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Family formation, fatherhood and crime
An invitation to a broader perspective on crime and family transitions

Abstract:
Using large-scale individual-level Norwegian administrative register data on the total population of men, we study the offending rates five years prior to and after five different family-related transitions. Leading criminological theories predict that marriage and fatherhood has a preventive effect on crime, with marriage receiving most support by empirical research. The last decades' major changes in family patterns warrant a re-examination of the marriage effect. We argue that marriage, cohabitation, and fatherhood all are important aspects of the family formation process. We find some support for the hypothesis that family formation inhibit criminal behaviors, but our results are less clear-cut than those reported by previous research. Most importantly, the declines in offending in the years prior to experiencing family transitions do not seem to be of a permanent nature.

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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.

INTRODUCTION

There is a fairly large empirical literature concluding that there is a causal effect of marriage on men`s desistance from crime (Bersani, Laub, and Nieuwbeerta 2008; Blokland 2005; King, Massoglia, and Macmillan 2007; Laub, Nagin, and Sampson 1998; Maume, Ousey, and Beaver 2005; Warr 1998). The theoretical mechanisms suggested as explanations for the relationship include, but are not limited to, social control and changes in routine activities (Laub, Nagin, and Sampson 1998; Warr 1998) and changes in self-perception due to changed social roles (Bottoms et al 2004; Giordano, Cernkovich, and Rudolph 2002). Several studies have also discussed the importance of fatherhood as a possible turning point (Blokland 2005; Farrall and Calverley 2006; Farrington and West 1995; Forrest 2007; Uggen, Manza, and Angela 2004), but the empirical evidence is inconclusive.

Since around the late 1960s, major changes have taken place in the family systems of the industrialized world. These changes, often commonly referred to as "the second demographic transition" (van de Kaa 1987), has as one of its most distinct features a movement away from marriage as the main indicator of family formation, towards a set of such indicators of which marriage is just one. Cohabitation, out-of-wedlock childbearing and union dissolution are increasingly common experiences in men's lives. These demographic changes have occurred throughout the whole industrialized world, but not with the same strength and rate of social diffusion in all countries (Sobotka 2008).

Therefore, a discrepancy has emerged between contemporary social scientists' studies of the role life course events play in criminal behaviour on the one hand, and the societal development of the family on the other. It has become a lot harder for social scientists to assess the actual timing of *the family formation process*, and we need to reassess whether marriage still is a salient turning point and marker of change in criminal behaviour as it was earlier. We also need to assess whether other family events such as cohabitation, and the transition to fatherhood are equally important life course transitions for criminal behaviour.

The Scandinavian countries are often characterised as "frontrunners" in this process of family change, with other countries lagging behind (Sobotka 2008). In this sense, Scandinavia represents a particularly interesting research context with relevance for most other industrialized countries.

In this paper, we 1) outline the demographic changes that have taken place under the umbrella concept of "the second demographic transition", 2) discuss how these changes should be reflected in life course research on crime, and 3) provide a new empirical analysis based on large-scale individual-level administrative register data on the total population of Norwegian men. Our statistical approach is to study how offending rates develop in the years before and after four specific demographic events that may take place in men's lives.

Changes in family formation patterns over the past decades

Criminologists have of course acknowledged the changes that have taken place in patterns of family formation over the past decades. Some of the most important studies on marriage and crime were on cohorts who grew up in a time where family formation was largely synonymous with marriage, and more recent studies have therefore argued that we need to assess whether there is still a marriage effect, as this association might have been context specific (Bersani, Laub, and Nieuwbeerta 2008; King, Massoglia, and Macmillan 2007).

We argue that these changes are more profound than just to warrant re-assessing the marriage-effect. In the industrialized world, major changes in the family institution have taken place over the last decades. Although some of these changes have had historical precursors, the changes are dramatic enough to warrant use of the term "the second demographic transition" (van de Kaa 1987). Broadly described, the changes include a diversification and to some extent also a postponement of two inter-related life course domains: fertility and family formation. The nature of the changes and the usefulness of the concept of a second demographic transition is under continuous discussion by demographers (Billari and Liefbroer 2004).

Two of the most pronounced and universal features are lower overall marriage rates and a rising age at marriage. Much of the decline in marriage rates is compensated for by a drift from marriage to cohabitation. Although these developments are most pronounced in Scandinavia, similar patterns are non-negligible in all the western countries (Heuveline and Timberlake 2004; Sobotka 2008). Cohabitation is becoming more accepted and common also in the UK and the US (Bumpass and Lu 2000; Seltzer 2004). In Norway, cohabitation is now the normatively prescribed first family formation event among the younger cohorts (Noack 2004), and more than 90 per cent choose cohabitation as their first partnership (Wiik 2009). Still, most couples marry, but when they do, they have often lived together already for several years and possibly had one or more children along the way.

It is clear that the transition to parenthood is postponed, and total fertility has dropped to below the replacement level (Frejka and Sobotka 2008). With the rise of cohabitation as an accepted family form, also the link between marriage and childbearing has weakened. Of all the first births in Norway in 2007, only 32% of them were to married mothers, while 52% to cohabiting mothers (Statistics Norway 2008). With high dissolution rates, an increasing proportion of people enter multiple unions throughout their life courses.

It has correctly been pointed out that cohabitation is a less stable union than marriage, and might not reflect similar levels of commitment (Nock 1995; Sampson, Laub, and Wimer 2006), but it is also the case that many cohabiting couples do get married sooner or later. In that light, cohabitation may be seen as a stepping-stone towards marriage, but in countries where norms for choice of union type are more relaxed, such as Norway, one might believe it represents an equal showing of commitment to the relationship. A recent study of relationship commitment and quality in Scandinavia reported that cohabitants without plans to marry their partners are less serious and less satisfied with their current relationships than those that have such plans, and concluded that there is much heterogeneity among cohabitants (Wiik, Bernhardt, and Noack 2009).

Nevertheless, a large fraction of couples have had a "trial period" as cohabitants before they get married. The cohabiting couples with poor relationship quality are likely to end their relationships or continue cohabiting, whereas those who get married are selected on having high-quality relationships. The selection of couples from cohabitation into marriage has probably changed substantially as cohabitation has become more common. This implies that any research finding on differences between marrieds and non-marrieds are harder to generalize to the complete population.

These changes have important implications for criminological studies on the impact of family formation. Marriage is no longer the sole marker of family formation, and families are established with seriously committed partners having children within cohabitation.

Family formation and crime

The marriage effect on the propensity to commit crimes is usually thought to work through at least four specific mechanisms. First, there is *direct social control* by the spouse. Women have much lower crime rates than men, and may not accept further deviant and irresponsible behaviour on part of their husbands. Second, having a spouse increases the *social support* available to an individual, not only because of the spouse but also through the in-laws and the spouse's social network. This might be

particularly important, as deviant men is believed to have a tendency to marry a less deviant spouse, and the spouse's social network might represent a relatively large increase in social capital (Laub and Sampson 2003: 46). Third, the transition to the married state brings with it changes in *daily routine activities*. A married man will likely spend less time with peers, and more time on home-centred activities, thus reducing the potential influence of deviant peers (Laub and Sampson 2003; Warr 1998). Fourth, marriage is likely to change one's *perception of oneself*, and help the man forge a new identity as an adult, responsible person (Giordano, Cernkovich, and Rudolph 2002). Certain behaviours, such as crime, are less compatible with this new role. What is important to the present study is that all the suggested mechanisms are not marriage-specific in the sense that cohabitation might produce similar effects, although the impact each one of them has on offending might depend on union type. Several of the effects produced by these mechanisms might be amplified in strength by the presence of children.

