European Sociological Review, 2023, **XX**, 1–16
https://doi.org/10.1093/esr/jcad048
Advance access publication 9 August 2023
Original Article

OXFORD

Birth cohort changes in fertility ideals: evidence from repeated cross-sectional surveys in Finland

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Fertility has declined in developed countries but whether there is a similar pattern in the number of children individuals wish to have (henceforth an *ideal number of children*) remains unclear. Using repeated cross-sectional survey data from the Finnish Family Barometers, we examine birth cohort changes in the ideal number of children among men and women from five birth cohorts (1970–1974, 1975–1979, 1980–1984, 1985–1989, and 1990–1994). We also investigate whether associations between socioeconomic factors and the ideal number of children differ across birth cohorts, and whether there are any gender differences in these associations. We find that the ideal number of children is lower among more recent than earlier birth cohorts and that this shift is driven by substantially higher child-free ideals among recent cohorts. While the ideal number of children among men and women is associated with socioeconomic factors, birth cohort differences remain significant after controlling for these characteristics. These findings suggest that large birth cohort differences in child-free ideals are not due to the individual socioeconomic circumstances of more recent birth cohorts. Rather, it appears that the childbearing attitudes of Finns have changed and may have contributed to the recent fertility decline.

Introduction

Since the Great Recession, fertility rates have declined steeply in several high-income countries, including in the Nordic countries. In Finland, the total fertility rate (TFR) decreased from 1.87 in 2010 to 1.32 in 2022 (Official Statistics of Finland, 2023). Similar trends have been observed in other Nordic countries, albeit with less pronounced declines than those in Finland (Hellstrand *et al.*, 2021). Finland is known for its generous family policies, gender equity, and high female labour market participation rate—factors that used to correlate with higher fertility in Europe (Frejka, Goldscheider and Lappegård, 2018). Therefore, the steep fertility decline observed in Finland since 2011 (Figure 1) was unexpected. The reasons for this decline have been widely discussed but explanations related to socioeconomic factors or a lack of gender equity do not suffice to capture the latest changes in childbearing (Hiilamo, 2020; Comolli *et al.*, 2021). It remains unclear whether fertility ideals and desires, known key predictors of childbearing behaviour (Bongaarts, 2001; Miller, 2011; Philipov and Bernardi, 2012), have changed, either in parallel or prior to the fertility decline, and are contributing to this development.

Fertility ideals are operationalized in this study as the ideal number of children (also referred to as ideal family size) is defined as the number of children a person would prefer to have with perfect fertility control and no constraints on fertility (Philipov and Bernardi, 2012). A two-child family ideal persisted over the last three decades in many high-income countries at the aggregate level (Hagewen and Morgan, 2005; Sobotka and Beaujouan, 2014) but the fertility rates are well below two in many high-income countries (Sobotka, 2020). This macro-level disparity between the average

Received: July 2021; **revised:** July 2023; **accepted:** July 2023

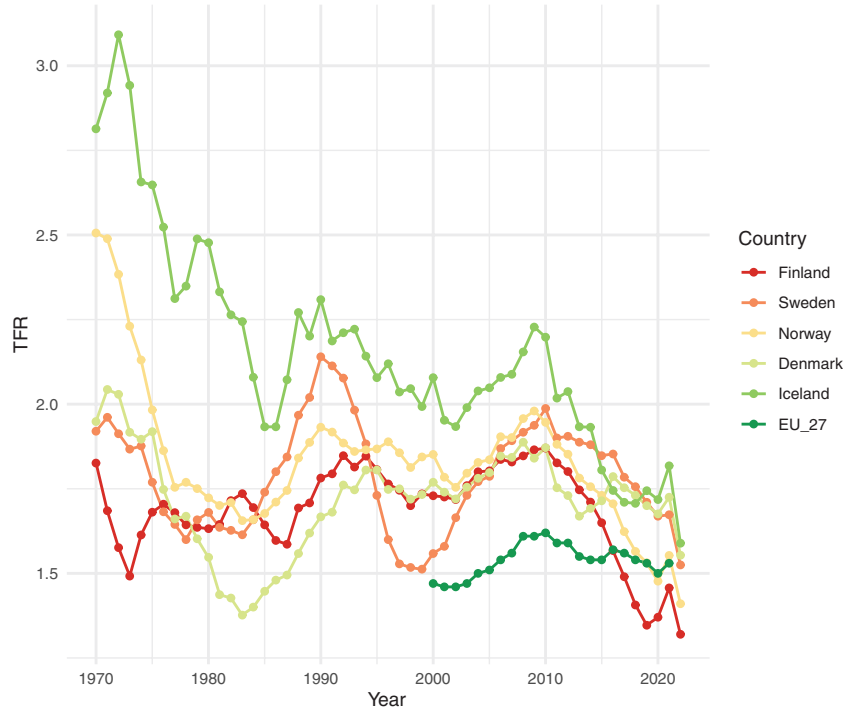

Figure 1 Total fertility rate (TFR) in the Nordic countries and in EU-27 countries in 1970–2022. *Source*: Eurostat (2023), Human Fertility Database (2023).

ideal and achieved family sizes was termed the 'fertility gap' (Philipov, 2009).

However, there is evidence indicating that the ideal family size has also declined (Goldstein, Lutz and Testa, 2003; Hagewen and Morgan, 2005; Testa, 2007; Hartnett and Gemmill, 2020). Using the Eurobarometer surveys, Goldstein, Lutz, and Testa (2003) showed that the personal ideal number of children was below the replacement level in Germany and Austria, especially for younger adults aged 20–34. These findings were corroborated by Testa (2007) using the Eurobarometer 2006 survey. Based on US survey data, Hagewen and Morgan (2005) found a potential decline in the intended number of children among young women under age 25 compared to that of earlier cohorts at a similar age. Likewise, Hartnett and Gemmill (2020) recently showed that in the US from 2006 to 2017, the intended number of children declined, and intentions to have no children rose among younger people. This period was also characterized by unprecedented declines in the TFR in the US (Rybińska, 2020).

The potential explanations for the fertility decline in Finland include declining fertility ideals and the spread of childless[1] lifestyles, as well as overall changes in the family formation culture, mismatches between women's work–family expectations and work–family policies, and the increased social exclusion of young men (i.e., rising numbers of low-educated and unemployed young men) (Miettinen, 2015a; Rotkirch *et al.*, 2017; Hiilamo, 2020; Rotkirch, 2020). Results from the Finnish Family Barometer surveys suggest that the average ideal number of children declined over the last 20 years, from 2.3 and 2.5 children in the 1990s and early 2000s to 2.0–2.2 children in the 2010s (Miettinen, 2015a; Rotkirch *et al.*, 2017). However, it remains unclear whether this change in fertility ideals represents a period change, which might be triggered by the Great Recession in 2008 and affected all birth cohorts, or whether it captures a deeper ideational change across birth cohorts.

