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Elizabeth Thomson, Trude Lappegård,
Marcia Carlson, Ann Evans and Edith Gray

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Elizabeth Thomson, Stockholm University and University of Wisconsin-Madison
Trude Lappegård, Statistics Norway
Marcia Carlson, University of Wisconsin-Madison
Ann Evans, Australia National University
Edith Gray, Australia National University

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Abstract: This paper compares mothers' experience of having children with more than one partner in two liberal welfare regimes (the U.S. and Australia) and two social democratic regimes (Sweden and Norway). Using a life course approach we produce estimates of the likelihood of experiencing childbearing across partnerships even for those who have not (yet) done so. Our results show that births with different partners constitute a substantial proportion of all births in each country we study. Despite quite different arrangements for social welfare, the determinants of childbearing across partnerships are very similar. Women who had their first birth at a very young age or who are less well educated are most likely to have children with different partners. There are no stronger socioeconomic differentials in childbearing across partnerships for the liberal as compared to the social democratic welfare states, but in the United States, the differential was much larger than in the other countries. The risk of childbearing across partnerships increased dramatically in all countries from the 1980s to the 2000s, and the educational differential also increased.

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Introduction

In most wealthy countries of the world, cohabitation, divorce, non-union or nonmarital childbearing and repartnering have become or are becoming common features of the family system. A less noticed and less well-documented result of these changes is the experience of parents having children with more than one partner. In contexts with high levels of union stability among parents, individual childbearing careers must be conceptualized not only in terms of the timing and number of births but also in terms of whether children are born in the same partnership.

Furstenberg and King (1999) were the first to identify the concept of childbearing across partnerships as a distinct demographic phenomenon.[1] A few studies have followed with data from the U.S., Australia and Norway (Meyer, Cancian and Cook 2005; Carlson and Furstenberg 2006; Gray and Evans 2008; Manlove et al. 2008; Guzzo and Furstenberg 2007; Lappegård and Rønsen forthcoming). Only the latter two studies, however, placed the event in the context of childbearing careers where the identity of each child's other parent, as well as the child's birth order, is taken into account.

[1] "Childbearing across partnerships" is no more felicitous a term than "multi-partnered fertility" used in much of the previous research, but the latter term is a misnomer in the vast majority of cases where parents have children with no more than two different partners. Another option, "stepfamily fertility", may be misleading because "stepfamily" has been used only with respect to coresident partnerships and often only with respect to marriage.

Family behaviors that place a parent at greater risk of having children with a new partner – out of union childbearing, cohabitation and separation – are consistently associated with socioeconomic disadvantage (Ventura and Bachrach 2000; Martin 2006). On the other hand, the socioeconomically advantaged may be more attractive as partners and better able to support additional children (Sweeney 2010). It is therefore not clear whether the family complexities produced by childbearing across partnerships fall disproportionately on the socioeconomically disadvantaged (studies cited above). Furthermore, the degree of socioeconomic differentiation may depend on general levels of economic inequality or state support for children and families (Härkönen and Dronkers 2006; Perelli-Harris et al. 2010; Thomson, Winkler-Dvorak and Kennedy 2012) and may have changed over time in the context of rising levels of inequality (McLanahan 2004; Kennedy and Thomson 2010).

In this paper, we consider childbearing across partnerships as an event in a woman's childbearing career—a different type of birth from a second or higher-order birth with the same partner. We complement previous analyses of this sort for men (Guzzo and Furstenberg 2007; Lappegård and Rønsen forthcoming) by investigating women's childbearing with more than one father. We use data from four countries with different histories and levels of non-union childbearing, cohabitation and separation/divorce to identify common features of childbearing across partnerships. We compare socioeconomic differentials across welfare regimes and within each pair of countries with similar social welfare provisions for children and their families. And we investigate the possibility of increasing differentials over time.

Childbearing across Partnerships in Life courses and Kinship Systems

Over the past few decades, scholars have examined several components of family change that have been observed in most Western industrialized countries since the mid-20th century. Together, these changes are sometimes referred to as the "Second Demographic Transition" (Lesthaeghe 1995). They include postponement of parenthood and marriage as well as rising or high levels of cohabitation, nonmarital childbearing, and divorce (Lesthaeghe 1995; Van de Kaa 1987). Although these trends have been widely documented across a host of industrialized nations, notable variation exists in the timing and intensity with which they have occurred (Amato and James 2010; Kiernan 2001; Roberts, et al. 2009), as well as the extent to which they are even viewed as part of a singular 'transition' in family systems (Council of Europe 1991).

Childbearing across partnerships arises from instability in adult unions during the childbearing years, the desire of single parents for new partners, and the new couple's desire for a child together. If women entered and remained in a single partnership over their fertility career, parents would have children with only one partner. If separated or divorced parents did not find new partners, or if they chose not to have children with those partners, there would be no childbearing across partnerships. With an increasing pool of single parents and their propensity to form new partnerships, together with the value of shared children for new partnerships (Thomson et al. 2002), it is not surprising that childbearing across partnerships occurs and has potentially increased.

It is important to recognize that childbearing across partnerships is not new. With high mortality rates through the early 20th century in most industrialized countries, it was not uncommon that a

man or woman would experience the death of a spouse during the childrearing years, and it was not uncommon to remarry. A remarried woman could have children with a new partner while she was still able to have biological children. A remarried man of any age could have children if his new wife were still in her childbearing years. Newer forms of union instability are less exogenous than death; exposure to the risk of having children with a new partner occurs primarily because individuals do not enter a stable union before having children (i.e., non-coresident or cohabiting partnerships) or because childbearing occurs within unions that do not last until the end of a woman's fertile years (i.e., separation or divorce).

Childbearing across partnerships driven by union instability, however, has potentially greater implications for family complexity than when one of the parents dies. Families continue to be a foundational unit in the social order of most societies, and the parent-child bond remains fundamental among kin relationships (Nock, Kingston and Holian 2008; Rossi and Rossi 1990). Parents are charged with socializing children to be positive and productive citizens, as well as providing for their material needs—although there is notable variation across welfare states in the extent to which childrearing is supported by public institutions (Gornick and Meyers 2003).

In the recent past, children were likely to be reared in the family unit referred to as the "structurally isolated nuclear family" where married mothers and fathers shared a residence with their biological offspring, generally living apart from extended kin (Davis 1949; Parsons 1955; Popenoe 1988). The confluence of biological relatedness, co-residence and legal ties increased the ability of parents to spend time and money on their children and clarified their rights, obligations and responsibilities. Rights, obligations and responsibilities were concentrated in the

nuclear family to some extent at the expense of obligations and responsibilities to extended kin (Parsons 1955).

The rise in divorce in the late 20th century called into question the viability of the nuclear family model for organizing the care and well-being of family members. Particular attention was drawn to the ambiguities in norms, authority, legal relationships and habits that arose when parents did not live together and when they formed stepfamilies with a new partner (Bernard 1956; Cherlin 1978; Furstenberg and Cherlin 1991; Ihinger-Tallman 1988). While some of the 'effects' of parental separation (including divorce) and stepfamily formation (by cohabitation or marriage) are certainly due to the characteristics of individuals who enter this status (Castro-Martin and Bumpass 1989; Furstenberg and Spanier 1984), it is clear that changing partners when children are involved has profound implications for the character of intra-familial relationships and broader kinship networks (Furstenberg 1990).

