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Abstract

How are long-term family life courses associated with mid-life earnings for men and women? Based on Finnish register data on earnings and family life courses from ages 18–39 (N=12,951) we identify seven typical family life courses, and link them to mid-life earnings with sequence and cluster analysis and regression methods. In addition to previous research on earnings gaps by parenthood or marriage, our findings support a negative earnings gradient from more to less 'traditional' normative family life courses for both men and women. In the egalitarian welfare state of Finland, the most 'traditional' family life courses of stable marriage with two or more children go along with the highest earnings. Mid-life earnings are progressively lower following family lives that deviate from this normative model with partnered or unpartnered childlessness or cohabiting parenthood. We find the lowest earnings for unpartnered mothers and never-partnered childless men. Findings draw attention to a large group of never-partnered childless men with low earnings who often go unnoticed in previous research. Their earnings disadvantage is not associated with family instability but on the contrary with the combined absence of any family events.

Introduction

Family life course are tightly intertwined with social and gender inequality in employment and earnings (Petersen, Penner and Høgsnes, 2014; Aisenbrey and Fasang, 2017). Single parenthood and non-marital cohabitation are consistently associated with lower socio-economic resources particularly for women; albeit to varying degrees across countries (McLanahan and Sandefur, 1994; Perelli-Harris *et al.* 2010). Marriage tends to go along with higher earnings at least for men (Killewald and Lundberg, 2017; Ludwig and Brüderl, 2018) and motherhood is associated with an earnings penalty for women in most Western societies (Budig, Misra and Boeckmann, 2001; England *et al.* 2016). Increasing family instability is discussed as a potential driver of rising income inequality in the United States (Western, Bloome and Percheski, 2008; Bloome, 2017).

The literature largely focuses on earnings gaps by either marriage or parenthood (e.g. Killewald and Gough, 2013; England *et al.* 2016; Luwdig and Brüderl, 2018). With few exceptions (Kahn *et al.* 2014; Muller *et al.* 2016; Killewald and Lundberg, 2017; Loughran and Zissimopoulos, 2009), little attention is payed to the timing, duration and sequencing of different family states across the life course. Yet, earnings later in life are attached to a complete family trajectory, in which partnering, separation and re-partnering as well as parenthood or childlessness, occur over time as sequentially linked and overlapping family events. Instead of earnings gaps between parents and childless or married and unmarried individuals, we follow Muller *et al*. (2016, under review) to assess, whether there is an earnings gradient from more to less 'traditional' family life courses in Finland, and whether this gradient differs for men and women. With more 'traditional' family life courses we refer to the model of cohabitation followed by marriage and then having two children in a stable marriage as the culturally idealized and institutionally most supported content and order of life course events in contemporary Finland.

We take a life-course perspective on long-term family trajectories and mid-life earnings to address two research questions: (RQ 1) what are the typical long-term family life courses (from ages 18–39) in Finland, and (RQ 2) how are they associated with mid-life earnings for men and women? To address the first research question, we identify the most empirically relevant types of family life courses as they are actually lived by individuals over a longer time span. To answer the second research question, these typical family life courses are linked to mid-life earnings for men and women, controlling for key characteristics that are known to be associated both with family life courses and earnings. We first present (2a) earnings gaps between men and women, who experienced the same family life course, followed by (2b) earnings gradients by family life course

within each gender. Sequence, cluster and regression analyses are applied to exceptionally rich Finnish register data that include monthly histories of the formation and dissolution of cohabitations and marriages, childbearing and education. Employment and earnings are recoded on a yearly basis from different register sources, including taxation registries.[1]

In his review on child outcomes of divorce, Amato (2010: 650, 657) proposes a "multiple-transition perspective" that focuses on the number of family transitions rather than on divorce as a single event. Similarly, Bloome (2017) advocates the duration spent in different household types as a process indicator of childhood family structure. We build on these arguments but go one step further by not only considering the number of transitions, or duration in one state, but the combination of sequentially linked family events, that is, the number, order, duration and sequencing of family states across the life course. Typical family life courses summarize "a complex set of life-course trajectories as they actually take place, providing ideal types of trajectories that can be interpreted and analysed in a meaningful way" (Aassve, Billari and Piccarreta, 2007: 371). Our analysis is placed within the life course paradigm and Abbott's (2016) notion of a processual sociology.

The Finnish case highlights how contemporary family dynamics, gender, and earnings are linked in a gender-egalitarian Nordic welfare state, where the gender earnings gap remains substantial and income inequality has recently increased (OECD 2011; Jäntti *et al.* 2010; Riihelä, Sullström and Tuomala, 2010). Finland is among the forerunner societies in terms of the Second Demographic Transition, with high rates of separation, divorce, and nonmarital cohabitation (Lesthaeghe, 2010). There is a long-standing debate on whether the extensive family policies in the Nordic countries really have the intended equalizing effect on gender and family differences (see Petersen, Penner and Høgsnes, 2014). On the one hand, gender inequality in employment participation is low (Hausmann *et al.* 2014). On the other hand, compared to men, women take much longer family leave when they have young children, the labour market is highly gender-segregated (Emerek, 2008), and female-dominated fields have lower pay. These factors contribute to a persistent gender

[1] To study gender differences, earnings are a better indicator compared to composite indices or education. Class schemes and indices of occupational prestige may overstate women's economic resources, since women often work in relatively high-prestige but lower-paid occupations (Hauser and Warren, 1997). Because returns to education are lower for women than for men (Psacharopoulos and Patrinos, 2004), educational attainment also obscures the full extent of gender inequalities in economic resources.

earnings gap, albeit more narrow compared to liberal countries such as the United States (Mandel and Semyonov, 2005; Riihelä, Sullström and Tuomala, 2014; Statistics Finland, 2014).

Previous Research

Most of the previous studies focus on earnings gaps by either marriage or parenthood. Findings support a marriage and fatherhood premium for men and motherhood penalties for women (Harkness and Waldfogel, 2003; Sigle-Rushton and Waldfogel, 2007), but to varying degrees across countries and population sub-groups. Concerning earnings differentials by marriage, several studies on the United States or Norway show marriage premiums not only for men, but also for women (Cooke, 2014; Dotti Sani, 2015; Killewald and Gough, 2013; Petersen, Penner and Høgsnes, 2014). Moreover, research is accumulating that marriage wage premiums for men are not causal but driven by selection of men with higher earnings potential into marriage (Killewald and Lundberg, 2017, Ludwig and Brüderl, 2018).

The literature on earnings gaps by parenthood documents motherhood penalties in most Western countries (Budig and England, 2001; Harkness and Waldfogel, 2003) and fatherhood premiums for men (Hodges and Budig, 2010; Correll, Benard, and Paik, 2007). Recent research has focused on variation of the motherhood penalty across the earnings distribution using quantile regression (Cooke, 2014; Budig and Hodges, 2010; England *et al.* 2016; Killewald and Bearak, 2014). Findings show that women at the bottom of the earnings distribution incur larger motherhood penalties than high earning women. In addition, the effect of motherhood on earnings varies by education, parity and marital status, among others (Budig, Misra and Boeckmann, 2001; Kahn, Garcia-Mangalo and Bianchi, 2014; Killewald and Gough, 2013). Kahn *et al.* (2014) point out that life course context and the combination with other family circumstances matters for motherhood penalties: by mid-adulthood, the motherhood penalty attenuates for American women if they have no more than two children. Findings on single-mother penalties are more mixed (see Harkness, 2016), and even less is known about the situation of (non)resident parents and single fathers. Recent research on Finland shows a clear single motherhood disadvantage in the labour market that partly follows from their weaker educational profiles compared to partnered mothers (Härkönen, Lappalainen and Jalovaara, 2016).

Another stream of literature examines outcomes of union dissolution. Studies support negative economic consequences of divorce, especially for women, who are more often economically dependent on their spouses and become resident single parents (Leopold, 2018). Welfare state

transfers, social policies, women's employment and re-partnering to some extent alleviate the negative earnings and income consequences of divorce and separation (Diprete and McManus, 2000; McManus and Diprete, 2001; Uunk, 2004: Tach and Eads, 2015).

Studies on earnings gaps by specific family forms and events, such as marriage, parenthood and separation above, often lose sight of how the timing and combination of different family events in the life course are associated with later-life earnings. These temporal dynamics in family life courses have been the focus of recent work in demography and life course sociology (for example Struffolino, Bernardi and Voorpostel, 2016; Elzinga and Liefbroer, 2007; Aassve, Billari and Piccarreta, 2007; Van Winkle, 2018). Studies usually provide detailed longitudinal descriptions comparing change in family life courses across cohorts or between countries and population sub-groups. They rarely link family life courses to socio-economic outcomes at mid-life. To our knowledge, Muller and co-authors (2016) present the only study using a similar approach to ours by comparing women's family life courses and their link to later-life earnings across 22 countries using data from the Generations and Gender Program (GGP). They argue that rather than a motherhood penalty, there is a family life course earnings gradient: women with the most 'traditional' family life courses have the lowest later-life earnings, followed by women who delayed motherhood, unpartnered mothers and partnered childless women. They find the highest earnings for women who lived single without children across their life courses and therefore deviate most from the 'traditional' family life course of stable marriage and parenthood. Moreover, the family trajectory gradient is flatter in countries with more gender-equal employment opportunities during women's childbearing years. Our study extends this work by comparing earnings gradients by family life courses for men and women within one gender-egalitarian country. This allows us to directly compare earnings gaps between men and women with the same family life course, as well as earnings gradients by family life course within each gender in a institutional and normative context. In the Finnish case earnings gradients can be expected to be flatter, or even reversed with higher earnings for more 'traditional' family lives compared to Muller *et al*. (2016)'s findings. This is important to show that the earnings gradients in family life courses are highly context dependent and therefore can be shaped by social policy and changing cultural values within countries.

