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## Crime and the transition to parenthood. The role of sex and relationship context

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**Crime and the transition to  
parenthood**  
The role of sex and relationship  
context

**Abstract:**

Research on desistance from crime has paid little attention to parenthood as a “turning point”. In this paper, we use Norwegian register data on a population of men and women who had their first child between 1995 and 2001 (131,167 women and 127,415 men). We provide separate estimates for sex and marital status as parenthood has different implications for men and women. Their social and economic situations will also vary by marital status, which is likely to have implications for offending. We describe the changes in offending for this sample year-by-year, comparing subjects before and after child-birth. Overall, we find that the transition to parenthood is characterized by a decrease in criminal activity. There is considerable heterogeneity between women and men. The term “turning point” applies only to men who are not living with the other parent.

**Keywords:** parenthood, crime, social control theory, sex, register data, turning points

**JEL classification:** J12, K49

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**Discussion Papers**

comprise research papers intended for international journals or books. A preprint of a Discussion Paper may be longer and more elaborate than a standard journal article, as it may include intermediate calculations and background material etc.

## **Sammendrag:**

Forskning på kriminelle løpebaner har fokusert lite på foreldreskap som et mulig vendepunkt, selv om de underliggende kriminalitetsdempende mekanismene også vil kunne virke i inngangen til foreldrerollen. Foreldreskap påvirker menn og kvinner forskjellig, og den sosiale og økonomiske situasjonen vil også variere etter hvilken kontekst barna blir født inn i. Ved bruk av registerdata beskriver vi i denne artikkelen årlige forandringer i kriminalitet både før og etter inngangen til foreldreskap for alle menn og kvinner som fikk sitt første barn mellom 1995 og 2001 (131,167 kvinner og 127,415 menn). Vi presenterer separate estimater for kjønn og samlivsstatus i fødselsåret. For menn går kriminaliteten ned i perioden før fødselen, mens for kvinner er det stor grad av forandring i nær tilknytning til fødselen. Menn som får barn uten å bo med moren forandrer seg lite i perioden før fødselen, men deres kriminalitet går ned etter fødselen. For kvinner varierer effekten av fødsler mindre med tilknytningen til den andre forelderen samtidig som den relative økningen i kriminalitet etter fødselen er sterkere.

# 1. Introduction

Several studies have shown that marriage is one of the most important “turning points” in a criminal career (Sampson & Laub 1993) and generally promotes desistance from crime (Bersani, Laub & Nieuwebeerta 2009; Blokland & Nieuwebeerta 2005; Burt et al. 2010; Sampson, Laub & Wimer 2006). Several previous studies have suggested that becoming a parent represents a turning point similar to become married and affects criminal behaviour through the same mechanisms. However, thus far this idea has received little research interest. For example, some of the men interviewed by Sampson and Laub (2003: 135) attributed their change in offending to becoming a father. Becoming a parent increases individual responsibilities, changes one’s economic situation and limits social expectations to certain life domains (Keizer et al. 2010: 2–3). Moreover, parenthood has a major impact on routine activities, especially for women (Gauthier & Furstenberg 2002).

The context of parenthood may be of major importance. Any changes in offending related to becoming a parent are likely to be conditional on the offender’s relationship with the other parent (Farrington & West 1995; Giordano, Seffrin, Manning & Longmore 2011; Massoglia & Uggen 2010). Having a child within a marriage or cohabiting union could be quite different to having a child where parents are not romantically involved. There are also possibly differences between married and cohabiting couples in this regard. Importantly, over recent decades, increasing proportions of first births have been to mothers in cohabiting relationships. This pattern is pronounced in Scandinavia (Kiernan 2004). In 2010, over 50 per cent of all children in Norway were born outside marriage (Statistics Norway 2010). A large proportion of couples will therefore experience a transition to parenthood before marriage. It is thus possible that parenthood is an even more important adult life-course transition than marriage.

The idea of “turning points” or desistance (Sampson & Laub 1993; 2005) is usually understood as gradual changes from the time the relevant event takes place. This implies that offending prior to the turning point should be stable or rising. Some have suggested that change, or at least “openness for change”, must be present *before* seizing the opportunities for change that turning points represent (Giordano et al. 2002). However, few studies explicitly assess the timing of change (Chen & Kandel 1998; Duncan et al. 2006; Laub et al. 1998; Lyngstad & Skardhamar 2011b).

Sex differences in crime have been reported in relation to marriage (Bersani et al. 2009; Rhule-Louie & McMahon 2007; Thompson & Petrovic 2009) and are likely to apply to parenthood as well. Obviously, physical constraints are much more important for the mother than the father during pregnancy and for some time after the birth. Although becoming a parent is reported to be a generally

important life-course transition for men (Keizer et al. 2010; Marsiglio 1995), it is believed to be even more important for women's change in personal goals (Salmela-Aro et al. 2000).

The empirical evidence on parenthood as a turning point is not conclusive. Qualitative studies on crime and delinquency often attribute major importance to becoming a parent (Edin et al. 2004; Farrall & Calverley 2006; Giordano et al. 2002; Helgeland 2009; Maruna 2001). Evidence from quantitative studies is mixed. Some studies have found no association between parenthood and a reduction in crime (Blokland & Nieuwebeerta 2005; Farrington & West 1995; Giordano et al. 2011), while other studies found a strong association (Kreager, Matsueda & Erosheva 2010; Savolainen 2009). A few studies have compared men and women (Graham & Bowling 1995; Thompson & Petrovic 2009) and addressed the importance of the marital status at the time of the child's birth (Farrington & West 1995; Giordano et al. 2011). None of the studies utilizes information about the period leading up to parenthood in such a way that it allows for an assessment of parenthood as an eventual turning point.

In this paper, we study changes in offending for men and women around the time of their transition to parenthood. Our contribution is threefold. First, we provide a description of how offending rates change before and after entry into parenthood. Second, we test whether these changes vary by the partnership context (married, cohabiting or not co-residential with the other parent). Third, we test whether the changes in offending during the transition to parenthood are different for men and women. We use data on all individuals in the total (resident) Norwegian population who had their first child between 1995 and 2001 ( $N = 272,901$ ), linked with police data on all solved cases committed between 1992 and 2004. We take a "within-individual" approach, where we compare an individual's behaviour at one point in time with that individual's behaviour at a later point in time. This removes bias due to confounding variables, and allows us to assess changes in an individual's crime rates year-by-year both prior to and following the year in which they become a parent.