To address the potential ideational change in fertility ideals, our study examines birth cohort differences in the ideal number of children among people born between 1970 and 1994. A decline in fertility ideals among more recent birth cohorts might reflect broader cultural changes in Finland. To this end, we use repeated cross-sectional data from Finland from the Family Barometer surveys collected between 2007 and 2018. Our first research question is: *Did individuals from more recent birth cohorts have lower fertility ideals than individuals born earlier when examined at the same age?* Previous studies investigating changes in fertility ideals and desires over the life course showed that they decline with age, especially among women

(Heiland *et al.*, 2008; Gray *et al.*, 2013; Kuhnt *et al.*, 2017). It is, therefore, essential to control for age when assessing changes in fertility ideas and to compare individuals from the same age groups when examining birth cohort changes. Moreover, while fertility has declined among women of all age groups and at all parties, the decline in first-order births, especially among women under age 30, has contributed the most to the decline in Finland (Hellstrand, Nisén and Myrskylä, 2020). This suggests that childless life course periods increased among the cohorts born roughly after 1990. Therefore, we also examine the differences in fertility ideals across birth cohorts separately among childless people and parents.

Alternatively, documented declines in the average ideal number of children in Finland could reflect period changes in fertility ideals during the Great Recession and the recovery period that followed. Recent studies from the Nordic countries found a more pronounced fertility decline in the 2010s among men and women with weaker labour market attachment (i.e., unemployed or with low earnings) (Ohlsson-Wijk and Andersson, 2022), the low educated (Comolli *et al.*, 2021), and women in educational fields characterized by higher economic uncertainty (Hellstrand, Nisén and Myrskylä, 2022). Thus, declining fertility ideals during the 2010s might be related to the increased economic uncertainty associated with the Great Recession, not ideational changes. If so, we would expect to find associations between socioeconomic indicators, such as education, income, and employment status, and the ideal number of children, with negligible birth cohort differences. Therefore, our second aim is to study associations between socioeconomic factors and the ideal number of children over and above the birth cohort differences during the study period. Furthermore, cost-benefit considerations affect women's childbearing desires more than men's (Liefbroer, 2005). Thus, we also examine gender differences in these associations. We ask the following research questions: *Did education, income, and employment status predict the ideal number of children over and above the birth cohort differences in the ideal number of children? Did this association differ between men and women?*

Our study contributes to the sociological literature on fertility. To date, very few studies have examined birth cohort differences in fertility ideals. Previous studies of changes in fertility preferences mainly investigated changes over the life course (e.g., Heiland *et al.*, 2008; Gray *et al.*, 2013; Kuhnt *et al.*, 2017) or time periods (Sobotka and Beaujouan, 2014). Moreover, by documenting the presence of birth cohort differences in fertility ideals, particularly in child-free ideals, we underscore the potential relevance of ideational change for the currently observed fertility declines. Our study does not examine associations between changes in the ideal number of children and actual fertility rates in Finland. Nevertheless, studying changes in fertility ideals *per se* is important because they may indicate broader cultural changes that affect family formation processes.

Background

The Finnish context

Prior to the Great Recession, Finland and other Nordic countries (Sweden, Norway, Denmark, and Iceland) had relatively high and stable fertility with similar period and cohort fertility patterns (Andersson *et al.*, 2009) with Finland having higher proportions of childless men and women (Jalovaara *et al.*, 2019). All Nordic countries provide a universal child allowance and other types of family benefits (Eydal, Rostgaard and Hiilamo, 2018). In Finland, family policy includes a universal child allowance (for every child under age 17); paid maternal, parental, and paternal leave periods; and a child home care allowance (for children under age three who do not use child day-care services) (Ministry of Social Affairs and Health, 2013).

After a rapid fertility decline during the 1960s, Finland had comparatively high fertility in the late 1970s and 1980s (**Figure 1**). However, in 1991–1994, when the earliest birth cohort in this study entered their twenties, Finland experienced a deep economic recession, with unemployment rates rising to almost 20 per cent (Haataja, 2005). Fertility did not immediately decline during the economic recession of the 1990s: instead, the TFR first increased to 1.85 in 1994 and then declined to 1.70 in 1998 (Figure 1). Prior to the crisis, Finland introduced a home care allowance for children under age three who were not in day-care, which enabled employed parents to take child-care leave with the assurance that they could return to their job. During the recession in the early 1990s, the home care allowance increased by 30 per cent and parental leave for mothers and fathers was extended, which might have limited the negative effects of unemployment on fertility during the economic recession (Haataja, 2005; Hiilamo, 2017). However, the home care allowance was sharply reduced in 1996, and the eligibility requirements for it and for parental leave were tightened (Haataja, 2005).

In the late 1990s to early 2000s, when the 1980–1984 birth cohorts entered their twenties, Finland experienced rapid economic growth, and birth rates also increased. However, following the Great Recession in 2008, the Finnish economy stagnated for about a decade and started recovering only in 2017. The TFR did not immediately decline, but reached 1.87 in 2010, and then declined rapidly until 2019, reaching a TFR

of 1.35 (Figure 1). The tempo-adjusted TFR was also decreasing in Finland over the last decade, suggesting that the postponement of childbearing to later ages does not fully explain the TFR decline (Hellstrand *et al.*, 2020). Birth order decompositions showed that more than 75 per cent of the decline in period fertility was attributable to decreasing first births while decreasing second and third birth rates accounted for 21 per cent of the decline (Hellstrand *et al.*, 2020).

Terminology: ideal number of children

An ideal number of children can refer to general family ideals (e.g., 'What would be an ideal number of children for a family?') that reflect societal norms (Philipov and Bernardi, 2012). Here, we focus on the *personal* ideal number of children, a concept often used synonymously with fertility desires, which are usually measured by asking how many children people wish to have (see, for example, Testa, 2007; Philipov and Bernardi, 2012). The personal ideal number of children can change over the life course alongside or following changes in attitudes and life circumstances (Philipov and Bernardi, 2012; Kuhnt *et al.*, 2017).

Theories on fertility decision-making and behaviour, such as the traits–desires–intentions–behaviour model (Miller, 2011), the theory of planned behaviour (Ajzen and Klobas, 2013), and the cognitive-social model of fertility intentions (Bachrach and Morgan, 2013), highlighted the relevance of fertility ideals in fertility behaviour but did not explicitly measure it. A recent study extended this framework by adding a three-step model of reproductive decision-making, where fertility ideals, along with fertility desires and intentions, play a more central role (Liu and Lummaa, 2019). According to this study, the ideal family size influences fertility desires, which, in turn, determine intentions to have children, which are realized within the constraints of life circumstances. Generally speaking, fertility ideals and desires are more abstract concepts reflecting people's attitudes and wishes about having children, whereas fertility intentions are more concrete plans regarding childbearing (Miller, 2011; Philipov and Bernardi, 2012; Liu and Lummaa, 2019). Both motivational constructs are pivotal factors associated with childbearing behaviours (Bongaarts, 2001; Miller, 2011; Philipov and Bernardi, 2012; Yeatman, Trinitapoli and Garver, 2020).

