.52
Pregnant, nonresident, parent	-	0.22	-	1.33	-	0.75
Nonpregnant, resident, parent	-	0.47	-	1.83	-	0.69
Nonpregnant, nonresident, parent	-	1.15	-	1.36	-	1.54
In Partnership (v. Single)	-	0.90	-	1.23	-	2.35 *
N	-	369	-	489	-	372
chi2	-	24.93	-	29.07	-	12.25

Table 24. Chapter 3 Models, Aggressive Offending by Race and Gender, OR

	Whites		Blacks		Hispanics	
	Males	Females	Males	Females	Males	Females
Parent (v. Not a parent)	0.55 **	0.74	0.94	1.54	0.89	1.23
In Partnership (v. Single)	1.19	0.60	1.33 **	1.49	1.43 ***	2.70 **
N	1810	287	3446	460	3064	321
chi2	55.18	9.29	86.95	29.57	144.57	12.19
Resident, parent (v. Not a parent)	0.37 **	0.63	0.67	1.55	0.67	0.99
Nonresident, parent	0.71	1.01	1.00	1.46	1.04	2.13
In Partnership (v. Single)	1.21	0.60	1.35 **	1.49	1.46 ***	2.77 **
N	1810	287	3446	460	3064	321
chi2	59.25	9.83	90.22	29.59	149.42	14.32
Pregnant, nonparent (v. Not pregnant and not a parent)	-	0.51	-	0.89	-	0.35
Parent, nonpregnant	-	1.33	-	1.54	-	0.82
Pregnant, parent	-	0.17 *	-	1.38	-	0.79
In Partnership (v. Single)	-	0.64	-	1.52	-	2.64 *
N	-	287	-	460	-	321
chi2	-	19.99	-	29.73	-	14.99
Pregnant, nonparent (v. Not pregnant, and not a parent)	-	0.51	-	0.89	-	0.32
Pregnant, resident, parent	-	0.18 *	-	1.29	-	0.62
Pregnant, nonresident, parent	-	0.17	-	2.29	-	1.15
Nonpregnant, resident, parent	-	1.12	-	1.67	-	0.59
Nonpregnant, nonresident, parent	-	1.69	-	1.06	-	1.73
In Partnership (v. Single)	-	0.64	-	1.57	-	2.78 **
N	-	287	-	460	-	321
chi2	-	20.20	-	30.59	-	17.81

Table 25. Chapter 3 Models, Income Offending by Race and Gender, OR

	Whites		Blacks		Hispanics	
	Males	Females	Males	Females	Males	Females
Parent (v. Not a parent)	0.71	0.60	0.93	1.59	0.85	0.78
In Partnership (v. Single)	1.48 **	1.27	1.78 ***	1.27	1.42 **	3.12 *
N	1514	272	2948	243	2479	235
chi2	38.15	10.97	77.30	10.20	83.09	12.08
Resident, parent (v. Not a parent)	0.49 *	0.33	0.72	1.51	0.66	0.57
Nonresident, parent	0.86	1.51	0.98	1.81	0.97	1.18
In Partnership (v. Single)	1.50 **	1.28	1.80 ***	1.27	1.44 **	3.13 *
N	1514	272	2948	243	2479	235
chi2	40.47	15.91	79.25	10.27	86.16	13.83
Pregnant, nonparent (v. Not pregnant and not a parent)	-	1.37	-	0.65	-	0.59
Parent, nonpregnant	-	1.66	-	1.51	-	0.40
Pregnant, parent	-	0.19 *	-	1.06	-	0.70
In Partnership (v. Single)	-	1.45	-	1.34	-	3.04 *
N	-	272	-	243	-	235
chi2	-	21.58	-	11.12	-	14.04
Pregnant, nonparent (v. Not pregnant, and not a parent)	-	1.38	-	0.66	-	0.53
Pregnant, resident, parent	-	0.10 *	-	1.09	-	0.50
Pregnant, nonresident, parent	-	0.56	-	0.89	-	0.88
Nonpregnant, resident, parent	-	1.04	-	1.38	-	0.25
Nonpregnant, nonresident, parent	-	3.09	-	2.25	-	0.67
In Partnership (v. Single)	-	1.43	-	1.30	-	3.05 *
N	-	272	-	243	-	235
chi2	-	24.55	-	11.47	-	16.11

Table 26. Chapter 3 Models, Number of Drugs by Race and Gender, IRR

	Whites		Blacks		Hispanics	
	Males	Females	Males	Females	Males	Females
Parent (v. Not a parent)	0.82	0.46 ***	1.26 **	0.83	1.00	0.61 *
In Partnership (v. Single)	1.22 ***	0.85	1.17 **	0.87	1.15 **	1.16
N	1710	378	3285	478	2881	373
chi2	75.06	24.72	148.53	16.09	76.96	22.24
Resident, parent (v. Not a parent)	0.71 *	0.41 ***	0.91	0.89	0.77 *	0.57 *
Nonresident, parent	0.89	0.57 *	1.35 ***	0.64	1.15	0.71
In Partnership (v. Single)	1.23 ***	0.85	1.19 **	0.87	1.17 **	1.16
N	1710	378	3285	478	2881	373
chi2	77.02	25.20	160.13	17.14	91.61	23.17
Pregnant, nonparent (v. Not pregnant and not a parent)	-	0.95	-	0.82	-	0.63
Parent, nonpregnant	-	0.66	-	0.85	-	0.53 *
Pregnant, parent	-	0.24 ***	-	0.68	-	0.45 **
In Partnership (v. Single)	-	0.89	-	0.90	-	1.15
N	-	378	-	478	-	373
chi2	-	33.02	-	17.47	-	25.66
Pregnant, nonparent (v. Not pregnant, and not a parent)	-	0.95	-	0.82	-	0.61
Pregnant, resident, parent	-	0.23 ***	-	0.66	-	0.41 **
Pregnant, nonresident, parent	-	0.28 **	-	0.83	-	0.55
Nonpregnant, resident, parent	-	0.63	-	0.93	-	0.49 *
Nonpregnant, nonresident, parent	-	0.71	-	0.50	-	0.62
In Partnership (v. Single)	-	0.89	-	0.92	-	1.14
N	-	378	-	478	-	373
chi2	-	32.90	-	19.79	-	26.99