## **2. Parenthood and crime: theory**

According to the theory of age-graded social control (Laub & Sampson 2003; Sampson & Laub 1993), changes in offending over the life-course are in part explained by changes in social bonds and informal control. As individuals undergo life-course transitions, they are subjected to changes in the form and sources of social control that represent potential turning points. Marriage and child-bearing have been suggested as such turning points (Laub & Sampson 2003). Marriage is widely regarded as a highly significant family-related transition to adulthood that impacts heavily on offending, because it represents a new situation in which 1) the past can be cut off from the present, (2) supervision and

monitoring increase, (3) the structure of routine activities changes and (4) opportunities are provided for transforming identity (Sampson & Laub 2005: 17–18).

In comparison, parenthood has been seldom discussed as a possible turning point. Sampson et al. (2003: 43) mention that “parenting responsibilities lead to changes in routine activities as more and more time is spent in family-centred activities rather than unstructured time with peers”. Parenthood possibly activates many of the desistance-promoting mechanisms that are also associated with marriage: increased informal social control, changes in routine activities, potential changes in self-identity and social roles, and opportunities for growth and support. Parenting a child also redirects stakes in conformity because more is at stake (Edin et al. 2004: 53; Laub et al. 1998: 225). It is also understood that different turning points may occur simultaneously or consecutively to create cumulative crime-inhibiting effects through “the full respectability package” (Giordano et al. 2002; Maume 2003; Sampson et al. 2006).

Informal social control is a key mechanism in desistance from crime (Laub and Sampson 2003). However, social control might be seen as less relevant in the case of becoming a parent because it does not seem reasonable that small children exercise direct social control over their parents (Giordano et al. 2002: 1043). However, the presence of children can affect social support and control, because entering the new social role as a parent is likely to trigger new expectations from family and peers. The role of being a parent is more public than the role of being a (marital) partner. It is guided by a stronger consensus on what it means to be a good caregiver and putting the best interests of the child first. For example, the role of a responsible parent is viewed by most people as incompatible with continued offending. Hence, the role of parenthood might activate a broader domain of social control and possibly include a broader set of control agents (Keizer et al. 2010: 2–3) and reorient the parent towards the broader social world in such a way that offending is no longer a viable option.

While the above discussion of mechanisms applies to men and women, their reactions to parenthood may differ because of differing gendered expectations and social roles. The period of pregnancy will typically be experienced differently for mothers and fathers in cutting off the past from the present, apparently through the physical experiences of pregnancy and breast-feeding. For example, Draper (2003: 70) states that “[the pregnancy’s] embodied knowledge forms an important component of her transition to motherhood. However, such changes do not accompany a man’s transition to fatherhood”. Usually, the role of being a parent is experienced differently for men and women, and the tasks associated with child-care are divided unequally, even when this is not the couple’s intention (Cowdery & Knudson-Martin 2005: 338).

Entry into parenthood will also change routine activities substantially. Caring for a child places new demands on the parents and changes their social habits. It has been shown that becoming a parent generally leads to major changes to activities in adulthood, with the changes in time use patterns being more marked for mothers (Gauthier & Furstenberg 2002). Responsibility for child-care largely lies with mothers for at least the first years of the child (Ellingsæter & Leira 2006: 125; Hearn 2002: 260). While the participation of fathers in infant care has increased in recent decades, the mother nevertheless continues to assume the role of primary carer (Feeney 2001: 27). Norwegian fathers take about 9 per cent of their total parental leave allotment (Ellingsæter & Leira 2006: 38–39, 126). To the extent that changes in routine activities are an important mechanism leading to desistance from crime, parenthood may be an especially salient turning point for women. The degree of change to routine activities potentially depends on whether the parents are co-residing. The usual result of parents living separately is less contact between the father and the child as common residence with the child is not prevalent for fathers who are not in a relationship with the mother at the time of the child's birth (Kitterød 2005). The parent (usually the father) not co-residing with the child will have more of an opportunity to maintain their normal routine activities.

It has been suggested that the “full respectability package” may contribute more to the desistance process than one event alone (Giordano et al. 2002; Maume 2003; Sampson et al. 2006: 468). It is therefore important to attempt the difficult task of disentangling the effect of parenthood from a marriage effect (Farrington & West 1995: 251), as these events are often interrelated and can occur almost simultaneously.

Relationship status with the other parent also reflects important selection mechanisms. First, parenting a child within marriage or cohabitating union, or living separately, are to some extent associated with different stages in the life-course. In particular, having a child outside a marriage or cohabitation is more common earlier in life (late adolescence or early adulthood) and is also associated with heightened levels of criminal activity. Thus, the context of child-birth may reflect age differences. Second, there may be systematic differences between those who become parents when married and when cohabiting. Cohabitation before marriage is the norm in Scandinavia and Norway in particular and often serves as a stepping-stone towards marriage (Noack 2010). Importantly, the majority of first births are to cohabiting couples (Statistics Norway 2010). Third, there might be systematic differences between those who become parents within and outside marriage and cohabitation. For example, if the father does not show any signs of desistance, the mother might not be willing to choose him as a partner or even view him unsuitable for fathering responsibilities. A fourth selection effect is related to whether or not the pregnancy was planned. It seems reasonable to suggest that births within marriage and cohabiting relationships are more likely to be planned. As cohabitation is highly prevalent in



Norway, births within cohabitation may not differ significantly from births within marriage. However, births outside a co-habiting partnership are less likely to be planned. Prospective parents are likely to adjust their lifestyle ahead of marriage and pregnancy (Chen & Kandel 1998; Lyngstad & Skardhamar 2011b; Rhule-Louie & McMahon 2007).

### **3. Parenthood and crime: empirical evidence**

Becoming a parent has been identified as a turning point in several qualitative analyses of narratives on changes in offending for males (Edin et al. 2004; Farrall & Calverley 2006; Laub & Sampson 2003; Maruna 2001; Michalsen 2011) and females (Edin & Kefalas 2005; Fleisher & Krienert 2004; Giordano et al. 2002). In a Norwegian sample of former delinquents, Helgeland (2009) found that women attribute change in their overall life situation to becoming a mother, while men are more likely to emphasize the role of a pro-social partner or their own agency.

By contrast, the quantitative evidence for parenthood as a life event that shapes offending is mixed, and less conclusive. Savolainen (2009) found that the birth of a child reduced reoffending in a sample of Finnish men. In a British sample, Graham and Bowling (1995) found child-bearing was linked to desistance for women, but not to the same extent for men. Uggen and Kruttschnitt (1998) found an effect of motherhood on offending. Kreager et al. (2010) found in a sample of mothers from a disadvantaged neighbourhood in Denver, USA, that "...motherhood, not marriage, represents the primary turning point in the delinquent trajectories of women" (Kreager et al. 2010: 248).

