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The educational gradient of nonmarital childbearing in Europe: emergence of a pattern of disadvantage?

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Abstract

Nearly every European country has experienced some increase in nonmarital childbearing, largely due to increasing births within cohabitation. Relatively few studies in Europe, however, investigate the educational gradient of childbearing within cohabitation or how it changed over time. Using retrospective union and fertility histories, we employ competing risk hazard models to examine the educational gradient of childbearing in cohabitation in 8 countries across Europe. In all countries studied, birth risks within cohabitation demonstrated a negative educational gradient. When directly comparing cohabiting fertility with marital fertility, the negative educational gradient persists in all countries except Italy, although differences were not significant in Austria, France, and Germany. These findings suggest that childbearing within cohabitation largely follows a Pattern of Disadvantage. We argue that the Pattern of Disadvantage developed due to: 1) feminist and social movements that liberalized attitudes towards nonmarital childbearing, and 2) globalization and economic uncertainty that led to job insecurity and relationship instability. This explanation provides an alternative to the Second Demographic Transition theory, for which we find little evidence.

INTRODUCTION

The increase in nonmarital childbearing is one of the most striking demographic changes to have occurred in Europe throughout the past several decades. Nearly every European country has experienced some increase in nonmarital childbearing (Council of Europe 2006), and the vast majority of the increase has been due to births within cohabitation, not to single mothers (Perelli-Harris et al 2009; Kiernan 2004). This increase has led demographers to conclude that the rise of childbearing within cohabitation is one of the defining elements of family change (McLanahan 2004; Sobotka and Touleman 2008; van de Kaa 2001; Lesthaeghe and Neidert 2006; Thornton, Axinn, Xie 2007).

One of the most widespread explanations for family change is the second demographic transition (SDT) (Lesthaeghe and Surkyn 2002; Van de Kaa 2001; Sobotka 2008, Lesthaeghe and Neidert 2006, Zakharov 2008, Hoem and Kostova 2008, Hoem et al 2007, Raley 2001). Proponents of the second demographic transition argue that new family behaviors, such as childbearing within cohabitation, are the manifestation of lifestyle choices related to ideational and value change (Lesthaeghe and Surkyn 2006; Sobotka 2008). Underlying the concept of the second demographic transition is the idea “that new living arrangements... are the expression of secular and anti-authoritarian sentiments of better-educated men and women who held an egalitarian world view” (Lesthaeghe and Neidert 2006: 669). Thus, according to the SDT, higher education – especially prolonged education - is considered a mechanism for the transformation of values and the emergence of childbearing within cohabitation. Yet very little direct evidence has provided support for this explanation.

In contrast to the explanations of the SDT, the association between childbearing within cohabitation and education could be negative, reflecting

socioeconomic disadvantage. This association has been well documented in the United States (Rindfuss, Morgan, and Offutt 1996; Upchurch et al 2002; Ventura 2009), Great Britain (Hobcraft and Kiernan 2001) and recently in Russia (Perelli-Harris and Gerber 2010). In these countries, low education is a well-established cause and consequence of material disadvantage, and single and cohabiting mothers have higher rates of poverty and welfare dependency (Lichter et al. 2003; Kiernan 2002). Thus, the general association between nonmarital childbearing and low education can be considered a “pattern of disadvantage” (Perelli-Harris and Gerber 2010). In this paper, we propose a theoretical explanation for the emergence of the “pattern of disadvantage.” By incorporating social and economic change that occurred in the 1980s and 1990s, we provide an alternative explanation to that proposed by the second demographic transition.

Surprisingly, few studies have conducted comparative investigations of the educational gradient of childbearing within cohabitation across Europe, or how it changes over time (for exceptions see Kiernan 2004; Kennedy 2005). Understanding this relationship is fundamental to understanding the diffusion of family behaviors throughout different strata of society. We conceptualize the educational gradient not as the product of the causal effect of education on nonmarital childbearing, but instead as a reflection of the social stratification that defines basic groups. People with different levels of educational attainment may have different reasons for adopting new family behaviors, reasons which reflect their attitudes, opportunities, or constraints. As new behaviors spread throughout a society, the predominant reasons underlying or motivating those behaviors change and the educational gradient may in fact change. Thus, the educational gradient associated with an emerging behavior could flatten and even reverse over time.

To determine whether childbearing within cohabitation has more in common with the second demographic transition or the pattern of disadvantage, we examine the educational gradient of childbearing in cohabitation in seven European countries. We analyze standardized reproductive and union histories of the British Household Panel Survey in the U.K., the Fertility and Family Survey in the Netherlands, the Panel Analysis of Intimate Relationships and Family Dynamics (PAIRFAM) in Germany, and the Generations and Gender Surveys (GGS) in Austria, France, Italy, Norway, and Russia. Although each survey employed slightly different sampling designs and techniques, the primary variables studied here – union status, fertility, and education – are relatively comparable.

Retrospective fertility and union histories allow us to compare the development of nonmarital childbearing – and changes in the educational gradient of nonmarital childbearing - across time. Using models that control for the age and period distribution of fertility by union status, we address the following questions: is there a significant educational gradient for childbearing within cohabitation, and is it steeper than that of marital fertility, indicating that childbearing within cohabitation is more likely to be practiced by people with higher or lower education? Did the educational gradient of nonmarital childbearing change over time, and is the change the same in all countries observed? The answers to these questions will help shed light on how childbearing within cohabitation emerged in each country, and whether it has more in common with the second demographic transition or the pattern of disadvantage.

THEORETICAL FRAMEWORK

Education has long been used as an indicator of latent concepts, such as potential earnings prospects (Sweeney 2002, Raymo 2003), or access to resources more broadly defined (McLanahan 2004). As discussed above, low education is used as a proxy for disadvantage (pattern of disadvantage), while higher education is used as a proxy for ideational shifts in values (second demographic transition). In the following sections, we propose two historical explanations for how childbearing within cohabitation may have developed among those with either high or low education. In addition, we draw on theories from the marriage and nonmarital childbearing literature to explain potential reasons for the relationship between education and childbearing within cohabitation.

Pattern of Disadvantage

Historically, nonmarital childbearing primarily occurred among the most disadvantaged groups of society, for example rural inhabitants, previously married, or the poor (Kiernan 2004; Mitterauer 1983; Laslett et al 1980). Church and other historical records show that during the 16th to mid 20th centuries, the “illegitimacy ratio,” or the percent of births born out of marriage, was less than 10% in most countries of Europe (Shorter, Knodel, and Van de Walle 1971), although there were exceptions documented in certain regions of Austria, Hungary, and Norway (Mitterauer 1983, Trost 1978). Nonmarital childbearing usually occurred among groups that were on the margins of society, often because couples were not granted the right to marry. For example, until the late 19th century, the landless and unskilled laborers in Germany did not have right to marry, because marriage was tied to the status of a “Bürger” (citizen) (Mitterauer 1983). During the 19th century in some parts

of Austria, farmer's children not entitled to inherit the farm and people from lower classes, such as servants, had to remain unmarried, resulting in a high percent of births out-of-wedlock (Mitterauer 1983; Kytir and Münz 1986). In Paris, the costs of marriage were especially high for rural to urban migrants who had to obtain (and pay for) birth certificates and affidavits showing they had lived in Paris for at least six months. Until 1896, men under 30 and women under 25 needed to obtain written and notarized documents showing parental consent for the marriage (or the parent's death certificate), or if both parents had died, consent from grandparents or the Family council (Fuchs 1992). Thus, nonmarital births were often the result of social or financial barriers to marriage and often considered outside the norms of respectable society (Laslett et al 1980).