As marriage and childbearing have become even further disconnected in recent decades, the complexity of parent-child and kinship ties has increased. No longer are stepfamilies formed only through remarriage; instead, cohabitation and non-resident partnerships also contribute to the chance of having children with more than one partner. In whatever context it occurs, however, childbearing across partnerships may affect parents' ability to provide effective parenting and sufficient economic resources for their children—two key aspects of parental investment (Thomson, Hanson and McLanahan 1994). Parents in such families have divergent interests among their children in common and those they have had with other partners.

In the context of childbearing across partnerships, biological parents must spread their investments across households and/or must coordinate parenting within a household with a partner who is not related to their child; these circumstances likely diminish the quantity and perhaps quality of biological parenting that any given child receives, and social parents are unlikely to compensate completely for this loss. On the economic side, having children who live in two separate places increases the costs of childrearing because parents cannot benefit from the economies of scale of sharing household goods among all their offspring, and living away from children increases the transaction costs for the non-resident parent (Weiss and Willis 1985).

Prevalence and Variation in Childbearing across Partnerships

As noted above, childbearing across partnerships is not a new demographic phenomenon. As divorce replaced parental death as the primary family-disrupting event during the early 20th century, remarriage became the primary source of childbearing across partnerships. For example, Thornton (1978) found that white U.S. women who divorced and remarried had on average 1.59 children at the end of their first marriage, 3.30 children at 17 years after first marriage. The data covered childbearing during the 1950s and 1960s when cohabitation was unusual in the United States, so they likely capture most of the childbearing across partnerships that occurred. Thornton did not present information on the percent of women who had children in the first or subsequent marriage.

Bumpass (1984) showed that about 20 percent of children living with their mothers in 1980 had a half-sibling arising from one or the other parent's remarriage. He noted that the analysis likely missed a considerable number of half-siblings born in cohabitation, not recorded in his data.

Bumpass, Sweet and Raley (1995) showed, indeed, that cohabitation produced a significant proportion of stepfamilies, but they did not distinguish between step-families that did and did not produce additional births. Recent studies that include cohabitors show that about half of married or cohabiting couples with a stepchild eventually have a child together (e.g., Holland and Thomson 2010; Thomson et al. 2002; Vikat et al. 1999). At least one of the parents will then have had children with two or more partners. This research demonstrates a higher birth risk with a new partner than with the same partner, given the same number of prior births. But the two types of birth risk are conditioned on being in a partnership and, therefore, do not tell us about the risk for the population as a whole of childbearing across partnerships.

A substantial minority of contemporary parents have children with more than one partner. Carlson and Furstenberg (2006) reported that about a quarter of new parents in the Fragile Families Study (based on an urban U.S. sample) reported that they had children from a previous relationship. Estimates for a more representative sample of U.S. fathers, not conditioned on a recent birth, are somewhat lower, about 17 percent (Guzzo and Furstenberg 2007). Gray and Evans (2008) estimated that among Australian cohorts just above childbearing age, between 10 and 17 percent of fathers, and 13 and 20 percent of mothers had a child with more than one partner. Their estimates vary depending on whether parents with two children born outside marriage are assumed to have had births with the same partner or different partners. Estimates from Danish register data indicate that about 10 percent of fathers age 38 or older had children with more than one mother (Sobotka 2008). Estimates from Norway show an increase in the proportion of men who had children with more than one mother, from less than 4 percent of those born before the Second World War to about 11 percent of those born in the early 1960s

(Lappegård, Rønsen and Skrede 2011). Among parents with two or more children – the precondition for having a child with more than one partner – percentages who have done so are of course greater, ranging from 12 percent of the Australian fathers to 37 percent of the mothers in the Fragile Families Study.

Differential patterns of fertility and family formation have been identified as an important aspect of growing economic inequality in the United States (Cancian and Reed 2009; McLanahan and Percheski 2008). More advantaged individuals typically marry later, have children within marriage and are less likely to divorce, while less advantaged individuals have children earlier, often outside of marriage and/or unplanned, are less likely to marry, and more likely to divorce when they do. Because the less well educated are more likely to have nonmarital births (Ventura and Bachrach 2000) and to be divorced (Martin 2006) than their higher-educated counterparts, and because they begin their childbearing at an earlier age (Wilde et al. 2010), their exposure to the risk of having a child with a new partner is greater. Education also appears to be negatively associated with entering a stepfamily in some contexts but not in others and differentially for men and women (Sweeney 2010). Evidence for the overall association of socioeconomic status with childbearing across partnerships is mixed, but generally finds that the college-educated are less likely to have children with more than one partner (studies cited above). A recent study of Norwegian men also suggests an inverse association between socioeconomic status and having children with more than one partner (Lappegård and Rønsen forthcoming). To the extent that childbearing across partnerships occurs disproportionately to disadvantaged individuals and creates additional challenges for positive family functioning, this may be an important aspect of inequality both within and across generations.

A key question in inequality research is the extent to which different welfare regimes produce different levels of inequality in terms of poverty, earnings, income, and intergenerational mobility (Breen and Jonsson 2005; Gottschalk and Smeeding 1997; Kenworthy 1999). When welfare regimes operate to reduce economic inequality overall, or direct particular support toward children and families, differentials in family behavior may also be attenuated (Härkönen and Dronkers 2006; Perelli-Harris et al. 2010; Thomson et al. 2012). The extent to which childbearing across partnerships is concentrated among the less advantaged may therefore vary across welfare regimes.

Socioeconomic differentials in family behavior do, however, appear to be increasing as income inequality rises in wealthy countries, including those with welfare regimes with greater redistribution of income and support for families. McLanahan (2004) identified the "diverging destinies" of children in the United States as a result of growing inequality in family experiences by socioeconomic status. A few studies have demonstrated similar patterns even in Sweden, the prototype of social democratic welfare regimes (Hoem 1997; Kennedy and Thomson 2010).

In this paper, we provide considerable additional data on childbearing across partnerships, with one goal to identify commonalities across different national contexts. A second goal is to identify differences in socioeconomic variation under different welfare regimes and across time. We selected countries with welfare regimes characterized by Esping-Andersen (1990) as liberal (Australia and the United States) or social democratic (Norway and Sweden). The design is intended to provide both within- and across-regime variation in socioeconomic inequality and

support for children and families. Our overarching hypothesis is that socioeconomic differentials in childbearing across partnerships will be smaller in the social democratic than in the liberal welfare states and will have increased over time in each country.

Demographic and Welfare Contexts

The four countries we study are all among the "highest-low" fertility countries with total fertility rates between 1.6 and 2.1 (replacement level) children per woman as of 2001.[2] The U.S. and Australia have lower rates of nonmarital childbearing (about one-third of births) compared to the two Nordic countries (about half of births). The differences are due in large part to lower prevalence of cohabitation in the U.S. and Australia. Estimates for the 1990s indicated that only 5-7 percent of births in Sweden and Norway occurred to women living alone. In this respect, Australia is more similar to the Nordic countries than is the U.S. (8 percent and 17 percent, respectively). The U.S. is also an outlier in having the highest dissolution rates for both cohabitation and marriage. Most important for our purposes is that parents with children are much more likely to be living alone and at risk of childbearing with a different partner in the U.S., compared to the Nordic countries and Australia. (Sources include Andersson, 2002a; 2002b; Cherlin 2009; deVaus 2004; Sardon 2006a; 2006b; Sobotka and Toulemon 2008.)