A number of studies found either no evidence or mixed evidence for an association between child-birth and crime. Farrington and West (1995) found mixed results in their analyses of fatherhood and offending, but highlighted the importance of the context into which the child is born. Having "illegitimate children" and not living with the child was strongly correlated with crime. It has been suggested this association works through underlying traits such as antisocial behaviour. Living with a child and wife yields non-significant results on crime. Giordano et al. (2002) found no additional effect of motherhood when controlling for marriage. Another study by Giordano et al. (2011) found a small effect of parenthood, but only for those living with the other parent, with higher levels of socio-economic status, and demonstrating a need for children. Using a Dutch sample, Blokland and Nieuwebeerta (2005) found no effect of becoming a parent on offending, regardless of marital status. Further, there are mixed results in studies of drug use and desistance when entering parenthood. Thompson and Petrovic (2009) found no association between having children and desistance from substance use, while Chen and Kandel (1998) showed that women discontinue marijuana use *before* entering motherhood.

An association between entry into parenthood and crime is thus not reliably established, but there are several possible reasons for the mixed results seen in previous studies. Several studies used a cohort of relatively young (Giordano et al. 2011) or older samples (Farrington & West 1995; Sampson et al. 2006). The differences in the populations under study may account for some of the observed differences.

A few studies (Graham & Bowling 1995; Thompson & Petrovic 2009) investigated gender differences in response to becoming a parent. An obvious reason is that many criminological studies are all-male samples or the crime rate among females is sufficiently low as to preclude any meaningful analysis of data on females. A small number of studies of female offending have been conducted (see, e.g., Alarid et al. 2000; Giordano et al. 2002; Kreager et al. 2010), but direct comparisons with results from studies of males are problematic because the samples are usually drawn from different populations. Moreover, only a few studies have addressed how any effects of parenthood are contingent on the relationship status of the new parents (Farrington & West 1995; Giordano et al. 2011). Importantly, no previous studies have utilized data to identify the timing of change. Thus, the “turning point” hypothesis has not yet been reliably tested.

#### **4. The contribution of this study**

This study contributes to the literature on parenthood and offending by examining how offending rates develop around the time of the transition to parenthood. Our data represent individuals who actually experience this transition. By focusing on this group, we obtained a “within-individual” design. From data on these individuals, we can estimate the year-by-year pattern of offending over the period from five years before to five years after the year of entry into parenthood. Thus, we also capture changes in offending preceding parenthood. This makes it possible to ascertain when any changes in offending are initiated and how long they last. We examine changes in offending between men and women and between relationship contexts. That is, whether the individual is living with the other parent at the time of the birth. Importantly, our approach of examining the period leading up to parenthood makes it possible to describe patterns of “dynamic selection” (Bjerk 2009: 393) and extends the knowledge of how the transition to parenthood is captured by the term “turning point”.

#### **5. Data and methods**

The data are based on administrative register data, available from Statistics Norway, comprising the total population of resident persons in Norway. The register system is based on a personal ID number assigned to every person ever resident in Norway since 1960. This system is routinely used by various

government agencies, including the registrar's office, tax authorities and the police, and it is possible to follow individuals through different registers and link information on individuals together. The register data are thus individual-level, population-wide and longitudinal. Many of the limitations associated with survey data, such as the data being limited to a geographical area or having a small number of observations, are not relevant to our study. Furthermore, the only attrition from the data is natural—that is, due to death and emigration (for a detailed discussion of this type of data, see Lyngstad & Skardhamar 2011a; Røed & Raaum 2003).

Information on when each person parents his or her first child is gathered from the population registers. This is combined with information on the partner's family status, at the end of the birth year, to determine the context of relationship with the other parent. Information on cohabitation in the registers is only available for couples with common children, and thus only possible to determine at the end of the birth year. Parents who are defined as not living with the other parent can be cohabitating with other persons, or sharing a residence without having a registered address with the other parent. These data are then linked with yearly records from the crime statistics. The data on crimes committed are gathered from police records of solved cases from 1992 through 2009. Solved cases are defined slightly more broadly than convictions alone. This is an advantage in a number of cases where no conviction is recorded even though the perpetrator is arrested and the case is solved (according to the police). These persons are usually convicted, but they can also be subjected to a conditional waiver of prosecution having the case transferred to mediation, or be found not criminally responsible (e.g., low age or not accountable because of mental health issues). More importantly, the data include each single offence and the date it was *committed*. This process is important, as conviction (or other legal decision) can occur some years later. Only committed offences registered in the period 1992–2004 are included to allow for a time lag between when the offence was committed and when the case was solved.<sup>1</sup>

## 6. Within-individual design

Our approach is inspired by the much-cited study by Laub, Nagin and Sampson (1998). They used panel data to estimate the effect of marriage on crime by using a series of dummies for each year before and after marriage. Thus, they were able to detect a gradual decrease in offending after marriage while there were no changes before marriage. They interpreted these findings as an effect of gradually increasing investment in the relationship and growing social control. Similar approaches

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<sup>1</sup> There is some time lag because the police send data on completed cases to Statistics Norway each year. The data are then processed by Statistics Norway, constituting additional checks of data quality.