Over the past few decades, childbearing within cohabitation has become widely accepted and practiced throughout most countries of Europe, but it may have continued to increase predominantly among the most disadvantaged. In order to explain this increase, we draw together several widespread explanations: the feminist and social movements that led to ideational change, and the increasing globalization and economic uncertainty that led to diverging patterns of family formation. Of course, the extent and timing of each of these movements varies by country – for example, former Soviet countries followed a markedly different path of social and economic change. But overall, we argue that a set of general trends and processes led to a widespread pattern of change.

Throughout Europe before the 1960s, marriage was more or less universally upheld as a desirable institution that defined property rights, mediated a contractual agreement between a man and a woman, and regulated sexual and procreative relationships (Thornton, Axinn, and Xie 2007). Marriage also embodied social

constraints that reinforced norms of morality, respectability, gender roles, and patriarchy. In Western Europe in the 1960s and 1970s, the rise of feminist and liberal social movements – also called social liberalism - eroded many of the constraints of the institution of marriage (McDonald 2006; Cherlin 2009). Post-materialist values emerged, at least in terms of attitudes: individualization, secularism, and anti-authoritarianism, including the rejection of formal institutions such as the Church (Inglehart 1990). Premarital sexual intercourse lost its stigmatization, relationships became less rigid, and women gained greater independence. Clearly this had an impact on the institution of marriage; in many countries, divorce restrictions were relaxed, resulting in rapidly increasing divorce rates in the late 1960s and 70s (McDonald 2006). Thus, changes that took place during this period were essential for setting the groundwork for the liberalization of attitudes towards nonmarital childbearing, but do not necessarily explain the underlying individual reasons for the increases in the behavior itself.

The process of social liberalism was not uniform across Europe, however, especially in Eastern Europe, which was dominated by authoritarian regimes and closed societies. Nonetheless, cultural, economic, and social developments throughout the Soviet period led to a similar liberalization of the institution of marriage (Gerber and Berman 2009), allowing for a later increase in childbearing within cohabitation. During and after World War II, the Soviet State encouraged women to participate in the labor force, thereby leading to a type of economic independence for women and a pseudo-equality with men, at least in the public sphere of work (Kon 1995). Soviet women developed a type of feminism, although it remained unique from that in the West and emphasized distinct gender roles and essentialist feminine qualities (Zhurzhenko 2001). Divorce legislation in the Soviet Union was liberalized in the

mid-1960s, and divorce rates increased steadily until they were as high if not higher than most Western countries (Council of Europe 2006). The “sexual revolution,” however, did not occur in the Soviet Union until the late 1980s and early 1990s, when public discussions and displays of sexuality increased and sexualized images flooded advertising, mass media, and film (Kon 1995). Taken as a whole, these movements led to an attitudinal shift that later opened the door for an increase in childbearing within cohabitation.

During the 1980s and 1990s, the globalization of economies – also called new capitalism – fundamentally changed the workings of the marketplace (Mills and Blossfeld 2005; McDonald 2006). The rewards of new capitalism have been numerous – e.g. higher living standards and increased consumption - but some people, generally the least advantaged, have had to struggle with lowered job security, less wage protection, and uncertain pensions (McDonald 2006). Overall, new capitalism has led to increasing economic uncertainty and greater risk, especially among youth entering the labor market. In order to cope with new labor markets and increasing uncertainty, some have adopted certain strategies, for example prolonged education (Kohler, Billari, Ortega 2002; McLanahan 2004). In fact, education has become increasingly important for negotiating the new globalized labor force, and in some countries, the increasing returns to education may have made it more difficult for those with less education to achieve employment stability (Kohler, Billari, Ortega 2002; Newell and Reilly 1999). Given these conditions, the educational gradient, understood as a proxy for social strata, may have become more important for determining individual financial stability in the age of new capitalism. However, it is important to note that country-specific institutional settings and welfare regimes may

have buffered the effects of new capitalism, thus producing less variation in economic stability by education.

Taken together, social liberalism and new capitalism have led to an increase in cohabitation and childbearing within cohabitation. The changing values of the 1960s and 70s led people to become more accepting of alternative lifestyles (Axinn and Thornton 2000), while the rise of feminism led to women's empowerment across the educational spectrum, allowing women to participate in the labor market, but also enabling some to leave defective marriages or choose cohabitation over marriage when partners do not meet economic or emotional standards. Just as importantly, economic globalization and labor market instability of the 1980s and 1990s led to greater employment uncertainty. As young people's lives became more uncertain – and the steps to attain economic stability became more difficult to achieve – many young people began to postpone family-related events, e.g. leaving the parental home, marriage, and childbearing (Mills and Blossfeld 2005; Sobotka and Toulemon 2008; Kohler, Billari, Ortega 2002; McLanahan 2004). In particular, male unemployment, which is often concentrated among the least advantaged, led couples to delay or forego marriage in favor of cohabitation (Oppenheimer, Kalmijn, and Lin 1997, Oppenheimer 2003). Thus, the temporary and reversible nature of cohabitation has provided an alternative to the commitments of marriage, as well as a living situation that reflects life uncertainty, whether due to job instability and unemployment or prolonged education and the establishment of a career.

In this framework, marriage is not necessarily eschewed. As Kalmijn (2007: 244) writes: “Changing values may have resulted in greater acceptance of less traditional forms of behavior (e.g. divorce, cohabitation), but this does not necessarily imply that people value marriage less.” Indeed for many, marriage has remained a

symbol of stability and status – a personal lifetime goal (Cherlin 2009). Marriage may be postponed throughout different life events, but eventually most people marry, and indeed most people want to marry. Even in Sweden, the country that with the most widespread cohabitation and highest levels of childbearing within cohabitation, most people marry sometime in their lives (Andersson and Philipov 2002), and survey data shows that the majority of those currently living with a partner expect to marry within the next five years (Bernhardt 2004).

If cohabitation is associated with uncertainty, and marriage signifies stability, and likewise, the least educated have been negatively impacted by economic uncertainty and globalization, while the most educated have benefitted, then it follows that the least educated would be more likely to cohabit, while the most educated would be more likely to marry. This association should become even more pronounced at the time of birth, when the stability of marriage and the commitment of two parents may be perceived as especially important for raising children. Perelli-Harris et al (2009) show that events that make up the childbearing process – conception, birth, and early childrearing – are particularly important for prompting marriage. In most of Europe, only a small percent of mothers persistently remain within cohabitation throughout the childbearing process, indicating that cohabitation is not displacing marriage as the preferred environment for childbearing and rearing. Thus, the pattern of disadvantage predicts that women in more uncertain situations with fewer social and economic resources should be more likely to have children in cohabiting relationships, while couples with access to more resources and greater opportunities to establish a stable lifestyle should be more likely to give birth within marriage.

The question then is – why would poor women want to have children under such uncertain conditions and in such unstable relationships? As Edin and Kefalas (2005) show in their extensive qualitative study in Philadelphia, poor women often choose to have a child as a way to find meaning in their lives. These women value children highly, and “grab eagerly at the surest source of accomplishment within their reach: becoming a mother” (Edin and Kefalas 2005: p. 46). And even though they also place a high value on marriage, they often see their romantic partners as economically or socially unsuitable for marriage (see also Anderson 1990). The changing acceptance of nonmarital childbearing and increasing female empowerment allow women to reject the constraints of marriage, if their partners do not meet their standards. In addition, cohabiting couples may simply lack the financial resources to turn their relationship into a marriage, either because of inadequate funds to establish financial stability, buy a house or hold a respectable wedding (Edin and Kefalas 2005; Gibson-Davis et al 2005). To summarize, “the pattern of disadvantage” explains how feminism and an increasing acceptance of nonmarital childbearing coupled with growing economic uncertainty produces a negative educational gradient for childbearing within cohabitation.