Theoretical explanations for changes in fertility ideals over birth cohorts

According to the second demographic transition theory (SDT), ideational factors and value changes are crucial for family formation in contemporary developed societies, where individual freedom of choice replaced strict marital and social norms and economic necessities as determinants of childbearing (Lesthaeghe, 2010, 2014). The spread of post-materialist or postmodern values—such as the need for individual autonomy, self-actualisation, and self-development; and consumption and leisure aspirations—go hand-in-hand with a decreased importance of having children compared to pursuing other life goals (Lesthaeghe, 2014).

At the same time, the financial resources and time investments needed to raise children have increased (Kornrich and Furstenberg, 2013; Craig *et al.*, 2014). Due to the high expectations of good parenting (so-called intensive parenting), younger people might perceive childbearing as more demanding compared to earlier generations (Craig *et al.*, 2014). This may, in turn, trigger both increases in permanent child-free preferences among younger people (Rybińska, 2020) and the desire for longer childless periods before entering parenthood, as reflected in older ideal ages at first birth (Melnikas and Romero, 2020).

Furthermore, recent societal changes, such as the spread of social media use and work-related attitudes—in particular so-called 'workism'—may have influenced attitudes regarding childbearing and family formation (Hiilamo, 2020; DeRose and Stone, 2021). Frequent social media users were more likely to postpone or forgo childbearing than less frequent social media users for reasons related to uncertainty in life and lifestyles preferences (i.e., a reluctance to change their current lifestyle and a desire to do things in life other than childbearing) (Savelieva, Jokela and Rotkirch, 2022). The importance of family and children may have also decreased due to the rising importance of work as a source of value and meaning in life, as outlined in the SDT (DeRose and Stone, 2021). According to the preference theory (Hakim, 2006), women with a work-centred lifestyle tend to have lower fertility ideals than women with home-centred or adaptive lifestyles.

Thus, based on the SDT and recent cultural and societal changes, we hypothesize the following:

> Hypothesis 1 (H1): Men and women in more recent birth cohorts were more likely to have a low ideal number of children and to endorse childfree ideals compared to earlier birth cohorts.

Socioeconomic factors and fertility ideals among men and women

Fertility ideals may have declined due to or in addition to other reasons than cultural or lifestyle changes, which we hypothesized are reflected in birth cohort changes in fertility ideals. After the Great Recession, economic uncertainty was cited as one of the reasons why Finns were postponing or not having (more) children (Savelieva, Jokela, and Rotkirch, 2022). Unemployment increased sharply starting in 2009 and

remained elevated until 2018 (CEIC, 2023). Although recession indicators do not fully explain the Finnish fertility decline (Comolli *et al.*, 2021), the decline in first births accelerated more among people with the lowest education, the weakest labour market attachment, or a job in a field with high overall uncertainty (Comolli *et al.*, 2021; Hellstrand *et al.*, 2022; Ohlsson-Wijk and Andersson, 2022). Moreover, *perceived* uncertainty about the future, which does not necessarily reflect an individual's financial or labour market situation, was suggested to play an important role in fertility preferences (Vignoli *et al.*, 2020).

Economic constraints and labour market uncertainties are important factors in fertility behaviour (e.g., Bernardi, Klärner and von der Lippe, 2008; Hofmann and Hohmeyer, 2013; Kreyenfeld and Andersson, 2014). Childbearing in developed countries is usually postponed during periods of economic crisis and uncertainty and is accelerated during periods of economic stability and growth (Sobotka, Skirbekk, and Philipov, 2011). According to the economic insecurity hypothesis, people are likely to postpone or revisit childbearing when they perceive their income and working conditions as unstable (Bernardi *et al.*, 2008). Moreover, based on the Narrative Framework, fertility preferences formed under conditions of economic uncertainty are related not only to structural constraints but also to personal narratives of the future (Vignoli *et al.*, 2020). Therefore, we would expect to see similar changes in fertility ideals across all birth cohorts in response to changing socioeconomic conditions due to the Great Recession, rather than the changes being clustered in more recent birth cohorts. Based on previous studies and the uncertainty perspective in fertility more broadly, we hypothesize the following:

> H2: Higher employment instability, lower income, and lower levels of education were associated with lower fertility ideals in all birth cohorts over the study period (controlling for age, parenthood status, and partnership status).

Gender differences in fertility ideals

Prior research indicates that the expected costs and benefits of childbearing affect men's and women's preferences differently (Liefbroer, 2005; Mynarska and Brzozowska, 2022). For women, the perceived high *cost* of having children plays a crucial role in their fertility decisions, since they face higher opportunity costs than men in terms of their career development and income (Mynarska and Brzozowska, 2022). For men, the perceived *benefits* of having children are more important factors in their fertility preferences (Mynarska and Brzozowska, 2022). Additionally, for men, the desire for parenthood is often tied to support for traditional values, whereas, for women, emotional aspects are often the main motivational factors for having children (Mynarska and Rytel, 2020). Moreover, while the capacity to maintain a household through full-time employment is essential for the fertility preferences of both childless men and women, its importance decreases after having children for women, but not for men (Neyer, Lappegård, and Vignoli, 2013).

Previous studies showed that education influences fertility preferences, especially of women, such that highly educated women are more likely to prefer to have a larger family than less educated women (Morgan and Rackin, 2010; Kuhnt *et al.*, 2017). As for fertility behaviour, a previously observed pattern of the lowest educated women having the highest completed fertility has largely vanished among recent cohorts in Nordic countries, except Finland (Jalovaara *et al.*, 2019). The lowest-educated men now have the highest levels of childlessness in all Nordic countries (Jalovaara *et al.*, 2019). If fertility ideals shifted in parallel with fertility behaviour, we would expect to see lower fertility ideals among lower-educated men, and a positive association between higher education and the ideal number of children among both men and women. Therefore, we made the following hypotheses:

> H2a: Over the study period, income was positively related to the ideal number of children among men but not among women across all birth cohorts.

> H2b: Low education was associated with a low ideal number of children among men only, while higher education was related to a higher ideal number of children among both men and women across all birth cohorts.

> H2c: Unemployment was associated with a lower ideal number of children among both men and women across all birth cohorts.

Data and Methods

Sample

The data came from six waves of the repeated cross-sectional Family Barometer surveys (2007–2018), which were conducted by Väestöliitto, the Finnish Family Federation, to study various topics related to family life and childbearing in Finland (Miettinen and Rotkirch, 2008a, 2010; Lainiala *et al.*, 2014; Miettinen, 2015b). The surveys in 2007 and 2008 were conducted as postal surveys by the Population Research Institute at Väestöliitto, and the surveys in 2010, 2014, 2015, and 2018 were conducted as online surveys by KANTAR TNS Gallup Oyj. The response rates for the postal surveys were 52 per cent in 2007 and 44 per cent in

2008, whereas the response rates for the online surveys cannot be determined. The participants in the online surveys were recruited by KANTAR TNS Gallup Oyj from the panel of participants consisting of approximately 50,000 households, which represent the Finnish population (excluding the Åland islands). The sample size for the online surveys was predetermined, and the data collection was finished once the sample size was reached.