Sampson and Laub's well-known study of persons born in the 1920-30's and followed until age 70, has argued that marriage is one of the most important institutions of social control in adulthood. They have consistently found that social bonds reduce crime, of which marriage is a special kind of social bonds (Sampson and Laub 1993). Their conclusion is that *lasting* marriages seem to have this preventive effect (Laub, Nagin, and Sampson 1998). Moreover, qualitative interviews with some of the men pointed to the importance of forming a romantic relationship for their desistance from crime (Laub and Sampson 2003). Statistical analyses where selectivity into marriage, i.e. that only the low-crime men get married, was taken into account gave similar results (Sampson, Laub, and Wimer 2006).

Turning from marriage to cohabitation, the literature is much smaller. Importantly, several studies based on qualitative interview data with offenders, suggest that cohabitation and forming a romantic relationship represent important turning points towards desistance (Farrall and Calverley 2006; Giordano, Cernkovich, and Rudolph 2002). If this holds for a larger population, we would expect these findings to be reproduced in quantitative studies as well, but there is a lack of studies paying serious attention to cohabitation. One study suggest that there is a preventive effect of cohabitation on par with that of marriage (Sampson, Laub, and Wimer 2006), a Finnish study reported that the transition to cohabitation had a *greater* crime preventive effect than marriage (Savolainen 2008), while Horney et al. (1995) and Forrest (2007) found that, if anything, men's offending rates *increased* with cohabitation.

The criminological literature on desistance has, as far as we have noticed, not paid much attention to the impact of fatherhood, although there are some remarks that nevertheless suggest that the transition to parenthood should be given a larger role. For instance, Laub and Sampson mention that *"[p]arenting responsibilities also lead to changes in routine activities, as more time is spent in family-centred activities rather than in unstructured time with peers (...) Along with changing routine activities, having children can also influence a person's identity and sense of maturation"* (Laub and Sampson 2003: 135). Similar short comments about additional impact of fatherhood are also found elsewhere in the literature (Edin, Nelson, and Paranal 2001; Farrall and Calverley 2006: 5; Sampson and Laub 1993: 220; Uggen, Manza, and Angela 2004). General studies of fatherhood suggest that fatherhood is linked with the role of transitions and a re-orientation in life (Fägerskiöld 2008; Knoester, Petts, and Eggebeen 2007), which again accords well with the theories of desistance from crime (Farrall and Calverley 2006; Laub and Sampson 2001).

Results from large-scale generalizable studies on fatherhood are less clear. It has been suggested that having children might account for the marriage effect, but this has not been confirmed (Farrington and West 1995). Rather, Farrington and West suggested that having a child outside of marriage *increased* the risk of crime, implying that desistance is only affected by the presence of a partner. This finding was supported by Warr (1998) and Blokland and Nieuwbeerta (2005) who concluded that the role children play in offending trajectories is very limited.

There is thus a marked discrepancy between the results from qualitative studies and the large scale quantitative studies considering the importance of having children. Even though interviewed offenders refer to having children as important turning points for their desistance process, this is not supported by the statistically oriented studies. In our view, these issues are not sufficiently investigated with quantitative methods.

It seems then that the main findings from the empirical literature to date are that marriage is strongly associated with desistance from crime. Whether there is a similar impact of cohabitation is less clear, and some studies even suggest that cohabitation might be associated with increased crime. There are few large-scale studies on the impact of children. A tentative conclusion is that the presence of a partner is far more important than the presence of any children. However, results from qualitative studies strongly suggest that both cohabitation and the birth of a child can be important turning points in offenders' lives.

Research questions

Evidently, to get a complete picture of the impact family life course events have on the propensity to commit crimes, marriage, cohabitation and child births should be seen in relation to each other. Our two main research questions can be put like this: Is marriage still an important and relevant turning point in trajectories of offending? And, is fatherhood now also such a marker of changes in a man`s criminal behaviour? From the shortcomings in the literature outlined above, we will study five specific transitions, the answers to which all extend the existing marriage-crime literature. The motivation for choosing these five transitions is found in the gaps in the current literature, and the possibilities inherent in our data. The five transitions are: 1) Entry into first marriage, 2) the transition to marriage for cohabiting couples who has a common child, 3) first birth within marriage, 4) the birth of a common child with a cohabitant, and 5) the birth of a child without living with the mother.

Our hypothesis is that, for all these events, we will see a similar reduction in offending rates around the time of each of these events. We expect that change is likely to be gradual, so that the offending rates will decrease in the time before the transition takes place, and then stabilize around the transition. A minimum condition for the hypothesis to be true is that there is a change in offending rate *among those who experience the transitions* into marriage or fatherhood. Thus, we study the rate of offending prior to and after the time of these transitions, controlling for a number of relevant confounders.

DATA AND METHODS

Administrative register data

Our data are extracted from Norwegian administrative registers. Everybody resident in Norway has a personal ID number, and this ID is used to link together data on individuals from different registers. The registers cover everybody who has ever resided in Norway since 1964, and contain a wide range of measurements organized, depending on the type of variable, as either time series or event histories at the individual level for each resident. Therefore, 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, do not plague our study. Furthermore, the only attrition from the data is natural, that is due to death and emigration, and the measurements are generally very reliable (Røed and Raaum 2003).

The two data sources we use are the FD-Trygd database (Akselsen, Lien, and Sivertstøl 2007) and the criminal statistics register system. Both data sources are individual-level, population-wide and longitudinal. Finally, as the data are related not only to crime but include characteristics also on a wide

range of other social and demographic variables. They therefore allow us to trace persons not only through time along one dimension, but also through multiple domains of life.

The information on criminal charges includes all charges made by the authorities over the period from 1992 to the end of 2005. We use the definition of "charged" as it is applied in the official statistics system. A reasonable interpretation would be "suspects", as the category denotes persons who were legally charged at the *end* of the police's investigation. This implies that persons who were suspects at an earlier stage but were no longer suspects at the end of the investigation are not included in these figures. An advantage of using criminal charges is that in a fair amount of cases there is no conviction. Our data thus include offenders identified by the police where the prosecution was dropped, the case was transferred to mediation, or the person was not criminally responsible (e.g. low age or not accountable due to mental health issues). We do not use the date of the *charge* itself, but the date the offence was *committed*. The crime data are divided into different types of criminal activity: We focus on charges of *crimes*, which are considered to be more serious offences than *misdemeanours*. The difference is defined in the penal code. The misdemeanours are largely shoplifting, traffic offences and environmental offences. Some men will serve prison sentences, and while imprisoned, these men will offend less frequently. Ideally, this should be taken into account but data on imprisonment are not available.