Second demographic transition

So far, our discussion has focused on how “the pattern of disadvantage” can explain the expansion of childbearing within cohabitation. However, we must also address the alternative explanation: the increase in childbearing within cohabitation occurred predominantly among the most highly educated. Education has long been considered a mechanism for the ideational shifts leading to family change (Caldwell 1982, Cleland and Wilson 1987). Ideational change lies at the heart of second

demographic transition theory (Lesthaeghe and Neidert 2006; Van de Kaa 1987; Sobotka 2008). Proponents of the SDT argue that the rise of cohabitation and childbearing within cohabitation has primarily occurred due to shifts in values, such as increases in individual autonomy, rejection of authority, and self-actualization; in short, the pursuit of Maslow's "higher order needs" (Lesthaeghe and Neidert 2006). Lesthaeghe and associates (2002, 2006) draw connections to Ron Inglehart's theory of post-materialism, which posits that values change as material needs are met, not only through economic development, but also through investments in education. Higher education is strongly correlated with the values associated with post-materialism and the SDT: research from the World Values Survey shows that individuals with higher education are more committed to individualism and gender equality and less supportive of authority (Weakliem 2002).

Indeed, in some countries the increase in childbearing within cohabitation may have begun among more highly educated men and women. In Sweden in the early 1900s, an intellectual elite rejected religious marriage, insisting instead on civil marriages, or "Marriages of conscience" (Trost 1978). Lesthaeghe and Surkyn (2002) observed that in the 1960s and 1970s in the Low Countries of Belgium and the Netherlands new living arrangements such as cohabitation were practiced by better educated younger cohorts with an "egalitarian world view." Higher education may also be associated with secularism and a rejection of the authority of the Church. Laplante (2006) argues that Catholics in Quebec abandoned traditional Christian norms when the Church refused to change its doctrine about marriage and sexuality, thus leading to a striking increase in cohabitation. This explanation may be valid in other "post-Catholic" countries such as France, which have also had anti-Catholic movements (Goldstein and Kenney 2007).

Diffusion of nonmarital childbearing throughout society

We expect that the pattern of childbearing within cohabitation has not developed uniformly across countries. In some European countries, childbearing within cohabitation will have been initiated by and diffused only among the least educated, as in the United States. In other countries, childbearing within cohabitation will have started among the least educated but then spread throughout the population so that little educational gradient remains. In others, the trend could have started among the most highly educated with or without subsequent diffusion downwards. Taken as a whole, we anticipate that this study will provide evidence of multiple pathways to family change in Europe, but nonmarital childbearing, both to single and cohabiting mothers will in most of our sample countries be associated with the pattern of disadvantage.

ANALYTIC STRATEGY

Data

We use a number of surveys to study the educational gradient of nonmarital childbearing. The data from Austria, Russia, Norway, Italy, and France come from the Generations and Gender Surveys, which interviewed nationally representative samples of the resident population in each country. The GGS is a set of comparative surveys that are each representative of their respective populations (see www.ggp-i.org). The questionnaire in each country is intended to follow a standard format, but several countries had to incorporate it into existing surveys and included context-specific questions. The Dutch data come from the 2003 Fertility and Family Survey and interviewed women aged 18-62. The analytic sample for the U.K. is drawn from

the sample of women interviewed in the 2005 wave of the British Household Panel Survey . Data for Germany comes from the first wave of the Panel Analysis of Intimate Relationships and Family Dynamics (PAIRFAM) which was conducted in 2008-09.ⁱ We have limited the sample to the Western states of Germany, because the special demographic situation in the Eastern states would have required a separate analysis. Different from the other data sets, PAIRFAM follows a cohort design. We used the cohorts 1971-73 for this investigation which mainly reflects fertility and union formation behavior since the 1990s, when nonmarital childbearing within Western Germany began to increase (Konietzka and Kreyenfeld 2002).

Although each survey employs different survey and sampling designs, we followed standardized procedures to create cleaned harmonized union and reproductive histories (Perelli-Harris, Kreyenfeld, and Kubisch 2009). The events studied here are relatively comparable – births, union formation, and education. Cohabitation could have different meanings in different settings, but the questions generally relate to co-resident relationships with an intimate partner. In some of the GGS surveys (and the BHPS), the question specifically referred to cohabiting relationships that last more than three months. The BHPS sample includes all women who were interviewed in wave 15 and who provided information on the start and end dates of their partnerships. Because these data are retrospective, they are subject to recall error, which may be particularly problematic for the start and end of cohabiting relationships. We think misreporting of marriage dates, however, is less likely. Thus, underreporting would most likely result in an overestimation of births to single women relative to cohabiting women.

Methods

In this paper we are interested in examining the educational gradient for childbearing to single mothers and cohabitators and whether the educational gradient changes over time. Because a greater percent of first births are nonmarital compared to higher parity births (Perelli-Harris et al 2009), an analysis of first births provides a general depiction of the educational gradient of nonmarital childbearing. Also, including higher order births in our analysis would risk conflating trends in parity and spacing with trends in nonmarital childbearing.

Simply presenting percents of first births by union status and education does not account for factors such as changes in the age composition of the population or period effects. Thus, we focus on rates of childbearing by union status. Following the approach taken in Perelli-Harris and Gerber (2010), we estimate the monthly rates of single, cohabiting, and marital births, defined simply as the number of first births of each type occurring in a given month divided by the number of women at risk of any first birth at the start of that month. The three birth rates of interest are equivalent to three competing risks, which we model in a discrete-time framework by estimating multinomial logistic regressions (MLR) using the sample of all person-months when childbearing-age respondents were at risk for having a first birth.ⁱⁱ The basic form of the model is:

$$h(m)_{it} = p(y_{it} = m) = \frac{\exp(\sum x_{ijt} \beta_{jmt})}{\sum_{m=1}^M \exp(\sum x_{ijt} \beta_{jmt})}, \quad (1)$$

where $h(m)_{it}$ denotes the hazard that respondent i will experience event m in month t , which is equivalent to the probability that i has the value m on a nominal variable y at the end of month t . There are four categories of y : a single birth, cohabiting birth, marital birth, and no birth in month t . The x_{ijt} represent respondent i 's values on a set

of j potentially time-varying covariates at time t . The β_{jm} are parameters estimated from the data using maximum likelihood. The m subscript on β_{jm} shows that a separate parameter vector is estimated for each possible type of event. The model is identified by constraining all the elements in one such vector (the reference category) to equal zero (e.g. $\beta_{j1} = 0$). The models include women aged 15-44 in each period.

When the category no birth is the reference category, the exponentiated parameters can be interpreted as the change in the relative risk of giving birth due to a change in the associated control variable. This is because the reference category is extremely likely. As a consequence, the denominators in the top and bottom terms that comprise the relative risk ratio approach one, and the relative risk ratio approaches a relative risk. For example, the exponentiated parameter for high education can be interpreted as the change in the risk of a birth outcome when a woman has high rather than medium education (the reference category for the education variable) when all other variables are held constant.