Theoretical background

Theoretical arguments on the link between family life course and earnings can be grouped into three broad categories: treatment, selection and discrimination based arguments (Petersen, Penner and Høgsnes, 2014). *Treatment* mechanisms assume that family events alter behaviour in a way that it

affects labour market productivity and thereby earnings. Becker's (1981) model of *economic specialization* in households is a prominent treatment approach that predicts marriage and fatherhood premiums for men with corresponding penalties for women due to a gendered division of labour between partners. Evidence is accumulating that specialization alone is at best an inadequate explanation for gender and family earnings differentials (Killewald and Gough, 2013; Cooke, 2014). Alternative explanations include that partnerships and parenthood strengthen preferences for financial resources (Gorman, 2000) and come with social control and social support that promote healthy life-styles and productivity (Waite and Gallagher, 2002; Joutsenniemi, 2007; Martikainen *et al.* 2005). Conversely, stress related to single motherhood has been shown to depress health (Struffolino, Bernardi and Voorpostel, 2016), possibly with negative earnings consequences.

Instability-based theories (Mitchell *et al*. 2015; Bloome, 2017) offer another treatment type argument suggesting that repeated family transitions, particularly union formations and dissolutions, negatively affect earnings. Family transitions often come with emotional turmoil, disrupted routines, and increased stress and tension in family interactions. Associated residential moves can further draw individuals' mental and physical resources away from their jobs and career development. Importantly, even family transitions that come with new resources, such as (re)partnering and stepfamily formation take time to adjust that is not spent on the job. Instability-based theories predict that multiple family transitions, irrespective of which transitions, will be associated with lower earnings in mid-life compared to more stable family life courses.

The *life course paradigm* (Elder, Johnson, and Crosnoe, 2003; Mayer, 2009) emphasizes the timing and sequencing of family events and cumulative advantage and disadvantage type processes across the life course (Dannefer, 2003; DiPrete and Eirich, 2006). From this perspective, both family life courses of high instability and the combined absence of any family events are "non-normative" in not following social timetables. Social timetables, that is, shared normative ideas about appropriate life course passages come with social support and generate resources and rewards to those who observe the culturally mandated schedules (Furstenberg, 2005:155). They are often inscribed in institutional regulations that implicitly or explicitly incentivize and reward normative life courses (Mayer, 2009). According to this perspective, predictable and socially organized life courses, for example cohabitation followed by stable marriage and parenthood, will be associated with higher earnings. Conversely, ill-timed and non-normative family life courses, such as teenage parenthood, cohabiting parenthood and separation, will go along with lower earnings. Processes of cumulative disadvantage arise if ill-timed and non-normative family events early in the life course trigger future disadvantage, whereas normative family events set in processes of cumulative advantage.

In contrast to family instability, complete stability, that is the combined absence of any family events, tends to go unnoticed in studies focusing on earnings gaps by either marriage or parenthood. On the one hand, individuals who remain unpartnered and childless could invest more time and energy in career development to increase earnings. On the other hand, the never-partnered and childless do not benefit from positive social support, social control or institutional support that might come with having a partner or children. Research suggests that the advantages of being partnered, including the social support and control that contribute to healthier lifestyles, are greater for men (Joutsenniemi, 2007; Martikainen *et al.* 2005). This would suggest that family life course with a combined absence of any family events are associated with lower earnings in mid-life, particularly for men.

Overall, based on the treatment type mechanisms discussed above, we expect the highest earnings for the most 'traditional', that is culturally and institutionally supported family life courses of cohabitation followed by marriage and parenthood within stable marriages for men and women in the gender egalitarian welfare state of Finland. Men can arguably benefit even more from following the most 'traditional' family life course given, social support and social control mechanisms above, continuing occupational gender segregation and women's longer family leave periods. *We therefore expect that gender earnings gaps will be particularly pronounced in the most 'traditional' family life courses and narrower for family life courses of unpartnered parenthood or unpartnered childlessness that deviate form this pattern* (*Hypothesis 1*). Following the three arguments above, earnings for both men and women will be progressively lower for family life courses that deviate from this 'traditional' model with either single parenthood (particularly for women) or the combined absence of any family events (particularly for men). *We therefore hypothesize a negative earnings gradient from more to less 'traditional' family life courses for men and women in Finland (Hypothesis 2).*

Selection based arguments posit that there is no causal link between family states and earnings. Instead, any associations found are due to differential selection of individuals with certain characteristics into specific family life courses and earnings profiles. Individuals with low education, instable parental homes or poor relationship skills could systematically select into unstable family life courses or withdraw from building an own family altogether. The never-partnered and childless could over-represent individuals with (unmeasured) characteristics that are undesirable in both the partner market and the job market – a compositional difference associated with lower earnings. Due to gendered norms of family breadwinning, negative selection processes into remaining single and childless and separating are presumably stronger for men than for women.

To quantify the extent to which compositional differences account for the association between family life courses and earnings, we control for a number of factors that are known to be associated with union dynamics, childbearing, and earnings: I) childhood family background including regional characteristics, II) educational attainment, and III) labour market entry characteristics. They are introduced in detail in the data and methods sections below.

Finally, *discrimination* based arguments posit that earnings differ by gender or family status, because of positive or negative employer discrimination. Marriage might signal higher reliability, and parenthood, especially for women, lower reliability for employers in hiring decisions and promotions (Correll, Benard, and Paik, 2007). We cannot directly account for discrimination in our analysis, but take this possibility into account in the interpretation of the results.

Study Design, Data and Methods

Figure 1 illustrates our study design on gender differences in the association between typical longitudinal family life courses and mid-life earnings. We first seek to identify the combinations of family events, including union formation and dissolution and childbearing, over time that are most empirically relevant for our study cohorts, using sequence and cluster analysis. In a second step, we use regression models to analyse how the typology of family life courses is associated with mid-life earnings, measured at ages 37–39, for men and women.

<Figure 1>

We use data for the cohorts born 1969 and 1970 compiled by Statistics Finland (permission no. TK53-663-11) by linking information from a longitudinal population register and registers of employment, educational qualifications, income subject to state taxation and vital events. The analysis sample is extracted from an 11 % random sample of persons born between 1940 and 1995 who were registered in the population of Finland on 31 December in at least one of the years of 1970, 1975, 1980, 1985, and 1987–2010. The data include union histories until the end of 2009. Starting in 1987 the union histories cover not only marriages but also cohabitations. Finnish registers contain information on the place of residence to the specific dwelling, thereby enabling the linkage of different-sex individuals to co-residential couples. A cohabiting couple is defined as a man and a woman who are registered as domiciled in the same dwelling for over 90 days, who are not close relatives, such as siblings or a parent and a child, or married to each other, and whose age difference is no more than 20 years (or the partners have shared children). Note that we cannot capture non-cohabiting partnerships, including LAT (Living Apart Together) partnerships or same-

sex unions.[2] Parenthood is measured as having (registered) biological children. Due to limited information on them, we exclude adopted, foster and stepchildren. Men's childbearing histories are covered nearly as completely women's: only 1.3 % of the women's children have no father registered.

We focus on the 1969 and 1970 cohorts because we can observe the longest complete union histories for them: the 1969 cohort is the oldest for which there are records of all co-residential unions from the year of their 18th birthday until age 39. Family trajectories from ages 18 to 39 (259 months) are available for 6,621 men and 6,330 women. Individuals who were not in the Finnish population the year they turned 18th years, mainly due to living abroad, who died or emigrated between 18 and 39 (8 %) are excluded.

We specify eight family states: 1) Unpartnered, childless, 2) Unpartnered, parent, 3) Cohabiting, childless, 4) Cohabiting, 1 child, 5) Cohabiting, 2+ children, 6) Married, childless, 7) Married, 1 child, and 8) Married, 2+ children. We distinguish between cohabitation and marriage because evidence accumulates that they differ in important ways, including selection by education and a higher risk of separation for cohabiting unions (Perelli-Harris and Lyons-Amos, 2015). They continue to have distinct meanings: for most, cohabitation represents a lower level of commitment, greater freedom and a way to test the relationship, while marriage represents an ideal for ultimate commitment (Perelli-Harris *et al*. 2014). In the Finnish context, even though cohabitation is a common and well-established union type, cohabitations tend to be transitory in that they lead to either marriage or separation (Jalovaara and Kulu, 2018). Marriage and marital childbearing are more common among the highly educated (Jalovaara and Fasang, 2015; Schnor and Jalovaara, 2017). "Unpartnered" refers to persons who are currently neither cohabiting nor married, although they could have been in the past. "Unpartnered parents" comprise resident as well as nonresident unpartnered parents. The union and childbearing histories are monthly; however, here we use data split into 3-month intervals to increases the efficiency of the analysis without losing substantively relevant information.

[2] For details on the inference of cohabitations, see Jalovaara and Kulu (2018).

The main outcome is gross annual individual earnings[3] at ages 37–39 (3-year mean) extracted from taxation registries. We use the 3-year mean as a more reliable measure of a person's earnings position in mid-life that is not distorted by short-term fluctuation and outliers. Earnings comprise wage and salary earnings and entrepreneurial income subject to state taxation. Earnings higher than 115,000 euros are top coded as 115,000 (1.5 %). To facilitate the interpretation of the results, earnings data are kept as absolute euro amounts but are transformed into 2009 values to control for inflation (Statistics Finland, 2009).

We control for a number of characteristics known to be associated with family life courses and earnings. Table S1 in the Supplementary Material gives detailed measurement and coding information.

I) Childhood family background: Greater parental resources are associated with higher own socioeconomic attainment (see Erola, Jalonen and Lehti, 2016), which tends to go along with marriage formation and union stability. Children of divorced parents are less likely to marry (Erola, Härkönen and Dronkers, 2012) and more likely to separate and divorce (Gähler and Härkönen, 2014; Wolfinger, 2000) than children raised in stable two parent families. Furthermore, growing up in a single-parent family is associated with lower socioeconomic attainment (see Erola and Jalovaara, 2017) including higher (downward) mobility and lower earnings in adulthood (Bloome, 2017). We therefore control for parental socioeconomic status and for single-parent family background. In addition, regional factors, including local labour markets and partner markets, can affect both family life courses and earnings. We include an indicator on the degree of urbanization of the place of residence in childhood[4]. Finland is a sparsely populated country with an uneven population distribution. The rural–urban divide is strong and linked to the socioeconomic structure of the population as well as differential family processes (e.g., union stability, Jalovaara, 2013). Migrant background is controlled for, because immigrants tend to have lower earnings than the native population, and their family dynamics differ in complex ways depending on the country of origin.