Table 27. Chapter 3 Models, Binge Drinking by Race and Gender, OR

	Whites		Blacks		Hispanics	
	Males	Females	Males	Females	Males	Females
Parent (v. Not a parent)	0.87	1.78	1.27	0.59	0.93	0.53
In Partnership (v. Single)	1.19	1.32	1.59 ***	1.33	1.49 ***	1.10
N	1696	417	2523	331	2897	362
chi2	185.23	31.66	281.65	33.93	409.63	38.81
Resident, parent (v. Not a parent)	0.83	1.79	1.16	0.53	0.69	0.62
Nonresident, parent	0.90	1.75	1.30	0.89	1.13	0.36
In Partnership (v. Single)	1.19	1.32	1.60 ***	1.35	1.53 ***	1.07
N	1696	417	2523	331	2897	362
chi2	185.29	31.66	281.87	34.68	415.19	39.85
Pregnant, nonparent (v. Not pregnant and not a parent)	-	0.66	-	0.54	-	0.15 *
Parent, nonpregnant	-	2.50	-	0.48	-	0.38
Pregnant, parent	-	1.00	-	0.38	-	0.21 **
In Partnership (v. Single)	-	1.40	-	1.42	-	1.16
N	-	417	-	331	-	362
chi2	-	36.85	-	36.11	-	48.59
Pregnant, nonparent (v. Not pregnant, and not a parent)	-	0.66	-	0.52	-	0.15 *
Pregnant, resident, parent	-	1.05	-	0.42	-	0.23 *
Pregnant, nonresident, parent	-	0.75	-	0.15	-	0.17 *
Nonpregnant, resident, parent	-	2.44	-	0.37	-	0.42
Nonpregnant, nonresident, parent	-	2.57	-	1.90	-	0.26
In Partnership (v. Single)	-	1.40	-	1.34	-	1.14
N	-	417	-	331	-	362
chi2	-	37.05	-	41.46	-	49.15

Table 28. Chapter 3 Models, Frequency of Marijuana Use by Race and Gender, b-coefs

	Whites		Blacks		Hispanics	
	Males	Females	Males	Females	Males	Females
Parent (v. Not a parent)	-0.44 *	-1.00 ***	0.25 *	-0.46	-0.07	-0.61 *
In Partnership (v. Single)	0.27 *	-0.07	0.22 **	0.06	0.20 **	0.16
N	2052	466	4176	627	3622	493
Resident, parent (v. Not a parent)	-0.85 ***	-0.97 **	-0.14	-0.30	-0.35 *	-0.62 *
Nonresident, parent	-0.19	-1.10 **	0.34 **	-1.02 **	0.10	-0.58
In Partnership (v. Single)	0.29 *	-0.07	0.23 **	0.06	0.22 **	0.17
N	2052	466	4176	627	3622	493
Pregnant, nonparent (v. Not pregnant and not a parent)	-	-0.72 *	-	-0.14	-	-0.61
Parent, nonpregnant	-	-1.16 **	-	-0.29	-	-0.70 *
Pregnant, parent	-	-1.47 ***	-	-0.76 *	-	-0.94 **
In Partnership (v. Single)	-	-0.01	-	0.13	-	0.20
N	-	466	-	627	-	493
Pregnant, nonparent (v. Not pregnant, and not a parent)	-	-0.72 *	-	-0.12	-	-0.62
Pregnant, resident, parent	-	-1.39 ***	-	-0.54	-	-0.90 *
Pregnant, nonresident, parent	-	-1.80 ***	-	-1.41 **	-	-1.11 *
Nonpregnant, resident, parent	-	-1.23 **	-	-0.18	-	-0.78 *
Nonpregnant, nonresident, parent	-	-1.04	-	-0.60	-	-0.43
In Partnership (v. Single)	-	0.00	-	0.11	-	0.21
N	-	466	-	627	-	493

Table 29. Chapter 4 Models, Any Offending by Race and Gender, OR

	Whites		Blacks		Hispanics	
	Males	Females	Males	Females	Males	Females
Any PO (v. No PO)	0.54 **	0.21 ***	0.99	1.34	0.99	0.85
Partner w/ ASI (v. Single)	2.25 ***	1.64	2.47 ***	1.39	3.66 ***	4.73 ***
Partner w/o ASI	1.21	0.61	1.50 ***	1.15	1.36 **	1.61
N	1758	371	3585	499	3034	379
chi2	39.88	29.53	60.48	26.99	109.29	17.98
No PO (v. Low PO)	1.36	1.73	1.20	0.77	1.02	1.17
Moderate PO	0.65	0.20	1.17	0.92	1.07	1.07
High PO	0.66	0.25	1.54 *	1.16	0.91	0.81
In Partnership (v. Single)	1.37 *	0.81	1.59 ***	1.19	1.51 ***	2.23 *
N	1758	371	3585	499	3034	379
chi2	32.05	23.99	56.04	26.94	86.56	9.11
No PO (v. Low PO)	1.42	1.68	1.19	0.77	1.02	1.02
Moderate PO	0.71	0.20	1.16	0.93	1.08	0.97
High PO	0.70	0.26	1.52 *	1.18	0.92	0.70
Partner w/ ASI (v. Single)	2.23 ***	1.57	2.45 ***	1.41	3.66 ***	4.82 ***
Partner w/o ASI	1.22	0.59	1.50 ***	1.15	1.36 **	1.63
N	1758	371	3585	499	3034	379
chi2	40.76	33.20	64.51	27.31	109.88	18.62