Norway and Sweden are, of course, both social democratic countries with long histories of state support for parenthood (parental leave, public child care, leave for care of sick children and child allowances). Both represent the dual-earner model of family organization, though in this respect

[2]Sweden's TFR has dropped to as low as 1.5 due to shifts in birth timing, but cohort fertility remains at about two children per woman.

Norway is somewhat less egalitarian than Sweden. Transfers are high in the Nordic countries, with a resulting relatively low level of economic inequality. Due to oil reserves, Norway is, however, a much richer country than Sweden. Australia and the U.S. were both established as British colonies and have quite heterogeneous populations in terms of ancestry and immigrant or colonial experience, compared to the Nordic countries. Both are classified among the liberal welfare states (Esping-Andersen 1990) with a minimal safety net and emphasis on means-tested benefits. Economic inequality is much higher in both countries than in Norway and Sweden (Smeeding 2005). Despite differences between countries within each pair, the two-by-two design is likely to offer more insight into the phenomenon of childbearing across partnerships than a more arbitrary set of comparative contexts.

Data and Methods

Our data come from nationally-representative surveys in Australia and the United States and from population registers in Sweden and Norway. This means, of course, that the quality of our data is confounded with the type of welfare state regime. The implications of these differences for our analyses and results are considered below. We observe birth cohorts from 1952 to 1991.

For Australia, we use data from the most recent wave (2008) of the Household, Income and Labour Dynamics in Australia (HILDA) survey, a nationally-representative longitudinal study. HILDA contains detailed information on birth and marriage histories, but information on cohabitation is limited. Respondents report the timing of the respondent's first cohabitation, any cohabitation prior to a reported marriage, and the total number of cohabitations. This means that some first births will appear as occurring out of union when they in fact occurred in cohabiting

unions that did not result in marriage. As noted below, this data limitation likely produces an overestimate of childbearing across partnerships in Australia.

For the U.S., we use data from the National Survey of Family Growth (NSFG), cycle 7 (continuous survey), and cycle 5 (1995), both conducted by the National Center for Health Statistics.[3] In the continuous survey, interviews are conducted 48 weeks of each year, with a new representative sample drawn every year. Samples can be accumulated across years, and new data files are released about every two years. We combine data from the 2006-2008 release with the 1995 survey. Interviews with female respondents gather complete union and birth histories from which we can determine union status and union order for each birth.

In both the U.S. and Australian data, we do not know the identity of each child's father and must infer fatherhood from the mother's union history. We classify children born within nine months of a dissolved cohabiting or marital union to be children of that prior union. If a child is born more than 9 months after a union ended and 6 months or less before a new union starts, he or she is considered to be the child of the new union (and hence a child with a new partner). We censor open intervals 6 months before the interview date, as we cannot observe union status after the interview but within 6 months of the birth. If the first birth is classified as out of union, we assume that the next birth is with a different partner. The Australian union histories do not enable us to distinguish between first births out of union and first births in cohabiting unions that later

[3] The 2005 NSFG had an error in skip instructions that compromised the quality of union histories and was therefore not suitable for our purposes.

dissolved; thus, some of the second births will be classified as occurring with a new partner when in fact they occurred within the same cohabiting union.

For Norway and Sweden, we use data from the national population registers. We use the multi-generation registers to match every woman with her children and obtain the year and month of the child's birth. These registers also uniquely identify the father of each child; in a very small number of cases, fathers are not identified, but an unknown father can be presumed not to be the same person as the father of an earlier- or later-born child, whether identified or not. Thus, without reference to marriage or union histories we are able to directly determine whether a second or higher-order birth is with the same man as the first birth.

After presenting descriptive information about the prevalence of childbearing with more than one partner, we use discrete-time hazard regression models to estimate the risk of childbearing across partnerships. After each birth with the first child's father, women are at risk of having no additional children, having the next child with the same man, or having the next child with another man. By including the competing risk of having an $n+1^{st}$ birth with the same man who fathered the first n children, we control for predispositions to have large numbers of children. Observations are censored after the first birth with a different man than the father of previous children. For example, women who had two children with different fathers do not contribute to the risk of having a third child with the same or a different father. Multiple births (mostly twins) are treated as a single event, either born to the same or a different father than previous children. We censor after a multiple birth with the same father because of the likely unique consequences of multiple births for further childbearing. Thus, if a woman's first birth is a multiple birth, she

does not contribute any exposure time to the estimation. Finally, we censor at the last observation or when a woman reaches age 45, whichever occurs first. In the register data we also censor at mother's death before age 45. Duration at risk is measured in calendar years since the previous birth (with the same father as for the first birth),[4] and duration dependence is specified as a linear and squared function of years since the previous birth.

Socioeconomic disadvantage is represented by three indicators that are available in each data set. The mother's and maternal grandmother's highest attained education is classified as compulsory only, secondary (high school, gymnasium degree) or tertiary (college or university degree). We also include indicators for immigrant status. In the U.S., we know only if the woman is foreign-born or native-born. Australian women were classified as born in Australia, in another English-speaking country, or in a non-English speaking country. In Sweden and Norway, we classify immigrants into three origin groups: other Nordic countries (including Sweden for Norway, Norway for Sweden); Western Europe, the U.S., Canada or Australia; all other countries combined. In Sweden, immigrants are women who came to Sweden before age 16; adult immigrants are not included in the analysis because we do not have birth information on children born prior to immigration.

We also control for several dimensions of the mother's birth and union history that may indicate a propensity for union stability and/or repartnering, but we are limited by information available

[4] Intervals less than 7 months are excluded as they appear in the woman's birth history and any subsequent birth intervals are also excluded, even if they are longer. Intervals of 7-11 months were rounded to one year.

across all four countries. Mother's age at first birth is classified as under age 20, 20-24, 25-29, and 30 and older. We include an indicator for women who were married and divorced prior to the first birth. To account for changes over time in non-union childbearing and parental separation, we control for the historical period in which the interval began, i.e., the year of the *nth* birth with the first father (1970s, 1980s, 1990s, 2000s). We also know mother's marital status at first birth in all four countries and union status (living alone, cohabiting, married) at first birth in the survey data for Australia and the U.S.[5] We do not use this variable, however, because in the survey data we also use the information to measure childbearing with a different father. As noted above, when a first child is born out of union, we define the mother's second child – whether born in a union or not – as being with a different father. Thus, women with a non-union first birth have zero risk of having the second child with the same father, and the risk of having a second child at all is identical to the risk of having a second child with a different father.

Results

Table 1 shows the proportion of women across the four countries that had at least one child by a different partner than the father of the first child. In all four countries, we observe a linear relationship between the number of children women have had and the likelihood that they have had those children with more than one partner. This pattern is consistent with Thomson and colleagues' (2002) argument that stepfamilies produce motives for additional children that would not be born in stable unions. At each parity, for all mothers, and for all two-child mothers, the

[5] Cohabitation is not registered in the Nordic countries but can be estimated with residential data for partners who have children together. Such estimates were not available in Norway for the entire period observed.

