Partnering behavior is central to understanding fertility. Influential concepts, including singlehood, serial monogamy, and multiple-partner fertility, are frequently used to analyze partnering and childbearing dynamics. These concepts are evoked to understand individual and population-level patterns but are mainly analyzed at the individual level. We propose a measure for gauging the interplay between partnerships and childbearing at the population level, namely cohort fertility rates (CFR) as the sum of births under various partnership contexts. Surprisingly, demographers rarely measure and do not have a clear picture of the extent to which childbearing in different partnership contexts contributes to completed fertility. We analyze Finnish register data to decompose CFR into births across union status, union order, and reproductive partner order. Contrary to the discourse of partnering in the Nordics, births within first unions to first reproductive partners account for about two-thirds of CFR. Births in higher-order unions to first reproductive partners account for one-fifth. Single births and births with higher-order reproductive partners have a modest impact. This ranking holds across sex and educational level. We argue that the proposed measures offer a novel appraisal of population-level implications of partnerships and childbearing dynamics and provide an opportunity to understand cross-country variation in fertility patterns.

Introduction

Shortly after WWII, Europe and the United States saw a spell of high fertility alongside widespread and early marriage. This phase helped construe childbearing as homogeneous, predictable, and occurring within the benign confines of a first and life-long union—the standard partnership context for births (Coontz 2006). The trend was quickly broken, however, and followed...
by a decrease in union stability and childbearing (Cherlin 2016). These unforeseen developments propelled research on the link between various “nonstandard” partnership behaviors and fertility (Wu and Li 2005).

Grand and midrange fertility theories rely heavily on careful readings of aggregate partnering patterns (e.g., Goode 1963). The essential empirical building blocks that underpin the theory of fertility decline proposed by the second demographic transition theory (SDT), for example, include the stock of single parents, “nuclear” families (usually in reference to opposite sex couple households with biological children), stepparent households, as well as rates of divorce and childbirth outside of wedlock or across unions (Zaidi and Morgan 2017).

However, despite explicating the changing nature of partnerships as key to understanding fertility (Shanahan 2000), analyses rarely construe completed fertility as the result of partnership-specific births. The focus mostly lies on the population prevalence of household types at the macro-level (which does not convey birth conditions) or the risk of childbearing within household types at the micro-level (which does not convey the impact on population-level fertility). Given that fertility always is the result of births occurring in some form of partnership state (including outside of a union), the contribution of these partnership contexts of birth to completed fertility is worth exploring. To the extent that total fertility rate (TFR) and cohort fertility reflect broad patterns of childbearing patterns of populations, the large and multifaceted literature on the relationship between partnership forms and childbearing behavior can be complemented by analyses that quantify and decompose cohort fertility by partnership context of birth.

A key sociological insight into childbearing and partnerships is that the two processes are fundamentally gendered and socioeconomically stratified. The prevalence of and rates of partnership formation and dissolution often show a strong educational gradient. The workhorse models for predicting childbearing—income effects and opportunity costs—have until lately been congruent with the observed reversed educational gradients in fertility for men and women. Recent work suggests a propelled trend towards increasingly pronounced polarization in partnership practices across educational groups (and across socioeconomic strata in general) (Jalovaara, Andersson, and Miettinen 2021). Simultaneously, there is evidence suggesting that childbearing is becoming more similar for men and women of the same socioeconomic status (SES) (Kolk 2020). Gender differences and educational differences in childbearing and partnership behavior may also be interrelated, as suggested, for example, by a large literature on men’ “repartnering advantage” (e.g., Di Nallo 2019).

In this study, we analyze how cohort fertility as the sum of births in different types of partnership contexts and the extent to which this differs for men and women and across educational groups. Surprisingly, the literature dedicated to this area of discussion is scant, with the notable
exception of Thomson, Gray, and Carlson (2020), who studied the contribution of multi-partner fertility to period fertility rates in the United States and Europe. This research gap is unfortunate because knowing the share of fertility, particularly cohort fertility, attributable to a specific partnership context of birth helps to understand the nature of partnering and fertility, as it provides cues of the conditions under which childbirth is practically feasible or normatively appropriate. It adds perspective to the project of assessing diversity in family and life course experiences (Settersten and Mayer 1997): In extant measures, partnership behavior and childbearing behavior are presented as separate statistics or with a focus on civil status, such as the share of children living in a given household type or the fertility rate of married or non-married populations. In contrast, partnership contexts of birth illustrate a relationship between birth context and cohort fertility rates (CFRs). This approach also enables an objective assessment of popular perceptions about partnerships and childbirth. For example, although discourse on SDT forerunner societies and “modern dating” portray the sequence of co-residing relations before entering parenthood as ubiquitous (Rubin 2020), empirical research is yet to quantify just how this is reflected in fertility at the population level. Moreover, portraying the childbearing context of births across gender and educational level is it enables a birds-eye account of societal-level homogeneity and heterogeneity of the partnership–childbearing nexus across these salient social categories.