Table 30. Chapter 4 Models, Aggressive Offending by Race and Gender, OR

	Whites		Blacks		Hispanics	
	Males	Females	Males	Females	Males	Females
Any PO (v. No PO)	0.55 **	0.46	0.94	1.56	0.97	1.26
Partner w/ ASI (v. Single)	1.50 *	1.17	1.77 **	2.27 *	2.83 ***	6.10 ***
Partner w/o ASI	1.13	0.44 *	1.27 *	1.45	1.30 *	1.91
N	1793	288	3402	471	3016	324
chi2	57.93	17.64	89.09	32.44	159.42	20.52
No PO (v. Low PO)	1.33	0.96	1.24	1.09	1.03	0.74
Moderate PO	0.61	0.41	1.17	1.72	1.17	1.04
High PO	0.72	0.26	1.48	2.31	0.74	0.63
In Partnership (v. Single)	1.20	0.60	1.32 **	1.66	1.43 ***	2.72 **
N	1793	288	3402	471	3016	324
chi2	57.37	13.16	88.31	33.27	146.96	12.84
No PO (v. Low PO)	1.34	0.97	1.25	1.09	1.02	0.61
Moderate PO	0.62	0.43	1.16	1.79	1.16	0.95
High PO	0.74	0.27	1.47	2.48	0.74	0.50
Partner w/ ASI (v. Single)	1.48	1.12	1.76 **	2.50 *	2.83 ***	6.73 ***
Partner w/o ASI	1.13	0.42 *	1.26 *	1.52	1.30 *	1.96
N	1793	288	3402	471	3016	324
chi2	59.23	19.50	92.18	35.24	163.60	22.39

Table 31. Chapter 4 Models, Income Offending by Race and Gender, OR

	Whites		Blacks		Hispanics	
	Males	Females	Males	Females	Males	Females
Any PO (v. No PO)	0.51 **	0.38	0.91	1.49	0.98	0.46
Partner w/ ASI (v. Single)	1.84 **	2.59 *	2.44 ***	2.93 *	3.30 ***	5.85 **
Partner w/o ASI	1.44 *	0.79	1.68 ***	1.19	1.20	2.00
N	1508	282	2900	248	2451	241
chi2	45.21	24.48	80.34	14.16	106.84	18.3
No PO (v. Low PO)	1.79	1.74	1.14	0.65	1.00	2.51
Moderate PO	0.75	0.48	1.01	1.33	0.99	1.57
High PO	1.01	0.57	1.13	0.42	0.80	1.41
In Partnership (v. Single)	1.52 **	1.18	1.77 ***	1.36	1.39 **	2.87 *
N	1508	282	2900	248	2451	241
chi2	44.57	14.75	76.29	13.89	80.93	13.04
No PO (v. Low PO)	1.81	1.86	1.13	0.59	0.96	2.58
Moderate PO	0.76	0.58	1.00	1.31	0.99	1.36
High PO	1.04	0.66	1.11	0.44	0.78	1.14
Partner w/ ASI (v. Single)	1.84 **	2.54 *	2.44 ***	2.66	3.31 ***	5.71 **
Partner w/o ASI	1.43 *	0.79	1.68 ***	1.12	1.20	1.97
N	1508	282	2900	248	2451	241
chi2	45.89	24.80	80.61	17.35	107.86	18.58

Table 32. Chapter 4 Models, Number of Drugs by Race and Gender, IRR

	Whites		Blacks		Hispanics	
	Males	Females	Males	Females	Males	Females
Any PO (v. No PO)	0.84	0.44 ***	1.13	0.90	1.10	0.58 *
Partner w/ ASI (v. Single)	1.35 ***	1.13	1.20 *	1.05	1.54 ***	1.48 *
Partner w/o ASI	1.18 **	0.69 *	1.16 *	0.84	1.05	0.97
N	1694	380	3238	489	2831	380
chi2	78.58	38.37	141.63	17.37	104.97	30.16
No PO (v. Low PO)	0.86	1.20	0.87	1.21	0.95	1.99 *
Moderate PO	0.60 *	0.35 *	1.02	1.44	1.00	1.32
High PO	0.68	0.47	0.92	0.88	1.12	1.21
In Partnership (v. Single)	1.23 ***	0.82	1.17 **	0.87	1.13 *	1.12
N	1694	380	3238	489	2831	380
chi2	80.97	30.13	142.27	19.26	79.98	25.65
No PO (v. Low PO)	0.87	1.26	0.87	1.23	0.92	1.94 *
Moderate PO	0.61 *	0.37 *	1.02	1.48	0.98	1.23
High PO	0.70	0.51	0.92	0.91	1.10	1.13
Partner w/ ASI (v. Single)	1.34 ***	1.10	1.20 *	1.04	1.54 ***	1.45
Partner w/o ASI	1.18 **	0.68 *	1.16 *	0.83	1.05	0.96
N	1694	380	3238	489	2831	380
chi2	83.77	40.77	142.44	20.27	105.88	30.71