We are also interested in directly comparing the educational gradient of cohabiting births to marital births to see whether the steepness of the educational gradient is significantly greater for cohabiting births. This analysis will tell us to what extent the characteristics of cohabiting women who give birth differ from those of married women. Thus, we estimate competing risk hazard models using marital births as the reference category. The exponentiated parameters, however, cannot be interpreted in the same way as in the models with no birth as the reference category. Instead they reflect a comparison of two relative risk terms associated with a change in the associated parameters. Thus, in the analyses shown below, the slope of the educational gradient for cohabiting births would need to be greater than the slope of

the marital births in order to support the SDT (high education) or POD (low education) hypotheses.

Measures

Education. The education system differs greatly across countries, but we have attempted to standardize the analyses by using the International Standardized Classification of Education (ISCED 1997) to classify country-specific data into six educational categoriesⁱⁱⁱ. We then collapse these six categories into three basic categories: low (ISCED 1 & 2), medium (ISCED 3 & 4), and high (ISCED 5 & 6). The lowest education level refers to less than completed basic secondary, medium refers to completed secondary school and any education beyond secondary education but less than completed college (including vocational and technical schools), and higher education refers to a bachelor's or university degree and higher.

We construct time-varying covariates for school enrollment and educational attainment based on data available in the survey, registry data, or external sources. Norway has the most accurate time-varying covariates, because the GGS survey can be linked to retrospective educational histories in civil registers, and time-varying covariates can be coded based on dates of graduation from each level of school. For the Russian, Austrian and Italian data, we use questions in the GGS on date of graduation from the highest level of education achieved and impute continuous schooling from age 15 to this date. We also use information on whether the respondent was enrolled at the time of interview and assume continuous schooling up to age 23^{iv}. After that age we are reluctant to assume continuous enrollment, since respondents could have taken a break from education, especially to care for young children. In the Netherlands, Germany, and the UK, we use external sources to impute

continuous education from age 15 to the average age of graduation from each level of educational attainment achieved. For the Netherlands and Germany, we use census data to construct the average date of graduation for each type of education (Feuerstein 2008), while in the UK we use information on highest qualification combined with a schedule of educational progression that is outlined in the national curriculum of England and Wales (<http://www.britishschool.org/Admissions/GroupEntry>). We also use information on school enrollment at the time of interview and assume continuous schooling up to age 23 in the Netherlands, Germany, and the UK.

Period. To show change over time, we include 5-year periods. We also tested 10-year periods, but found that 5-year periods provided a more accurate fit. Due to a smaller age-range interviewed, we can only examine trends back to the 1980s in Austria. Since the German data only includes the cohorts 1971-73, we do not include measures for period at all.

Age. Age refers to current age in a particular month. We include age and age-squared to capture non-linearities in the impact of age on fertility risks.

RESULTS

Descriptive Statistics

Table 1 provides a descriptive profile of the relationship status of women at the time of birth both across countries and over time. As consistently documented in other studies (Kiernan 2004, Perelli-Harris et al 2009, Council of Europe 2006), childbearing within cohabitation has steadily increased in all the countries of our study (Table 1). The increase was most pronounced in France and Norway; only 9-12% of first births occurred within cohabitation in the 1970s, but by the early 2000s over half of all first births occurred within cohabitation. Note that Austria had a

relatively high percent of cohabiting births in the 1980s, reflecting a long history of one of the highest nonmarital birth rates in Europe (Kytir and Münz 1986). The increase in the UK and the Netherlands did not take off until the 1990s, but by the early 2000s, over a quarter of first births occurred within cohabitation. This is comparable to West Germany, where about 20 percent of births are now to cohabiting women. In Russia, nearly 10% percent of first births occurred within cohabitation in the 1980s and 1990s, increasing to 18% in the early 2000s. Only in Italy has childbearing within cohabitation remained marginal relative to the other sample countries (under 10%).

(Table 1 about here)

Table 1 also shows changes in the distribution of first births by union status for each educational level. Although we might have expected distinct patterns to emerge across the different sample countries, the results are strikingly similar. By and large, there is a positive educational gradient for marital births and a negative educational gradient for single births. The only exceptions are for the marital birth gradient: in the Netherlands in the 1970s and 1980s, in France in the 1980s, and in Russia in the 1990s the percent of marital births for those with medium education was slightly higher than for those with higher education. Thus, our data suggest a negative educational gradient for nonmarital births (to both single and cohabiting women) in all countries.

The educational gradient for cohabiting births exhibits more cross-country variation. There is a strong and persistent negative educational gradient in Norway and Russia. In the other countries, the pattern is less consistent. In the UK, the educational gradient is not as pronounced in the 1980s and 1990s, when the percent of births within cohabitation was highest for those with medium education, but the

educational gradient does become strongly negative in the 2000s.^v In the Netherlands, a slightly positive educational gradient exists in the 1970s and 80s, but it reverses in the later periods, when the percent of cohabitating births increases rapidly, suggesting that the highly educated could have been the forerunners of childbearing within cohabitation, with the least educated overtaking in the 1990s when the phenomenon became more widespread. The data for France follow a similar trend. The educational gradient is slightly positive in the 1970s, but becomes mixed in the 1980s. It becomes negative in the 1990s, but less distinct in 2000-04 when those with medium education have the highest percent of births to cohabiting parents. Finally, Italy West Germany (in the early 1970s) and Austria do not appear to have a strong gradient. In Germany, where we only have data for the cohorts 1971-73, there is no education gradient in cohabiting births. In Austria, the gradient appears to become more negative over time, but it is difficult to tell, since sample size is too small to examine change over time. In Italy, the only pattern arises in the 1980s and 90s, when women with medium education have the lowest percent of births within cohabitation. To summarize, Table 1 suggests multiple paths for the initiation of childbearing within cohabitation, but for most countries a general convergence to a negative educational gradient after 1990.

Competing Risk Hazard Models

As discussed in Perelli-Harris and Gerber (2010), estimating rates of single, cohabiting, and marital births provides more information than simple percents, because rates can vary independently, while percents are dependent on the changes that may occur to the other types of births. In other words, the percent of cohabiting births may increase due to declining marital fertility, not due to an increase of women giving birth within cohabitation. Most importantly, competing risk hazard models allow us to investigate whether childbearing within cohabitation is significantly

associated with education for each union status, while controlling for the age structure of fertility, changes in single or marital fertility, and the influence of school enrollment. Table 2 shows the relative risk ratios for covariates associated with having a first birth by union status, with “not having a birth in a given month” as the reference category. As discussed in the methods section, these can be roughly interpreted as relative risks because each of the outcome variables are rare outcomes – in the vast majority of person months, no birth occurs. Because we are interested in contrasting SDT with POD explanations each of which predict a different pattern of diffusion by education level, our focus is on the rows showing the relative risk of education. For each union type, a relative risk above one implies a higher likelihood of birth relative to women with medium education, and a relative risk below one implies a lower likelihood of birth relative to women with medium education.

Table 1 shows that the educational gradient for cohabiting births is negative in every country studied. Although not all education coefficients are significant in all of our sample countries, at least one parameter is significant for each country and the patterns suggest that the first birth risks for women with low (high) education are significantly higher (lower) than for women with medium education. In Norway, Austria and West Germany, parameters for both high and low education are significant. In the UK, France, and Russia, the only significant distinction is between women with and without high levels of education. On the other hand, for the Netherlands and Italy, the significant difference is between women with and without low levels of education. Overall, these first results suggest that childbearing within cohabitation is associated with the Pattern of Disadvantage.