The socio demographic data consist of *annual* measurements of an individual's family configuration, childbearing, educational attainment, and income, and a set of stable characteristics such as sex, cohort, social background and country of birth. For each individual, time series of these characteristics are included in the data.

All demographic variables (i.e. births, family type and immigrant background) are gathered from the population register. Information on educational attainment and parent's educational level are gathered from the National educational database (NUDB). The highest fulfilled educational level in each person-year is used. Parent's education level is measured at age 16, based on father's or mothers' education level. Usually the father's level is used, but if that is unknown, the mother's level is used instead. For a relatively large proportion and especially among immigrants there is no information on education for either parent, and therefore we have included a category for missing values. Income is measured annually. The definition used here is cover all labour market earnings, but excludes capital income, pensions and social benefits.

Data for four transitions

Most previous studies on the marriage effect discuss crime rates among those who marry compared to those who do not marry – although sometimes efforts to control for the selection into marriage are made. Those who desist from crime are characterized by being more likely to marry, and the marriage effect might be partly spurious. Following Duncan et al (2006), we study the propensity to commit crimes both in the period leading up to the life course transition in question and the immediately subsequent period. Thus, we are studying the likelihood only *among those who experience the transition, avoiding the problem of spuriousness*. The data on cohabitation in the registers do not allow us to distinguish between single persons and cohabitations, unless the cohabiting couple has a common child. First, we define our four different transitions and corresponding sample sizes N as follows:

1. *Entry into first marriage:* The man's marital status changes from single in year *t-1* to married in year *t*. N=121,707
2. *Transition to marriage for cohabiting couples who has a common child:* The man is registered in time *t-1* as cohabiting with a woman with whom he has at least a common child, and is registered as being married in time *t*. N=42,322
3. *First birth within marriage:* A married man is registered with no children at time t-1 and registered with a child at time *t*. N=175,118
4. *The birth of a common child with a cohabitant*: The man's registration status changes from being 'single' (although the man might cohabit *without* children) and at parity zero in year *t-1* to 'cohabiting with a common child' and parity higher than zero in year *t*. N=91,560
5. *The birth of a child without living with the mother*: The man's parity goes from zero to higher than zero, without any changes either in marital or in cohabitation status. N=11,364

For each transition studied, an identical procedure is performed: A data set of person-year sub-observations is constructed, where every man experiencing the transition in question contributes a set of person-year observations to the data set. In all the person-year observations, other information is updated with the current values: If the man's educational attainment changes over this period, the new education level will be reflected by the person-year observations after the change in educational attainment. We follow each individual at least three years and maximum five years both prior to and after the event occurs.

As this data structure can be difficult to understand, consider this example: A man marries for the first time at age 30. If his marriage takes place within our observation window, he will contribute person-years to our data. Let us assume that the marriage took place in 1997. For every year in the observation window, a person-year observation is generated. For the period 1992 to 1996, the time-related variable, *dt,* will take negative values, indicating that there is still some time left before the marriage. For the period 1998 to 2004, the variable will take positive values.

To make sure that each observed life course transition contributes person-year observations both before and after the event, we restrict our data to include only those events that take place in the period from 1995 to 2001. This way, we ensure that each event contributes a minimum of seven person-year observations, of which at least three cover the period leading up to the event and the same minimum number cover the period immediately after the event.

Statistical approach

A logistic regression model is then estimated on the data set of person-year observations. Our outcome variable is defined as a binary indicator of being charged with any crime in a given year. Although this definition does not capture the *intensity* of the man's criminal career, it does capture the *extent.* This definition is not sensitive to outliers, such as cases where one individual is charged a very large number of times in a given year.

The model includes a set of independent variables. The main independent variable measures the time relative to the life course transition. It is a categorical variable, where each category indicates how many years the person-year observation is before or after the timing of the life course transition.

The man's age at the time of the life course transition is included as a series of dummy variables. Educational attainment is measured as a categorical variable (ISCED classification), with nine levels and a separate category for missing values. Annual income is measured as a continuous variable, transformed to the natural logarithm. Different immigrant backgrounds are distinguished with a set of dummy variables. Finally, the current period which will capture secular changes in the crime rate is also measured by dummy variables. The period-effect is important as it rules out the possibility that any effects might be due to changes in police priorities or registration routines.

We denote the timing-variable *dt*, and it ranges from -5 to 5, where *dt*=0 is the time of transition. We construct dummy variables for each level of *dt*, and it is these parameters that are of interest in the analysis.

RESULTS

We study the mentioned transitions in turn. In total, ten logistic regression models are estimated. For each transition, two models are estimated: One is estimated with a dummy variable for all offences as the outcome, while in the other the outcome variable is based on crimes. The estimates of interest are those for the logit coefficients and associated standard errors for the estimated coefficients for the variable *dt*, which capture the likelihood of committing at least one offence or crime up to five years prior to and after the transition year. Our set of control variables is included in all estimated models. Distributions for all categorical analysis variables are shown in table 1. The complete results from all the logistic regression models are reported in tables 2 and 3. The parameter estimates for the control variables does not deviate from what we would expect from previous research: There is a downward trend in crime with increasing age at the time of the event. Variables measuring components of the man's socioeconomic status show the expected crime-reducing effect.

To simplify the presentation, regression parameters are plotted as a function of *dt* in figures 1 to 5. In all the plots, dotted lines represent the limits of 95 per cent confidence intervals around the point estimates for each year. The baseline category is *dt=0*, so if the interval between the dotted lines includes the x-axis, then the regression estimate is not significantly different from zero. We show two plots for each transition, where panel A) display results from models of all offences, while panel B) is for crimes only.

Figure 1 shows the results for our first model. In this model, the transition is entry into marriage at year *dt=0*. For all offences, we observe the expected decrease in crime rates towards *dt=0*, but this is followed by a temporary *increase* before returning to the level around the time of the transition. Despite the increase in the years immediately after marriage, the logit parameters remains at a level below that at the start of the observation window. We can then conclude that there is an immediate marriage effect, but also a small rebound effect after marriage. The magnitude of any permanent effect of marriage remains unclear. Panel B) shows the effect restricted to crimes (i.e. the more serious offences). In this case, there is no significant change at all towards *dt=0*, but is followed by a temporary increase the years after marriage, although the effect at the end of the period is just barely measurably different from the peak at *dt*=3. This short-term increase is statistically significant. Note that the difference between *dt*=2 and *dt*=-3 has slightly overlapping confidence intervals, so this increase should not be given much weight.