The total sample comprised 14,667 participants (1,560–3,180 participants per survey year; Supplementary Table 1). For this study, we included only men and women aged 20–45 born in 1970–1994 who reported their ideal number of children. Thus, the analytical sample included 7,344 participants, with 482–2,041 participants per survey year (Supplementary Table 1). Compared to the Finnish population, people aged 20–24 were underrepresented in all survey years, whereas highly educated participants (having at least lower tertiary education) were overrepresented across all survey years (Supplementary Table 2). Therefore, all analyses were weighted for age and education, and gender was treated as a stratum.

Measures

The ideal number of children was self-reported in all surveys and coded as 0, 1, 2, 3, 4, 5, and 6+ children. It was asked the following questions in the successive surveys: 'The ideal number of children in my own family would be …' (2007); 'The ideal number of children for yourself would be…' (2008); and 'What is or would have been your own ideal number of children?' (2010–2018). The following birth cohorts were included in the analysis: 1970–1974, 1975–1979, 1980–1984, 1985–1989, and 1990–1994. Age was used as a continuous variable and centred at 30 years to facilitate the interpretation of the results. Gender was coded as 0 = male and 1 = female. Parenthood status was coded as 0 = childless and 1 = one or more children. Partnership status was coded as 1= single; 2 = divorced/separated or widowed; 3 = married, cohabiting, or in a registered partnership. Education was coded as 0 = basic; 1 = secondary; 2 = lower tertiary; and 3 = upper tertiary. Income was reported as personal monthly income in 2007-2008 and as annual income in 2010–2018. We recoded income into quartiles with 0 = the lowest quartile and 3 = the highest quartile for all survey years. Employment status was coded as 0 = employed; 1 = unemployed; and 2 = not working (i.e., in education or on maternal/parental/home care leave).

Statistical analysis

We pooled the data from six survey years to examine the birth cohort changes in fertility ideals. Given that the intraclass coefficient within survey years was low (ICC = 0.03, 95% CI 0.00, 0.07), indicating that only 3 per cent of the variance in the ideal number of children was attributable to the survey year, linear regression analysis was used. First, we examined the overall birth cohort changes in the ideal number of children for the total sample of men and women. In this model, age was modelled with linear (age) and quadratic (age × age) terms to account for non-linearity. The birth cohort was used as a categorical variable, and a two-way interaction term between age and birth cohort was included in the model. The model was also 0 of children. The three-way interaction with gender (age × cohort x gender) was not significant ($P > 0.05$) and dropped from further analyses. The model was written as follows and applied to men and women separately:

$$Y_i = \beta_0 + \beta_1 AGE_i + \beta_2 AGE_i AGE_i + \beta_3 COHORT_i + \beta_4 COHORT_i AGE_i + \beta_5 NUMBER\_OF\_CHILDREN_i + \varepsilon_i$$

To illustrate the birth cohort changes in the ideal number of children, we plotted adjusted predictions of the mean ideal number of children at different ages for each birth cohort.

We then examined the birth cohort changes separately for childless people and parents, due to changes across cohorts in the age at first birth and in the proportion of people remaining childless. The models were adjusted for gender, and the model for parents was additionally adjusted for the number of children. The models were written as follows:

$$y_{ichildless} = \beta_0 + \beta_1 AGE_i + \beta_2 AGE_i AGE_i + \beta_3 COHORT_i + \beta_4 COHORT_i AGE_i + \beta_5 GENDER_i + \varepsilon_i$$

$$y_{iparents} = \beta_0 + \beta_1 AGE_i + \beta_2 AGE_i AGE_i + \beta_3 COHORT_i + \beta_4 COHORT_i AGE_i + \beta_5 GENDER_i + \beta_6 NUMBER\_OF\_CHILDREN_i + \varepsilon_i$$

Given that the decline in first-order births has contributed the most to the decline in TFR in Finland (Hellstrand *et al.*, 2020), we focused on childless people to examine their probability of having child-free ideals (i.e., desiring zero children), and the mean ideal number of children among those who wanted to have children (ideal number of children > 0). We applied the two-part model using the *twopm* command in Stata 15.1 to jointly examine these associations (Belotti *et al.*, 2015). The probability of having child-free ideals was modelled using logistic regression in the first part of the model, while the mean ideal number of children above zero was modelled using ordinary least squares regression in the second part of the model. Like in the model for the total sample, the two-part model included linear and quadratic terms for age and the interaction term between age and birth cohort. The model was run separately for men and women.

Finally, the associations between socioeconomic factors with the ideal number of children were examined separately for men and women using linear regression analysis. Income and employment status were examined in separate models to avoid over adjustment. All models were adjusted for linear and quadratic terms for age, number of children, partnership status, birth cohort, and education. To aid the interpretation of the coefficients, age was divided by five, such that a one-unit increase in age on the ideal number of children corresponded to five years when reporting the unstandardized regression coefficients.

All statistical analyses were weighted for age and education and conducted in Stata 15.1 (StataCorp, 2017).

Results

Characteristics of the sample

Table 1 shows the characteristics of the analytical sample separately for men (n = 2,948, 40.1 per cent) and women (n = 4,396, 59.9 per cent). The mean age of the participants was 31.1 years. About half of the sample were childless (60.4 per cent for men and 55.0 per cent for women). The proportions of childless people to parents by birth cohort and age group are shown in Supplementary Table 3. Compared to men, women were more likely to be in a steady relationship (66.6 per cent vs. 59.5 per cent, $P < 0.001$); were more educated (e.g., 15.8 per cent vs. 11.4 per cent for higher tertiary education, $P < 0.001$); and were more likely to not be working, i.e., to be in education or on parental leave (20.2 per cent vs. 15.0 per cent, $P < 0.001$). However, men had higher incomes than women (e.g., 16.5 per cent vs. 6.5 per cent for the highest quartile, $P < 0.001$). There were no differences between men and women in the mean ideal number of children ($P = 0.093$). Almost half of the participants said two children is ideal, 20.9 per cent cited three children, 15.8 per cent said no children and 10.1 per cent cited one child.

Changes in the ideal number of children across birth cohorts

Figure 2 shows the mean ideal number of children at different ages across birth cohorts separately for men and women. The more recent cohorts had a lower ideal number of children than the earlier cohorts. These associations were more pronounced among women (Supplementary Table 4). For example, at age 30, the mean ideal number of children for women born in 1980–1984 and 1985–1989 was 1.9, which was significantly lower than the mean ideal of 2.4 and 2.2 for women born in 1970–1974 and 1975–1979, respectively. The differences in the mean ideal number of children were large until age 30 and then decreased gradually. The results were similar for men (Supplementary Table 4). In the combined sample of men and women, the results were similar to those for women only (see Supplementary Figure 1), and the three-way interactions between age, cohort, and gender were non-significant (all P-values > 0.295), which suggests that the birth cohort effects did not differ between men and women.