Fertility, however, may in general be associated with a negative educational gradient, indicating that women with lower education have higher fertility risks for all

types of union status. This is certainly the case for single births - we find a strong negative educational gradient for first birth risks to single women in each of the sample countries. In general, single women with the lowest education are significantly more likely to have a first birth than their counterparts with medium education. The only exception is Russia, where the coefficient for low education is positive but not significant. Women with high levels of education are less likely to have a single birth than women with medium levels of education in all of the sample countries and the parameter estimates are statistically significant in six of the eight sample countries, (France and the Netherlands are the exceptions). These results, however, are not surprising, since other analyses show that single births occur to women with lower levels of education (McLanahan 2004).

What is pertinent to our research question is whether marital fertility is associated with a negative educational gradient, and whether the negative educational gradient of cohabitation is steeper than the educational gradient of marital fertility. If the educational gradient of cohabiting births is significantly more negative than that of marital births, then we can conclude that the characteristics of married and cohabiting women significantly differ, and that the underlying reasons for childbearing within cohabitation are consistent with the Pattern of Disadvantage explanation. In order to compare marital fertility with cohabiting fertility, we first consider the coefficients for marital fertility on Table 2. In most countries - Austria, West Germany, Italy, the Netherlands and the UK – marital fertility is associated with a negative educational gradient, and it is difficult to know whether the marital gradient is significantly different from the cohabiting gradient. The educational gradient for marital births in France is very flat, with no significant differences. Marital fertility in Norway, on the other hand, has a positive educational gradient – the opposite of the negative

educational gradient of cohabiting fertility. Finally, Russia has a U-shaped gradient, which is also different from that of cohabiting fertility. These results suggest that there may be some differences between cohabiting and marital fertility, but it is difficult to know whether the educational gradient for cohabiting births is steeper than that of marital births or whether any differences are significant.

In order to ascertain whether the cohabiting educational gradient is steeper than the marital educational gradient, we estimate competing risk hazard models with marital births (rather than no births) as the reference category. Results presented in Figure 1 suggest that the negative educational gradient for cohabiting births is steeper than that of marital births for all countries except Italy. The magnitude and significance of the relative risk ratios differ, however, across countries. The strongest differences emerge in Norway, the UK, and Russia. As noted above, in Norway we are comparing a negative educational gradient for cohabiting births with a positive gradient for marital births. For the other two countries, the cohabiting educational gradient is more steeply negative. For example, in Russia, the relative risk ratio for low education (relative to the reference category of medium education) is 1.89, and for those with the highest education the relative risk ratio is 0.73, suggesting that the negative educational gradient for birth risks is steeper for cohabiting than for married women. The coefficients for the Netherlands show that the distinction between lower and medium education is significantly more negative for cohabiting than married women, but the gradient does not differ significantly for more highly educated women. In France, Austria and West Germany the educational gradient of cohabiting fertility is still negative, but there is no significant difference between the educational gradients for cohabiting and married women. Finally, Italy provides an exception to the pattern; the relative risk ratios for both higher and lower education are

significantly higher than medium education suggesting that the educational gradient is steeper for cohabiting births at lower levels of education and steeper for marital births at higher levels of education. Note that even though cohabitation is still “marginal” in Italian society (Heuveline and Timberlake 2004; Perelli-Harris et al 2009) and less than 10% of Italian women gave birth within cohabitation, the model coefficients are significant due to the Italian GGS’s very large sample size. Thus, we have the statistical power to be able to analyze and compare educational gradients in a setting where childbearing within cohabitation is just starting to emerge.

These results suggest that by and large, childbearing within cohabitation not only differs from marital childbearing, it is, in most of our sample countries, indicative of a Pattern of disadvantage. Although this pattern may be weaker in some countries than in others, it does appear to be a general phenomenon in countries where childbearing within cohabitation exceeds 18%. Of course, comparisons between educational levels across countries must be made cautiously; for example, the ISCED classifications may not accurately represent the value of a vocational degree versus a college degree in a particular society rendering the comparison between higher education levels across countries unsound. However, because we are interested in comparing educational gradients rather than the meaning of education in a particular society, this limitation is less important. In addition, if we were to move people from one category to another, the most that could happen would be to negate a significant effect, creating a flatter educational gradient or comparison; it would be nearly impossible to reverse the educational gradient.

Finally, we note the association with control variables. As expected, the period coefficients show that all sample countries (West Germany is excluded here) experienced an increase in birth risks within cohabitation, although the size and

significance of the parameters indicates some leveling off in recent years. In most countries the probability of a marital birth generally decreased, as the age at first birth was postponed and childlessness increased, although the magnitude of the risk differs by country. In contrast, trends in the risk of a single birth are less consistent across our sample countries. All countries showed that school enrollment lowered the risk of a single birth by about 65-80%, a cohabiting birth by about 65-90%, and a married birth by about 50-80%. Age effects were also relatively similar across countries, reflecting the general age pattern of fertility that rises and then falls throughout the reproductive years.

Has the educational gradient changed over time?

As discussed above, one of the primary goals of this paper is to investigate the initiation of childbearing within cohabitation and to examine whether the educational gradient changes over time. A limited time period in West Germany and a restricted age range interviewed in Austria means that we could only carry out this additional analysis with six sample countries. For this subset of countries, we included interaction terms between educational level and 5 or 10-year periods for each country. In most countries, the interaction terms for cohabitation were insignificant or did not show a consistent pattern (for example, in the Netherlands there were a few significant results, but due to small sample size some of the period-education cells were empty).

In France, however, an interesting pattern emerges when interaction terms are included. When “no birth” is the reference category, the pattern is very similar to table 1: women with lower education have higher first birth risks within cohabitation in all periods, and the interaction terms do not suggest that the educational gradient in the risk of having a cohabiting birth has changed over time. These results support the

POD explanation. However, we are also interested in whether the negative educational gradient of cohabitating fertility has persisted over time relative to the educational gradient of marital fertility. When marital births are the reference category, we find that the coefficients for all of the period dummies, higher education, and the interaction terms for higher education in the period 1975-84 are significant. In order to see how the relationship between the cohabiting and marital educational gradients changed over time, we plot the product of the main and interaction effects in Figure 2.

(Figure 2 about here)

Figure 2 shows that in the early 1970s, when only about 12% of births were to cohabiting women, there was very little difference between the educational gradients of cohabiting and married women (both were negative). In the late 1970s and early 1980s, when childbearing within cohabitation started to increase, the top end of the educational gradient became steeper for cohabiting women. This suggests that birth risks for highly educated women were greater for cohabiting women than married women, and that highly educated women were the forerunners of childbearing within cohabitation. Note that the pattern in 1975-84 appears to be very similar to the U-shaped pattern in contemporary Italy, where relative risk ratios for both low and high levels of education are positive. After 1985, the interaction term between high education and period was not significant, suggesting that there was very little difference in the educational gradient of childbearing between cohabiting and married women. Finally, the significance of the main effects (high education) indicates that in the reference category of 2000-04, the higher end of the educational gradient between cohabiting and marital fertility again diverged, but this time cohabiting women with higher education had lower birth risks than married women with higher education

(relative to medium education). Throughout the period 1975-2004, more highly educated women first had a higher risk of childbearing within cohabitation compared to marriage, and then a lower risk of childbearing within cohabitation compared to marriage. Thus, France is a very interesting case in which the most highly educated appear to be the forerunners of childbearing within cohabitation, as predicted by the second demographic transition, but by 2000-04, they had lower risks of childbearing within cohabitation compared to marriage, supporting the pattern of disadvantage.