Figure 1. Effect of marriage. Parameter estimates from logistic regression
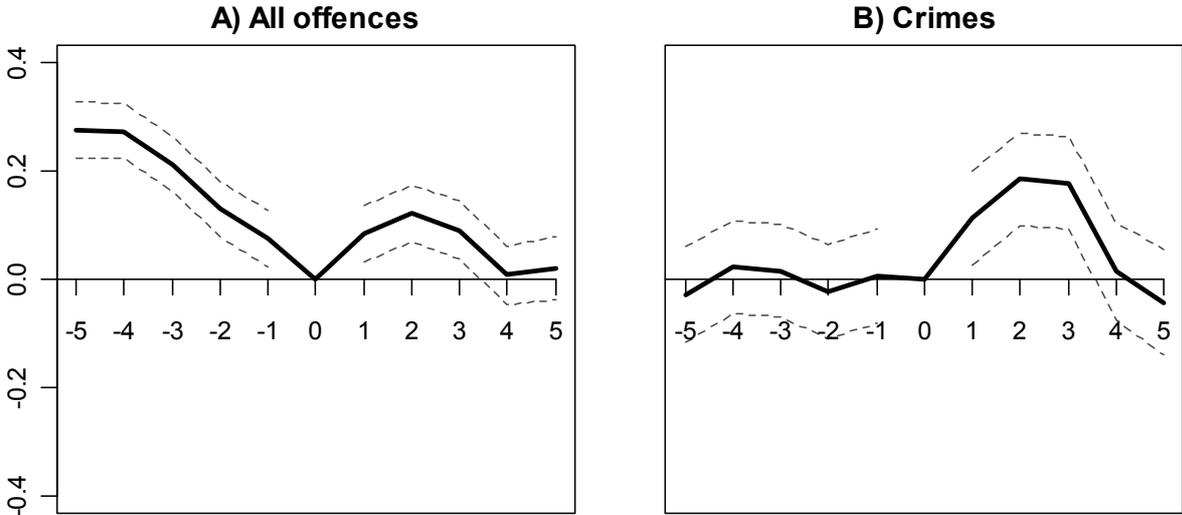
As mentioned above, premarital cohabitation is not only a very common experience, but also has broad social acceptance. Figure 2 A) displays the logit coefficients around the time of marriage conditioning on the couple already cohabiting with at least one common child. There is a marked decrease in offending towards $dt=-2$, and remains relatively stable thereafter. (All estimated parameters for subsequent years have overlapping confidence intervals with $dt=-2$). A possible explanation is that if most couples cohabit about two years prior to marrying, and there is a causal effect of family formation, then the change in offending is likely to occur a couple of years prior to marriage. In panel B) the same model is estimated for crimes only. In this case, the likelihood of being charged with a crime declines markedly up to $dt=-2$, but after the transition the likelihood increases significantly to a level similar to that at the beginning of the period. The confidence intervals around these parameter estimates are quite large, and only two parameter estimates are significantly different from zero.

Figure 2. Effect of marriage for cohabiting couples with a common child. Parameter estimates from logistic regression

A) All offences

B) Crimes
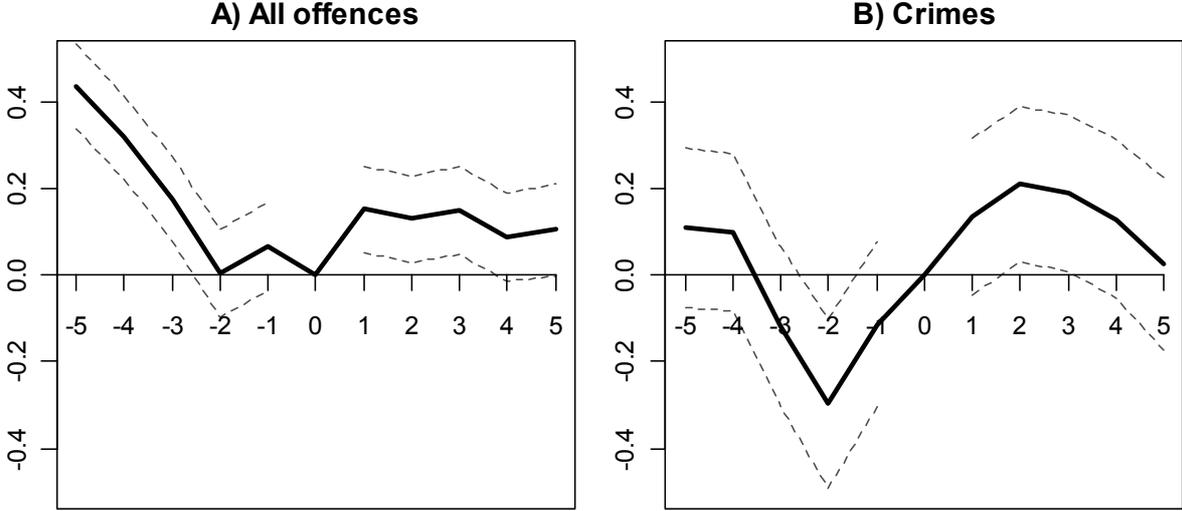
Transition to fatherhood is our second focus, and Figure 3 shows the change in the likelihood of offending around the time of the first birth for married couples. Most notably, the decrease in offending is towards one year *prior* to the year the child is born, followed by an increase in the years after the birth. This is not unreasonable, given that gestation takes nine months, and that the impact on behaviour might "take effect" already at the time of conception (if not earlier). Most first births are planned to some extent (although they might be mistimed). If the father will adjust his behaviour, he is likely to do so purposefully prior to the birth event itself. The pattern resembles that of the marriage effect: the main effect is strong, but there is also a rebound that makes up for some of the decline in the years prior to the birth. The pattern for crimes only shows a similar decrease towards the date of child birth, but at a little lower level, and there is a rebound back to the initial level.

Figure 3. Effect of a first child for married men. Parameter estimates from logistic regression

A) All offences

B) Crimes
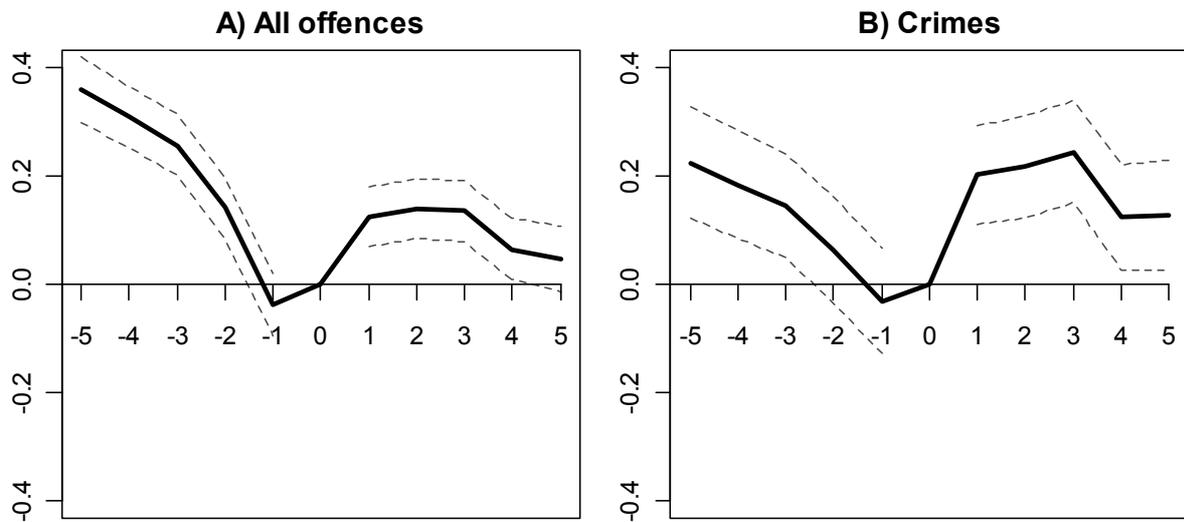
Figure 4A) displays how the likelihood of offending develops around the time of having the first child for cohabiting couples. These results are very similar to the impact of first child for married fathers, with a decrease in offending towards dt=-1 and a subsequent rebound. The similarity with married fathers holds also for the pattern in Figure 4B) displaying the same decrease towards dt=-1, followed by a return to the original level as it was before the child was born.