We further examined the birth cohort effects on the ideal number of children among childless people and parents (Figure 3). The trend was similar between childless participants and parents, with more recent cohorts reporting a lower ideal number of children than earlier cohorts. Compared to the total sample, the associations between age and an ideal number of children by birth cohort were attenuated by about half when examined only among parents, and the ideal number of children did not drop below two (Figure 3 and Supplementary Table 5). For childless participants, the associations were more similar to those for the total sample, and the ideal number of children fell below two for more recent birth cohorts. Like in the total sample, the differences in the mean ideal number of children were large until age 30 and then decreased gradually (Figure 3).

Changes in child-free ideals across birth cohorts in the childless sample

We then examined whether the decline in the ideal number of children among the younger birth cohorts was driven by an increase in child-free ideals or by a decrease in the average ideal number of children among those who wanted to have at least one child. When analysing child-free ideals, we focused on childless people, because the proportion of parents who reported having child-free ideals was very low in all birth cohorts (0–2.3 per cent; except among male parents from the 1990–1994 birth cohort (11.6 per cent); Supplementary Table 6). There were significant main effects of birth cohort, as well as interactions between age and birth cohort, on the probability of having child-free ideals: younger childless men and women in more recent cohorts had a higher probability of having child-free preferences than their counterparts in earlier cohorts (Figure 4A and Supplementary Table 7). In contrast, there were no main effects of birth cohort on the ideal number of children, and no interactions between age and birth cohort on the ideal number of children among people who wanted to have children (Figure 4B and Supplementary Table 7). Overall, these findings suggest that increases in child-free ideals among more recent birth cohorts drove the overall decline in average fertility ideals across cohorts.

Table 1 Characteristics of the sample (n = 7,344)

	Men (n = 2,948)		Women (n = 4,396)	
	% (unweighted)	% (weighted)	% (unweighted)	% (weighted)
Age				
20–24	8.7	19.8	11.5	19.7
25–29	28.0	24.8	28.5	24.3
30–34	23.0	23.4	26.4	23.5
35–39	21.5	19.6	19.2	20.3
40–45	18.9	12.5	14.4	12.1
Number of children				
0	56.3	60.4	53.5	55.0
1	24.8	21.2	26.4	22.7
2	13.6	13.1	13.5	13.9
3	4.4	4.4	5.4	6.3
4	0.6	0.6	0.8	1.1
5	0.2	0.1	0.3	0.6
6+	0.2	0.2	0.3	0.5
Partnership status*				
Single	29.0	35.3	23.2	27.3
Divorced/separated/widowed	6.1	5.2	7.3	6.1
Married/cohabiting	64.9	59.5	69.5	66.6
Education				
Basic	8.2	15.4	3.4	9.1
Secondary	38.4	54.4	31.0	46.4
Lower tertiary	33.3	18.9	42.3	28.8
Higher tertiary	20.1	11.4	23.3	15.8
Income, quantiles**				
0 (lowest)	27.0	34.6	38.9	48.5
1	21.4	23.4	29.8	28.7
2	27.4	25.5	21.0	16.3
3 (highest)	24.2	16.5	10.3	6.5
Employment status***				
Employed	76.6	69.9	72.0	65.8
Unemployed	8.3	9.8	7.7	9.0
Not working	15.0	20.3	20.2	25.2
Cohort				
1970–1974	27.3	20.6	22.8	20.8
1975–1979	29.9	22.8	26.7	24.4
1980–1984	21.3	26.5	25.0	24.8
1985–1989	13.6	17.5	15.2	17.7
1990–1994	8.0	12.6	10.4	12.2
Ideal number of children				
0	14.7	16.4	15.4	15.1
1	9.8	9.9	10.5	10.4
2	51.2	49.6	44.9	43.4
3	19.2	18.9	22.4	22.9
4	3.2	3.3	4.9	5.3
5	0.9	0.9	1.0	1.3
6+	1.1	1.0	1.0	1.6

Note. *The sample size for partnership status: n = 2,758 for men and n = 4,329 for women.
**The sample size for income: n = 2,622 for men and n = 3,749 for women.
***The sample size for employment status: n = 2,830 for men and n = 4,263 for women.

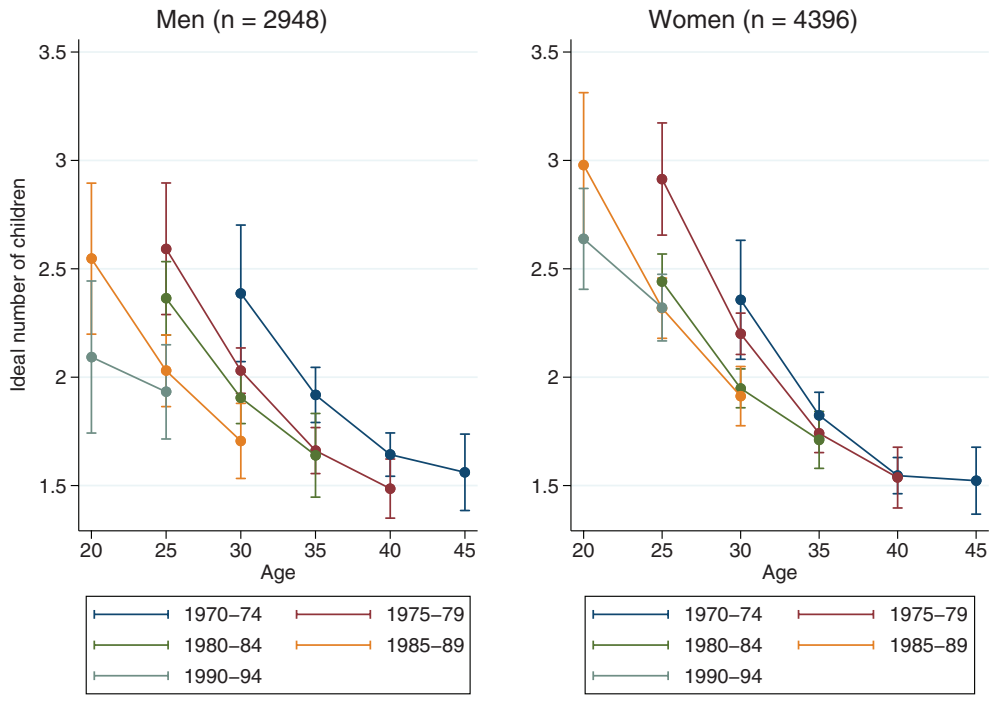

Figure 2 Adjusted predictions of the mean ideal number of children by age and birth cohort for men and women from the linear regression models (n = 7,344). *Note*. The models were weighted for age and education and adjusted for the number of children.