(Figure 2 about here)

DISCUSSION

In this study, we examine the educational gradient of childbearing in cohabitation in eight European countries to determine whether childbearing within cohabitation has more in common with the second demographic transition or the pattern of disadvantage. Our results provide evidence that across Europe nonmarital childbearing – both to single and cohabiting mothers – has more in common with the pattern of disadvantage than the second demographic transition. In every country studied, cohabiting women with lower (or higher) education had significantly higher (or lower) first birth risks than women with medium education. This indicates that by and large childbearing within cohabitation is associated with a negative educational gradient.

We were also interested in comparing the educational gradient of cohabiting fertility with that of marital fertility, to see whether the educational gradient of cohabiting births is significantly more negative than that of marital births. A significantly negative educational gradient indicates that the characteristics of cohabiting women are significantly different than those of married women and that

the underlying reasons for childbearing within cohabitation are better explained by the pattern of disadvantage. Our results show that the negative educational gradient of childbearing within cohabitation was significantly steeper than that of marital births in Norway, Russia, the UK and the Netherlands. Although negative, the educational gradient was not significant in France, Austria, and West Germany, suggesting that cohabitation and marriage are more similar in these countries. In Italy it was U-shaped, with significant results for lower and higher education. In no country, was there a positive educational gradient, as would be predicted by the second demographic transition. It is also noteworthy that one of the strongest negative educational gradients was in Norway – one of the Scandinavian countries often held up to be a model second demographic transition country (Raley 2001; Sobotka 2008).

Our results show some variation over time, indicating that there are multiple pathways to the development of childbearing within cohabitation. In most countries, the negative educational gradient has been entrenched since its historical beginnings. In Norway, for example, the innovators in childbearing within cohabitation were among the least educated. In others, such as Russia and the UK, childbearing within cohabitation remained at a low to medium level for a longer period and only recently experienced substantial increases, but nevertheless the educational gradient did not change. In France, on the other hand, the most highly educated appeared to initiate increases in childbearing within cohabitation in the late 1970s and early 80s. By 2000-04, however, the most highly educated had higher birth risks within marriage than in cohabitation. Such a reversal may also have occurred in the Netherlands, since the descriptive statistics appear to show a slight positive educational gradient for percent of births in cohabitation in the earlier periods, but small sample size inhibits us from fully testing changes over time using the full models. Finally, contemporary Italy,

which appears to be on the threshold of increasing childbearing within cohabitation shows a similar pattern to France in the late 1970s, when childbearing within cohabitation was also just beginning to emerge. This suggests that in some countries, the second demographic transition was important in the initial stages of the development of childbearing within cohabitation, but as the phenomenon diffused, the pattern of disadvantage prevailed and became the predominant pattern we see today.

Some limitations of this study must be noted. First, by focusing on first births, we do not address possible increases in nonmarital childbearing for higher parities, which could lead to slightly different interpretations from those presented above. Second, as discussed above, when comparing education levels across countries it is difficult to know whether the meaning of education is the same in all countries. Nonetheless, because our goal is simply to determine whether childbearing within cohabitation diffused from the top or the bottom of the educational distribution, we think these categories are adequate to capture these trends. Third, we had to impute school enrollment based on crude measures, which may underestimate breaks in schooling. However, given that we focus on births that usually occur after graduation, this limitation may be less important. Fourth, each survey suffers from specific limitations, for example, response rates in Moscow and St. Petersburg –the largest urban areas in Russia – were very low, meaning that the survey may be representative only of the rest of Russia (Perelli-Harris and Gerber 2010). The BHPS data has limited information on start dates of some unions, which if non-random could potentially introduce sample selection bias. The Austrian GGS only interviewed women aged 15-44, and the German PAIRFAM data included only one cohort, thus restricting analyses over time. Finally, we acknowledge that our analyses do not capture country-specific cultural, social, and policy changes that may be very

important for explaining the development of nonmarital childbearing within a particular country.

Nonetheless, this study shows that analyzing union status at the time of birth reveals important patterns of social stratification. The decision to bear and raise children in different unions produces different trajectories among the least and most educated, resulting in a pattern of disadvantage. In the theoretical framework, we argue that the pattern of disadvantage developed due to two major waves of social and economic change: 1) feminist and social movements that liberalized attitudes towards nonmarital childbearing and empowered women to choose suitable partners, and 2) globalization and economic uncertainty that led to job insecurity and relationship instability. Our results suggest that even though each country developed through these stages at a different pace, nearly all countries have converged on the pattern of disadvantage. The main exception is Italy, where childbearing within cohabitation is just emerging and the educational gradient mirrors that of France in its early stages of diffusion.

It is important to recognize, however, that country-specific welfare policies, institutions, and cultural attitudes play a major role in determining the pace of family change. Certain countries have social welfare systems that encourage marriage and may inhibit the increase of childbearing within cohabitation. Germany, for example, encourages the “traditional breadwinner model” and privileges marriage in public health care, pensions, and tax systems. This privileging of marriage becomes important for women who want to stay home to raise young children and less important for women who want to remain in the labor force after birth or have salaries more equal to their partners (Konietzka and Kreyenfeld 2002). Thus, the German system may explain our findings showing relatively low levels of childbearing within

cohabitation and very little difference between cohabiting and marital fertility educational gradients.

On the other hand, the initiation of welfare policies may have promoted the increase in childbearing within cohabitation and exacerbated the negative educational gradient. As countries established social safety nets, unmarried mothers often became the beneficiaries of a range of transfers and benefits. For example, in 1976 the French government instituted a means-tested benefit to provide a monthly income to single mothers for up to three years after each birth (*allocation pour parent isolé*). This may have led low-income cohabiting couples to hide their relationships and postpone marriage, resulting in an increase in births within cohabitation among the least educated (Schultheis 1999). Thus, policies could have unintended consequences, resulting in a divergence in family formation strategies between different strata of the population. Further in-depth research is needed to understand how specific policies, institutions, and cultural attitudes contributed to the increase of childbearing within cohabitation and the emergence of the pattern of disadvantage in each country.

Finally, our results challenge the assertion that cohabitation, even in countries with high levels of cohabitation, is “indistinguishable from marriage” (Heuveline and Timberlake 2004). The finding that the least educated have higher fertility rates within cohabitation, or alternatively the most educated have higher fertility rates within marriage, suggests that those with the most resources are able to marry, while those with the least resources encounter obstacles to marriage (McLanahan 2004). This may imply that childbearing within cohabitation is symptomatic of a “social problem.” Prior research shows that cohabiting relationships in European countries are less stable than marital couples (Liefbroer and Dourleijn 2006), and children born within cohabitation are more likely to be raised by single mothers (Heuveline, Timberlake,

and Furstenberg 2003). Women who give birth within cohabitation may be at an additional disadvantage if they are more likely to experience union dissolution than married mothers, and if they have less education. Thus, the negative educational gradient of childbearing within cohabitation could result in a negative association between union status and future social, financial, or emotional outcomes. Further research is needed to determine whether the negative educational gradient of cohabitation at the time of birth produces negative outcomes throughout the life course, or whether country-specific welfare systems and cultural institutions mediate this relationship, thus rendering it irrelevant to future outcomes.