United States is an outlier with the highest proportion having a child with more than one partner. The relative position of each country at parity two is consistent with the ordering of each country's proportion of births out of union. Among mothers with two or more children, the proportion that had at children with two or more partners was 16.3 percent in Sweden, 19.5 percent in Norway, 23.6 percent in Australia and 32.6 percent in the U.S.

[Table 1 about here]

Table 2 presents descriptive statistics for birth outcomes, conditional on parity in the first childbearing union. All mothers for whom the second birth interval was observed (singleton first birth, interval greater than 6 months) are included in the first panel. The proportion of women whose second birth is with a different father from the first is lowest in Sweden (12 percent of all second births) and highest in the U.S. (27 percent of all second births). Norway and Australia are in between, but closer to Sweden than to the U.S. And as we noted above, the Australian estimate is likely biased upwards. Differences between the U.S. and other countries are in large part due to the higher proportion of first births to mothers living alone, as opposed to cohabiting or married mothers. In the NSFG sample, 19 percent of first births were out of union and by our measure they produced 67 percent of second births with a different father than the first. Corresponding estimates for Australia are 11 percent and 45 percent, and may be overestimated. We cannot directly observe non-union births in the Norwegian register data for the period studied here, but for more recent periods, estimates from registers are 8 to 12 percent.[6] In

[6] Statistics Norway StatBank, Table 05525, Live births by cohabitation status, www.ssb.no

Sweden, register-based estimates are between 8 to 10 percent for all births, somewhat higher for first births, during the periods we observe (Thomson and Eriksson 2010).[7]

[Table 2 about here]

Mothers who had two children with the first father (second panel) are about as likely to have the third with a new father in all four countries (10 percent in Australia, 12 percent in the other countries). The U.S. becomes an outlier after the third birth with the same father. Of women having a fourth birth, almost one sixth had the child with a new partner compared to around one tenth in the other countries. On the other hand, after four births with the same man, Australian women are most likely to have a fifth birth with a different man. These estimates are, however, based on a very small sample and may not be robust.

Table 3 presents descriptive statistics for the maternal characteristics available across all four data sets that we hypothesize are associated with the propensity to have a child with more than one father. The distribution of maternal characteristics is based on the sample of mothers observed at risk of a second birth, i.e., those who did not have a twin first birth and for whom the

[7] In both Sweden and Norway, we found that, among women who were not formally registered in the same residence as the child's father at first birth, about half of those with a second birth had the child with the same man. This result is likely due to late formal registration after the first birth (Thomson and Eriksson 2010) rather than to mistakes in linking fathers to their children. The vast majority of these first-birth fathers were undoubtedly residing with the mother at birth but were not registered until a year or so later.

second birth interval was at least seven months. Mothers with more than one birth are not over-represented.

[Table 3 about here]

In the United States, first births occur disproportionately to very young mothers – nearly one-third of births occurred to teenage women, compared to 8-15 percent in the other countries. Consistent with their lower levels of cohabitation, Australian and U.S. women are more likely to have been previously married and divorced before their first birth. The proportion of immigrants is higher in Australia and Sweden than in the U.S. or Norway, but not to a significant degree. As noted above, the Swedish data exclude women who migrated as adults in order to ensure complete birth histories.

Educational distributions across countries reflect both differences in the educational systems and differences in the relationship between education and childlessness or delayed childbearing. The same can be said for the education of children's maternal grandmothers, who completed their education under quite different systems in the four countries. Women in Norway and Sweden whose mother's education is unknown are predominantly immigrants whose mothers were not educated in and possibly never lived in the host country.

Table 4 presents descriptive characteristics for the birth intervals observed, i.e., the first birth interval and subsequent intervals after the birth of two, three or four children with the same father. More than half the intervals are observed after the first birth, another third or so after the

second birth with the same father. Variation in the distribution of the decade in which birth intervals begin reflects differences in the countries' birth rates during those periods.

[Table 4 about here]

Table 5 presents estimates from the discrete-time hazard model for the competing risks of having a birth with the same or a different father. Entries are the relative risk ratios for categories of maternal or interval characteristics compared to the baseline category. Because of the vastly different number of observations, we use a significance level of .05 for Australia and the U.S., of .001 for Norway and Sweden to identify differences of substantive interest.

[Table 5 about here]

The demographic underpinnings of childbearing with the same partner and with a new partner are remarkably similar across countries. First, the risk of having additional births declines significantly after the first two children with one father. In other words, the more births one has with the first father, the less likely one will go on to have a subsequent birth of any kind. But the decline is steeper for births with a different than with the same father, suggesting that having more children in the same union particularly diminishes the chances of having a child in a new union. The difference is especially noticeable in the U.S. where progressions to third and higher-order births with the same father are higher than in other countries.

The risk of having another birth with the same partner is higher for women whose first birth is in their 20s as compared to women whose first birth is under age 20. By contrast, the risk of having a subsequent birth with a different partner shows a striking decline with mother's older age at first birth. In part this is a function of the shorter time available to find a new partner and have more children after a first childbearing union ends. But older first-time mothers also have more stable unions and would therefore have less exposure to the possibility of childbearing with a new partner. These patterns are quite consistent across countries.

Another indicator of union instability – marriage and divorce prior to first birth – is also associated with a higher risk of childbearing with a different partner in Norway and Sweden—but not in the U.S. and Australia. In the Nordic countries where marriage is least common, especially before childbearing, those who have been married and divorced before their first birth are also less likely to have a higher-order birth with the same father as their first; the same is true in the U.S. These diverging patterns may reflect somewhat different underlying mechanisms – marriage and divorce before first childbearing union may signal a propensity toward continued union instability (and hence childbearing across partnerships), whereas women who enter and exit a first marriage before childbearing years also simply have less time to have children once they enter and bear children in their first stable union.

Across all countries, almost all immigrants are less likely to have a child with a different father; in Norway and the U.S., immigrants are more likely to have a child with the same father, also found for non-western immigrants in Sweden. The largest differences are for immigrants from poorer countries and likely reflect cultural differences in family patterns. In Australia,

immigrants from non-English-speaking countries have a lower risk of childbearing overall, due in part to the selection of immigrants who were able to be interviewed in English. These immigrants are more likely to have been admitted on work than family visas and therefore less likely to have higher-order births.

Turning to socioeconomic differentials, we also find a common pattern across countries. Mother's education is inversely associated the risk of a birth with a different father than previous children. This relationship is especially striking where we see that higher education has a positive effect on higher-order births with the same father. By contrast, maternal grandmother's education is does not predict a diminished risk of childbearing by a different partner in any country, and in the Nordic countries, grandmother's having secondary or tertiary education is positively related with childbearing across partnerships as well as with childbearing with the same father. The relationships are not the result of multicollinearity, as these differentials are also observed without controls for mother's education. Notably, there is no association between maternal grandmother's educational attainment and any birth outcomes in Australia and the U.S.

Change across decades may also be viewed as a union instability indicator as non-union births and parental separation increased in all four countries over the periods observed. Controlling for fluctuations in period fertility represented by same-father births, we find a clear increase from the 1970s onward for childbearing with different fathers. The increase is particularly striking in Norway.