Table 33. Chapter 4 Models, Binge Drinking by Race and Gender, OR

	Whites		Blacks		Hispanics	
	Males	Females	Males	Females	Males	Females
Any PO (v. No PO)	0.88	1.23	1.40 *	0.68	0.88	0.55
Partner w/ ASI (v. Single)	2.42 ***	2.07	2.48 ***	2.45	3.97 ***	2.96 *
Partner w/o ASI	1.02	1.16	1.44 **	1.09	1.30 *	0.75
N	1680	419	2487	338	2856	367
chi2	203.97	34.39	293.75	38.83	439.24	51.38
No PO (v. Low PO)	0.83	0.30	0.77	1.20	1.12	1.41
Moderate PO	0.74	0.68	0.98	0.78	1.01	0.73
High PO	0.56	0.19	1.41	0.70	0.80	0.70
In Partnership (v. Single)	1.21	1.31	1.56 ***	1.29	1.49 ***	1.18
N	1680	419	2487	338	2856	367
chi2	189.87	39.04	288.59	35.18	412.59	38.88
No PO (v. Low PO)	0.86	0.30	0.75	1.17	1.07	1.19
Moderate PO	0.79	0.72	0.94	0.78	1.01	0.62
High PO	0.62	0.19	1.35	0.70	0.77	0.60
Partner w/ ASI (v. Single)	2.42 ***	2.05	2.46 ***	2.44	4.01 ***	3.21 **
Partner w/o ASI	1.03	1.13	1.44 **	1.09	1.30 *	0.78
N	1680	419	2487	338	2856	367
chi2	205.03	42.18	296.39	39.18	440.67	52.37

Table 34. Chapter 4 Models, Frequency of Marijuana Use by Race and Gender, b-coefs

	Whites		Blacks		Hispanics	
	Males	Females	Males	Females	Males	Females
Any PO (v. No PO)	-0.31	-0.68 *	0.07	-0.52 *	-0.06	-0.54 *
Partner w/ ASI (v. Single)	0.46 **	0.39	0.52 ***	0.85 **	0.83 ***	0.77 **
Partner w/o ASI	0.21	-0.27	0.19 *	-0.06	0.14	-0.02
N	2043	468	4127	638	3581	501
No PO (v. Low PO)	0.11	-0.22	0.04	0.47	0.04	1.16 **
Moderate PO	-0.45	-1.12	0.30 *	0.04	-0.09	0.76 *
High PO	-0.01	-1.10	-0.07	-0.32	0.01	0.70
In Partnership (v. Single)	0.27 *	-0.12	0.23 **	0.08	0.22 **	0.07
N	2043	468	4127	638	3581	501
No PO (v. Low PO)	0.12	-0.20	0.03	0.43	0.03	1.10 **
Moderate PO	-0.43	-1.05	0.29 *	0.04	-0.10	0.72 *
High PO	0.02	-1.04	-0.09	-0.28	0.01	0.64
Partner w/ ASI (v. Single)	0.45 **	0.36	0.52 ***	0.84 **	0.84 ***	0.67 *
Partner w/o ASI	0.21	-0.29	0.19 *	-0.05	0.14	-0.10
N	2043	468	4127	638	3581	501

Appendix C

Logged Offending Outcomes

Using a binary measure of offending necessarily removes a great deal of variation in offending. For instance, perhaps parenthood leads to a reduction rather than a cessation of offending. A binary measure of offending only captures the possibility of cessation. Thus, as another supplemental test, I censored each outcome variable at the 95th percentile, added a small constant (.01) and log-transformed the variables. These transformations reduce the extreme skewness of the variables. With the logged variables, I ran a fixed-effect OLS (xtreg) model for each outcome. The results are presented in the tables below. For parsimony, age, school, work, and street time are controlled for in each model, but are not shown. (Standard errors have been bootstrapped.)

Table 35. Chapter 3 Models with Logged Outcomes by Gender, OR

	Any Offense		Aggressive Offense		Income Offense	
	Males	Females	Males	Females	Males	Females
Parent (v. Not a parent)	0.89	0.74	0.85	1.10	0.84	0.92
In Partnership (v. Single)	2.00 ***	1.45 *	1.36 ***	1.29	1.76 ***	1.39 *
N	10318	1686	10318	1686	10318	1686
chi2	273.33	14.57	275.45	30.14	167.95	9.63
Resident, parent (v. Not a parent)	0.65 *	0.66	0.64 ***	1.05	0.62 **	0.79
Nonresident, parent	1.01	1.09	0.96	1.26	0.95	1.54
In Partnership (v. Single)	2.03 ***	1.45	1.38 ***	1.30	1.79 ***	1.40 *
N	10318	1686	10318	1686	10318	1686
chi2	165.37	17.41	342.67	30.86	216.21	18.22
Pregnant, nonparent (v. Not pregnant and not a parent)	-	0.58	-	0.65 *	-	0.79
Parent, nonpregnant	-	0.82	-	1.04	-	0.96
Pregnant, parent	-	0.43 *	-	0.81	-	0.73
In Partnership (v. Single)	-	1.58 *	-	1.36 *	-	1.45 *
N		1686		1686		1686
chi2		25.68		40.92		15.53
Pregnant, nonparent (v. Not pregnant, and not a parent)	-	0.56	-	0.64 *	-	0.77
Pregnant, resident, parent	-	0.39 **	-	0.77	-	0.64
Pregnant, nonresident, parent	-	0.54	-	0.94	-	0.99
Nonpregnant, resident, parent	-	0.68	-	0.98	-	0.78
Nonpregnant, nonresident, parent	-	1.58	-	1.25	-	2.11
In Partnership (v. Single)	-	1.59 *	-	1.37 *	-	1.46 *
N		1686		1686		1686
chi2		43.00		47.44		8.82