In conclusion, this study provides evidence that contemporary childbearing with cohabitation is linked to the pattern of disadvantage. The second demographic transition may explain the emergence of childbearing within cohabitation in a few countries, but the explanation is limited in that it focuses on value change, without recognizing subsequent social and economic change. By focusing on women's empowerment and ideational change coupled with globalization and economic uncertainty, the pattern of disadvantage explains how the family formation strategies of the most and least educated are diverging, leading to increasing inequality.

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Table 1. Percent of women who had a first birth, by union status, educational level and period.

Country	Low			Medium			High			Total		
	Single	Cohab	Married	Single	Cohab	Married	Single	Cohab	Married	Single	Cohab	Married
Austria												
Total 1980-2009 ¹	25	35	40	12	37	50	3	30	66	14	36	50
France												
1970-79	13	11	76	10	11	79	7	13	80	11	12	78
1980-89	12	29	58	7	21	72	8	26	66	9	25	66
1990-99	16	47	36	7	45	48	4	33	63	8	41	51
2000-04	18	50	32	7	60	33	0	46	54	5	52	43
Italy												
1970-79	5	1	94	3	1	95	1	1	98	4	1	95
1980-89	5	3	92	4	1	95	0	4	95	5	2	93
1990-99	8	7	85	5	4	91	2	5	93	6	5	89
2000-04	8	14	78	8	8	84	5	11	84	8	10	82
Netherlands												
1970-79	3	3	94	1	2	96	0	9	91	2	3	95
1980-89	6	5	89	3	4	93	2	7	91	4	5	91
1990-99	11	20	69	4	16	80	3	15	82	6	17	77
2000-03	10	35	55	3	30	67	0	29	71	3	27	70
Norway												
1970-79	27	14	59	8	8	84	5	7	88	13	9	78
1980-89	18	34	48	10	31	59	4	2	94	12	25	63
1990-99	17	55	28	9	54	37	6	38	56	9	48	42
2000-04	12	63	25	5	63	32	3	47	50	5	54	41
Russia												
1970-79	16	13	71	10	9	82	9	9	82	11	9	80
1980-89	19	17	64	11	10	80	9	8	83	11	10	78
1990-99	17	21	62	12	15	74	16	13	71	13	16	71
2000-04	28	27	44	19	16	65	11	15	74	19	18	63
UK												
1970-79	10	3	87	5	2	93	3	1	97	6	2	93
1980-89	26	6	68	18	13	69	5	9	87	14	10	76
1990-99	45	17	38	18	35	47	12	13	76	18	23	60
2000-04	49	45	6	25	39	36	6	23	71	16	31	53
West Germany												
Cohorts 1971-73 ¹	18	21	62	10	20	69	5	23	72	10	21	69

1: Total reported due to small sample size

Table 2. Relative Risk Ratios for Competing Risk Hazard Models of First Births by Union Status, Women 15-44, Reference category: No birth

	Austria	France	W. Ger.	Italy	Neth.	Norway	Russia	UK
Cohabiting								
Low	1.43 **	1.14	1.86 ***	2.07 ***	1.48 ***	1.33 ***	1.22	0.76
Medium	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
High	0.61 **	0.82 *	0.78 *	1.41	0.97	0.75 ***	0.60 ***	0.46 ***
1970-74		0.31 ***		0.14 ***	0.08 ***	0.07 ***	0.58 ***	0.06 ***
1975-79		0.38 ***		0.24 ***	0.07 ***	0.08 ***	0.44 ***	0.03 ***
1980-84	0.84	0.43 ***		0.28 ***	0.10 ***	0.13 ***	0.51 ***	0.14 ***
1985-89	0.93	0.62 ***		0.27 ***	0.13 ***	0.24 ***	0.76	0.33 ***
1990-94	0.69 **	0.86		0.36 ***	0.29 ***	0.35 ***	0.97	0.46 ***
1995-99	0.79 *	0.94		0.68 *	0.61 ***	0.49 ***	0.87	0.87
2000-04	0.87 ^a	1.00		1.00	1.00	1.00	1.00	1.00
In school	0.30 ***	0.29 ***	0.27 ***	0.11 ***	0.34 ***	0.27 ***	0.30 ***	0.22 ***
Age	2.41 ***	2.27 ***	1.41 ***	1.37 ***	2.14 ***	1.56 ***	1.69 ***	1.16
Age-squared	0.98 ***	0.98 ***	1.00 *	0.99 ***	0.99 ***	0.99 ***	0.99 ***	1.00 *
N Coh births	640	872	290	342	299	1299	692	402
Married								
Low	1.24 *	1.03	1.75 ***	1.45 ***	1.13 **	1.01	0.65 ***	1.25 *
Medium	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
High	0.89	0.98	0.72 ***	0.92	0.90	1.19 **	0.82 ***	0.87 *
1970-74		3.86 ***		2.45 ***	1.05 ***	1.51 ***	1.30 ***	2.07 ***
1975-79		3.14 ***		2.34 ***	1.02 ***	1.31 ***	1.28 ***	1.79 ***
1980-84	2.83 ***	2.22 ***		1.98 ***	1.18	0.93	1.33 ***	1.45 **
1985-89	2.68 ***	1.74 ***		1.45 ***	1.12	0.72 ***	1.44 ***	1.23
1990-94	1.76 ***	1.49 ***		1.20 ***	1.00	0.63 ***	1.52 ***	0.91
1995-99	1.11	1.41 ***		1.08 ***	0.91	0.57 ***	1.02	0.98
2000-04	1.08 ^a	1.00		1.00	1.00	1.00	1.00	1.00
In school	0.28 ***	0.28 ***	0.27 ***	0.23 ***	0.30 ***	0.27 ***	0.48 ***	0.40 ***
Age	2.73 ***	3.45 ***	2.13 ***	2.75 ***	3.43 ***	2.00 ***	2.66 ***	2.69 ***
Age-squared	0.98 ***	0.98 ***	0.99 ***	0.98 ***	0.98 ***	0.99 ***	0.98 ***	0.98 ***
N Mar births	881	2610	950	13898	2260	2228	4443	1949

Single																
Low	1.73	**	1.56	***	2.10	***	1.59	***	2.46	***	2.05	***	1.26		2.27	***
Medium	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00	
High	0.31	*	0.72		0.36	*	0.48	**	0.75		0.63	**	0.61	***	0.48	***
1970-74			3.12	***			0.68	*	0.28	***	0.59	*	0.65	***	0.34	**
1975-79			2.37	***			0.75		0.21	***	0.70		0.46	***	0.11	***
1980-84	1.27		1.60				0.60	**	0.50		0.49	**	0.56	***	0.44	**
1985-89	1.55		1.97	*			0.64	*	0.69		0.53	**	0.73	*	0.76	
1990-94	1.28		1.83	*			0.76		0.99		0.64	**	0.80		0.77	
1995-99	0.81		1.70				0.65	*	1.22		0.73		0.67	*	1.19	
2000-04	0.77 ^a		1.00				1.00		1.00		1.00		1.00		1.00	
In school	0.24	***	0.36	***	0.39	***	0.21	***	0.31	***	0.27	***	0.30	***	0.36	***
Age	1.37	**	1.65	***	1.60	**	1.16	*	1.40	**	1.15		1.85	***	1.38	
Age-squared	0.99	**	0.99	***	0.99	**	1.00	**	0.99	**	1.00		0.99	***	0.99	*
N Sing births	242		441		144		808		107		400		787		363	
N Person mo.	645194		597153		291230		2004167		634892		443521		499183		533118	

Figure 1. Relative risk ratios for competing risk hazard models for the educational gradient of births to cohabiting women relative to married women, 1970-2004.