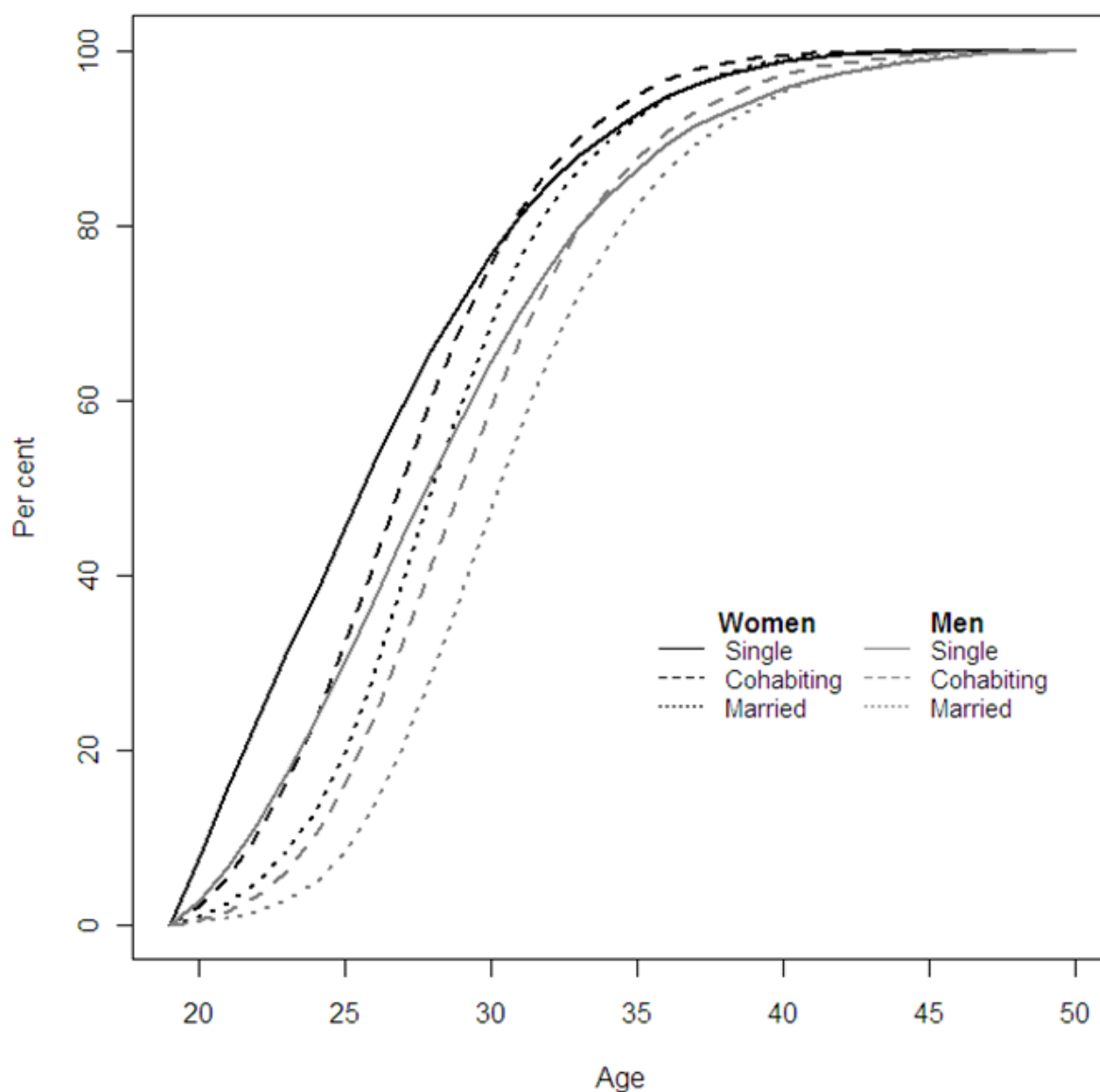
were used by Duncan et al. (2006) to study changes in drug use before and after marriage and by Kreager et al. (2010) to study gradual changes in offending *after* becoming a mother. Lyngstad and Skardhamar (2011b) also used similar data and methods to study changes in offending around the time of marriage. Utilizing this intra-individual approach, we can compare average outcomes after birth with what happens before the time of birth.

We investigate changes in offending among those who actually become a parent. In practice, this means that we compare the offending rate of new parents with their own offending rates before and after the year of the birth. This allows us to avoid the problem of spurious relationships that arise when one compares individuals with children to childless individuals.

For our analysis, we selected the complete set of individuals who experienced the birth of their *first* child between 1995 and 2001. While we take immigration, emigration and deaths into account, we also ensured that each individual was followed for a minimum of three years (and a maximum of five years) both before and after the year in which he/she parents their first child. Thus, all persons contribute between seven and 11 observations of person-years to the analysis. Because the age for criminal responsibility in Norway is 15 years, the lowest observable age was 18 years. This implies that some teenage pregnancies (17 or younger) are not covered in the data, but such experiences are very rare in Norway (Lappegård 2000). We include all other ages up to age 50 for both men and women. Hardly any women will become first time mothers in the upper age groups, while some older first-time fathers may have been omitted had we set the age cut-off earlier.

Table 1 is an overview of the sample by sex and marital status. The data set consists of 258,582 persons (131,167 women and 127,415 men) with a total of 2,621,784 person-years (1,314,220 for women and 1,307,564 for men). The differences in population size for men and women are somewhat arbitrary and reflect registration practices and limitations set for the analyses. For example, if a man has his second child with a woman who has no children of her own, then the woman will be in our data set, but not the man. If a man has his first child with a woman who is not registered as a resident citizen, then only the man will be included in our data set. We do not see any reason for these slight differences in figures for men and women to be of any concern for the conclusions. As noted above, there are differences between men and women in first birth timing. These differences are shown in Figure 1, by plotting the cumulative per cent of age at first birth. Having a first child without living with the other parent generally occurs at a somewhat lower age than births within marriage and cohabitation. It is not uncommon for parents to live separately after the age of 30. These patterns are naturally quite similar for men and women, but men have their first child about two years later on average.

**Figure 1. Cumulative distribution of age at first birth by sex and marital status**



**Table 1. Number of persons (age 18–50) who had their first child between 1995 and 2002 and corresponding means of persons charged in the year of birth**

|   | Women       |  | Men         |  |
|---|-------------|--|-------------|--|
|   | Sample size | Per cent of the sample charged in the birth year | Sample size | Per cent of the sample charged in the birth year |
| Becoming a parent within marriage                           | 55,504      | 0.24%  | 54,050      | 1.83%  |
| Becoming a parent within cohabitation                       | 56,281      | 0.26%  | 58,852      | 2.60%  |
| Becoming a parent without co-residing with the other parent | 19,382      | 1.59%  | 14,513      | 12.85%   |
| Total number of persons                                     | 131,167     | 0.45%  | 127,415     | 3.4%   |

## 7. Outcome definition and estimation procedure

Our outcome variable is denoted CRIME, which is a binary indicator of having committed at least one offence in a given year. Note that this is the year in which the offence was *committed* rather than when the person was arrested or convicted. The parameter estimates of interest are logit coefficients and standard errors associated with each level of the time-related categorical variable *TIME*. This variable is centred on the year of birth, so that its value three years *before* becoming a parent is  $-3$  and three years *after* the birth it takes the value of  $3$ . In effect, each different value represents a specific year relative to the year of birth, and each of these years is represented by a separate dummy variable in the statistical model. This way we avoid imposing any parametric restrictions on the shape of the trends in offending the year of becoming a parent. We are not primarily interested in the magnitude or significance of each of these coefficients, but rather the pattern they display when considered together.

It is of major importance to ensure these estimates are not biased by age or period effects (see, e.g., Hirschi & Gottfredson 1983; MacDonald 2002). Thus, we control for age at the year of marriage and period effects, both represented by a series of dummy variables. AGE is the age at entry into parenthood (that is at  $TIME = 0$ ). We also include AGE as a series of dummy variables for each five-year interval. The variable PERIOD captures any period effects, and is operationalized as a series of dummy variables for each calendar year between 1995 and 2001. The number of dummy variables is large, but not excessive as this specification provides a solid control for age and period effects without resorting to parametric specifications. Because our data set is very large, we can include many dummies with a minimum loss of statistical power.