[3] Our data include yearly income (from different sources) and employment, but no information on weekly hours or hourly earnings.

[4] First, rural residence in adulthood was also controlled for; however, this did not affect the results.

II) Educational attainment: Higher educational attainment is almost universally associated with higher earnings after graduation (e.g., Koerselman and Uusitalo, 2014) and with family life courses, although findings on the direction of the effects are mixed (Balbo, Billari and Mills, 2013). In Finland, high education promotes union formation for men and women (Jalovaara, 2012), and both partners having high education is associated with a lower risk of separation and divorce (Jalovaara, 2013; Jalovaara and Kulu, 2018).

III) Labour market entry characteristics: Early career unemployment and first earnings likely affect both family life courses and mid-life earnings. A successful labour market entry sets the stage for future careers, life-time earnings development, and encourages family formation (see Härkönen, Manzoni, and Bihagen, 2016). Early unemployment has been linked to scarring effects that negatively affect subsequent careers and future earnings (Gangl, 2006). In Finland, labour-force participation and high income promote union formation and entry into parenthood for both women and men (Jalovaara 2012; Jalovaara and Miettinen 2013), and both partners' gainful employment predicts a lower risk of separation and divorce (Cooke *et al.* 2013; Jalovaara, 2013).

While we can be confident that individuals' childhood family background is not affected by their early adult family trajectories, there are bound to be mutual effects between early stages of family trajectories, educational attainment and labour market entry. Given that we use observational data, we cannot fully factor out unobserved selection processes. Nevertheless, we can control for many important determinants of family life courses and earnings, which allows us to assess the importance of compositional differences in these characteristics. We briefly discuss additional potentially important factors, including personal characteristics such as social skills in the discussion section on avenues for future research.

Methods

Sequence analysis is applied to assess the similarity between each possible pair of family sequences on a pooled sample of men and women. We use Optimal Matching (OM) with constant substitution costs of 2 and indel costs of 0.5 to identify similarity in terms of both the timing an order of family states (MacIndoe and Abbott, 2004; Aisenbrey and Fasang, 2010). Results are substantively robust to other cost specifications, including Dynamic Hamming matching (Lesnard, 2010). The resulting distance matrix from OM serves as the basis for a cluster analysis, which we also conduct for the total sample of men and women. By examining the proportion of men and women in each cluster, we can thereby assess gender differences in family pathways without separating the analysis by

gender a priori. We use partitioning around medoid (PAM) clustering, because it provided more efficient groupings after determining the best number of clusters based on hierarchical clustering (Ward) (see Studer, 2013). The most discriminant number of groups is derived based on several cluster cut-off criteria. We retain seven clusters (ASW = 0.27) that provide adequate cluster quality and proved substantively most meaningful, thus satisfying the criterion of construct validity (Studer, 2013; Aisenbrey and Fasang, 2010).

The seven family clusters are visualized with relative frequency (RF) sequence plots (Fasang and Liao, 2014) separately for each cluster. RF sequence plots display a selection of representative sequences as sequence index plots. Each line represents one individual sequence and codes family states with different colors. The timeline is age, displayed on the x-axis. First the family sequences in each cluster are sorted according to their complexity (Elzinga, 2010), with the most complex sequence with the most frequent transitions at the top. Then, the sorted set of sequences is partitioned into *k* equal-sized frequency groups. For each frequency group, the medoid (i.e., the sequence with the lowest sum of distances to all the other sequences in the group) is selected as a representative. We also present the corresponding distance-to-medoid box plots that visualize the distances of all the sequences in a frequency group to their medoid and thereby provide information about the cluster homogeneity in different regions of the sorted sequences.

The seven family clusters enter OLS regression models on earnings as categorical independent variables. First, we fit models jointly on men and women and include an interaction term between gender and family cluster (Table 2 and Figure 4). This model is informative about *earnings gaps* between men and women who experience the same family life course (RQ 2a) with and without controlling for background variables as described above. Second, we specify separate models for women and men to examine *earnings gradients* within each gender by family life course as proposed by Muller and co-authors (2016) (Table 3, Figure 5) (RQ 2b). Control variables are introduced in four steps. The regression results are reported as predicted margins or "adjusted predictions" and, in Table S3 in the Supplementary Material, as ordinary regression estimates. All the sequence and cluster analyses are conducted using the R packages TramineR, TraMineRExtras, and WeightedCluster (Gabadinho *et al.* 2011; Studer, 2013).

Results

Typical Family Life Courses: Sequence and Cluster Analysis

The seven typical family life courses comprise three clusters characterized by marriage and four clusters in which marriage plays no role. Figure 2 shows the RF sequence plots for each marriage pathway and Figure 3 the four non-marriage clusters. Table 1 summarizes descriptive information regarding gender, education, average sequence complexity (Elzinga, 2010), and average sequence distance (as an indicator of cluster homogeneity) for each cluster.

The three marriage pathways divide into clusters 1) *Early marriage, 2+ children*, 2) *Late marriage, 2+ children* and 3) *Marriage, <2 children.* The first group (19 %) represents an orderly pathway of cohabitation followed by marriage, then first and second births in a demographically dense phase between ages 25 and 30 (Figure 2). Marriages are mostly stable (lasting at least until age 39); however, few have separated and thereby transitioned to unpartnered parenthood. This first group, *Early marriage, 2+ children* pathway most closely adheres to a 'traditional' normative family life course in Finland. The second cluster, *Late marriage, 2+ children*, is also large (20 %). It represents another normative pathway of cohabitation, followed by marriage and parenthood that postponed marriage until around age 30. At age 39, they are still married and have at least two children. Sequence complexity is relatively high because individuals in this group show serial pre-marital cohabitation and do not remain in any family state for longer durations of time (see Table 1). This group thereby resembles the late and protracted partnered mothers groups in Muller at al. (2016). Some have a childless cohabitation in their mid 20s, before they enter marriage and parenthood at around age 30. The third pathway, 3) *Marriage, <2 children,* is the least common marriage pathway (11 %) and includes long periods of childless marriage. Some remain childless in marriage by age 39, while others transition to first birth after a longer period of childless marriage. Few have a second child at a later stage, and almost all are still married at age 39. Presumably, this groups' heterogeneity results from both involuntary and voluntary childlessness.

As expected, individuals in the *Late marriage, 2+ children* and *Marriage, <2 children* clusters are more highly educated on average (Table 1). Women are overrepresented in the *Early marriage, 2+ children* group, whereas men are more likely to be in the *Late marriage, 2+ children* group, which reflects well-known gender differences with men forming families at later ages than women.

<Figure 3>

The four non-marriage pathways divide into 4) *Cohabiting parents,* 5) *Childless serial cohabitors*, 6) *Unpartnered parents*, and 7) *(Almost) never partnered childless.* Together they account for 54 % of the individual life courses, attesting to rather low prevalence of marriage for the study cohorts, despite its continuing cultural and institutional relevance. Cluster 4) *Cohabiting parents* covers 11 % of the sample. It shows a relatively orderly pathway of childless cohabitation followed by one and two children within a short period of time (Figure 3). Some marry, but only after a lengthy period of cohabiting parenthood. The cohabitation trajectories are quite stable, with hardly any unpartnered periods by age 39. The other cohabitation cluster, 5) *Childless serial cohabitors,* accounts for 10 % of the sample. This group shows serial brief cohabitation episodes before entering more stable unions, similar to the *Late marriage, 2+ children* cluster. Part of this group enters their first union only after age 30, while some continuously cohabit from a younger age but remain childless throughout most of their thirties. The ability to identify regularities as these fragmentary cohabitation histories illustrates one added value of a process perspective on family life courses. The cohabitation clusters also highlight that family life courses have to be observed at least until age 40 for our study cohorts, because much of their active family formation occurs only in their mid-30s.

The family cluster 6) *Unpartnered parents* shows comparably eventful family trajectories involving parenthood but not being partnered at age 39. This group comprises 10 % of the sample with a somewhat higher share of women than of men. Unpartnered parenthood is usually preceded by cohabitating parenthood, which in turn is preceded by brief episodes of childless cohabitation. The lower educated are overrepresented among *Cohabiting parents* and *Unpartnered parents*. They are among the most heterogeneous family life courses with a high average distance of all family sequences to each other resulting from great variation in the timing of transitions within these groups (Table 1). In contrast to stable cohabitation and marriage, non-normative family states, including unpartnered parenthood, are less attached to social timetables and cultural expectations about appropriate order and timing of events leading to greater heterogeneity in these features.

The last family cluster, termed 7) *(Almost) never partnered childless*, comprises individuals who, nearing age 40, have not had children, married, or entered a co-residential union, with the exception of very brief spells of cohabitation among about half of them. The continual and combined absence of all family events is most characteristic for this family cluster that accounts for a substantial 23 % of the sample. This group has the lowest sequence complexity and is dominated in numbers by men with only basic or secondary education (Table 1). Note that the *(almost) never-partnered childless*

are possibly dating and in LAT relationships but do not reach a stage where the two partners move in together, marry, or have children – or if they cohabit, it does not last long.

Even though our analysis differs in terms of study population and in the specification of family states, the resulting seven groups show some overlap with the six groups identified for women in 22 European countries by Muller and coauthors (2016). Their analysis does not distinguish between cohabitation and marriage and focuses on the age of the youngest child instead of parity, as in our specification. Similar to our analysis, they also find a group of never partnered and childless women, partnered childless women and single parents. Corresponding to our marriage clusters, Muller *et al*. (2016) identify three groups of partnered women whose family life courses follow different timetables that they label "Child with partner early", "Child with partner late" and "Child with partner stretched". In addition to finding of Muller *et al*. (2016), we also identify a group of cohabiting parents. This group could not be separated by design in their study and is likely particularly relevant for countries as Finland, in which the Second Demographic Transition is in advanced stage.