To quantify the link between partnership context of birth and completed fertility, we use Finnish register data on yearly observations of partnerships and fertility of complete birth cohorts of women aged 18–45 and men aged 18–50. We decompose cohort fertility by union birth contexts across three overlapping dimensions that are frequently represented in the literature on partnering and fertility (multi-partner fertility, singleness, and serial monogamy). Specifically, we distinguish between birth within/outside a union, births in a first/higher-order union, and births to a first/higher-order reproductive partner. We analyze heterogeneity across gender and educational levels to assess these patterns’ universality. We ask (a) what amount of CFR is due to birth from the respective partnering contexts? (b) Are there substantial disparities across educational levels and between men and women? (c) To what extent is it possible to delineate patterns of “standard” or “nonstandard” partnering contexts?

Background and theory

The “modal” partnership context of birth

Historical data on illegitimacy and remarriage in monogamous Western societies indicate that for the vast majority, the person with whom one first formed a household was also one’s lifelong reproductive partner (Goody
The dominant pathway during the first half of the twentieth century was from a family of origin into (one) family of reproduction. The ubiquity of the nuclear family trajectory is rather overestimated, however: Around 1950, nonmarital childbearing or divorce occurred among one in five US white women (Wu and Li 2005). Nevertheless, childbirth within the first-and-only enterer union represented the most common behavior (for brevity, we will refer to this partnership and childbearing behavior as the “modal trajectory”).

Today, being partnered remains highly predictive of childbirth (Aassve et al. 2006). The modal trajectory is strongly associated with the vernacular “traditional family” and is enmeshed within a male-breadwinner–female housewife model (Raybould and Sears 2021). Yet, beyond this observation, the relationship between partnering and childbearing pertaining to the “traditional family” has changed dramatically over the last decades (Cherlin 2016). Key changes in the relationship between partnering and childbearing include the rise of non-marital cohabitation, the postponement of childbirth, the increase in union dissolution, and repartnering and family complexity (Thomson 2014). In the following, we engage with the empirical work on the interplay between partnership and childbearing. Thereafter, we discuss key theoretical frameworks and concepts in which these phenomena are interpreted. Finally, we present the measure of partnership context of birth and argue for its relevance to understanding patterns of childbearing and partnerships as an overarching mode or “regime” for fertility.