The variable CONTEXT distinguishes among contexts in which the transition to parenthood takes place, as well as the respondent's sex. The categories are as follows: 1) man married to the mother of the child, 2) man cohabiting with the mother of the child, 3) man not co-resident with the mother of the child, 4) woman married to the father of the child, 5) woman cohabiting with the father of the child and 6) woman not co-resident with the father of the child. These categories correspond to those displayed in Table 1.

The data set of person-years is fed into a logit regression model, the equation of which can be expressed as:

$$\log\left(\frac{p_{it}}{1-p_{it}}\right) = \alpha + \beta_1 TIME_{it} + \beta_2 AGE_i + \beta_3 PERIOD_{it} + \beta_4 CONTEXT_i + \beta_5 (TIME_{it} \times CONTEXT_i),$$

where  $p_{it}$  is the probability of committing an offence in the given year for person  $i$  at time  $t$ . The intercept is represented by  $\alpha$ , while the  $\beta$ s are regression coefficients. We include an interaction term to let TIME vary by CONTEXT, so that the sum of  $\beta_1 + \beta_4 + \beta_5$  is the trajectory (log odds ratios) for any given context.

An alternative model specification could include a person-specific random term, which would allow for person-specific intercepts. This specification would be computationally intensive and yield substantively identical results.<sup>2</sup> A fixed-effect model would only take out the average level of offending for each individual, and not affect the parameter estimates.

We have estimated one regression model with an interaction term rather than estimating separate models for each of the six contexts to allow for comparison of parameter estimates across those levels. Comparisons of logit coefficients obtained from separate models by sex and marital status estimated on slightly different samples are at least in theory problematic (Mood 2010).

## 8. Results

As we are primarily interested in the trend in offending over time, we only present the estimates for TIME. To simplify the presentation, regression parameters for *time* are plotted separately by CONTEXT in Figure 2. The dotted lines represent the limits of 95 per cent confidence intervals around the point estimates for each year. As the baseline category in each plot is  $TIME = 0$ , if the interval between the dotted lines includes the x-axis, then the parameter estimate for that time point is not significantly different from zero (that is, the year of entering parenthood). Recall that we have allowed TIME to vary by CONTEXT. The results are therefore plotted separately for each of these

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<sup>2</sup> When a data set includes repeated observations for each individual, as is the case with panel designs such as this, several methodological issues arise. First, failing to take account of clustering can lead to underestimating standard errors. This applies to some parameters in our models (those for age and timing), but not to the parameters capturing the trends in offending. The reason for this is that there are no repeated observations within the set of individual observations for the time trend parameter *time*. Thus, the standard errors are appropriately estimated. Second, the results could be seriously biased if the population-averaged effect is not the same as the individual-specific effect. This might occur if X is unevenly distributed in the population and correlated with an unobserved variable, Z, which also determines Y. As our variable of interest is time before/after the event, no bias will arise for our time trend parameters. Thus, the choice of model in our case will not affect the estimates for either the parameters of interest or their associated standard errors. Thus, we are not concerned over whether to use ordinary logit models or random effects logit models. Nevertheless, to assure that results are not affected by our modelling choice, we have estimated both models presented in Figure 2 with a random intercept term at the person level. The differences in results were not important in any substantive way, and we report the ordinary logit coefficients.

categories, and each time trend is presented using  $TIME = 0$  (the year the child was born) as the reference category. The parameter estimates were recalculated to use the correct reference group in each plot.<sup>3</sup> The plots in the left column of Figure 2 show the changes in offending for men in three different relationship contexts at the time of the birth: married men, cohabiting men and men who are non-resident fathers at the time of the birth. The right-hand column shows the same plots for women. The full results from the regression model are included in Appendix 1.

The plot for married fathers shows that men experience a gradual decline in the probability of offending from five years *before* having a child towards the year the child is born. The decline towards the year of birth is followed by a rebound, but stabilizes at about two years after child-birth at a lower level than the pre-birth period. The overall impression is that there is a decline in offending over the period when married men become fathers, but the lion's share of the decline in crime occurs before the birth of the men's first child.

The top right-hand plot shows results for women who were married in the transition to parenthood. For these women, the change is more abrupt than for men: the probability of offending drops sharply in the year preceding birth. After the first birth, there is a rebound in offending, but contrary to the men, the relative changes in offending rates do not stabilize but rather increase to about the level seen before the birth (the point estimate is slightly lower, but the confidence intervals overlap). The overall impression is that in the period in which married women become mothers, there is a sharp decline in offending in the year before child-birth, but the offending rate returns to levels seen before the arrival of the child within a few years.

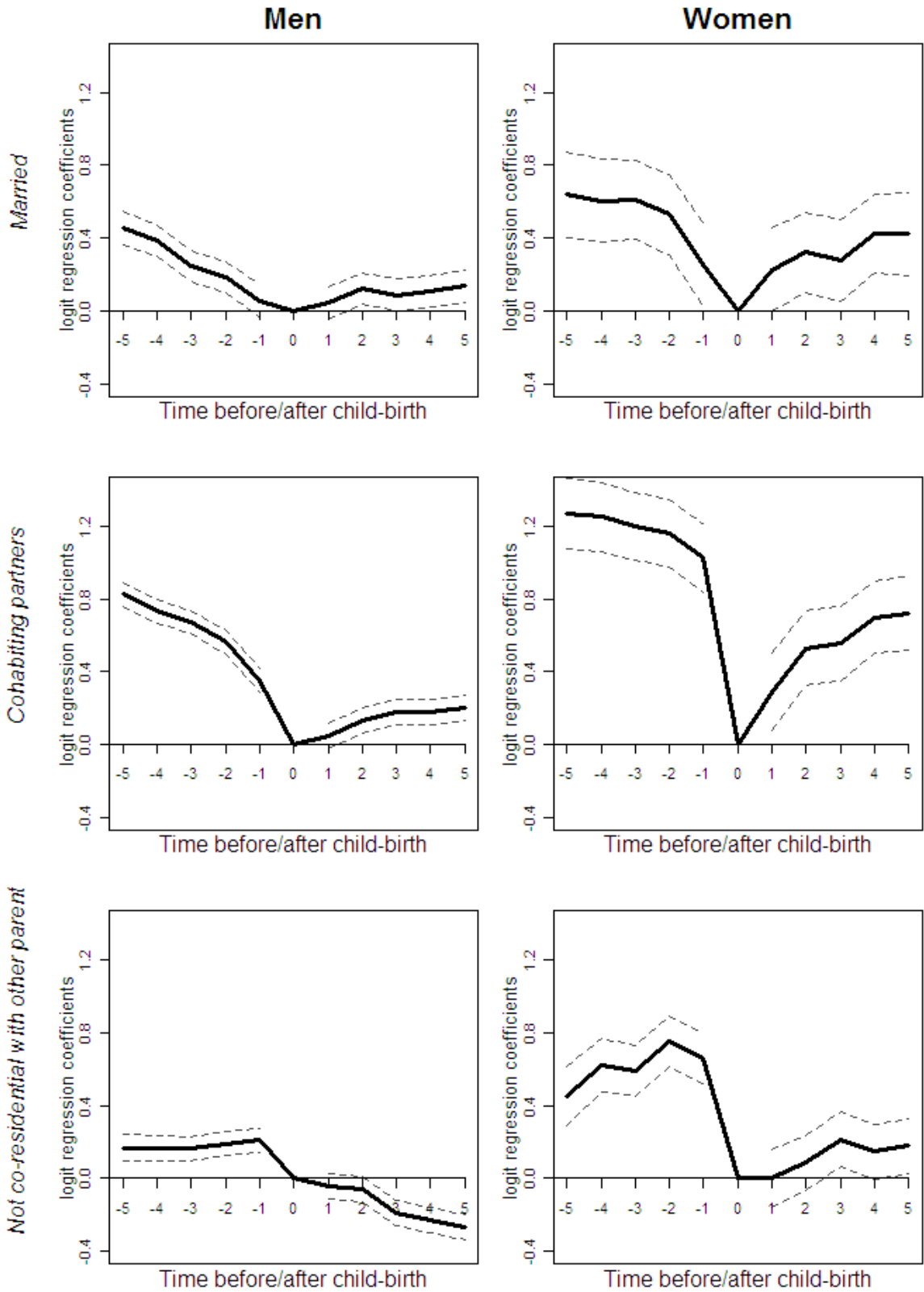
The middle row of the plots in Figure 2 covers men and women who were cohabiting at the time of becoming parents. It is notable that the plots for cohabiting parents are strikingly similar to those obtained for married individuals. The magnitude of the coefficients is somewhat larger, but the trend across time is nearly identical to that of married individuals.