Mid-Life Earnings: Interaction between Gender and Family Life Courses

We now turn to regression models of mid-life earnings, first fitted jointly for men and women to assess gender earnings gaps within family life courses (*Hypothesis 1*). Gender differences in the association between family life courses and earnings are estimated with an interaction term between gender and family life course type (RQ 2a). Table 2 and Figure 4 show results from two models: Model A includes the main effects and the interaction term only, and Model B additionally includes control variables to account for observed selection into family life courses. The results are presented as predicted annual earnings. Table S2 in the Supplementary Material shows the ordinary regression coefficients.

<Table 2>

<Figure 4>

In line with previous research (e.g. Riihelä, Sullström and Tuomala, 2014), findings underline a remarkable gender gap in mid-life earnings, although the percentage employed around age 40 is practically equal for men and women. Figure 4 clearly supports that the association between gender and earnings varies by family life course. In line with *Hypothesis 1*, women's earnings are lower in all family types compared to men's; however, the gender gap is largest in family life courses that

involve a stable marriage and parenthood. In contrast, the gender gap in earnings is much narrower in the *Unpartnered parent* and *(Almost) never partnered childless* family types. The gender earnings gap even increases when the control variables are introduced (comparison of Models A and B). Thus, women's parental background, education and employment cannot account for their lower earnings compared to men. On the contrary, women have lower earnings compared to men despite being, on average, more highly educated than men. In line with previous findings of a higher marriage premium for men compared to women in the US (e.g. Killewald and Gough, 2013) earnings differentials by family type are much more pronounced among men than among women. This is due in part to higher variation in earnings for men, which allows for greater differences by family type.

Family Life Courses and Mid-Life Earnings: Gender-specific Models

To assess earnings gradients by family life courses within each gender (*Hypothesis 2*), Figure 5 shows the predicted mid-life earnings for each family cluster from Model 1, which includes no control variables, and Model 4, which includes all control variables, separately for men and women. Table 3 shows the results from Models 1–4 including different sets of control variables, and Table S3 in the Supplementary Material shows the ordinary regression coefficients. The largest and most 'traditional' pathway *Married, 2+ children* is taken as the reference category. Regression coefficients for the other clusters show differences to this group.

<Table 3>

<Figure 5>

Model 1 includes the family clusters only. In Models 2–4, the control variables are added one group at a time. The effects of the control variables (not shown) are as expected: for both men and women, mid-life earnings are significantly and positively associated with white-collar employee, or employer parental class, own higher education, and high first earnings. For men and women, mid-life earnings are negatively associated with rural residence, living in a single-parent family as a child, migrant background, high age of completing the highest education and of entering employment, as well as the number of years unemployed in early adulthood. Overall, the observed covariates account for a much larger proportion of the association between family life courses and earnings for women compared to men. Consequently, a larger share of the associations between family life courses and earnings can be attributed to compositional differences for women, whereas

treatment and (positive) discrimination based mechanisms might play a larger role for men. The stronger association between family life course and earnings for men is also indicated by higher coefficients of determination (R^2) in all models for men compared to women (Table S3, Supplementary Material).

Men's Family Pathways and Mid-Life Earnings

In line with *Hypothesis 2,* findings support a negative earnings gradient with lower earnings for men the more they deviate from the normative timing and sequencing of late cohabitation followed by marriage and two children in a stable union. Men's earnings are by far highest in the most 'traditional' family life courses involving a stable marriage and parenthood, particularly in the *Late marriage, 2+ children* cluster. Men's earnings are lowest among *Unpartnered parents* and *Never partnered childless*. Specifically, predicted earnings are 39 % lower in the lowest-earning family pathway cluster – *(Almost) never partnered childless* compared to the highest-earning group for men (*Late marriage, 2+ children*). However, reflecting the remarkable gender earnings disparity, the lowest-earning men *((Almost) never partnered childless)*, earn on average as much as women in their highest-earning family life course type (*Late marriage, 2+ children)*. In contrast to instability-based theories, not the most unstable, but the most stable family cluster, *(Almost) never partnered childless*, is associated with the lowest mid-life earnings (lowest sequence complexity in Table 1). A large (in fact the largest, judging from Model 4) economic disadvantage for men follows from the combined, continual and accumulated absence of family events.

Earnings differentials between men with different family types are partly accounted for by compositional factors. For instance, when education is introduced into the model (Model 3), the earnings difference between the two marriage clusters almost disappears, and the differences between the family life courses characterized by cohabiting and unpartnered fatherhood and the other clusters diminish. Nevertheless, substantial earnings differentials between men's family life course types remain after including all control variables. Notably, only a third of the substantial earnings difference between the *Never-partnered childless* and the largest cluster (*Early marriage, 2+ children*) is accounted for by composition.

Women's Family Life Courses and Mid-Life Earnings

For women, findings also support *Hypothesis 2* of an negative earnings gradient from more to less 'traditional' family life courses, albeit this gradient is much flatter with smaller earnings differences

between family life course types compared to men (Table 3 and Figure 5). The more women deviate form a normative family life course of cohabitation, followed by marriage and (late) parenthood, the lower their earnings in mid-life. Model 1 shows that, compared to the *Early marriage, 2+ children* group, the family life courses involving cohabiting or unpartnered parenthood are associated with lower earnings, whereas *Late marriage, 2+ children* and *Marriage, <2 children* are associated with higher earnings. Results corroborate a marriage premium, with higher mid-life earnings for family clusters involving marriage. In addition, our processual approach underlines heterogeneity in the marriage premium depending on the timing of marriage and whether it goes along with parenthood or not: women's earnings are highest for the *Late marriage, 2+ children* group. Findings further support that the association between motherhood and earnings depends on it's timing in the life course and the number of children. Family clusters with fewer children or later motherhood go along with higher mid-life earnings. For women, we find a motherhood penalty when motherhood occurs outside of marriage. Childless cohabiting or unpartnered women have a significant earnings advantage compared to cohabiting and married mothers.

In contrast to men, earnings differentials among women are almost completely accounted for by the compositional differences captured by the control variables. In the last model including all control variables, all earnings differences between the *Early marriage, 2+ children* cluster and the other groups are substantively small and statistically not significant, despite our large sample size. Strong education effects (comparison of Models 2 and 3 in Table 3) reflect the key role of education for women's differential selection into family pathways in Finland.

These earnings differentials between women deviate strongly from the gradients found by Muller *et al*. (2016). Muller *et al*. (2016) report an earnings gradient where women with the most normative family life course of marriage with children attain the lowest later-life earnings. The opposite is the case for our sample in Finland – women with 'traditional' normative family life courses have the highest earnings, whereas mid-life earnings deteriorate the more their family lives deviate from this pattern. Moreover, the earnings gradients by family life course are very similar for men and women in Finland, except that men benefit even more from marriage compared to women. Note that Muller *et al*. (2016)'s sample comprises women born 1943–1963 in 22 European countries, whereas our cohorts were born 1969 and 1970. The differences therefore might partly reflect change over time. Yet the decisive difference likely is the egalitarian Finnish welfare state that facilitates and rewards the combination of marriage, motherhood and gainful employment to a greater extent than most countries in Muller *et al*.'s (2016) sample. Correspondingly, Muller *et al.* (2016) find that policies that incentive equal opportunities and female employment lead to lower earnings penalties for

normative ‘traditional’ life courses, which is the case relative to other countries for our cohorts in Finland. To strengthen confidence in our findings, we conducted several robustness checks. They are reported in the Supplementary material.

Discussion

Previous research documents high family diversity in Western societies (Bumpass and Lu, 2000; Goldscheider, 1997; Kennedy and Ruggles, 2014; Smock and Manning, 2010); however, less is known about the links between diverse family life courses and women’s and men’s earnings. In contrast to previous research that focuses on earnings gaps by parenthood or marriage, we take a life course perspective on earnings gradients across a typology of longitudinal family life courses, as they are actually experienced by individuals over time. Our research asked what are the typical family life courses from early adulthood to mid-life in our Finnish study cohorts, and how are they associated with mid-life earnings for men and women. Of central interest was, whether the association varies by gender. Using advanced methods and rich register-based data on the life courses of Finnish birth cohorts 1969 and 1970 at ages 18–39, the study contributes to previous literature in several ways.

First, we complement previous work on earnings gaps by single family states or events with a processual conceptualization of long-term family life courses that combine the timing, duration and sequencing of family events. This allows us to shift the focus from earnings gaps associated with particular events or statuses to earnings gradients by more or less ‘traditional’, culturally and institutionally supported family life courses (Muller *et al.* 2016). Our study on Finland corroborates previous findings on a marriage premium for men and women (Cooke, 2014; Killewald and Gough, 2013; Petersen, Penner and Høgsnes, 2014). Beyond previous research, our results revealed a similar earnings gradient with more ‘traditional’ family lives of marriage and parenthood being associated with the highest mid-life earnings for both men and women, followed by childless serial cohabitors, cohabiting parents, unpartnered parents and neverpartnered childless individuals. Whereas for women unpartnered parenthood is associated with the lowest earnings, for men neverpartnered childlessness goes along with the lowest earnings. This finding for men underline that economic disadvantages may not only go along with greater family complexity, as stress frameworks suggest, but also with a lack of family events. The combined absence of family transitions among finish men goes along with socioeconomic disadvantage including low education and difficulties in gaining stable employment and thus contributes to an accumulation of disadvantage across multiple life domains over time.

Second, we contribute to the comparative literature on family dynamics and inequality by comparing women and men in the setting of a Nordic gender-egalitarian welfare state. The Nordic countries are often seen as blueprints for gender egalitarian and family friendly social policies (Petersen, Penner and Høgsnes, 2014), although there has been a heated debate to what extent the Nordic model has actually been successful in keeping inequality by gender and family status low (Petersen, Penner and Høgsnes, 2014). Moreover, Finland is among the forerunner countries of the second demographic transition, with already high rates of cohabitation and non-marital childbearing for our study cohorts that appear to emerge with some delay in other countries as well. On the one hand, our findings support gender equality in that for both men and women there is a negative earnings gradient from more to less 'traditional' family life courses. On the other hand, the earnings gap between men and women is largest in the most 'traditional' family life of cohabitation, followed by marriage and 2 children in a stable union. Men benefit significantly more from adhering to culturally and institutionally supported schedules than women, even in the egalitarian welfare state of Finland. The stronger association between family life courses and mid-life earnings for men than for women with a steeper earnings gradient might seem counter intuitive, as most research claims that family lives matter more for women's earnings. Yet these findings correspond with previous research suggesting that marriage plays a larger role in men's labour market outcomes than in women's (Killewald and Gough, 2013).