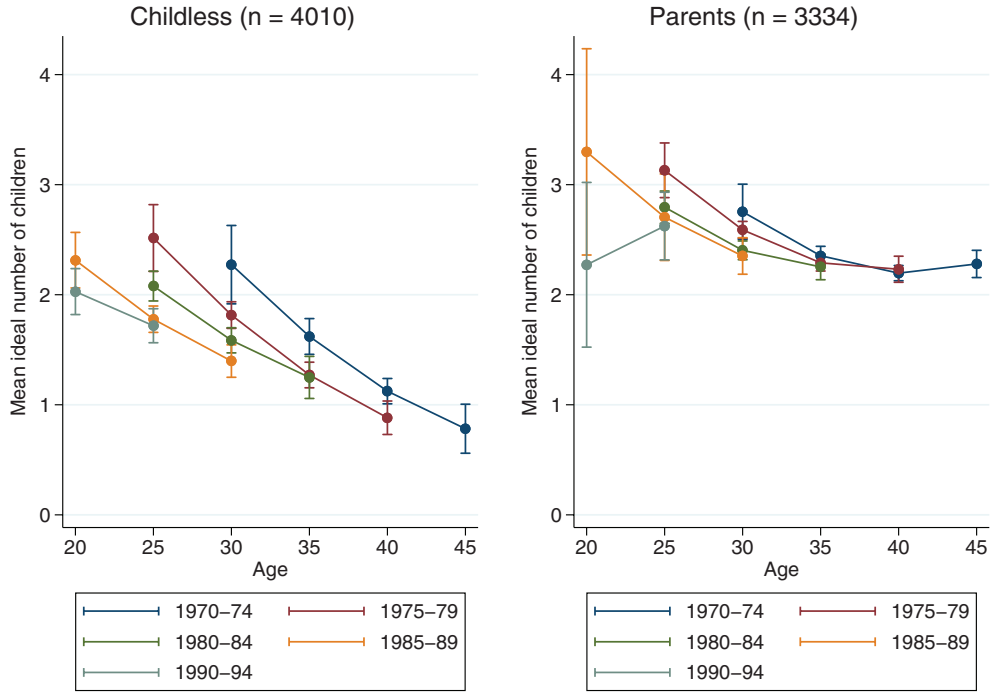

Figure 3 Adjusted predictions of the mean ideal number of children by age and birth cohort for the combined sample of men and women, separately for childless people and parents, from the linear regression models (n = 7,344). *Note*. The models were weighted for age and education and adjusted for gender; the model for parents was additionally adjusted for the number of children.

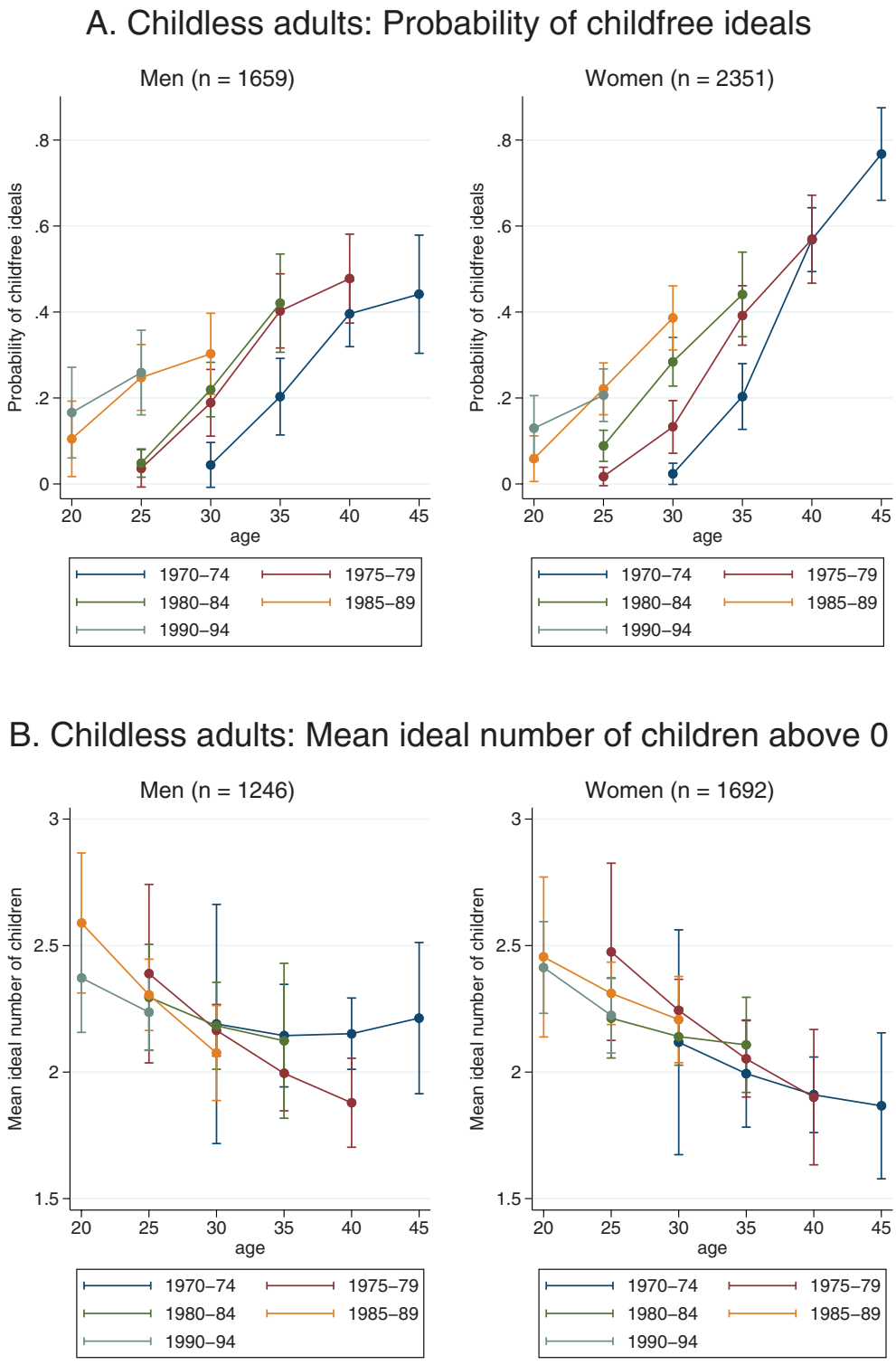

Figure 4 (A) Probability of having child-free ideals by age and birth cohort among childless men and women (n = 4,010) and (B) the mean ideal number of children by age and birth cohort among childless men and women who wanted to have children (n = 2,938).