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<sup>3</sup> Note that the regression is specified with one dummy for each category of  $TIME \times CONTEXT$ . The difference between a given value of  $TIME = t$  and  $TIME = 0$  for any combination of  $CONTEXT$  is the difference between the parameters, and the standard error for the difference between the parameters is the square root of  $Var(\beta_k) + Var(\beta_0) + 2 Cov(\beta_k, \beta_0)$ . We have recalculated all the parameters to have  $TIME = 0$  for each combination of  $CONTEXT$ . The estimations are done in SAS PROC LOGISTIC using the contrast statement to calculate the relevant estimates and standard errors.



**Figure 2. Logit coefficients for the time trend relative to year of first child by sex and marital status**



Taking the results for those who experience their first birth in marital or cohabiting unions together, it is clear that there is a decline in offending before becoming a parent, followed by a rebound. For men, the rebound stabilizes at a lower level than at the beginning of the observation period, but the rebound for women continues to increase almost back to pre-birth levels. It is important to note that the decline in offences for women is so sharp that the probability for charges in the birth year is almost indistinguishable from zero. A further decline is therefore hardly possible, making some increase almost inevitable.

We next turn to men and women who had their first child without living in a joint household with the child's other parent. The left-hand lower plot in Figure 2 shows the results for men who became fathers without living with the mother of the child. There is a flat and stable curve towards the year of entering parenthood when there is a significant drop in the probability of offending, followed by a further decline in the period after child-birth. This indicates an effect of becoming a father for men who have children outside partnerships.

According to the right-hand lower plot in Figure 2, women who have a child without living with the other parent experience a rising probability of being charged in the year leading up to parenthood. Women's offending drops slightly in the year before the birth year. A further and significant drop occurs in the birth year. The level of offending slowly increases after birth, but not to pre-pregnancy levels.

The results are reported as odds ratios relative to the reference year of the birth. Thus, the plots do not show any differences in the *absolute level* of offending. Clearly, if the *probabilities* were plotted on the same scale for men and women, all of the plots for women would appear to be flat very close to zero, as women in general have very low crime rates. For women who are living with the child's father, 0.25 per cent committed a crime in the year of the birth, while for men living with the mother, the corresponding percentage was nine times higher, 2.23 per cent.

For parents not residing with the other parent, the crime rates are far higher than for married and cohabiting persons. For women not co-residing with the father, the crime rate was 1.59 per cent in the birth year, while for men it was 12.85 per cent. This is also a clear indication that the family configuration at the time of becoming a parent reflects important mechanisms for selection into parenthood.

## 9. Discussion

Previous research has suggested that parenthood is a more important turning point than marriage for women (Graham & Bowling 1995; Kreager et al. 2010), but it is uncertain whether it is associated with desistance from crime for men (Farrington & West 1995; Sampson & Laub 2003). Our results suggest that parenthood is important for both men and women, and the reduction in crime over the long term is even greater for men than for women. However, the role of parenthood as a causal factor in producing these changes is less clear as most of the decline in offending takes place well ahead of the individual's first birth.

For men who do not live with the child's mother, offending does not decline before the birth of the child, but undergoes a gradual decline in offending thereafter. The decrease in offending for women is more abrupt and reflects the timing of pregnancy and birth, followed by an increase thereafter. For mothers, the magnitude of the increase varies by union status. The increase is smallest for mothers who were single at the time of the birth.

The theory of age-graded social control (Laub & Sampson 2003; Sampson and Laub 1993) argues that desistance from crime occurs in relation to events and transitions in the life-course that cut off the past from the present, provide increased informal social control, change routine activities and provide the opportunity for identity transformation. Our findings support the idea that the transition to parenthood is likely to provide each of these mechanisms, but the findings also suggest this varies according to relationship status and sex. We find no clear sign of parenthood being a "turning point" except for men that have their first child without residing with the mother of the child.

The gradual decrease in offending for men *before* child-birth might seem puzzling. The sample is selected based on actually becoming a parent, so the decrease in offending for men leading up to the birth of the child reflects a range of selection mechanisms into fatherhood. For those married or cohabiting, some of the decline in offending might be due to the effects of the partner, particularly so as first births are likely to occur after a couple of year of marriage or cohabiting. The decline in offending might also reflect a reorientation in life, a "readiness for change" (Giordano et al. 2002) that increases the probability of being chosen as a co-parent (Bjerk 2009). We note in conjunction with this that a change in behaviours, affiliations and identity may be anticipatory, in that "acquisition of values and orientations found in statuses and groups in which one is not yet engaged but which one is likely to enter" (Merton 1968: 438).