Figure 4. Effect of a first child for cohabiting men. Parameter estimates from logistic regression

A) All offences

B) Crimes
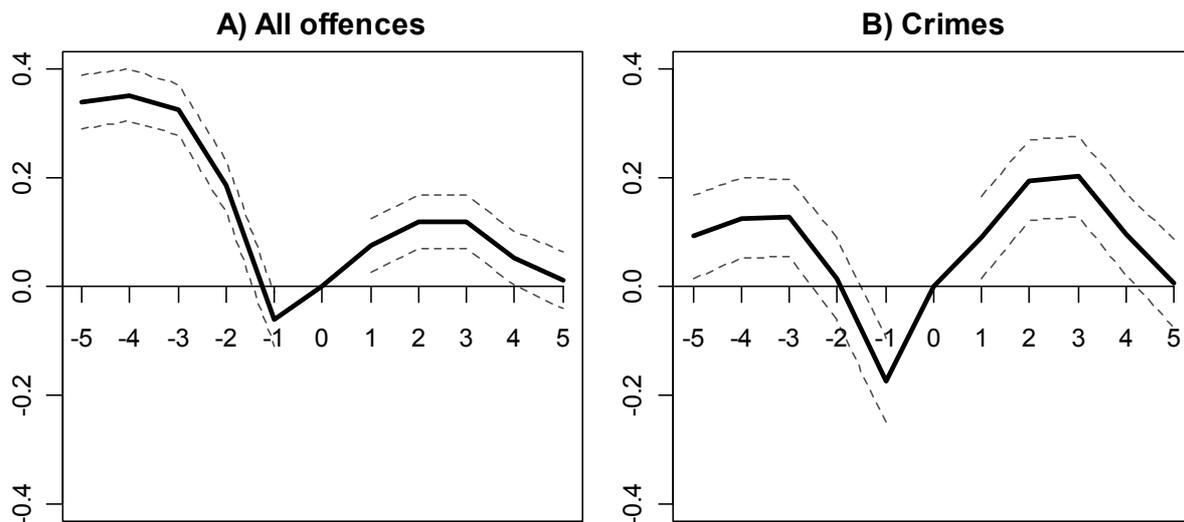
Now we turn to fathering children outside of a stable partnership. The estimated effects for this transition are displayed in Figure 5. This pattern is very different from that of married and cohabitating couples, and the likelihood of offending *increases* towards *dt*=-2. The patterns are very similar for both offences and crimes, and the effects are statistically significant (but the confidence intervals are large in the model of crimes in panel B). Given that the father of the child does not live with the mother, this transition is a marker of an *unstable* life situation rather than of entry into a more stable relationship with another adult. The child might be neither planned nor desired, and to these fathers the pregnancy might have come unexpected. It could be that their deviant lifestyle (which may include "promiscuous" sexual behaviour leading to mistimed pregnancies) is the very reason they are not found suitable as life partners by the mothers of their children, even though they will raise the children without living with the child's father. There is a marked decrease throughout the five years after the birth. This indicates that for at least a non-negligible proportion of men experiencing the birth of a child without a firm commitment to the partner, they will have lower propensities of committing crimes in the subsequent years.

Figure 5. **Effect of first child for non-cohabiting fathers. Parameter estimates from logistic regression**
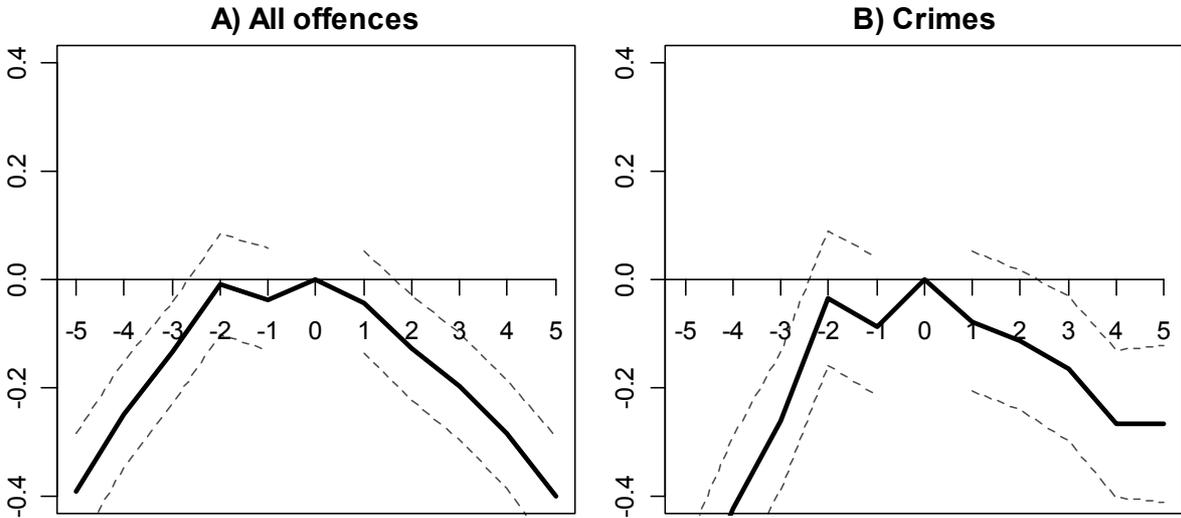
Despite the differences in the figures above, there are also similarities particularly across the figures 1a-4a. First, there seems to be a reduction in the likelihood of offending in the years leading up to the event. Second, this decrease is followed by a small rebound effect. The changes across time in the likelihood of committing *crimes* (figures 1b, 2b, 3b and 4b) are less clear, but the most reasonable

interpretation is that there are no marked changes, particularly when the confidence intervals around the point estimates are taken into account.

DISCUSSION

In order to make a comprehensive interpretation of our results, we take as our point of departure the results for the transition to marriage, in effect the model that is most comparable to previous studies in the family-crime literature. We observe the expected decrease in offending towards the time of marriage. On the surface this supports the idea of a "marriage effect". The decrease is gradual, and starts years before the actual timing of marriage. The men who are included in the model, might well be cohabiting in a stable relationship, possibly with common children.