Associations between socioeconomic factors and the ideal number of children

Finally, we examined the associations between education, income, and employment status and the ideal number of children. After controlling for age, number of children, partnership status, and birth cohort, we detected associations for education and income among men, but not among women (Table 2), and associations for employment status among both men and women (Table 3). Higher-educated men had a higher ideal number of children than men with basic education. Men with the lowest income (i.e., in the lowest income quartile) had a higher ideal number of children than men with higher income (Table 2). Finally, men who were not working at the time of the survey (i.e., in education or on parental leave) had higher fertility ideals than employed men (Table 3). Among women, being unemployed was associated with a lower ideal number of children (Table 3). In the same models, birth cohorts were still strongly associated with the ideal number of children in a dose–response manner: men and women from more recent birth cohorts wanted fewer children than men and women from earlier birth cohorts (Tables 2 and 3). Additional analyses revealed that the associations with income were present only in the 1980s birth cohorts among men (Supplementary Figure 2 and Supplementary Tables 8 and 9). Likewise, an association between unemployment and a lower ideal number of children was observed among women born in 1980–1984 and 1990–1994, while an association between not working and a higher ideal number of children was found among men and women from the 1980 to 1984 birth cohort only (Supplementary Figure 2 and Supplementary Tables 8 and 9).

Discussion

This study examined birth cohort differences in the ideal number of children among men and women

Table 2 Associations between income, birth cohorts, and the ideal number of children for men and women

	Men (n = 2,474)		Women (n = 3,713)	
	B (SE)	95% CI	B (SE)	95% CI
Age	**–0.33 (0.05)**	**–0.42, –0.24**	**–0.43 (0.04)**	**–0.50, –0.35**
Age^2	0.03 (0.02)	–0.01, 0.07	**0.06 (0.02)**	**0.02, 0.09**
Number of children	**0.49 (0.03)**	**0.43, 0.56**	**0.69 (0.03)**	**0.64, 0.75**
Partnership status				
Single	Reference	Reference	Reference	Reference
Divorced/separated/widowed	0.06 (0.13)	–0.19, 0.32	0.02 (0.13)	–0.23, 0.26
Married/cohabiting	0.09 (0.07)	–0.06, 0.23	0.07 (0.06)	–0.05, 0.19
Birth cohort				
1970–1974	Reference	Reference	Reference	Reference
1975–1979	**–0.19 (0.07)**	**–0.33, –0.05**	–0.01 (0.07)	–0.14, 0.11
1980–1984	**–0.25 (0.10)**	**–0.44, –0.07**	**–0.18 (0.08)**	**–0.33, –0.02**
1985–1989	**–0.53 (0.12)**	**–0.76, –0.29**	**–0.25 (0.10)**	**–0.44, –0.06**
1990–1994	**–0.74 (0.16)**	**–1.06, –0.42**	**–0.41 (0.13)**	**–0.66, –0.16**
Education				
Basic	Reference	Reference	Reference	Reference
Secondary	0.22 (0.11)	–0.00, 0.44	–0.07 (0.12)	–0.31, 0.18
Lower tertiary	**0.36 (0.11)**	**0.14, 0.59**	0.06 (0.12)	–0.18, 0.30
Higher tertiary	**0.36 (0.12)**	**0.13, 0.60**	0.09 (0.12)	–0.15, 0.34
Income				
0 (lowest)	Reference	Reference	Reference	Reference
1	**–0.33 (0.08)**	**–0.49, –0.17**	0.07 (0.05)	–0.04, 0.17
2	**–0.23 (0.08)**	**–0.38, –0.07**	0.08 (0.06)	–0.03, 0.19
3 (highest)	**–0.31 (0.10)**	**–0.50, –0.12**	–0.03 (0.07)	–0.16, 0.10

Note. B = unstandardized beta coefficient; SE = standard error; CI = confidence interval. Estimates in bold are significant at $P < 0.05$. Age is centred at 30 years; a one-unit change in age corresponds to 5 years.

Table 3 Associations between employment status, birth cohorts, and the ideal number of children for men and women

	Men (n = 2660)		Women (n = 4219)	
	B (SE)	95 % CI	*B* (SE)	95% CI
Age	**–0.33 (0.05)**	**–0.42, –0.24**	**–0.39 (0.04)**	**–0.46, –0.32**
Age^2	0.03 (0.02)	–0.01, 0.07	**0.05 (0.02)**	**0.02, 0.08**
Number of children	**0.49 (0.03)**	**0.43, 0.54**	**0.68 (0.02)**	**0.64, 0.73**
Partnership status				
Single	Reference	Reference	Reference	Reference
Divorced/separated/widowed	0.11 (0.12)	–0.13, 0.34	–0.01 (0.11)	–0.23, 0.22
Married/cohabiting	0.10 (0.07)	–0.04, 0.25	0.07 (0.05)	–0.04, 0.17
Cohort				
1970–1974	Reference	Reference	Reference	Reference
1975–1979	**–0.24 (0.07)**	**–0.38, –0.11**	–0.01 (0.06)	–0.13, 0.11
1980–1984	**–0.27 (0.09)**	**–0.45, –0.09**	**–0.15 (0.07)**	**–0.29, –0.00**
1985–1989	**–0.59 (0.12)**	**–0.82, –0.36**	**–0.25 (0.09)**	**–0.43, –0.07**
1990–1994	**–0.71 (0.16)**	**–1.03, –0.40**	**–0.37 (0.12)**	**–0.60, –0.15**
Education				
Basic	Reference	Reference	Reference	Reference
Secondary	**0.24 (0.10)**	**0.03, 0.44**	–0.06 (0.11)	–0.27, 0.15
Lower tertiary	**0.38 (0.10)**	**0.17, 0.58**	0.03 (0.11)	–0.18, 0.23
Higher tertiary	**0.40 (0.11)**	**0.19, 0.61**	0.07 (0.11)	–0.14, 0.28
Employment status				
Employed	Reference	Reference	Reference	Reference
Unemployed	0.08 (0.09)	–0.11, 0.26	**–0.29 (0.07)**	**–0.43, –0.15**
Not working	**0.23 (0.10)**	**0.04, 0.41**	0.10 (0.06)	–0.01, 0.21

Note. *B* = unstandardized beta coefficient; SE = standard error; CI = confidence interval. Estimates in bold are significant at $P < 0.05$. Age is centred at 30 years; a one-unit change in age corresponds to 5 years.

born in 1970–1994 using repeated cross-sectional survey data from Finland. In line with our first hypothesis, we found that more recent birth cohorts had a lower mean ideal number of children than earlier birth cohorts. For instance, compared to survey participants born in 1970–1974, those born in 1985–1989 desired, on average, 0.57 fewer children at age 30. This finding is not explained by a decline in the average ideal family size among Finns who wanted to become parents. Instead, this decline in the average ideal number of children is explained by the spread of child-free ideals in more recent birth cohorts. Furthermore, this increase in child-free ideals was driven by childless individuals born after 1985 (25 per cent and 26 per cent of men aged 25 and born in 1985–1989 and 1990–1994, respectively, said their ideal number of children was zero compared to 4 per cent and 5 per cent for men aged 25 and born in 1975–1979 and 1980–1984, respectively; the corresponding percentages for women were 22 per cent and 21 per cent compared to 2 per cent and 9 per cent).