Our results further showed that earnings differentials by family type were less accounted for by observed socio-demographic factors for men suggesting that compositional factors play a larger role for women than for men in Finland. For example, the observed compositional factors accounted for only one third of the earnings disadvantage of the *(Almost) never partnered childless* relative to the highest earning marriage cluster for men. This suggests that either we lacked information on relevant compositional characteristics (e.g., motivation, life-style, social skills), or that among men, the (almost) non-occurrence of family events is more strongly linked to earnings in mid-life via treatment or discrimination based mechanisms than among women. One plausible treatment type link is that the combined and continual absence of family events experienced by the *(Almost) never partnered childless* goes along with less social support and control by a partner and children, unhealthier lifestyles, and social isolation, which are also negatively related to work careers and earnings, and that these associations are stronger among men. This resonates with health and mortality research reporting that living alone or not being partnered is associated with poorer health behaviors and health, and that the advantages of being partnered are greater for men (Joutsenniemi, 2007; Martikainen *et al.* 2005, see also Waite and Gallagher, 2002). In addition, marriage and

fatherhood might lead to positive employer discrimination when it comes to promotions to a greater extent for men than for women. Given the strong dual earner norm in Finland, however, such effects are likely smaller than in countries with strong male breadwinner norms. A recent Swedish study using a field experiment found no support for employer discrimination based on parenthood (Bygren, Erlandsson, and Gähler, 2017). However in Finland, there might be more discrimination owing to the longer family leaves compared to Sweden. Future research should continue to adjudicate between treatment and discrimination based links between family pathways and earnings.

This study mainly focused on earnings differentials by family pathway that proved greater for men but also attest to the remarkable gender earnings gap. The lowest-earning group of men, *Never-partnered childless*, earn on average as much as women in the highest-earning family pathway. Thus, despite notable earnings differences between men, even the most disadvantageous pathway does not decrease men's earnings to the level of women who have lower average earnings on all family pathways. The persistent gender earnings gap in Finland partly reflects the gendered consequences of childbearing and gender-specific occupational segregation in the labour market (Mandel and Semyonov, 2005; Riihelä, Sullström and Tuomala, 2014). Differences in disposable income are smaller than in work earnings but still large (see Riihelä, Sullström and Tuomala, 2014). Research on the gender earnings gap and to what extent it is accounted for by family dynamics is clearly needed. In this regard, a limitation of our study was the lack of information on hourly wages or work hours. Although employment rates of Finnish women are high and they tend to work full-time, somewhat fewer work hours would explain some of the gap in annual earnings observed in this study. Future research should also pay more attention to the role of gender-specific occupational segregation for the gender-earnings gap in Finland (see Petersen, Penner and Høgsnes, 2014 for Norway).

Taken together, our study and the research by Muller *et al.* (2016) shows that it is useful to complement research on parenthood gaps by earnings gradients in longitudinal family life courses depending on how closely they adhere to institutionally and culturally supported models of family life. Future research should continue to systematically investigate how country contexts matter for gendered associations of family life courses and earnings later in life for men and women and how these associations change across cohorts.

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Table 1. Descriptive information on seven clusters of 'Family pathways'

	1) Early marriage, 2+ children	2) Late marriage, 2+ children	3) Marriage, <2 children	4) Cohabiting parents	5) Childless serial cohabitors	6) Unpartnered parents	7) (Almost) never partnered childless	Total
Percent	19	16	11	11	10	10	23	100
N	2476	2123	1406	1412	1331	1245	2958	12951
Percent, men	14	19	10	10	11	8	28	100
Percent, women	24	14	11	12	10	11	17	100
Education, men								
Basic	16	8	10	20	15	35	21	17
Secondary	50	37	45	56	49	48	48	47
Lower tertiary	25	30	25	19	24	10	19	22
Higher tertiary	10	25	20	5	13	7	12	14
Total	100	100	100	100	100	100	100	100
Education, women								
Basic	9	2	6	15	8	20	9	9
Secondary	42	21	27	49	36	47	36	37
Lower tertiary	39	42	45	29	40	23	34	36
Higher tertiary	10	35	22	7	16	11	21	17
Total	100	100	100	100	100	100	100	100
Sequence (mean)								
Complexity	7.5	8.5	7.9	8.3	7.3	8.3	3.6	7.0
Distance	26	28	39	37	30	36	15	51

Note: The total average sequence distance includes between-cluster distances and is therefore higher than the within-cluster averages.

Table 2. Predicted annual earnings at ages 37–39 and their standard errors (in parentheses); the interaction between gender and family pathway; from model A that includes no control variables, and model B that includes all control variables.

	Model A	Model B
Men		
Early marriage, 2+ children	39770	40068
	(657)	(565)
Late marriage, 2+ children	43900	40095
	(570)	(492)
Marriage, <2 children	42426	40246
	(761)	(654)
Cohabiting parents	33793	37129
	(786)	(677)
Childless serial cohabitors	37471	38199
	(742)	(636)
Unpartnered parents	27164	33966
	(874)	(761)
(Almost) never partnered childless	26835	30769
	(461)	(402)
Women		
Early marriage, 2+ children	23633	22964
	(508)	(438)
Late marriage, 2+ children	27043	20093
	(669)	(584)
Marriage, <2 children	26328	22778
	(746)	(644)
Cohabiting parents	21604	23408
	(723)	(621)
Childless serial cohabitors	25100	23561
	(813)	(698)
Unpartnered parents	19954	23483
	(744)	(641)
(Almost) never partnered childless	23643	22768
	(609)	(525)

Table 3. Predicted annual earnings at ages 37–39 and their standard errors (in parentheses); from four models (1) fitted separately for men and women.

Men	Model 1	Model 2	Model 3	Model 4
Family pathway				
Early marriage, 2+ children	39770	39908	40495	38845
	(752)	(736)	(665)	(635)
Late marriage, 2+ children	43900	42917	39239	37966
	(653)	(642)	(586)	(559)
Marriage, <2 children	42426	41813	39821	38516
	(872)	(854)	(772)	(735)
Cohabiting parents	33793	34744	36920	36483
	(900)	(883)	(798)	(758)
Childless serial cohabitors	37471	37282	37378	37024
	(850)	(833)	(751)	(713)
Unpartnered parents	27164	28124	32190	33856
	(1001)	(982)	(895)	(855)
(Almost) never partnered childless	26835	27113	28043	29991
	(528)	(518)	(467)	(451)

Women	Model 1	Model 2	Model 3	Model 4
Family pathway				
Early marriage, 2+ children	23633	23771	24705	24078
	(417)	(413)	(381)	(368)
Late marriage, 2+ children	27043	26281	22903	22580
	(549)	(546)	(512)	(493)
Marriage, <2 children	26328	26127	24697	24599
	(613)	(606)	(560)	(538)
Cohabiting parents	21604	22300	24250	23853
	(593)	(589)	(545)	(525)
Childless serial cohabitors	25100	25253	25018	24772
	(667)	(660)	(607)	(584)
Unpartnered parents	19954	20278	22559	23512
	(610)	(605)	(563)	(545)
(Almost) never partnered childless	23643	23413	23039	24055
	(500)	(495)	(455)	(442)

(1)
Model 1: Only includes the family pathway variable
Model 2: Model 1 + parental socioeconomic status + place of residence in childhood + lived in single-parent family + migrant background.
Model 3: Model 2 + educational attainment + age when completed highest education
Model 4: Model 3 + unemployment early in life + first earnings, logged + age when first employed