Table 36. Chapter 4 Models with Logged Outcomes by Gender, OR

	Any Offense		Aggressive Offense		Income Offense	
	Males	Females	Males	Females	Males	Females
Any PO (v. No PO)	0.90	0.61 *	0.88	1.05	0.85	0.76
Partner w/ ASI (v. Single)	4.59 ***	3.66 ***	2.00 ***	2.34 ***	3.33 ***	3.22 ***
Partner w/o ASI	1.74 ***	1.18	1.27 ***	1.16	1.58 ***	1.13
N	10216	1707	10216	1707	10216	1707
chi2	186.74	39.67	306.65	46.98	256.71	32.75
No PO (v. Low PO)	1.16	1.68 *	1.12	1.12	1.13	1.45
Moderate PO	0.97	1.05	0.98	1.26	0.89	1.22
High PO	1.12	0.90	0.97	1.13	0.96	0.96
In Partnership (v. Single)	2.00 ***	1.48 *	1.36 ***	1.33 *	1.76 ***	1.39 **
N	10216	1707	10216	1707	10216	1707
chi2	258.70	21.53	389.14	31.49	363.17	19.27
No PO (v. Low PO)	1.12	1.59	1.11	1.08	1.10	1.38
Moderate PO	0.96	1.02	0.97	1.24	0.88	1.19
High PO	1.11	0.90	0.96	1.13	0.95	0.96
Partner w/ ASI (v. Single)	4.59 ***	3.65 ***	2.01 ***	2.32 ***	3.33 ***	3.20 ***
Partner w/o ASI	1.74 ***	1.18	1.27 ***	1.15	1.58 ***	1.13
N	10216	1707	10216	1707	10216	1707
chi2	252.16	32.04	320.59	49.20	142.69	32.06

Appendix D

Substance Use Models with Baseline and Binary Number of Drugs Used

Table 37. Chapter 3 Substance Use Models by Gender, including baseline

	Number of Drugs (IRR)		Binge Drinking (OR)		Freq. of Marijuana Use (b-coef)	
	Males	Females	Males	Females	Males	Females
Parent (v. Not a parent)	0.96	0.58 ***	1.02	0.60	-0.07	-0.71 ***
In Partnership (v. Single)	1.12 **	0.93	1.35 ***	1.08	0.15 **	0.06
N	9844	1645	8782	1332	11473	1871
chi2	551.82	113.04	664.70	49.12	546.28	87.29
Resident, parent (v. Not a parent)	0.69 ***	0.54 ***	0.78	0.59 *	-0.49 ***	-0.65 ***
Nonresident, parent	1.09	0.71	1.15	0.66	0.09	-0.93 **
In Partnership (v. Single)	1.14 ***	0.93	1.37 ***	1.08	0.17 **	0.05
N	9847	1645	8782	1332	11474	1871
chi2	560.40	151.95	1600.18	45.00	916.32	71.74
Pregnant, nonparent (v. Not pregnant and not a parent)	-	0.87	-	0.48 **	-	-0.33
Parent, nonpregnant	-	0.68 *	-	0.63	-	-0.65 **
Pregnant, parent	-	0.43 ***	-	0.32 **	-	-1.04 ***
In Partnership (v. Single)	-	0.95	-	1.15	-	0.10
N	-	1645	-	1332	-	1871
chi2	-	133.54	-	105.51	-	97.52
Pregnant, nonparent (v. Not pregnant, and not a parent)	-	0.87	-	0.48 **	-	-0.32
Pregnant, resident, parent	-	0.38 ***	-	0.35 **	-	-0.95 ***
Pregnant, nonresident, parent	-	0.60	-	0.22 **	-	-1.31 ***
Nonpregnant, resident, parent	-	0.66 *	-	0.54	-	-0.62 **
Nonpregnant, nonresident, parent	-	0.75	-	1.07	-	-0.75 *
In Partnership (v. Single)	-	0.95	-	1.14	-	0.10
N	-	1645	-	1332	-	1871
chi2	-	79.30	-	66.40	-	89.27

Note: Table excludes the constant for frequency of marijuana models

Table 38. Chapter 4 Substance Use Models by Gender, including baseline

	Number of Drugs (IRR)		Binge Drinking (OR)		Freq. of Marijuana Use (b-coef)	
	Males	Females	Males	Females	Males	Females
Any PO (v. No PO)	0.98	0.58 ***	1.07	0.61	-0.09	-0.58 **
Partner w/ ASI (v. Single)	1.30 ***	1.16	2.52 ***	2.16 ***	0.58 ***	0.64 ***
Partner w/o ASI	1.07	0.82	1.19 *	0.86	0.08	-0.09
N	9702	1661	8671	1344	11359	1888
chi2	371.96	103.35	614.36	168.18	555.04	133.56
No PO (v. Low PO)	1.00	1.64 *	0.93	1.37	0.10	0.62 *
Moderate PO	0.98	1.06	0.98	0.93	0.02	0.06
High PO	0.95	0.84	0.95	0.60	-0.01	-0.07
In Partnership (v. Single)	1.12 **	0.92	1.34 ***	1.09	0.16 **	0.06
N	9702	1661	8671	1344	11359	1888
chi2	411.25	80.76	705.79	95.16	689.15	78.39
No PO (v. Low PO)	0.99	1.65 **	0.89	1.28	0.09	0.57 **
Moderate PO	0.97	1.05	0.96	0.91	0.01	0.04
High PO	0.94	0.85	0.92	0.59	-0.02	-0.06
Partner w/ ASI (v. Single)	1.31 ***	1.15	2.53 ***	2.17 **	0.58 ***	0.64 ***
Partner w/o ASI	1.07	0.82 *	1.19 **	0.86	0.08	-0.09
N	9702	1661	8671	1344	11359	1888
chi2	471.06	125.70	688.48	111.04	737.07	145.96

Note: Table excludes the constant for frequency of marijuana models

Table 39. Chapter 3 *Any Drug* Models, Binary Outcome of *Number of Drugs* , excluding baseline