Finally, we consider the potential interaction between mother's education and time – have educational differentials in childbearing across partnerships increased as has been the case for parental separation (Hoem 1997; Raley and Bumpass 2003; Thomson and Kennedy 2010). In each country, the interaction between the woman's education and decade of interval start increased model fit. Figures 1a-d illustrate the nature of the interactions. At the left side of each figure are educational differentials in the risk of having another child with the same father, after births that occurred in the 1970s, 1980s, 1990s and 2000s; at the right side are corresponding differentials for the risk of having another child with a different father. In each case, the baseline categories are comprised of women with compulsory education giving birth in the 1970s.

Fig. 1a-1d about here

Educational differentials in childbirth risks with the same partner have emerged in Australia and the Scandinavian countries. Education is associated with *higher* second and higher-order birth risks in the same union as previous births. In the United States, a U-shaped relationship does not change a great deal across time; mothers with secondary education are less likely than those without and less likely than those with tertiary education to have another child with the same father. In all countries, however, education is *negatively* associated with childbearing across partnerships and the differentials increased from the 1970s to the 2000s.

Discussion

Childbearing across partnerships constitutes a unique event in the fertility career. Distinguishing births not only by their order and timing but also by their parentage complicates fertility analysis,

but gives a more complete picture of childbearing in the family contexts that today characterize most wealthy societies. By contrasting the risk of parity progressions with the same or a different partner, one can identify the common and contrasting antecedents of each type of birth.

We show, first, that births with different partners constitute a substantial proportion of all births to women in each of the countries we study. We do not think it is likely that they will ever constitute a majority of births, however. The four countries we study have very high probabilities of progression to second birth in the same union as the first, if the first child is born in a union. They also have very low progression probabilities to third births, whether in the same or a new union. Births with a different father will, however, likely constitute a large proportion, perhaps a majority of third and higher-order births. Childbearing across partnerships will also be much higher in contexts such as the United States where a high proportion of first births occur to women living alone, and where union instability is exceptionally high (Cherlin 2009).

What seems most striking about the determinants of childbearing across partnerships is how similar they are across countries with quite different arrangements for social welfare. Much of the similarity, of course, arises from what we might call fertility fundamentals. Parity in the first childbearing union dramatically reduces further childbearing, whether with the same or a different partner. Despite the potential added value of births in stepfamilies (Thomson et al. 2002), the overall risk of a birth with a new partner is much lower when a mother already has two or more children with the first father. That is, the lower likelihood of such women forming a new partnership, especially a partnership in which they would want to have children, more than counterbalances any positive effects on childbearing of the new unions that are formed

(Thomson et al. 2012). This arises, in part, because of the biological constraint on women's fertility, such that time spent in first childbearing unions inherently limits the time available to re-partner and bear children in a subsequent union.

Another common pattern is that women having their first birth at a very young age are most likely to have children with different partners. Such early births are highly likely to occur out of union. The second birth will usually follow a 'separation' from the first birth father and the formation of a new partnership, again at a relatively young age. Women whose first births occurred at age 30 or older are somewhat less likely to have subsequent births, but especially unlikely to have them with a different partner. Older age at first birth is associated with greater union stability; when such unions do dissolve, older mothers have less time and perhaps less inclination to find a new partner and have additional children (Thomson et al. 2012).

We also find very consistent trends in the shift from same-partner to different-partner childbearing. We did not find, as hypothesized, stronger socioeconomic differentials in childbearing across partnerships for the liberal as compared to the social democratic welfare states. But in the United States, the differential was much larger than in the other countries. Although college-educated women in all four countries were the least likely to have a child with a different father, it is in the Nordic countries where mother's education has the stronger negative effects on childbearing across partnerships *when contrasted with* the positive effects of education on higher-order births with the same partner.

In the Nordic countries, the maternal grandmother's education had positive effects on both types of births – those with the same father and those with a different father. In Sweden, moreover, effects were stronger for different-father births, exactly the opposite one would expect if education provides more resources for stable unions. We note that higher divorce risks have been documented in Norway and Sweden for persons with highly-educated parents (Hoem and Hoem 1992; Lyngstad 2006). Lyngstad (2006) demonstrated further that the association was not due to parents' marital history, economic resources or urban environment. In Sweden, the association has been attributed to an unspecified component of 'bourgeois culture', including more liberal views of divorce (Hoem and Hoem 1992). We note further that the maternal grandmothers in our analyses are from cohorts in which the first increases in cohabitation and union dissolution were observed. It may have been the most highly educated who led the way toward new family forms and whose experience serves as a model for their daughters, net of the stability-enhancing effect of the daughters' own education.

Finally, we found in all four countries that educational differentials in childbearing across partnerships had increased from the 1970s to the 2000s. Although economic inequality is lower in social democratic than in liberal welfare states, all welfare regimes have experienced some increases in inequality that may underlie these increasing differentials. We therefore offer an additional set of cases to support McLanahan's (2004) claim of 'diverging destinies" for children of less well- and better-educated parents.

We note that cross-country comparisons are of value not only for identifying the scope conditions for individual-level relationships but also for demonstrating the absence of contextual

effects. The differences we found were overshadowed by similarities. What this tells us is that childbearing across partnerships is driven more by the somewhat similar family profiles of the four countries than by their welfare regimes, even while public policies are shown to influence fertility patterns (e.g., Andersson 2008). Whether the same results would hold in countries with very different family profiles remains to be seen.

While there are advantages to the fertility-centered approach we use here, the processes through which women come to have children with more than one partner are obscured. From previous research, we know quite a bit about the precursors to childbearing across partnerships – births out of union, parental separation, repartnering and stepfamily childbearing. Virtually all of this research is, however, limited to one or at most two steps in the process. By focusing on the cumulative result, we draw attention to the utility of combining analyses of union and fertility events through the childrearing years so as to explicate and understand the sources of heterogeneity in the family life course (Thomson et al. forthcoming).

The fertility-centered approach is also an important backdrop to the family dimensions of childbearing across partnerships. When a parent has children with more than one partner, her older children acquire a half-sibling and the new child is born into a half-sibship. Half siblings may contribute to solidarity in a new family but also compete for resources, especially those provided by the older children's step-parent. The processes through which half-siblings are produced set the demographic parameters of the half-sibling relationship and possible consequences for both older and younger half-siblings (Turunen 2012). For example, the time it takes for separation, repartnering and childbearing with a new partner means that half-siblings

are on average further apart in age than full siblings. Half-siblings on the mother's side are likely to live together while those produced by fathers will usually meet less frequently, if at all. As we focus on the fertility and partner parameters, we must not lose sight of their implications for the daily lives of families.

Indeed, just as questions were raised in the latter 20th century about the nature and implications of stepfamilies, arising in part from the complexity of family relationships and childrearing when biological parents divorce, live apart, and remarry (and sometimes have children with new partners) (Cherlin and Furstenberg 1994; Hanson et al. 1996), childbearing across partnerships represents a broader phenomenon of complex family ties that emerge when childbearing occurs amidst even greater union instability. Childbearing today is likely to occur within cohabiting unions, which are typically less stable than marital unions, and at least in the U.S., a non-trivial fraction of births occur outside of any co-residential union. To the extent that childrearing—a fundamental responsibility of families—becomes more difficult or complicated in the context of childbearing across partnerships, this suggests that some children will be disadvantaged by this circumstance. Given the fact that across all four countries we examined, the least well-off are the most likely to have children by more than one partner, and that these differentials have increased over time, childbearing across partnerships may be an important aspect of growing inequality and may suggest the need for new policy supports and interventions.