Parenthood within marriage and cohabitation may be a planned and anticipated event, and changes in behaviours may therefore precede the actual timing of conception. The decline in offending might then also be related to an increase in commitment to the partner. To become a father is also a result of being selected *by the partner*, hence being regarded as both a suitable father for the child and a life partner for the mother. For these reasons, we would expect that the men who live unordered lives tend to become fathers in a very good period of their lives. If they had not shown signs of responsibility and maturity (including less inclination to offend), they would be less likely to become fathers at that time.

For non-resident fathers, however, we would not expect any partner effect to result in declining crime rates before the birth. Neither would we expect these births to be planned. Becoming a father might even have come as a surprise. Many of these persons would be in a dating relationship, but given that they are not living together with the mother at the time of birth, they are not (yet) in a stable relationship. That there is no change in crime rates until the year of birth seems reasonable. The decline after becoming a father indicates that it does affect their lives substantively on average, probably reflecting their taking on responsibility for the child. Contact with the child can also be contingent on changed behaviours and control efforts by mother and child services. Some may also move in with the mother after the child is born, so that some of the decline is related to a partner effect.

The patterns for women are more abrupt and seem to be mainly related to the period of pregnancy. The rebound in crime rates after birth of the child is rather strong for married and cohabiting women and less so for those not co-residing with the father. While some of the mechanisms suggested for the men might apply to women as well, it seems that the decline in offending is more directly related to the period of pregnancy and the period of infancy where the responsibility for caring and everyday responsibilities lie with the mother. Clearly, pregnancy is a situation that demands immediate changes in behaviour in different ways and across a wide range of areas for women. The child's first year of life also places great responsibility on the mother. Thus, routine activities are fundamentally altered in this period for a range of practical reasons, as well as by changes in identity and social roles.

It is interesting to note that the overall rebound is much larger for women than for men. The rebound is largest for married women, and smallest for those not residing with the child's father. This is consistent with the idea that the rebound is associated with responsibilities and routine activities. Relationships started as cohabitating unions are more likely to dissolve (Andersson 2003; Lyngstad & Jalovaara 2010). Thus, it might be that a larger proportion of these women eventually become single mothers, with the associated larger responsibilities for the child. Those not residing with the father will have a larger share of responsibilities for the child in the whole period, and will be far less exposed to

criminogenic settings. The rebound effect may also come from another source linked to relationship quality. As has been noted in much of the literature on cohabitants and marriage, children may induce stress in the relationship (Wiik et al. 2009: 467).

The rebounds for both men and women seem puzzling. However, the rebounds fit into a framework that sees desistance as a *process* with several positive and less positive steps toward cessation from crime altogether (Laub & Sampson 2001). The rebound can also be interpreted as natural, in that so much positive change has already happened. Therefore, additional positive change or even remaining within the status quo may be unlikely, also recognized as “regression towards the mean” (Bland & Altman 1994). This is especially important for women because their crime reaches a level close to zero in the birth year. Additional benefits over time could therefore not be expected.

## 10. Limitations

Some caveats are in order. First, some might argue that our findings are hard to interpret, as our study does not provide evidence of the causal effects and causal directions. Thus, we do not know whether parenthood reduces offending. On the other hand, it is hardly realistic to expect to reliably estimate causal effects of events where there is so strong self-selection into the state of interest. Rather, our approach is to describe the observable patterns for those who actually do become parents. We do not know the counterfactual outcome for these persons (which could be an even higher crime rate), but our study is informative on *whether* there is any change and *when* this change occurs. Only one study has described changes in offending after becoming a mother (Kreager et al. 2010), while we provide additional evidence for the period leading up to mother- and fatherhood.

It has been argued that becoming a parent does not affect offending net of the partner effect (Warr 1998), while others suggest cumulative effects of additional turning points (Giordano et al. 2002; Sampson et al. 2006). Given that most of our sample had been cohabiting before the birth, and often also before marrying, it is hard to reliably rule out the possibility that partner effects do not reduce crime because the Norwegian registers do not include information on informal cohabitation (cohabitation without common children). Our results suggest that one should study more carefully the period leading up to the events that are closely associated with desistance (see also Lyngstad & Skardhamar 2011b). A similar limitation is related to changes in relationship status after becoming a parent that is not taken into account. Some of the post-birth changes in offending might be explained by this, say, if union dissolution increases the probability of offending.

It is possible that some persons in the sample spent some time in prison during the observation period. Imprisonments should be dealt with as interval censoring, but as was the case in most previous research, we did not have access to information on time spent in prison. One consequence of this limitation might be that the estimated probability of offending is biased downwards. However, unless there is a systematic selection into parenthood while imprisoned, we cannot see how this could explain our main results.

A final possible caveat regards the external validity of the study. Norway may be a very special case and the findings of less relevance outside Scandinavia. The average age of first birth for Norwegian women is high (28.2 years in 2010) (Statistics Norway 2011b) compared with the United States (25 years in 2006) (Mathews & Hamilton 2009). One reason for the high average age of first birth is the very low rate of teenage mothers in Norway, with only 8.4 live births per 1000 women under 20 years old (Statistics Norway 2011a) compared with 90 for the United States (Dye 2008). Another distinct feature of the Norwegian setting is the large share of first births outside marriage. Although cohabitation rates and child-bearing within cohabitating unions in Norway might be exceptionally high, this pattern is also spreading to other countries (Kiernan 2001). For example, cohabitation rates for 30–44-year-olds in the United States have doubled since the mid 1990s (Fry & Cohn 2011). While Norway is an “outlier” in these respects, other countries may follow the Scandinavian pattern and over time experience patterns of family demographic behaviour of the type observed in contemporary Norway. It is of course a possibility that the association between parenthood and crime is highly context sensitive. To settle that issue, studies should be conducted in several different national contexts.

## **11. Conclusion**

The above analysis shows that parenthood is associated with important changes in offending for both men and women. For women, changes in the probability of offending are primarily limited to the period between pregnancy and toddlerhood. Thus, there are no signs of long-term effects on offending. The exception is lone mothers, who do not return to previous levels of offending. Taken together, this supports the idea that mothers’ propensities for committing crime are shaped by routine activities, and desistance from crime is closely related to the most care-intensive period in the life of children. Parenthood does not seem to be a turning point for men in cohabiting or married relationships. The men who become fathers in these contexts display a gradual decrease in offending up to several years before fatherhood. This finding is in line with the idea of a gradual selection from dating to more committed relationships over the years before the birth. Men who become fathers while in a relationship with the mother have most likely already experienced “turning points” in their criminal

careers. These experiences might involve a wide range of interactions with individuals and social institutions, of which the effects may include embedding men in networks with their partner and their own kin and enabling them in turn to *become fathers*. Parenthood itself, however, does not represent such a turning point. The important exception is men whose introduction to parenthood takes place outside the context of a relationship with the mother of the child. In these cases, the father and the mother are not registered as residing together, and the child will live with the mother in most of these cases. For these men, there is no change before fatherhood, but a gradual decline thereafter. The men may be selected on high offending rates or “reckless” behaviour in previous years (which may lead to not living with a partner). To the extent that the notion of a turning point applies, it is to this group of men for whom the birth of their first child may offer an opportunity for reorientation away from crime. It is nevertheless notable that the period of transition to parenthood is characterized overall by desistance for men and lone mothers.