	Males	Females	Males	Females	Females	Females
Parent (v. Not a parent)	1.01	0.34 ***				
In Partnership (v. Single)	1.44 ***	1.00	1.48 ***	1.00	1.05	1.06
Resident, parent (v. Not a parent)			0.61 *	0.34 ***		
Nonresident, parent			1.23	0.34 **		
Pregnant, nonparent (v. Not pregnant and not a parent)					0.80	0.81
Parent, nonpregnant					0.41 **	
Pregnant, parent					0.22 ***	
Pregnant, resident, parent						0.20 ***
Pregnant, nonresident, parent						0.28 **
Nonpregnant, resident, parent						0.44 *
Nonpregnant, nonresident, parent						0.34 *
N	7708	1270	7708	1270	1270	1270
chi2	489.70	40.57	342.22	64.08	65.40	89.19

Table 40. Chapter 3 *Any Drug* Models, Binary Outcome of *Number of Drugs* , including baseline

	Males	Females	Males	Females	Females	Females
Parent (v. Not a parent)	0.92	0.36 **				
In Partnership (v. Single)	1.35 ***	1.04	1.40 ***	1.04	1.09	1.10
Resident, parent (v. Not a parent)			0.53 ***	0.36 ***		
Nonresident, parent			1.13	0.38 **		
Pregnant, nonparent (v. Not pregnant and not a parent)					0.87	0.87
Parent, nonpregnant					0.48 **	
Pregnant, parent					0.23 ***	
Pregnant, resident, parent						0.21 ***
Pregnant, nonresident, parent						0.32 *
Nonpregnant, resident, parent						0.50 *
Nonpregnant, nonresident, parent						0.41 *
N	9303	1586	9306	1586	1586	1586
chi2	556.76	91.84	489.37	97.36	81.90	89.02

Table 41. Chapter 4 *Any Drug* Models, Binary Outcome of *Number of Drugs* , excluding baseline

	Males	Females	Males	Females	Males	Females
Any PO (v. No PO)	1.01	0.30 ***				
Partner w/ ASI (v. Single)	2.09 ***	1.72 *			2.09 ***	1.72 *
Partner w/o ASI	1.35 ***	0.83			1.35 ***	0.83
No PO (v. Low PO)			1.02	3.69 **	1.01	3.57 ***
Moderate PO			1.08	1.09	1.07	1.05
High PO			0.94	1.13	0.93	1.14
In Partnership (v. Single)			1.44 ***	0.99		
N	7708	1295	7708	1295	7708	1295
chi2	464.71	70.94	475.14	60.82	520.84	61.28

Table 42. Chapter 4 *Any Drug* Models, Binary Outcome of *Number of Drugs* , including baseline

	Males	Females	Males	Females	Males	Females
Any PO (v. No PO)	0.93	0.33 ***				
Partner w/ ASI (v. Single)	2.02 ***	1.87 **			2.02 ***	1.88 **
Partner w/o ASI	1.26 ***	0.87			1.26 ***	0.88
No PO (v. Low PO)			1.08	3.05 ***	1.06	2.91 ***
Moderate PO			1.04	0.97	1.03	0.94
High PO			0.93	0.96	0.92	0.97
In Partnership (v. Single)			1.35 ***	1.04		
N	9303	1611	9303	1611	9303	1611
chi2	459.52	116.39	657.40	96.41	724.47	88.01

Appendix E

Z-Test of Gender Differences

This Appendix presents the results of z-tests between male and female models. The following tables present the z-test for each table in each chapter (except for the pregnancy and pregnancy-residency status models which were only estimated for women).

Table 43. Z-test of Gender Estimates

Chapter 3 models	Male			Female					
	Est (coef)	Std. Err. (boot)	P-value	Est (coef)	Std. Err. (boot)	P-value	Difference	Z-test	Sig
Table 9. Parent status table - Offending									
Any Offending									
Parent (v. Not a parent)	-0.12	0.10	0.212	-0.23	0.21	0.267	0.11	0.48	
In Partnership (v. Single)	0.40	0.06	0.000	0.23	0.17	0.174	0.17	0.92	
Any Aggressive Offending									
Parent (v. Not a parent)	-0.17	0.10	0.101	0.13	0.21	0.519	-0.30	-1.31	
In Partnership (v. Single)	0.29	0.06	0.000	0.32	0.22	0.143	-0.03	-0.13	
Any Income Offending									
Parent (v. Not a parent)	-0.21	0.11	0.063	-0.13	0.37	0.721	-0.08	-0.21	
In Partnership (v. Single)	0.46	0.08	0.000	0.50	0.26	0.056	-0.04	-0.14	
Table 13. Parent status table - Substance use									
Number of Drugs									
Parent (v. Not a parent)	0.01	0.08	0.937	-0.59	0.16	0.000	0.60	3.38	*
In Partnership (v. Single)	0.15	0.04	0.000	-0.05	0.11	0.632	0.21	1.76	
Binge Drinking									
Parent (v. Not a parent)	0.00	0.11	0.975	-0.37	0.30	0.229	0.36	1.12	
In Partnership (v. Single)	0.35	0.07	0.000	0.12	0.21	0.560	0.23	1.01	
Frequency of Marijuana Use									
Parent (v. Not a parent)	-0.01	0.09	0.918	-0.69	0.22	0.002	0.68	2.85	*
In Partnership (v. Single)	0.21	0.05	0.000	0.03	0.10	0.738	0.18	1.55	

Table 43. Z-test of Gender Estimates (continued)