Figure 1. Study design

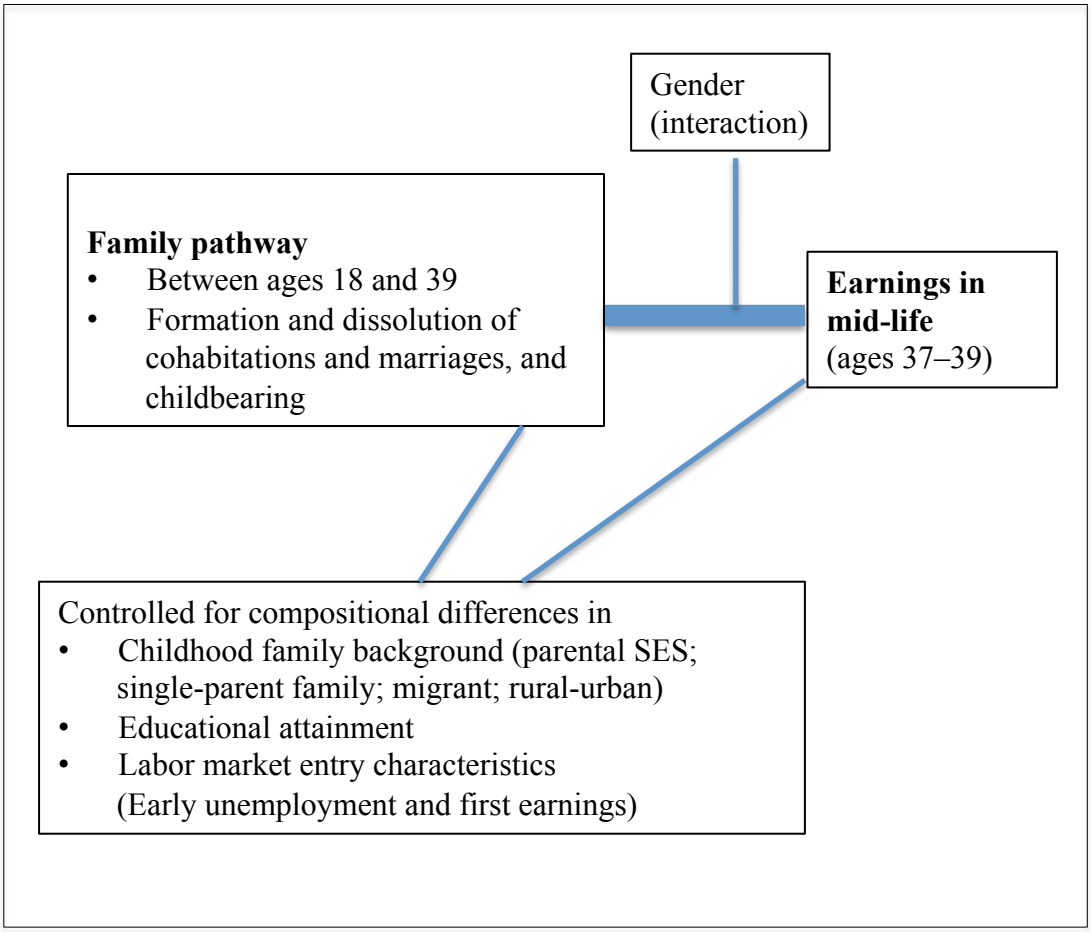
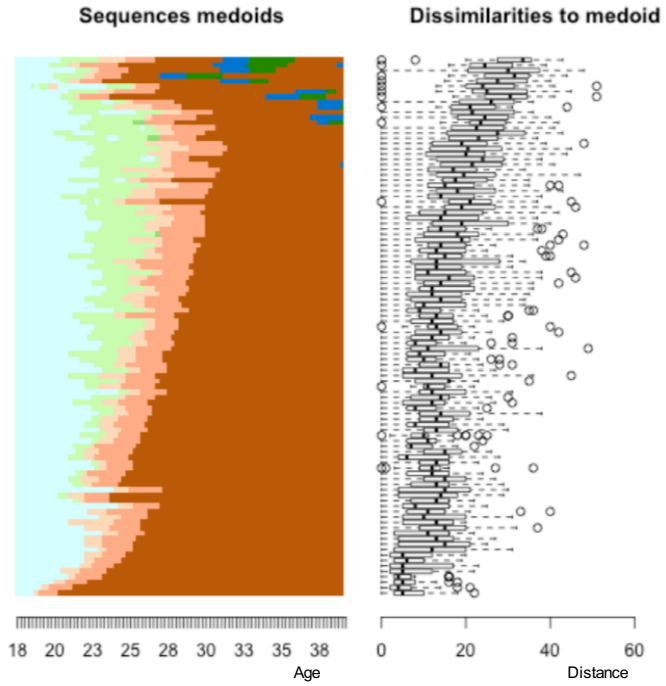


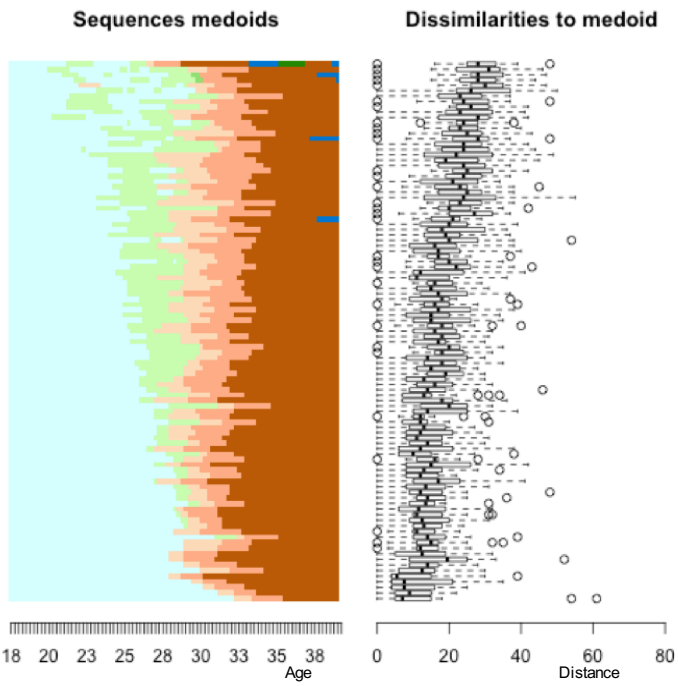
Figure 2. The three family pathways characterized by marriage; relative frequency sequence plots (view in color).

1) Early marriage, 2+ children (19 %)



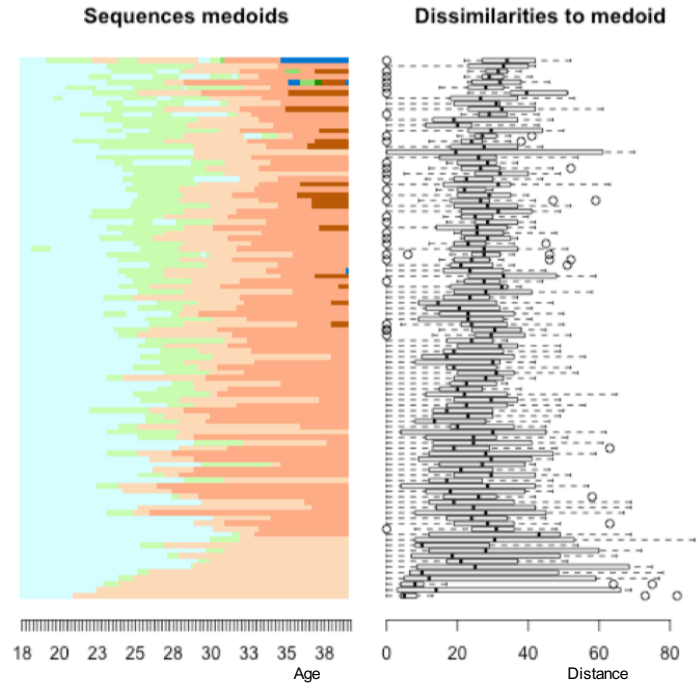
Representation quality: R2=0.16 and F=4.58

2) Late marriage, 2+ children (16 %)

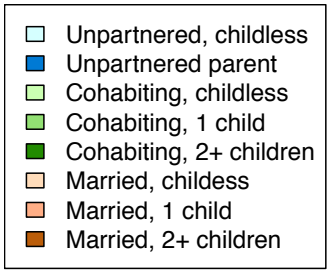


Representation quality: R2=0.06 and F=1.33

3) Marriage, <2 children (11 %)



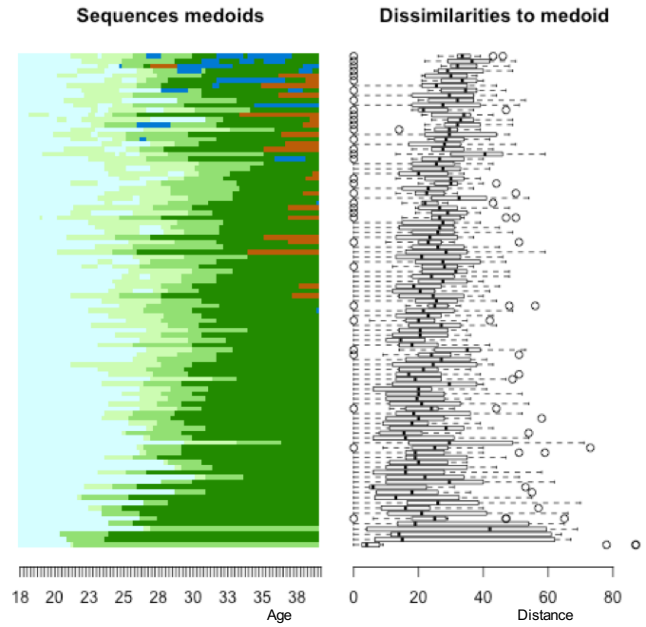
Representation quality: R2=0.03 and F=0.35



Note: Representative sequences, sorted descending from most complex to least complex sequence.

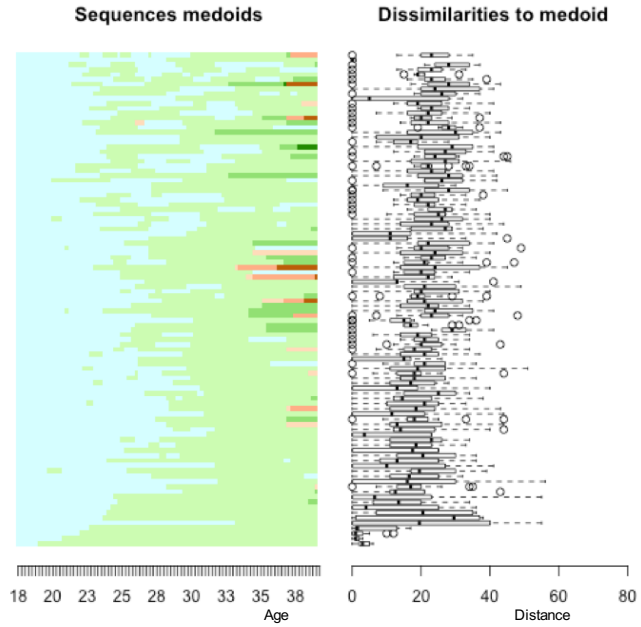
Figure 3. The three family pathways not characterized by marriage; relative frequency sequence plots (view in color).