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Table 1. Percent of women who had children with two or more fathers

	Australia		United States		Norway		Sweden	
	Percent	Number	Percent	Number	Percent	Number	Percent	Number
Parity								
Two	17.0	1,189	25.6	3993	13.4	358,699	10.1	627,027
Three	26.0	656	36.0	2164	24.9	196,008	23.3	285,996
Four	37.8	231	49.7	798	36.2	49,082	35.9	75,494
Five	56.5	64	57.4	248	41.2	12,917	41.3	20,282
Two or more	23.6	2,181	32.6	7,349	19.5	616,706	16.3	1,064,130
All mothers	18.0	2,856	23.3	10,535	15.9	766,623	12.6	1,373,522

Note: Women born 1952-1991, children born ages 16-45, year singleton first birth, second birth exposure 1+ year
USA estimates weighted, number unweighted
Data Sources: Australia - HILDA (2008); USA - NSFG (1995 and 2006-08);
Sweden - registers (1968-2007); Norway - registers (1970-2007)

Table 2. Parity Progressions with Same or Different Father

	Birth Outcomes (Percent)			
	Australia	USA	Norway	Sweden
All mothers				
No second birth	23.0	29.0	18.9	22.5
Second birth	77.0	81.0	81.1	77.5
Total	100.0	100.0	100.0	100.0
Mothers with second birth				
Second birth same father	81.7	73.0	85.7	88.4
Second birth different father	18.3	27.0	14.3	11.6
Total	100.0	100.0	100.0	100.0
Number of mothers	2,856	10,535	766,623	1,373,522
Mothers with two children, same father				
No third birth	54.8	55.4	59.5	63.7
Third birth	45.2	44.6	40.5	36.3
Total	100.0	100.0	100.0	100.0
Mothers with third birth, first two same father				
Third birth same father	89.8	87.3	87.6	87.6
Third birth different father	10.2	12.7	12.4	12.4
Total	100.0	100.0	100.0	100.0
Number of mothers	1,796	4,777	532,839	897,630
Mothers with three children, same father				
No fourth birth	67.5	66.1	75.9	73.6
Fourth birth	32.5	33.9	24.1	23.4
Total	100.0	100.0	100.0	100.0
Mothers with fourth birth, first three same father				
Fourth birth same father	90.7	83.5	88.4	89.1
Fourth birth different father	9.3	16.5	11.6	10.9
Total	100.0	100.0	100.0	100.0
Number of mothers	729	1,765	188,732	273,042
Mothers with four children, same father				
No fifth birth	69.8	63.5	73.9	69.4
Fifth birth	30.2	36.5	26.1	30.6
Total	100.0	100.0	100.0	100.0
Mothers with fifth birth, first four same father				
Fifth birth same father	87.7	93.5	92.6	92.6
Fifth birth different father	12.3	6.5	7.4	7.4

Total	100,0	100,0	100,0	100,0
Number of mothers	215	475	40,170	61,577

Note: Women born 1952-1991, children born ages 16-45 years, singleton first birth, birth exposures 1+ year
USA estimates weighted, number unweighted
Data Sources: Australia - HILDA (2008); USA - NSFG (1995 and 2006-08); Sweden - registers (1968-2007); Norway - registers (1970-2007)

Table 3. Mothers' Characteristics

	Australia	USA	Norway	Sweden
Mother's age 1st birth				
under 20 years	14.6	32.3	11.7	8.3
20-25 years	30.9	41.3	45.8	41.7
26-29 years	31.6	15.7	25.0	27.2
30 years or older	23.0	10.7	17.4	22.8
Prior marriage				
No	94.2	95.2	98.7	98.3
Yes	3.9	4.8	1.3	1.7
Unknown	1.9	0.0	0.0	0.0
Immigrant[1]				
native born	79.2	84.8	84.7	78.9
group 1	8.3	15.2	2.7	4.6
group 2	12.5	na	2.5	1.6
group 3	na	na	10.1	14.8
Unknown	0.0	0.0	0.0	0.1
Mother's education				
Compulsory	28.8	17.9	9.0	11.9
Secondary	35.6	61.1	53.2	63.0
Tertiary	35.6	21.1	31.9	22.8
Unknown	0.0	0.0	6.0	2.3
Grand mother's education				
Compulsory	47.5	25.8	40.8	36.4
Secondary	11.5	59.2	36.4	38.3
Tertiary	30.8	11.5	7.0	7.3
Unknown	10.2	3.6	15.7	18.0
Number of mothers	2,856	10,535	766,623	1,373,522

Note: Women born 1952-1991, children born ages 16-45, singleton first birth, birth interval exposures 1+ year
USA estimates weighted, number unweighted
Data Sources: Australia - HILDA (2008); USA - NSFG (1995 and 2006-08);
Sweden - registers (1968-2007); Norway - registers (1970-2007)
[1]Immigrant groups
Australia: group 1 English-speaking countries. group 2 non English-speaking countries USA: group 1 all immigrants
Norway/Sweden: group 1 Nordic countries. group 2 Western Europe. U.S.. Canada. Australia. New Zealand; group 3 all other countries

Table 4. Birth Interval Characteristics

	Australia	USA	Norway	Sweden
Parity with first child's father				
One	51.3	57.9	50.1	52.7
Two	32.0	28.7	34.3	34.4
Three	12.9	10.7	12.2	10.5
Four	3.8	2.8	3.4	2.4
	100.0	100.0	100.0	100.0
Decade previous birth with first child's father (start observation)				
< 1980	10.4	13.8	11.4	10.0
1980s	35.3	31.6	29.4	30.2
1990s	40.0	34.8	38.9	36.7
2000+	14.3	19.8	20.3	23.1
Number of intervals	5,561	17,552	1,531,243	2,605,771

Note: Women born 1952-1991, children born ages 16-45, singleton first birth, birth interval exposure 1+ year
USA estimates weighted, number unweighted
Data Sources: Australia - HILDA (2008); USA - NSFG (1995 and 2006-08);
Sweden - registers (1968-2007); Norway - registers (1970-2007)