Chapter 3 models	Male			Female					
	Est (coef)	Std. Err. (boot)	P-value	Est (coef)	Std. Err. (boot)	P-value	Difference	Z-test	Sig
Table 10. Resident Parent status table - Offending									
Any Offending									
Resident, parent (v. Not a pa	-0.31	0.15	0.037	-0.29	0.28	0.305	-0.02	-0.05	
Nonresident, parent	-0.05	0.11	0.671	-0.05	0.34	0.884	0.00	0.01	
In Partnership (v. Single)	0.41	0.06	0.000	0.24	0.14	0.098	0.17	1.10	
Any Aggressive Offending									
Resident, parent (v. Not a pa	-0.47	0.15	0.001	0.08	0.25	0.738	-0.56	-1.93	
Nonresident, parent	-0.06	0.12	0.646	0.30	0.35	0.391	-0.35	-0.96	
In Partnership (v. Single)	0.31	0.06	0.000	0.33	0.17	0.050	-0.02	-0.11	
Any Income Offending									
Resident, parent (v. Not a pa	-0.50	0.18	0.005	-0.34	0.40	0.389	-0.16	-0.37	
Nonresident, parent	-0.11	0.14	0.446	0.27	0.50	0.591	-0.37	-0.72	
In Partnership (v. Single)	0.47	0.08	0.000	0.49	0.20	0.016	-0.02	-0.08	
Table 14. Resident Parent status table - Substance use									
Number of Drugs									
Resident, parent (v. Not a pa	-0.26	0.08	0.001	-0.63	0.19	0.001	0.37	1.77	
Nonresident, parent	0.11	0.06	0.079	-0.50	0.22	0.022	0.61	2.69	*
In Partnership (v. Single)	0.17	0.04	0.000	-0.05	0.11	0.640	0.22	1.83	
Binge Drinking									
Resident, parent (v. Not a pa	-0.21	0.18	0.230	-0.35	0.33	0.290	0.14	0.38	
Nonresident, parent	0.09	0.14	0.505	-0.41	0.43	0.341	0.51	1.11	
In Partnership (v. Single)	0.36	0.08	0.000	0.12	0.20	0.543	0.24	1.11	
Frequency of Marijuana Use									
Resident, parent (v. Not a pa	-0.38	0.13	0.005	-0.63	0.20	0.001	0.25	1.06	
Nonresident, parent	0.14	0.10	0.159	-0.87	0.29	0.003	1.02	3.30	*
In Partnership (v. Single)	0.23	0.05	0.000	0.03	0.11	0.782	0.20	1.57	

Table 43. Z-test of Gender Estimates (continued)

Chapter 4 models

	Male			Female					
	Est (coef)	Std. Err. (boot)	P-value	Est (coef)	Std. Err. (boot)	P-value	Difference	Z-test	Sig
Table 17. Relationship Influence table - Offending									
Any Offending									
Any PO (v. No PO)	-0.09	0.08	0.261	-0.41	0.22	0.062	0.31	1.33	
Partner w/ ASI (v. Single)	0.93	0.10	0.000	0.81	0.16	0.000	0.12	0.62	
Partner w/o ASI	0.32	0.07	0.000	0.09	0.17	0.582	0.23	1.24	
Any Aggressive Offending									
Any PO (v. No PO)	-0.12	0.09	0.150	0.05	0.22	0.811	-0.18	-0.75	
Partner w/ ASI (v. Single)	0.63	0.11	0.000	0.91	0.24	0.000	-0.28	-1.07	
Partner w/o ASI	0.23	0.07	0.000	0.17	0.18	0.338	0.06	0.30	
Any Income Offending									
Any PO (v. No PO)	-0.22	0.12	0.073	-0.43	0.34	0.207	0.21	0.59	
Partner w/ ASI (v. Single)	0.89	0.12	0.000	1.13	0.31	0.000	-0.24	-0.74	
Partner w/o ASI	0.37	0.09	0.000	0.18	0.29	0.519	0.18	0.61	
Table 20. Relationship Influence table - Substance Use									
Number of Drugs									
Any PO (v. No PO)	0.01	0.06	0.840	-0.56	0.15	0.000	0.57	3.51	*
Partner w/ ASI (v. Single)	0.29	0.06	0.000	0.23	0.13	0.077	0.06	0.45	
Partner w/o ASI	0.11	0.04	0.017	-0.21	0.13	0.114	0.32	2.26	*
Binge Drinking									
Any PO (v. No PO)	0.02	0.12	0.879	-0.40	0.31	0.196	0.42	1.26	
Partner w/ ASI (v. Single)	0.95	0.12	0.000	0.81	0.25	0.001	0.14	0.51	
Partner w/o ASI	0.23	0.08	0.005	-0.13	0.19	0.499	0.36	1.76	
Frequency of Marijuana Use									
Any PO (v. No PO)	-0.06	0.08	0.493	-0.60	0.18	0.001	0.54	2.76	*
Partner w/ ASI (v. Single)	0.57	0.10	0.000	0.61	0.17	0.000	-0.05	-0.23	
Partner w/o ASI	0.16	0.06	0.010	-0.11	0.12	0.367	0.27	1.96	*

Table 43. Z-test of Gender Estimates (continued)