Our results thus corroborate earlier studies showing that the personal ideal number of children has fallen below the replacement level for more recent birth cohorts in Germany and Austria (Goldstein *et al.*, 2003; Testa, 2007). At the same time, our results are consistent with Sobotka and Beaujouan's (2014) main finding concerning the persistence of the two-child norm, since most participants in all birth cohorts in our study cited two children as their ideal. However, we observed a decline in the *mean* ideal number of children over the birth cohorts and an increasing proportion of people with an ideal of zero children, which is also in line with Sobotka and Beaujouan's (2014) findings. It should also be noted that Sobotka and Beaujouan (2014) examined changes in the ideal number of children reported *in general* and overtime periods, whereas we focused on changes in the *personal* ideal number of children and over birth cohorts.

Our second hypothesis about the potential role of socioeconomic factors in the decline in fertility ideals over and above birth cohort differences was not supported: while there were some associations between education, income, and employment status and the ideal number of children, cohort differences in the ideal number of children remained strongly significant.

Therefore, our results do not support the hypothesis that declines in the average ideal number of children in Finland reflect period changes in fertility ideals. Instead, our findings suggest that the fertility decline is part of a broader cultural change, as reflected in the increased adoption of child-free ideals among people born after the mid-1980s. Although the birth cohort perspective has been little used to examine changes in fertility ideals, it is a promising tool for capturing ideational changes. Given that recent societal changes, such as the spread of social media and increased workism, have framed the socialisation of people born after the mid-1980s in developed countries (Tammisalo *et al.*, 2020; DeRose and Stone, 2021), studying changes in fertility ideals and behaviour over these birth cohorts can highlight the reasons why fertility declined during the last decade.

The expected gender differences in the associations between socioeconomic indicators and fertility ideals were partly confirmed. In line with previous studies on cost-benefit assessments (e.g., Liefbroer, 2005; Mynarska and Brzozowska, 2022), we found that income was related to the ideal number of children among men, but not among women. More specifically, men with the lowest income had a higher ideal number of children than men with higher income. In other words, low-income men wanted more children, but likely faced more economic constraints in having them. In contrast to previous studies suggesting that highly educated women have a higher ideal number of children than less educated women (Morgan and Rackin, 2010; Kuhnt *et al.*, 2017), we found no associations between education and fertility ideals among women. However, being unemployed was related to a lower ideal number of children among women. This supports previous studies indicating that in high-income countries, having a permanent job and a secure income are perceived as important prerequisites for having children, especially a first child (Brinton *et al.*, 2018). In our data, unemployment was highest among the 1985–1989 and 1990–1994 birth cohorts of women (results not shown). Future research might further examine the interplay of broader cultural changes and experiences of economic uncertainty in shaping the fertility preferences of more recent birth cohorts across Nordic countries, and how they relate to fertility behaviours.

In sum, our findings suggest that attitudes towards parenthood have changed in Finland, creating a new cultural landscape surrounding childbearing (Rotkirch, 2020). Lutz (2020) suggested that some broader cultural changes may have occurred in the Nordic countries that led to lower ideal family sizes among younger cohorts, and likely caused at least part of the decline in birth rates. While we cannot confirm this hypothesis, future studies are needed to address the reasons underlying this change. For example, life goals other than childbearing may have become more important for young adults, as more people are choosing to postpone or renounce childbearing to pursue life goals other than parenting (Miettinen, 2015a; Rotkirch *et al.*, 2017). During the 2010s, lifestyle-related factors came to play a more important role in the postponement of childbearing than economic factors or the lack of a suitable partner (Miettinen, 2015a; Rotkirch *et al.*, 2017; Savelieva *et al.*, 2022). This development is in line with the second demographic transition theory, which emphasizes the rise of individualist attitudes as one of the reasons for the falling fertility (Lesthaeghe, 2014). Such changes may also underlie the increase in the ideal age at first birth among Finns from 25.6 in 2007 for women (27.4 for men) to 26.7 in 2015 (28.5 for men) (Miettinen and Rotkirch, 2008b; Miettinen, 2015a). It would be useful to know whether these attitudinal changes indicate the desire for longer childless lifespans during early adulthood or a permanent child-free lifestyle and whether declaring oneself as child-free in early adulthood persists later in life.

Our study has some limitations. First, the phrasing of the questions regarding the ideal number of children differed slightly between the questionnaires used in the 2007, 2008, and 2010–2018 surveys. Although all the questions asked about the *personal* ideal number of children, the different phrasing (e.g., 'The ideal number of children *in my own family* would be…' vs. 'The ideal number of children *for yourself* would be…') might result in different interpretations of this question. However, after repeating the analyses without data from either the 2007 survey or the 2008 survey, the results remained the same (available from the first author). Second, as we lacked data for people from the earlier cohort (1970–1974) when they were in their twenties, we could not directly compare them to people from more recent cohorts. Third, it is possible that the selection of participants might differ between the postal surveys (2007 and 2008) and online surveys (2010–2018) due to the differences in the data collection process.

In conclusion, using repeated cross-sectional surveys from Finland, our study demonstrated that the ideal number of children decreased among more recent birth cohorts and that this development was mainly driven by a sharp increase in child-free ideals. Thus, attitudinal change is likely to be one major cause of the decline in birth rates. Since several European countries and the United States have experienced similar declines in fertility rates in the last decade, our findings suggest potential mechanisms that may be applicable to other countries as well. Future studies should examine whether this shift is also occurring in other countries and whether it is more pronounced in Finland than

elsewhere. It is also crucial to investigate the degree to which the unprecedented fertility decline currently being observed in Finland can be attributed to changes in fertility ideals. Finally, it would be useful to study the reasons why this change is occurring, and whether it translates into actual fertility behaviour.

Notes

1. Unless otherwise stated, the term 'childless' in this study refers to temporary childlessness: that is, being without children at a given time point (Houseknecht, 1987). Both involuntary and voluntary factors can contribute to childlessness. Thus, people may be childless for various reasons, including fecundity impairments, an unstable partnership or other life course constraints, or personal preferences (Houseknecht, 1987; Kreyenfeld and Konietzka, 2017). In contrast, the term 'childfree' refers to the deliberate choice not to have children (ideal number of children equals zero children), and is conceptually similar to the term 'voluntary childlessness' (Gillespie, 2000). Previous research has shown that child-free people have characteristics that distinguish them from people who choose to become parents: they are more egalitarian, and they tend to reject traditional norms and adopt non-conformist behaviour (Baber and Dreyer, 1986; Tanturri and Mencarini, 2008; Kelly, 2009).

Supplementary Data

Supplementary data are available at *ESR* online.

Acknowledgements

K.G. was supported by the Helsinki Collegium for Advanced Studies at the University of Helsinki, and the Finnish Cultural Foundation (under grant 00200993). The study is part of the NetResilience consortium funded by the Strategic Research Council within the Academy of Finland (grant numbers 345184, 345183, and 345186). Data collection was supported by the Alli Paasikivi Foundation and Väestöliitto, the Family Federation of Finland.

Author contributions

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Data Availability

The data used in this study is available from the Finnish Social Science Data Archive (https://www.fsd.tuni.fi/en/).

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