When considering the results from the subsequent models, particularly for the transition to marriage for cohabitants with a common child, it is clear that also in this model the decline in the likehood of offending starts well before the time of the wedding. During the years prior to the marriage event, these men have already started living together with a woman with whom they have at least one common child. The implication is that the marriage event in itself did not decrease offending rates much, because these men started their families years before actually getting married. Thus, marriage cannot be seen as a single indicator of family formation. It is, however, part of a more complex chain of events that includes the initiation of a coresidential relationship and childbearing

Now, turning to the impact of having a child on offending, there are two issues that need to be resolved. When previous studies have observed a marriage effect, is this partly due to the strong link between marriage and childbearing. Given that about one-third of those who enter a first marriage, has been cohabiting with common children prior to that event, we need to ask whether a child has an effect on crime rates independent of the effect of union formation. There is a decrease in crime towards the year of a first birth for married couples. This is an indication that partnering is not the only dimension of family formation that affects men's deviant behaviour. The changes in offending are similar for those who have their first common child as for cohabitants. Thus, how a father's crime rate changes in the years prior to and after his transition to fatherhood on crime seems not to be contingent on the type of union he has his first child in.

Finally, men who experienced the transition to fatherhood but are not living with the child's mother do reduce their criminal activities in the years following the birth of the first child. At first sight, this may seem somewhat surprising as prior studies have suggested that this would increase the likelihood of

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offending (Farrington and West 1995). These men should not be much affected by any "partner effect" such as increased direct social control, and they are selected on either preferring to live away from the child's mother or not being accepted as the mother's life partner. Nevertheless, having a child does seem to have a negative impact on offending.

There is a consistent difference between the results from models estimated for all offences and for crimes only. The effect of the family events on the likelihood of offending seems to be quite strong and is negative, in the sense that the likelihood of offending adjusts to a lower level before the event takes place. Why do we not observe such an adjustment in the results for crimes? Second, we include all potential offenders in our study. Many previous studies have focused solely on potential *desisters*, which imply that they only measure any change in crime rates for individuals who already have a criminal background.

There are of course some limitations to this study. First, the administrative data do not include information about all cohabiting couples, as there is only information about cohabitation if it involves children. Despite this limitation, we utilize this information as best as we can, and we have argued that it at least broadens the scope relative to most previous studies. Second, administrative data do of course not include information on the qualitative aspects of a romantic partnership or fatherhood. We do not have any information on e.g. "commitment" or similar indicators. One possible solution could have been to study the impact of lasting marriages and cohabitation versus those who break up. But this would have complicated our study considerably due to selection problems. Third, it is of course possible that some persons in the sample spend some time in prison during the observation period. Imprisonments should be dealt with as interval censoring, but we have not had access to information on imprisonments. A consequence might be that the estimated probability of offending is biased downwards. However, unless there is a systematic selection so that these events happen while imprisoned, we cannot see how this could explain our main results.

Finally, another limitation is related to the causal order. Although we observe changes around the time of the transitions, we cannot reliably establish that it is in fact these changes that lead to the observed results. There might be cases of reversed causality, e.g. that the potential offenders get married because they change, rather than changing because they are getting married. Furthermore, ; both processes are probably present, and there might be dynamic, interactional effects. This kind of limitation is frequently encountered in the social sciences, and rarely dealt with much better than we have. Our approach has been to carefully describe the changes adjusted for confounders, establishing

that there are indeed observable changes for those who experience the events. At least, as we are consistently comparing the persons with themselves at points in time prior to and after the event, we have effectively avoided the more serious problem (and even more frequently encountered) of selection of different kinds of persons into the relevant events.

CONCLUSIONS

The main findings from our study are that all the family transitions included have a marked effect on the likelihood to commit offences and crimes. From the results as a whole, there are both striking similarities and differences. The most prominent commonality in our results is the downward adjustment towards a lower likelihood of offending across four different transitions: marriage, marriage among cohabitants with a common child, and the transition to fatherhood among those who at the time of the transition are married or cohabiting. This adjustment takes place well in advance of the actual transition, suggesting that events that happen much earlier than the actual transition might be important. An example of such an event could be the selection process in which a more casual, dating relationship gradually is converted into, first, cohabitation and, later, marriage.

The role of children in this process seems to be more important than previously acknowledged. Our findings support ideas voiced by qualitative research, namely that having children also may play the role as an important marker of change in their criminal behaviour. This conclusion holds even for men who become fathers while having no firm commitment to the mother.

In conclusion, it is clear that changes in a man's marital status do not any longer provide an accurate and updated picture of how family events shape criminal behaviour. Our findings point to the need for researchers to take a broader perspective on the role family transitions play for criminal behaviour. In order to fully comprehend how family transitions affect criminal behaviour, social scientists should focus more on the diversity in family formation. Depending on the interrelations among family events, this may imply studying complete sequences such as union and fertility histories and not single events by themselves. Marriage is still of importance, but it is only one piece of the complete picture.

Table 1. Distributions of categorical analysis variables in each the five models of family transitions.[e]

Variable		Transitions to marriage	Transition to marriage for cohabiting fathers	First birth for married men	First birth for cohabiting men	First birth without living with the mother
Time to event (dt)	-5	7	7	6	7	7
	-4	8	8	7	8	8
	-3	10	10	9	9	9
	-2	10	10	9	10	9
	-1	10	10	10	10	10
	0	10	10	10	10	10
	1	10	10	10	10	10
	2	10	10	10	10	10
	3	10	10	10	10	10
	4	10	9	10	10	10
	5	8	8	9	8	8
Year for event	1995	11	9	13	12	11
	1996	13	12	16	14	14
	1997	15	15	15	15	13
	1998	16	16	14	15	14
	1999	15	15	15	15	15
	2000	15	16	15	15	17
	2001	15	17	13	13	16
Age at event	20	0	0	0	0	4
	21	1	0	0	1	5
	22	1	0	0	1	4
	23	2	1	1	2	3
	24	3	1	1	3	2
	25	4	2	2	5	2
	26	5	4	3	6	2
	27	7	6	4	7	2
	28	8	7	6	8	2
	29	9	8	7	8	2
	30	9	9	8	8	2
	31-34	28	32	28	26	9
	35-39	16	21	22	16	19
	40-44	6	7	12	7	23
	45-49	2	2	6	3	17
Education	0	0,9	0	0	0	0
	1	0,1	0	0	0	0
	2	7	8	7	9	16
	3	14	16	13	18	25
	4	43	49	36	47	38
	5	8	7	8	7	6
	6	17	14	18	12	8
	7[a]	8	6	11	5	3
	Mis.[b]	2	1	6	1	3
Nationality[c]	A	87	93	77	91	87
	B	7	2	18	4	8
	C	1	0	0	0	0
	D	5	4	5	5	5
Social origin[d]	1	6	4	6	4	3
	2	15	12	14	11	10
	3	52	56	45	55	46
	4	21	26	18	25	32
	Mis.[b]	6	2	17	4	8
N (person-years)		1 252 328	440 728	969 449	938 267	114 991

Note: [a]The two highest levels (Master's and Ph.D.) are collapsed into one category; [b]This category represents cases with missing values on the variable; [c]The categories are A = Norwegian-born, B = Immigrants, C = Foreign-born with Norwegian parents, D = All other categories; [d]Social origin is measured by the education of the man's parents and takes the following values: 1 = Postgraduate university education, 2 = University/college graduate, 3 = Secondary education, 4 = Primary education or less. [e]Percentages might sum up to more than 100 per cent due to rounding errors.