4) Cohabiting parents (11 %)



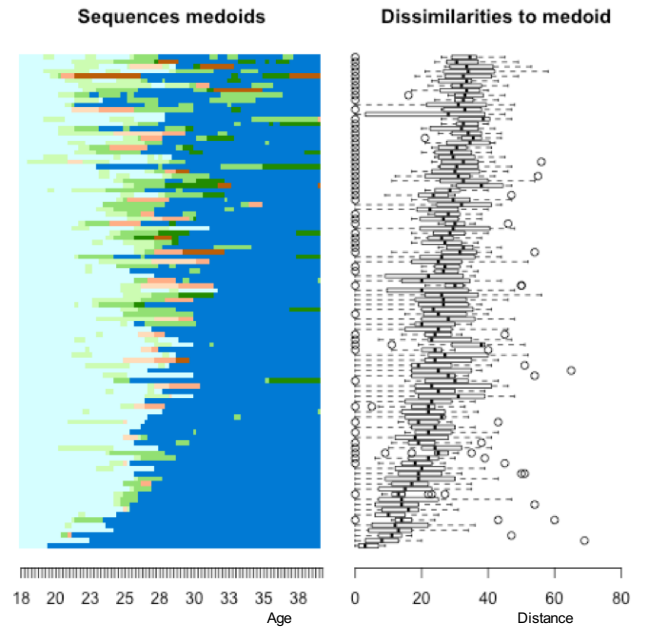
Representation quality: R2=0.01 and F=0.07

5) Childless serial cohabitors (10 %)



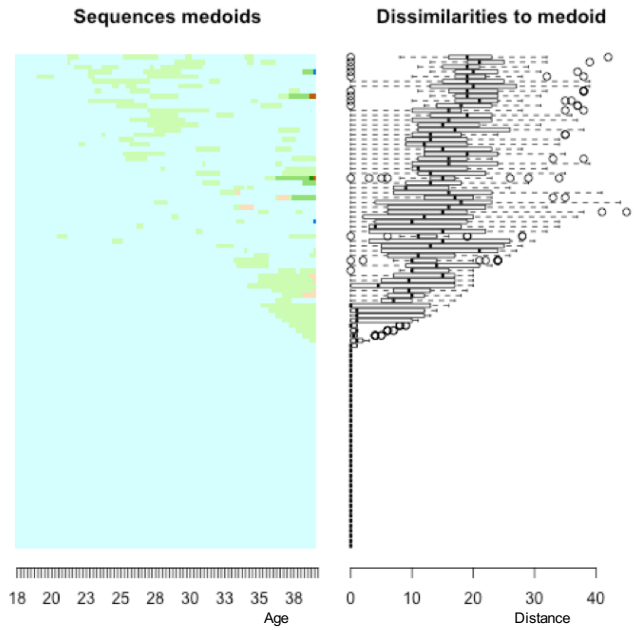
Representation quality: R2=0.08 and F=1.13

7) Unpartnered parents (10 %)

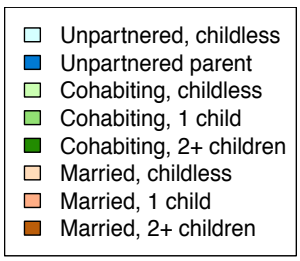


Representation quality: R2=0.03 and F=0.31

7) (Almost) never partnered childless (23 %)



Representation quality: R2=0.26 and F=9.99



Note: representative sequences, sorted descending from most complex to least complex sequence.

Figure 4. Predicted earnings at ages 37–39 and their 95% CIs; the interaction between gender and family pathway; from model A, which includes no control variables, and model B, which includes all control variables (also shown in Table 2).

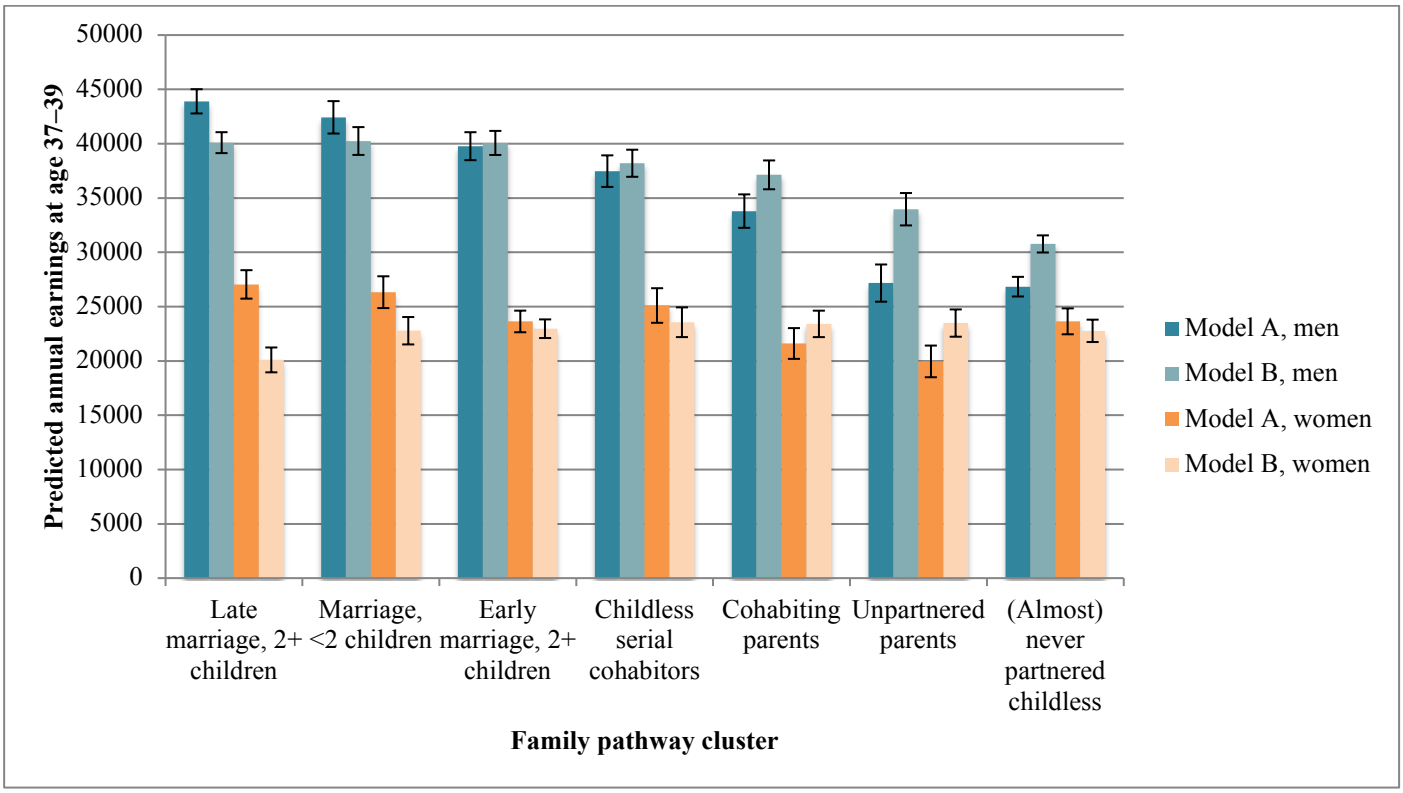
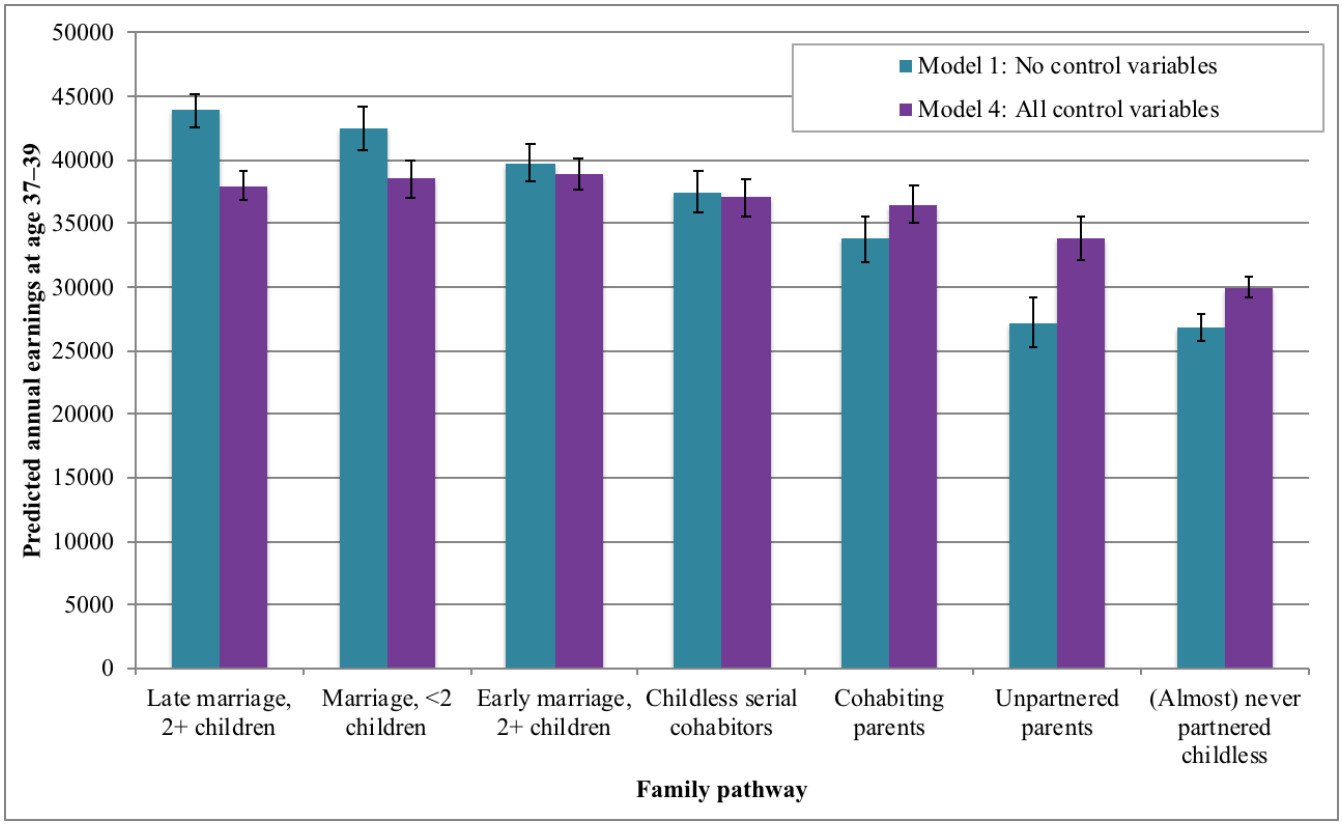
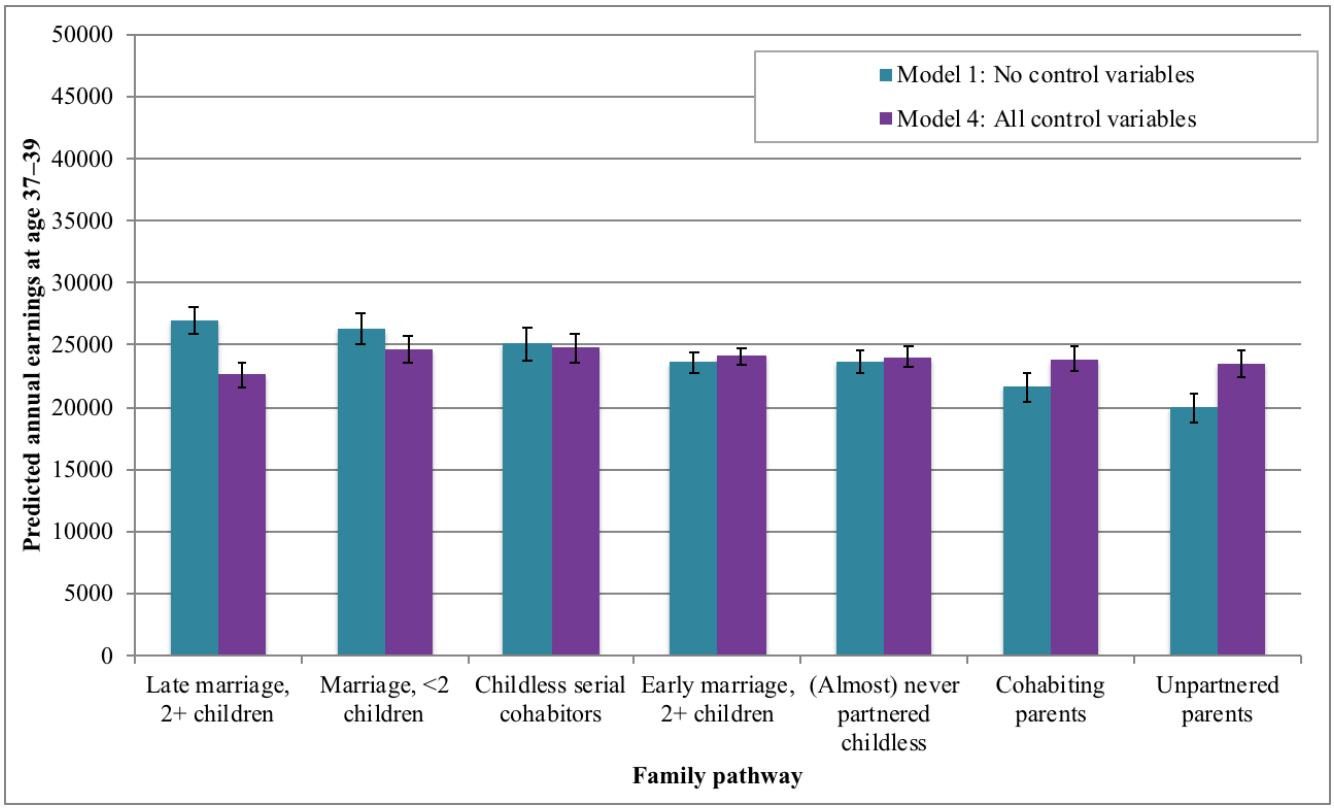