Table 5. Relative risks of childbearing within and across partnerships

	Relative Risk Ratio, Birth with Same, Different Father vs. No Birth							
	Australia		USA		Norway		Sweden	
	Same	Different	Same	Different	Same	Different	Same	Different
Parity (first child's father)								
one child	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
two children	0.39*	0.17*	0.54*	0.21*	0.33*	0.18*	0.26*	0.19*
three children	0.25*	0.06*	0.36*	0.16*	0.18*	0.07*	0.18*	0.09*
four children	0.23*	0.06*	0.45*	0.06*	0.21*	0.06*	0.23*	0.07*
Mother's Age 1st Birth								
under 20 years	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
20-25 years	1.35*	0.53*	1.17*	0.41*	1.17*	0.48*	1.08*	0.49*
26-29 years	1.31*	0.14*	1.21*	0.13*	1.20*	0.17*	1.05*	0.17*
30 years or older	0.99	0.11*	0.87*	0.05*	0.93*	0.07*	0.82*	0.07*
Prior marriage < 1st birth								
No	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Yes	1.11	1.04	0.83*	1.22	0.70*	1.36*	0.78*	1.53*
Unknown	0.99	0.78	na	na	na	na	na	na
Immigrant[1]								
native born	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
group 1	0.88	0.77	1.26*	0.63*	1.00	1.34*	0.77*	0.95*
group 2	0.77*	0.35*	na	na	1.15*	1.06	0.93*	0.86*
group 3	na	na	na	na	1.24*	0.79*	1.06*	0.90*
Unknown	na	na	na	na	1.29*	0.18	1.26*	1.28*
Mother's education								
Compulsory	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Secondary	0.96	0.96	0.76*	0.64*	0.95	0.84*	0.96*	0.83*
Tertiary	1.11*	0.74*	0.96	0.38*	1.18*	0.76*	1.12*	0.74*
Unknown	na	na	na	na	0.94*	0.63*	0.76*	0.44*
Grand mother's education								
Compulsory	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Secondary	0.93	1.14	0.94	0.96	1.12*	1.00*	1.05*	1.22*
Tertiary	1.01	1.12	1.00	0.93	1.26*	1.12*	1.22*	1.29*
Unknown	0.95	1.52*	0.90	1.15	1.11*	0.85*	0.99*	0.93*
Decade Interval Start[2]								
< 1980	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1980s	0.86*	1.33*	0.82*	1.43*	0.94	1.59*	1.23*	1.33*
1990s	0.69*	1.89*	0.76*	1.62*	0.81*	3.17*	1.01*	1.38*
2000+	0.62*	1.63*	0.76*	1.50*	0.97	3.64*	1.04*	1.53*
Log-Likelihood	-9847.0		-33687.8		-2981445.1		-47434261.3	

Df	42	36	44	44
Observations (years)	31,742	92,657	11,701,600	17,038,943

Note: Women born 1952-1991, children born ages 16-45, singleton first birth, birth interval exposures 1+ year
USA estimates weighted, number unweighted
Data Sources: Australia - HILDA (2008); USA - NSFG (1995 and 2006-08);
Sweden - registers (1968-2007); Norway - registers (1970-2007)
[1]Immigrant groups
Australia: group 1 English-speaking countries. group 2 non English-speaking countries USA: group 1 all immigrants
Norway/Sweden: group 1 Nordic countries. group 2 Western Europe. U.S.. Canada. Australia. New Zealand; group 3 all other countries