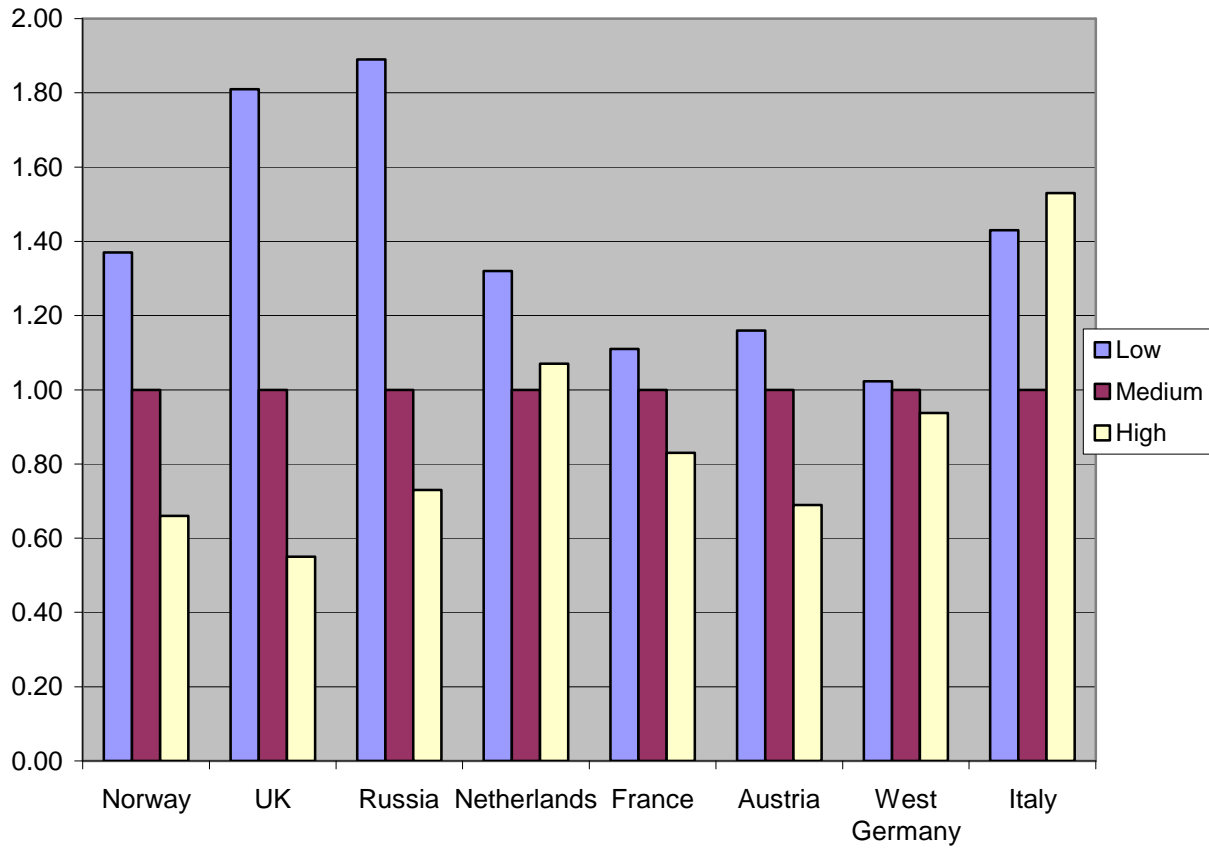
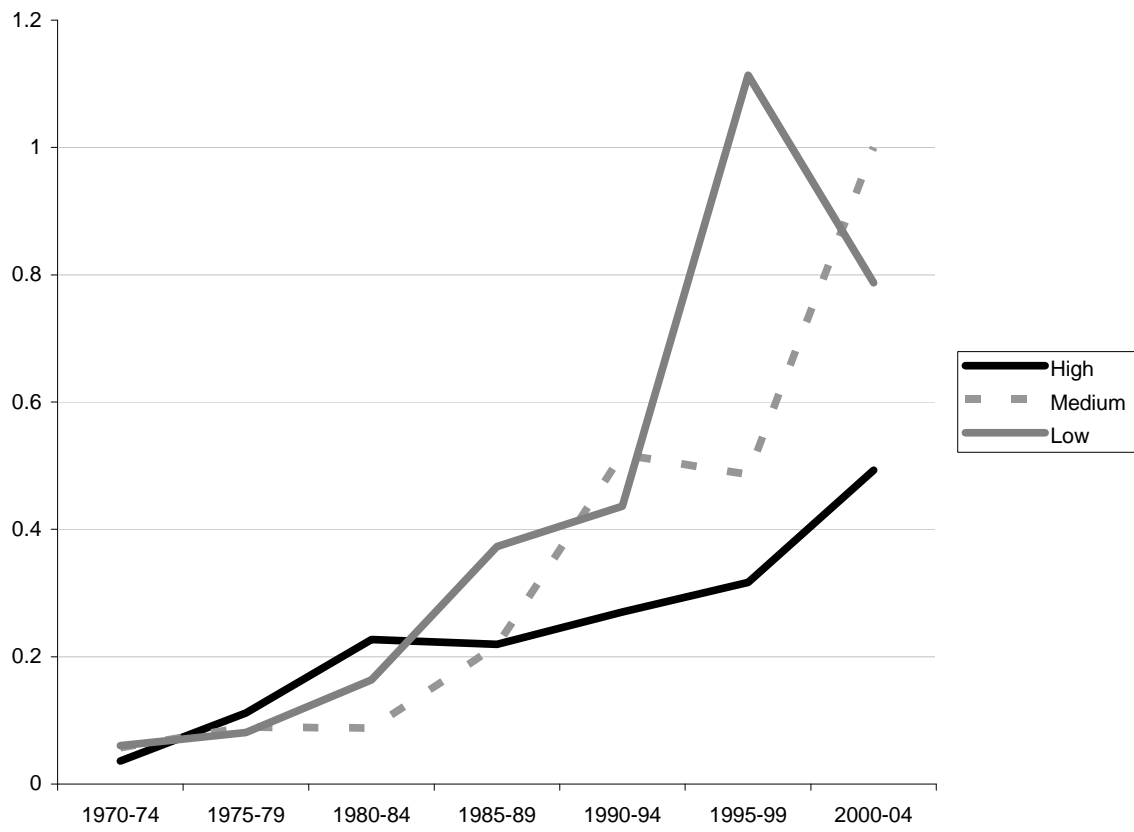


Figure 2. Relative risk ratios for competing risk hazard models for the educational gradient of births to cohabiting women relative to married women with interactions over time: France.



Endnotes:

ⁱ Germany also conducted a Generations and Gender Survey in 2005. However, we have decided not to use this data set due to the underreporting of partnerships.

ⁱⁱ This model requires that the IIA (Independence of Irrelevant Alternatives) is met. We attempted to conduct Hausman tests to see whether the IIA assumption could be rejected but the chi-square statistic was often negative.

ⁱⁱⁱ The UK and German classifications deviate somewhat from the suggested ISCED system. For the UK, we include people who received very poor scores on their O-level/GSCE tests in ISCED category 2. In Germany, we have grouped people with an Abitur into one category, but those who never received a vocational or university degree are classified as ISCED 1 & 2.

^{iv} Increasing the age of continuous school enrollment does not substantially alter the results.

^v In recent decades, very few people in the UK failed to achieve an ISCED level 3 qualification. As a consequence, the number of observations with low education is small and figures should be interpreted with some caution.