Table 2. Parameter estimates from logistic regressions on the likelihood of committing at least one *offence* from five models of family transitions

		Transition to marriage		Transition to marriage for cohabiting fathers		First birth for married men		First birth for cohabiting men		First birth without living with the mother	
		Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Constant		-2.98	0.05	-2.94	0.10	-3.16	0.06	-2.37	0.05	-2.32	0.12
	-5	0.27	0.03	0.44	0.05	0.36	0.03	0.34	0.03	-0.39	0.05
	-4	0.27	0.03	0.32	0.05	0.31	0.03	0.35	0.02	-0.25	0.05
	-3	0.21	0.03	0.17	0.05	0.26	0.03	0.33	0.02	-0.13	0.05
	-2	0.13	0.03	0.01	0.05	0.14	0.03	0.18	0.02	-0.01	0.05
	-1	0.07	0.03	0.07	0.05	-0.04	0.03	-0.06	0.03	-0.04	0.05
Time to event (dt)	0	0.00		0.00		0.00		0.00		0.00	
	1	0.08	0.03	0.15	0.05	0.12	0.03	0.08	0.03	-0.04	0.05
	2	0.12	0.03	0.13	0.05	0.14	0.03	0.12	0.02	-0.13	0.05
	3	0.09	0.03	0.15	0.05	0.14	0.03	0.12	0.03	-0.20	0.05
	4	0.01	0.03	0.09	0.05	0.07	0.03	0.05	0.03	-0.28	0.05
	5	0.02	0.03	0.10	0.05	0.05	0.03	0.01	0.03	-0.40	0.06
	1995	-0.16	0.02	-0.13	0.04	-0.14	0.02	-0.13	0.02	-0.17	0.05
	1996	-0.10	0.02	-0.06	0.04	-0.14	0.02	-0.07	0.02	-0.07	0.04
	1997	-0.07	0.02	-0.01	0.04	-0.01	0.02	-0.07	0.02	-0.03	0.04
Year for event	1998	0.00		0.00		0.00		0.00		0.00	
	1999	-0.02	0.02	-0.01	0.04	0.03	0.02	0.01	0.02	0.05	0.04
	2000	0.02	0.02	-0.01	0.04	-0.01	0.02	-0.05	0.02	0.06	0.04
	2001	0.00	0.02	-0.02	0.04	0.00	0.02	-0.05	0.02	0.07	0.04
	20	0.38	0.07	0.92	0.49	0.76	0.14	0.73	0.06	0.23	0.09
	21	0.28	0.05	1.06	0.21	0.64	0.08	0.69	0.04	0.45	0.08
	22	0.46	0.04	0.78	0.13	0.69	0.06	0.66	0.04	0.48	0.08
	23	0.50	0.04	0.63	0.10	0.71	0.05	0.58	0.03	0.54	0.09
	24	0.42	0.03	0.60	0.08	0.64	0.05	0.58	0.03	0.29	0.09
	25	0.31	0.03	0.47	0.06	0.39	0.04	0.46	0.03	0.43	0.09
	26	0.22	0.03	0.36	0.06	0.32	0.04	0.29	0.03	0.55	0.10
Age at event	27	0.13	0.03	0.30	0.05	0.18	0.04	0.19	0.03	0.33	0.10
	28	0.09	0.03	0.10	0.05	0.11	0.04	0.07	0.03	0.30	0.10
	29	0.09	0.03	0.12	0.05	0.09	0.04	0.06	0.03	0.02	0.10
	30	0.00		0.00		0.00		0.00		0.00	
	31-34	-0.04	0.02	-0.10	0.04	0.00	0.03	-0.06	0.02	-0.21	0.08
	35-39	-0.13	0.02	-0.22	0.04	-0.08	0.03	-0.18	0.02	-0.52	0.08
	40-44	-0.31	0.03	-0.51	0.06	-0.12	0.03	-0.25	0.03	-0.88	0.08
	45-49	-0.62	0.05	-0.54	0.10	-0.31	0.04	-0.33	0.04	-1.16	0.09

Table 2 (cont.)

		Transition to marriage		Transition to marriage for cohabiting fathers		First birth for married men		First birth for cohabiting men		First birth without living with the mother	
		Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
	0	1.61	0.05	1.60	0.10	1.17	0.06	1.46	0.05	1.04	0.12
	1	0.90	0.11	0.72	0.47	0.52	0.07	0.40	0.22	1.04	0.25
	2	0.97	0.02	0.82	0.03	0.90	0.02	0.94	0.02	0.83	0.03
	3	0.82	0.01	0.69	0.03	0.75	0.02	0.80	0.01	0.64	0.03
Education	4	0.00		0.00		0.00		0.00		0.00	
	5	-0.45	0.03	-0.28	0.05	-0.42	0.03	-0.51	0.03	-0.24	0.07
	6	-0.70	0.02	-0.59	0.05	-0.56	0.03	-0.74	0.03	-0.40	0.06
	7[b]	-0.97	0.04	-0.81	0.08	-0.98	0.04	-1.07	0.05	-0.60	0.14
	Mis.[c]	0.34	0.03	0.33	0.12	0.23	0.03	0.51	0.04	0.38	0.07
	A	0.00		0.00		0.00		0.00		0.00	
Nationality[d]	B	0.53	0.03	0.04	0.14	0.44	0.04	0.15	0.05	0.00	0.06
	C	0.78	0.05	0.12	0.24	0.62	0.08	0.16	0.14	-0.09	0.17
	D	0.20	0.03	0.22	0.05	0.18	0.03	0.17	0.02	0.09	0.05
Ln(income)		-0.11	0.00	-0.10	0.00	-0.09	0.00	-0.11	0.00	-0.08	0.00
	1	0.00		0.00		0.00		0.00		0.00	
	2	0.14	0.04	0.03	0.08	0.00	0.04	0.08	0.04	0.54	0.09
Social origin[e]	3	0.29	0.03	0.04	0.07	0.18	0.04	0.14	0.04	0.80	0.09
	4	0.37	0.04	0.03	0.07	0.35	0.04	0.16	0.04	0.88	0.09
	Mis.[c]	0,19	0,05	0,46	0,16	0,24	0,05	0,24	0,06	0,94	0,11
-2 log likelihood		287 873		85 748		227 461		308 183		59 769	
N (person-years)		1 252 328		440 728		969 449		938 267		114 991	

Note: [a]This columns list the proportion of person-years that has the relevant category on the categorical variable in question. Numbers are rounded to the nearest integer.; [b]The two highest levels (Master's and Ph.D.) are collapsed into one category; [c]This category represents cases with missing values on the variable; [d]The categories are A = Norwegian-born, B = Immigrants, C = Foreign-born with Norwegian parents, D = All other categories; [e] Social origin (the education of the man's parents) takes the following values: 1 = Postgraduate university education, 2 = University/college graduate, 3 = Secondary education, 4 = Primary education or less.