Chapter 4 models	Male			Female					
	Est (coef)	Std. Err. (boot)	P-value	Est (coef)	Std. Err. (boot)	P-value	Difference	Z-test	Sig
Table 18. Parental Orientation table - Offending									
Any Offending									
No PO (v. Low PO)	0.13	0.12	0.280	0.35	0.30	0.246	-0.22	-0.67	
Moderate PO	0.01	0.13	0.941	-0.11	0.28	0.693	0.12	0.39	
High PO	0.08	0.15	0.578	-0.15	0.32	0.647	0.23	0.65	
In Partnership (v. Single)	0.40	0.06	0.000	0.28	0.16	0.077	0.12	0.73	
Any Aggressive Offending									
No PO (v. Low PO)	0.14	0.14	0.305	0.14	0.30	0.633	0.00	-0.01	
Moderate PO	0.01	0.14	0.921	0.31	0.28	0.280	-0.29	-0.93	
High PO	0.01	0.18	0.970	0.13	0.36	0.723	-0.12	-0.30	
In Partnership (v. Single)	0.29	0.06	0.000	0.35	0.20	0.084	-0.06	-0.29	
Any Income Offending									
No PO (v. Low PO)	0.15	0.13	0.230	0.43	0.48	0.375	-0.27	-0.55	
Moderate PO	-0.11	0.15	0.466	0.15	0.35	0.657	-0.26	-0.69	
High PO	-0.11	0.15	0.453	-0.25	0.41	0.535	0.14	0.32	
In Partnership (v. Single)	0.46	0.08	0.000	0.48	0.26	0.067	-0.03	-0.10	
Table 21. Parental Orientation table - Substance use									
Number of Drugs									
No PO (v. Low PO)	-0.03	0.07	0.618	0.54	0.19	0.004	-0.58	-2.85	*
Moderate PO	-0.03	0.07	0.652	0.09	0.20	0.646	-0.13	-0.59	
High PO	-0.06	0.10	0.581	-0.08	0.20	0.686	0.02	0.11	
In Partnership (v. Single)	0.15	0.05	0.001	-0.07	0.10	0.528	0.22	1.90	
Binge Drinking									
No PO (v. Low PO)	-0.04	0.14	0.796	0.22	0.46	0.637	-0.26	-0.53	
Moderate PO	-0.04	0.15	0.764	-0.05	0.33	0.883	0.00	0.01	
High PO	-0.07	0.15	0.640	-0.45	0.39	0.244	0.38	0.92	
In Partnership (v. Single)	0.34	0.07	0.000	0.12	0.20	0.538	0.22	1.07	
Frequency of Marijuana Use									
No PO (v. Low PO)	0.07	0.11	0.557	0.64	0.24	0.007	-0.57	-2.20	*
Moderate PO	0.04	0.10	0.723	0.11	0.21	0.593	-0.07	-0.32	
High PO	-0.06	0.14	0.663	-0.07	0.19	0.698	0.01	0.05	
In Partnership (v. Single)	0.22	0.06	0.000	0.03	0.13	0.817	0.19	1.28	

Table 43. Z-test of Gender Estimates (continued)

Chapter 4 models	Male			Female					
	Est (coef)	Std. Err. (boot)	P-value	Est (coef)	Std. Err. (boot)	P-value	Difference	Z-test	Sig
Table 19. Parental Orientation and Relation Influence table - Offending									
Any Offending									
No PO (v. Low PO)	0.12	0.15	0.416	0.32	0.28	0.264	-0.20	-0.62	
Moderate PO	0.01	0.13	0.947	-0.12	0.29	0.676	0.13	0.41	
High PO	0.08	0.19	0.669	-0.12	0.27	0.656	0.20	0.61	
Partner w/ ASI (v. Single)	0.93	0.11	0.000	0.81	0.23	0.000	0.11	0.45	
Partner w/o ASI	0.32	0.07	0.000	0.10	0.21	0.641	0.22	1.02	
Any Aggressive Offending									
No PO (v. Low PO)	0.13	0.11	0.221	0.10	0.26	0.700	0.03	0.11	
Moderate PO	0.01	0.13	0.925	0.29	0.32	0.359	-0.28	-0.82	
High PO	0.00	0.16	0.976	0.12	0.31	0.690	-0.12	-0.34	
Partner w/ ASI (v. Single)	0.63	0.12	0.000	0.90	0.25	0.000	-0.28	-1.01	
Partner w/o ASI	0.23	0.07	0.001	0.17	0.19	0.390	0.06	0.31	
Any Income Offending									
No PO (v. Low PO)	0.14	0.12	0.263	0.41	0.44	0.351	-0.27	-0.60	
Moderate PO	-0.11	0.11	0.313	0.13	0.34	0.711	-0.24	-0.66	
High PO	-0.12	0.15	0.417	-0.26	0.35	0.447	0.14	0.37	
Partner w/ ASI (v. Single)	0.89	0.12	0.000	1.12	0.27	0.000	-0.23	-0.79	
Partner w/o ASI	0.37	0.09	0.000	0.18	0.25	0.470	0.19	0.74	
Table 22. Parental Orientation and Relation Influence table - Substance Use									
Number of Drugs									
No PO (v. Low PO)	-0.04	0.09	0.608	0.55	0.15	0.000	-0.60	-3.44	*
Moderate PO	-0.04	0.07	0.536	0.07	0.15	0.635	-0.11	-0.69	
High PO	-0.06	0.10	0.536	-0.07	0.16	0.647	0.01	0.08	
Partner w/ ASI (v. Single)	0.30	0.05	0.000	0.23	0.12	0.053	0.07	0.55	
Partner w/o ASI	0.11	0.05	0.032	-0.21	0.11	0.058	0.32	2.61	*
Binge Drinking									
No PO (v. Low PO)	-0.08	0.15	0.608	0.17	0.43	0.693	-0.25	-0.54	
Moderate PO	-0.07	0.17	0.683	-0.08	0.31	0.783	0.02	0.04	
High PO	-0.10	0.15	0.530	-0.47	0.40	0.243	0.37	0.87	
Partner w/ ASI (v. Single)	0.95	0.12	0.000	0.81	0.28	0.005	0.15	0.47	
Partner w/o ASI	0.23	0.09	0.006	-0.13	0.21	0.545	0.36	1.60	
Frequency of Marijuana Use									
No PO (v. Low PO)	0.05	0.10	0.587	0.60	0.28	0.029	-0.55	-1.87	*
Moderate PO	0.03	0.09	0.740	0.09	0.22	0.672	-0.06	-0.26	
High PO	-0.07	0.12	0.560	-0.08	0.20	0.707	0.01	0.04	
Partner w/ ASI (v. Single)	0.57	0.12	0.000	0.61	0.16	0.000	-0.04	-0.20	
Partner w/o ASI	0.16	0.05	0.002	-0.11	0.11	0.299	0.27	2.26	*

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Research and Teaching Interests

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Awards

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