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## Appendix 1: Full regression results from logit model

|   | Estimate | Std Error | Pr > ChiSq |
|---|----------|-----------|------------|
| <b>Intercept</b>  | -2.8954  | 0.0632    | < 0.0001   |
| <b>TIME × CONTEXT</b>                                       |          |           |            |
| (REF = Women not co-resident with the father and TIME = -5) |          |           |            |
| <b>Married men</b>  |          |           |            |
| -5  | 0.804    | 0.069     | < 0.0001   |
| -4  | 0.7355   | 0.0681    | < 0.0001   |
| -3  | 0.5928   | 0.0678    | < 0.0001   |
| -2  | 0.5309   | 0.0681    | < 0.0001   |
| -1  | 0.4025   | 0.0687    | < 0.0001   |
| 0   | 0.349    | 0.0689    | < 0.0001   |
| 1   | 0.3915   | 0.0687    | < 0.0001   |
| 2   | 0.4727   | 0.0682    | < 0.0001   |
| 3   | 0.4348   | 0.0685    | < 0.0001   |
| 4   | 0.457    | 0.0683    | < 0.0001   |
| 5   | 0.4833   | 0.0693    | < 0.0001   |
| <b>Cohabiting men</b>                                       |          |           |            |
| -5  | 1.4069   | 0.0646    | < 0.0001   |
| -4  | 1.3141   | 0.0642    | < 0.0001   |
| -3  | 1.2531   | 0.0639    | < 0.0001   |
| -2  | 1.1442   | 0.0642    | < 0.0001   |
| -1  | 0.9325   | 0.0649    | < 0.0001   |
| 0   | 0.5808   | 0.0662    | < 0.0001   |
| 1   | 0.6292   | 0.066     | < 0.0001   |
| 2   | 0.714    | 0.0657    | < 0.0001   |
| 3   | 0.76     | 0.0655    | < 0.0001   |
| 4   | 0.7619   | 0.0655    | < 0.0001   |
| 5   | 0.7828   | 0.0662    | < 0.0001   |
| <b>Men not co-resident with the mother</b>                  |          |           |            |
| -5  | 2.2378   | 0.0675    | < 0.0001   |
| -4  | 2.235    | 0.0662    | < 0.0001   |
| -3  | 2.2314   | 0.0653    | < 0.0001   |
| -2  | 2.26     | 0.0653    | < 0.0001   |
| -1  | 2.2787   | 0.0653    | < 0.0001   |
| 0   | 2.0685   | 0.0659    | < 0.0001   |
| 1   | 2.0243   | 0.0658    | < 0.0001   |
| 2   | 2.0106   | 0.0655    | < 0.0001   |
| 3   | 1.8823   | 0.0658    | < 0.0001   |
| 4   | 1.8404   | 0.0658    | < 0.0001   |
| 5   | 1.8018   | 0.0665    | < 0.0001   |
| <b>Married women</b>  |          |           |            |
| -5  | -1.2683  | 0.1031    | < 0.0001   |
| -4  | -1.3012  | 0.0974    | < 0.0001   |
| -3  | -1.2991  | 0.0922    | < 0.0001   |
| -2  | -1.3773  | 0.0933    | < 0.0001   |
| -1  | -1.6506  | 0.099     | < 0.0001   |
| 0   | -1.9061  | 0.1055    | < 0.0001   |
| 1   | -1.6803  | 0.0984    | < 0.0001   |
| 2   | -1.5847  | 0.0957    | < 0.0001   |
| 3   | -1.6255  | 0.097     | < 0.0001   |
| 4   | -1.4839  | 0.0932    | < 0.0001   |
| 5   | -1.4853  | 0.0976    | < 0.0001   |

| <b>Cohabiting women</b>                      |          |        |          |
|--|----------|--------|----------|
| -5   | -0.7261  | 0.0817 | < 0.0001 |
| -4   | -0.7426  | 0.0782 | < 0.0001 |
| -3   | -0.7911  | 0.0764 | < 0.0001 |
| -2   | -0.8313  | 0.0769 | < 0.0001 |
| -1   | -0.9675  | 0.0787 | < 0.0001 |
| 0  | -1.9937  | 0.1026 | < 0.0001 |
| 1  | -1.704   | 0.0939 | < 0.0001 |
| 2  | -1.4642  | 0.0881 | < 0.0001 |
| 3  | -1.438   | 0.0875 | < 0.0001 |
| 4  | -1.2927  | 0.0845 | < 0.0001 |
| 5  | -1.2708  | 0.0873 | < 0.0001 |
| <b>Women not co-resident with the father</b> |          |        |          |
| -4   | 0.1719   | 0.0775 | 0.0265   |
| -3   | 0.1399   | 0.0748 | 0.0613   |
| -2   | 0.3039   | 0.073  | < 0.0001 |
| -1   | 0.208    | 0.0742 | 0.005    |
| 0  | -0.4521  | 0.0838 | < 0.0001 |
| 1  | -0.4516  | 0.0831 | < 0.0001 |
| 2  | -0.3663  | 0.0806 | < 0.0001 |
| 3  | -0.2364  | 0.078  | 0.0024   |
| 4  | -0.3043  | 0.0784 | 0.0001   |
| 5  | -0.274   | 0.0798 | 0.0006   |
| <b>Age (REF = &lt; 20)</b>                   |          |        |          |
| 20-24  | -0.4448  | 0.0180 | < 0.0001 |
| 25-29  | -1.2563  | 0.0180 | < 0.0001 |
| 30-39  | -1.6136  | 0.0190 | < 0.0001 |
| 35-39  | -1.7121  | 0.0223 | < 0.0001 |
| 40-44  | -1.7810  | 0.0321 | < 0.0001 |
| 45-50  | -1.9208  | 0.0574 | < 0.0001 |
| <b>Period (REF = 2001)</b>                   |          |        |          |
| 1995   | -0.0400  | 0.0164 | 0.0148   |
| 1996   | -0.0395  | 0.0158 | 0.0124   |
| 1997   | -0.00179 | 0.0153 | 0.9065   |
| 1998   | -0.00794 | 0.0154 | 0.6055   |
| 1999   | -0.0153  | 0.0153 | 0.3185   |
| 2000   | -0.0828  | 0.0153 | < 0.0001 |