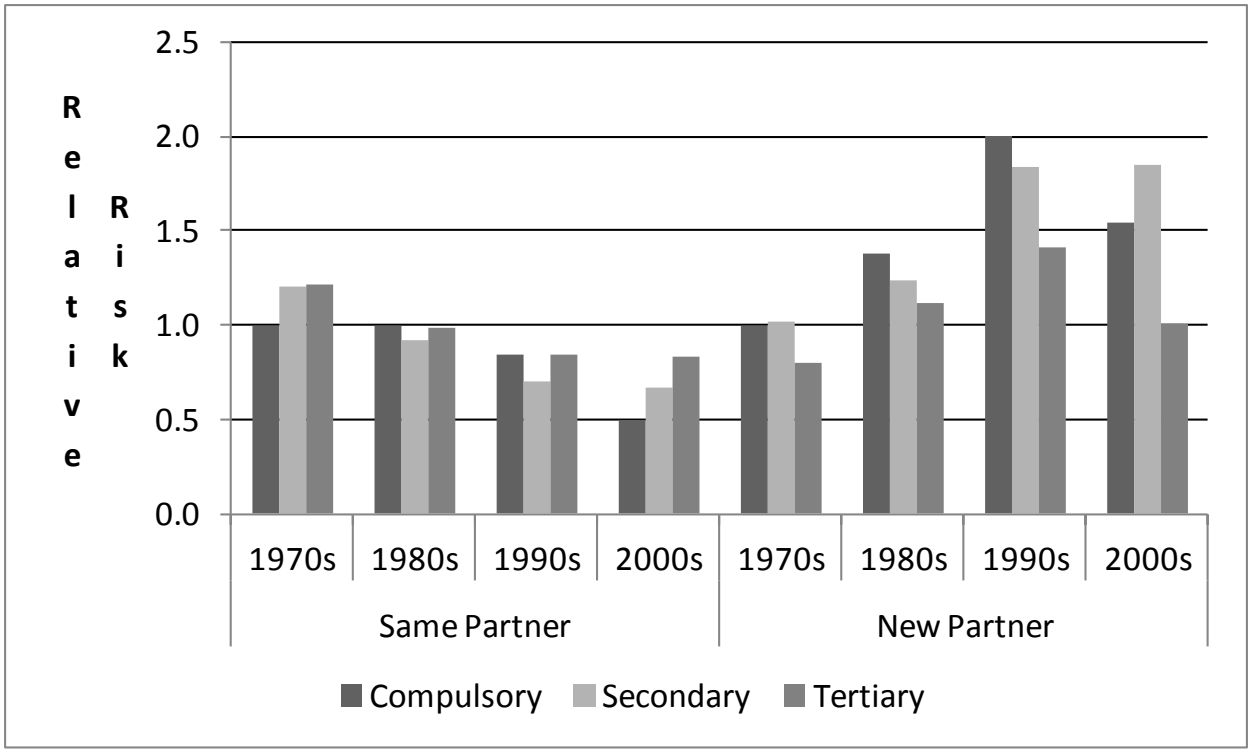

Fig. 1a Australia: Educational Differentials in Childbearing over Time

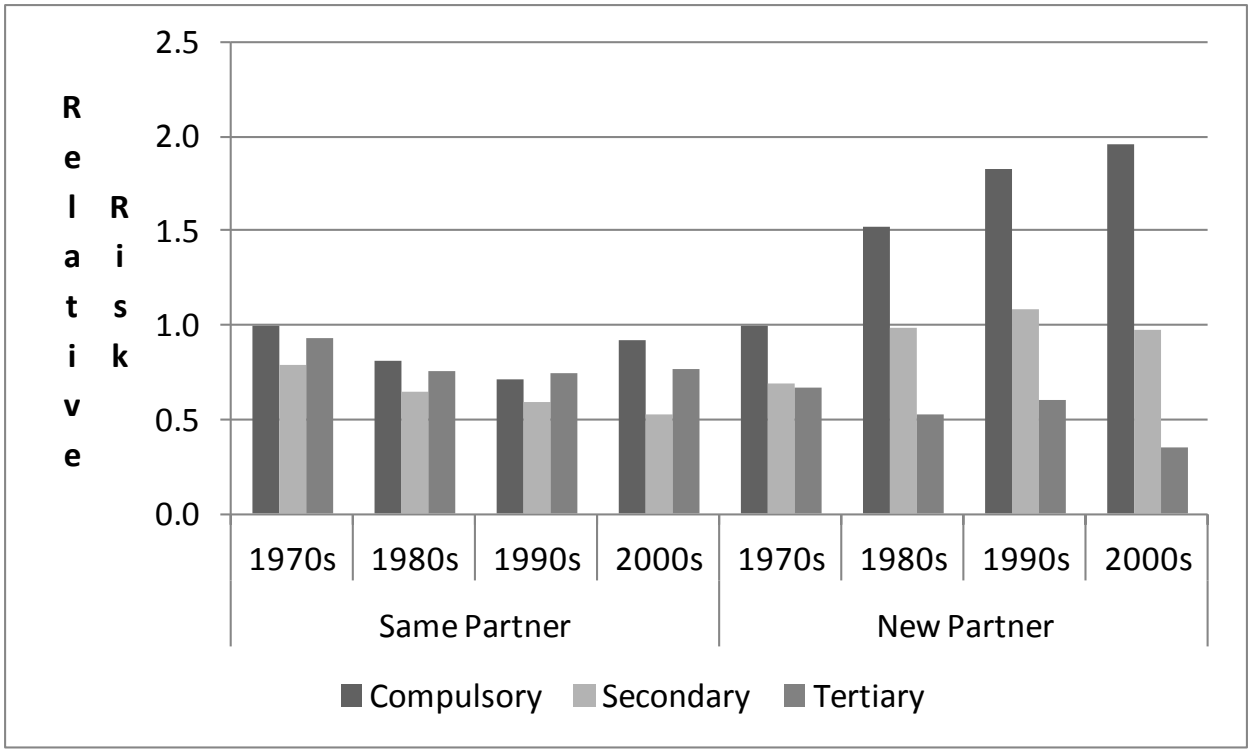

Fig. 1b USA: Educational Differentials in Childbearing over Time

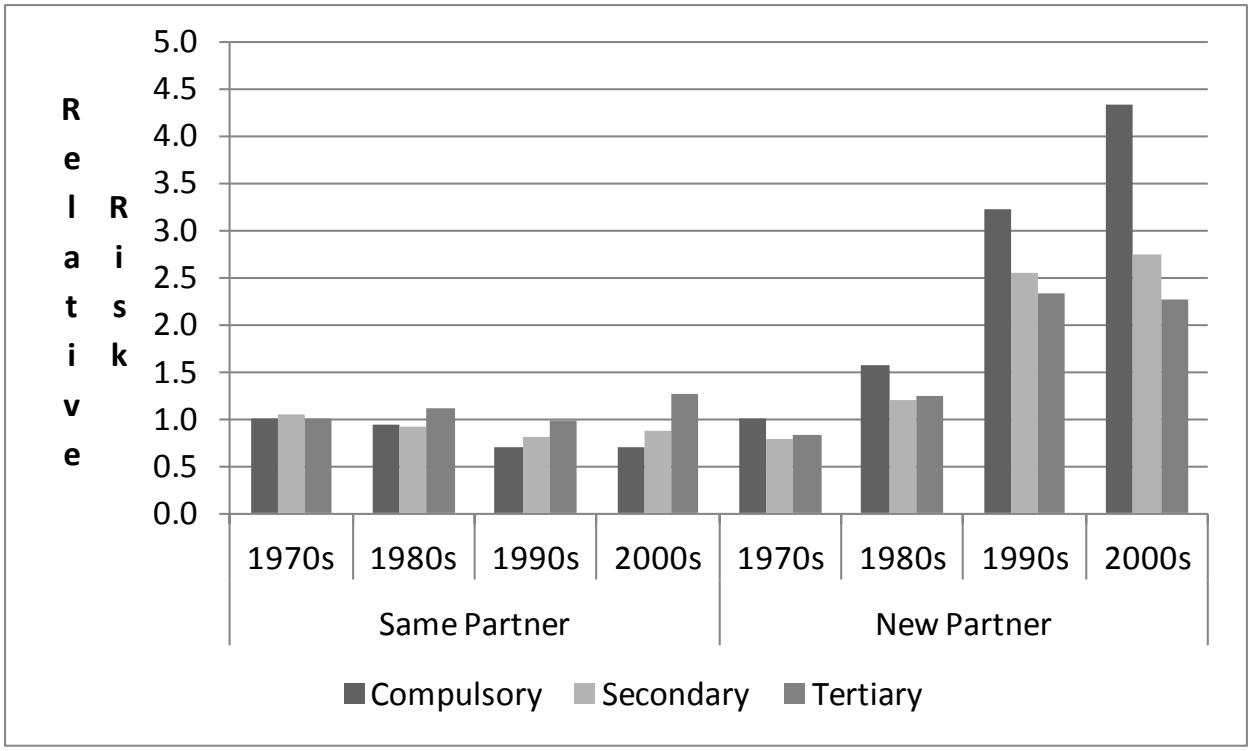

Fig. 1c Norway: Educational Differentials in Childbearing over Time

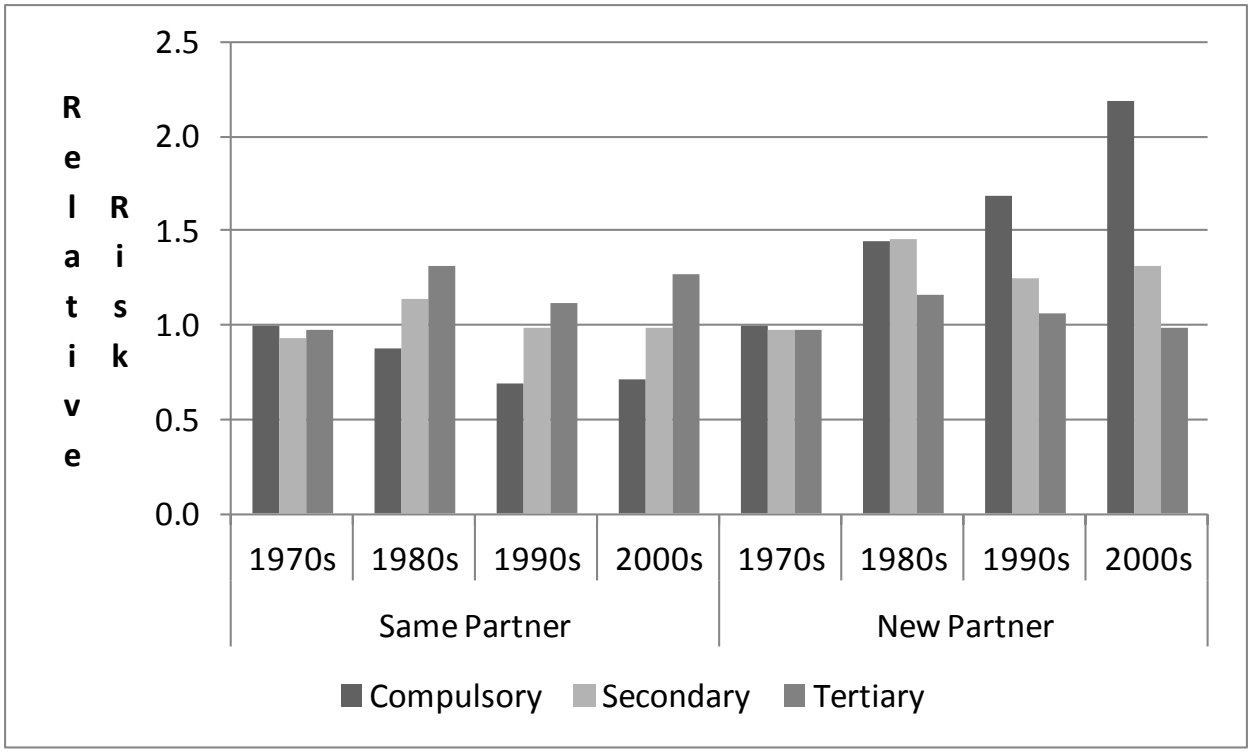

Fig. 1d Sweden: Educational Differentials in Childbearing over Time