Figure 5. Predicted annual earnings at ages 37–39 and their 95 % CIs from two models fitted separately for men and women; Model 1 includes no control variables, and model 4 includes all control variables. (All models shown in Table 3.)

Men



Women



Supplementary material

Table S1. Measurement of the control variables

Group I. Childhood family background
Parental socioeconomic status is inferred from data on occupational class in 1980, when the study cohorts were between ages 10 and 11. For children under 16, the occupational class is determined by the occupation of the household's reference person. The categories are blue-collar worker, upper white-collar employee, lower white-collar employee, self-employed farmer, other self employed, employer, and other.
Degree of urbanization of the *place of residence in childhood*, measured in 1980 (at age 10–11). The categories are urban, semi urban, and rural.
A dummy for having *lived in a single-parent family* as a child, that is, in at least one of the years 1975, 1980, and 1985.
Migrant background, that is, a dummy for not being born in Finland.
Group II. Education
Educational attainment: A categorical variable indicating the highest level of education by age 40. The levels are 1) basic (individuals with no registered post-comprehensive education), 2) secondary (vocational secondary or the general upper-secondary school), 3) lowest tertiary or lower degree-level tertiary, and 4) higher degree-level tertiary.
Age at which the highest education was achieved (for the first time).
Group III. Employment stability and earnings in early adulthood
Years unemployed between ages 18 and 33 are measured as registered job seekers.
First earnings (logged) when the main type of economic activity was employed for the first time.
Age at which first earnings were measured.

Table S2. Regression models of annual earnings at ages 37–39 from the model including interaction effects of gender and family pathway; regression coefficients (B) and standard errors (in parentheses).

	Model A: Family pathway		Model B: Family pathway + all all control variables	
Gender (ref: Male)				
Female	-16137	***	-17105	
	(830)		(714)	
Family pathway (ref: 'Early marriage, 2+ children')				
Late marriage, 2+ children	4130		26	
	(870)		(749)	
Marriage, <2 children	2657	**	177	
	(1006)		(863)	
Cohabiting parents	-5976	***	-2939	***
	(1024)		(879)	
Childless serial cohabitors	-2298	*	-1870	
	(991)		(850)	
Unpartnered parents	-12605	***	-6103	***
	(1093)		(946)	
(Almost) never partnered childless	-12935	***	-9299	***
	(802)		(695)	
Interaction effects of family pathway and gender (ref: 'Early marriage, 2+ children')				
Female × Late marriage, 2+ children	-720		-2898	
	(1209)		(1037)	
Female × Marriage, <2 children	39		-362	
	(1351)		(1158)	
Female × Cohabiting parents	3947	**	3383	**
	(1352)		(1159)	
Female × Childless serial cohabitors	3766	**	2467	*
	(1378)		(1181)	
Female × Unpartnered parents	8927	***	6622	***
	(1416)		(1215)	
Female × (Almost) never partnered childless	12945	***	9103	***
	(1128)		(968)	
Constant	39770	***	37620	***
	(657)		(2079)	
R-squared	0.13		0.36	
N	12951		12951	

* p<0.05, ** p<0.01, *** p<0.001

Table S3. Regression models of annual earnings at ages 37–39; fitted separately for men and women; regression coefficients (B) and standard errors (in parentheses).

	Model 1: Family pathway		Model 2: Model 1+ Childhood family background		Model 3: Model 2 + education		Model 4: Model 3+ labor market entry characteristics	
Men, ref: Men in 'Early marriage, 2+ children' family pathway								
Late marriage, 2+ children	4130		3009		-1255		-879	
	(996)		(977)		(888)		(844)	
Marriage, <2 children	2657	*	1905		-673		-329	
	(1152)		(1128)		(1019)		(968)	
Cohabiting parents	-5976	***	-5163	***	-3574	***	-2362	*
	(1173)		(1149)		(1037)		(986)	
Childless serial cohabitors	-2298	*	-2625	*	-3117	**	-1822	
	(1135)		(1111)		(1002)		(953)	
Unpartnered parents	-12605	***	-11784	***	-8304	***	-4989	***
	(1252)		(1228)		(1116)		(1068)	
(Almost) never partnered childless	-12935	***	-12794	***	-12452	***	-8855	***
	(919)		(900)		(813)		(786)	
Constant	39770	***	40357	***	38424	***	38965	***
	(752)		(2348)		(2378)		(3178)	
R-squared	0.08		0.12		0.29		0.36	
N	6621		6621		6621		6621	
Women, ref: Women in 'Early marriage, 2+ children' family pathway								
Late marriage, 2+ children	3410		2510		-1801		-1498	
	(689)		(685)		(643)		(619)	
Marriage, <2 children	2696		2357		-7		521	
	(741)		(733)		(678)		(653)	
Cohabiting parents	-2029	**	-1471	*	-454		-224	
	(725)		(719)		(663)		(638)	
Childless serial cohabitors	1467		1482		314		694	
	(786)		(778)		(717)		(690)	
Unpartnered parents	-3678	***	-3493	***	-2145		-566	
	(739)		(733)		(679)		(658)	
(Almost) never partnered childless	10		-358		-1666		-23	
	(651)		(645)		(595)		(579)	
Constant	23633	***	22087	***	16434	***	22353	***
	(417)		(1758)		(1824)		(2475)	
R-squared	0.02		0.04		0.19		0.25	
N	6330		6330		6330		6330	

* p<0.05, ** p<0.01, *** p<0.001

Robustness checks

To strengthen confidence in our findings, we conducted several robustness checks. Analyses are performed with different variations of the earnings measure, including alternative measures of income and earnings that also comprise taxable social-security benefits, and only using income at age 39 instead of the mean at ages 37–39. The results concerning earnings differentials between family pathways are substantively the same. When using income at age 39 only, the gender earnings gap is slightly narrower because below age 40, women's earnings increase with age, whereas men's earnings stabilize (at a higher level) at a younger age (see Riihelä, Sullström and Tuomala, 2014).

A supplementary analysis examines whether the observed earnings differences between family pathways reflect different proportions of persons with no work earnings during the three years, for instance because they were unemployed or on disability pension. The proportion of persons with no (taxable) work earnings between ages 37–39 is generally low (6 % for both sexes) but varies greatly by family pathway, being highest among *(Almost) never partnered childless* (14 %) and *Unpartnered parents* (11 %) and lowest (1 %) among men in the three marriage clusters. When persons with no earnings are excluded, the earnings differences between family pathways decrease, but remain sizeable. For instance, based on Model 4 (Table 3) for men, the earnings difference between *(Almost) never partnered childless* and the (reference) group *Early marriage, 2+ children* diminishes by 21 %, and for *Unpartnered parents* by 18 %. Thus, the observed earnings differences among men are, for the most part, contributed by those who had some work earnings during the three years.