Table 3. Parameter estimates from logistic regressions on the likelihood of committing at least one *crime* from five models of family transitions.

		Transition to marriage		Transition to marriage for cohabiting fathers		First birth for married men		First birth for cohabiting men		First birth without living with the mother	
		Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Intercept		-3,64	0,09	-3,67	0,20	-3,92	0,10	-2,89	0,08	-2,61	0,16
	-5	-0,03	0,04	0,11	0,09	0,22	0,05	0,09	0,04	-0,64	0,07
	-4	0,02	0,04	0,10	0,09	0,18	0,05	0,13	0,04	-0,42	0,07
	-3	0,02	0,04	-0,12	0,09	0,15	0,05	0,13	0,04	-0,26	0,06
	-2	-0,02	0,04	-0,30	0,10	0,07	0,05	0,02	0,04	-0,03	0,06
	-1	0,01	0,04	-0,11	0,10	-0,03	0,05	-0,17	0,04	-0,09	0,06
Time to event (dt)	0	0,00		0,00		0,00		0,00		0,00	
	1	0,11	0,04	0,14	0,09	0,20	0,05	0,09	0,04	-0,08	0,07
	2	0,19	0,04	0,21	0,09	0,22	0,05	0,20	0,04	-0,11	0,07
	3	0,18	0,04	0,19	0,09	0,24	0,05	0,20	0,04	-0,16	0,07
	4	0,02	0,05	0,13	0,09	0,12	0,05	0,10	0,04	-0,26	0,07
	5	-0,04	0,05	0,03	0,10	0,13	0,05	0,01	0,04	-0,27	0,07
	1995	-0,26	0,04	-0,22	0,08	-0,15	0,04	-0,20	0,03	-0,35	0,06
	1996	-0,25	0,04	-0,29	0,08	-0,14	0,04	-0,12	0,03	-0,18	0,05
	1997	-0,14	0,03	-0,13	0,07	0,06	0,04	-0,05	0,03	-0,06	0,06
Year for event	1998	0,00		0,00		0,00		0,00		0,00	
	1999	-0,03	0,03	-0,03	0,07	0,04	0,04	0,02	0,03	-0,01	0,05
	2000	0,01	0,03	-0,14	0,07	0,00	0,04	-0,04	0,03	-0,01	0,05
	2001	-0,01	0,03	-0,13	0,07	0,02	0,04	-0,03	0,03	0,00	0,05
	20	0,45	0,09	1,17	0,63	0,85	0,19	0,68	0,08	0,24	0,11
	21	0,21	0,08	1,08	0,32	0,71	0,12	0,59	0,06	0,45	0,11
	22	0,51	0,07	0,88	0,21	0,62	0,10	0,61	0,06	0,58	0,11
	23	0,54	0,06	0,92	0,16	0,82	0,08	0,64	0,05	0,59	0,11
	24	0,49	0,06	0,88	0,13	0,66	0,07	0,62	0,04	0,31	0,12
	25	0,37	0,05	0,64	0,11	0,39	0,07	0,46	0,04	0,50	0,12
	26	0,27	0,05	0,32	0,11	0,37	0,07	0,30	0,04	0,53	0,13
Age at event	27	0,21	0,05	0,35	0,10	0,18	0,06	0,15	0,04	0,46	0,13
	28	0,13	0,05	0,02	0,10	0,12	0,06	0,01	0,04	0,31	0,13
	29	0,13	0,05	0,13	0,09	0,06	0,06	-0,02	0,04	0,06	0,14
	30	0,00		0,00		0,00		0,00		0,00	
	31-34	-0,04	0,04	-0,15	0,08	0,01	0,05	-0,13	0,04	-0,29	0,11
	35-39	-0,17	0,04	-0,29	0,08	-0,15	0,05	-0,28	0,04	-0,67	0,11
	40-44	-0,38	0,05	-0,64	0,12	-0,19	0,05	-0,43	0,05	-1,10	0,11
	45-49	-0,93	0,09	-0,83	0,21	-0,53	0,06	-0,67	0,06	-1,66	0,12

Table 3 (cont.)

		Transition to marriage		Transition to marriage for cohabiting fathers		First birth for married men		First birth for cohabiting men		First birth without living with the mother	
		Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Education	0	2,18	0,07	2,00	0,15	1,56	0,08	1,78	0,07	1,30	0,15
	1	1,12	0,17	1,13	0,73	0,53	0,12	0,33	0,37	1,51	0,31
	2	1,33	0,03	1,03	0,06	1,16	0,03	1,22	0,02	1,02	0,04
	3	1,16	0,02	0,95	0,05	1,03	0,03	1,09	0,02	0,81	0,04
	4	0,00		0,00		0,00		0,00		0,00	
	5	-0,66	0,06	-0,46	0,12	-0,66	0,07	-0,64	0,06	-0,44	0,11
	6	-1,06	0,05	-0,98	0,11	-0,78	0,05	-1,04	0,05	-0,57	0,10
	7[b]	-1,67	0,11	-1,26	0,21	-1,48	0,10	-1,75	0,13	-1,22	0,30
	Mis.[c]	0,49	0,05	0,73	0,19	0,30	0,05	0,74	0,06	0,59	0,09
Nationality[d]	A	0,00		0,00		0,00		0,00		0,00	
	B	0,46	0,04	0,40	0,25	0,34	0,06	0,16	0,08	0,00	0,08
	C	0,87	0,07	-1,69	1,01	0,66	0,12	-0,10	0,25	-0,18	0,21
	D	0,21	0,04	0,16	0,09	0,20	0,05	0,20	0,04	0,14	0,06
Ln(income)		-0,17	0,00	-0,16	0,01	-0,14	0,00	-0,16	0,00	-0,11	0,00
Social origin[e]	1	0,00		0,00		0,00		0,00		0,00	
	2	0,22	0,07	0,19	0,17	-0,05	0,09	0,00	0,07	0,44	0,12
	3	0,42	0,07	0,14	0,16	0,25	0,08	0,12	0,06	0,72	0,11
	4	0,58	0,07	0,27	0,16	0,54	0,08	0,17	0,06	0,83	0,12
	Mis.[c]	0,22	0,08	0,27	0,30	0,25	0,10	0,16	0,10	0,67	0,14
-2 log likelihood		116 445		28 835		92 863		145 270		36 097	
N (person-years)		1 252 328		440 728		969 449		938 267		114 991	

Note: [b]The two highest levels (Master's and Ph.D.) are collapsed into one category; [c]This category represents cases with missing values on the variable. [d]The categories are A = Norwegian-born, B = Immigrants, C = Foreign-born with Norwegian parents, D = All other categories; [e]Social origin (the education of the man's parents) takes the following values: 1 = Postgraduate university education, 2 = University/college graduate, 3 = Secondary education, 4 = Primary education or less.

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