The interrelationship between partnerships and childbearing

Repartnering and childbearing in higher-order unions. One dimension of the modal trajectory of childbearing described above is that childbearing occurs mainly in the first-ever entered union. In many countries, as a first-time union forms in early adulthood, cohabitation has largely superseded marriage during the last 50 years (Billari and Liefbroer 2010; Elzinga and Liefbroer 2007). Legal and sociocultural connotations aside, a key difference between marriage and non-marital cohabitations is that the latter is less durable and more often ends in union dissolution (Sobotka and Toulemon 2008). As such, partnerships have become more transient (e.g., Heikel and Fulda 2018; Liefbroer 1999). Across countries, repartnering occurs in one to three-quarters of the ever-separated (e.g., Beaujouan 2012; Skew, Evans, and Gray 2009; Z. Wu and Schimmele 2005); In 2000, two-fifths of US marriages were higher-order marriages of one or both spouses (Lewis and Kreider 2015). Drawing on this basic observation, scholars have advanced the idea that the association between the first partnership and childbearing has been partially disrupted (e.g., Dommermthand Wiik 2014). Indeed, cues from period fertility rates in Australia suggest that as much as one-third of TFR could be from births in higher-order unions (Gray and Evans 2018).
A number of studies have focused on SES and gender as predictors of entering higher-order unions and childbearing in higher-order unions. A majority of studies conclude that men are somewhat more likely to re-marry (e.g., Livingstone 2014; Payne 2018; Shafer and James 2013; Z. Wu and Schimmele 2005) and repartner (Beaujouan and Ní Bhrolcháin 2011; de Graaf and Kalmijn 2003; Maslauskaité and Baublyté 2015; Poortman 2007). This “male repartnering advantage” is suggested to originate from norms and preferences such as acceptable age ranges, which improve the marriage market for men relative to women (Gelissen 2004; Goldscheider and Sassler 2006; Lampard and Peggs 1999). Others contend that (first) union dissolution place women, more often than men, in a precarious situation that may hamper repartnering (Boertien and Lersch 2021; Poortman 2007; McDonald 2020). A related hypothesis is that custodian obligations limit repartnering for women but less so for men (Koo, Griffith, and Suchindran 1984). There is some evidence that gender differences in repartnering are smaller among the nulliparous (Beaujouan 2012; de Graaf and Kalmijn 2003; Di Nallo 2019; Gray 2015; Ivanova, Kalmijn, and Uunk 2013; Steele et al. 2005), while the role of parental involvement is somewhat unclear (Berger et al. 2018; Di Nallo 2019; Schnor, Vanassche, and Van Bavel 2017; Skew, Evans, and Gray 2009; Vanassche et al. 2015). The most prevalent view on socioeconomic differences in re-partnering is that higher SES is more advantageous for male repartnering. Shafer and James (2013) find a positive socioeconomic gradient in remarriage for men but not for women in the United States, as does Maslauskaité and Baublyté (2015) in four European countries, whereas Hiekel and Fulda (2018) find no educational gradient in serial cohabitation in Germany. A complementary hypothesis with some empirical support (Andreß et al. 2006) is that economic precarity and custodian demand for repartnering is greater among (low SES) leading to a negative SES gradient in repartnering for women but not necessarily for men. No consistent gender differences have been reported regarding birth risk (Ivanova, Kalmijn, and Uunk 2014; Vanassche et al. 2015) or childbearing intentions (Stewart 2002) in higher-order unions. Critically, some projections suggest that in the coming decades up to 10 percent of TFR will occur in women aged 40 or older (Beaujouan and Sobotka 2022). Childbearing postponement itself increases the time for union formation and dissolution to unfold and thus may increase exposure to births in higher-order unions, and the characteristics of this delay with respect to childbearing and childlessness have been found to vary systematically across SES (e.g., Lazzari 2022).

Childbearing with more than one partner. A second pillar of the modal trajectory of partnerships and childbearing is that births tend to occur with one single partner. Cross-sectional estimates suggest that among parents of two or more children in recent cohorts, between 5 and 20 have reproduced with more than one partner (Monti 2018; Thomson, Dahlberg,
Svallfors 2021). The share of Multiple partner fertility (MPF) parents, where the preceding birth occurred in singlehood, differs from 6 percent to 20 percent across countries (Thomson, Dahlberg, and Svallfors 2021). The share of period TFR due to births with higher-order reproductive partners has been estimated to vary from 9 percent in Sweden, France, and Norway to up to 20 percent in the United States (Thomson, Gray, and Carlson 2020).

At the individual level, the “value of children” and “commitment” hypotheses state that in partnerships where one or both partners have a child with another person, having a biologically shared is particularly important to strengthen the relationship and to alight with conventions and norms of family formation (Griffith, Koo, and Suchindran 1985). A similar argument maintains that new partnerships revigorated the process of family formation (Holland and Thomson 2011). In both cases, the likelihood of having a second or higher-order birth is predicted to increase with a new partner compared to the reproductive partner of the first childbirth. Other perspectives see MPF and potentially higher childbearing therein as a result of more as a trajectory of unplanned partnering and childbearing behavior (Guzzo 2017), while others argue that the complexity and effort of maintaining a stepfamily may impede childbearing. At the aggregate level, these processes have formed a debate about whether the antecedent to MPF—union dissolution—is an “engine to fertility” or reduces fertility (Thomson, Winkler-Dworak, and Kennedy 2013). The evidence is mixed. Some studies suggest that advanced parity progressions are higher in repartnered compared to first unions (e.g., Vikat, Thomson, and Hoem 1999), while others tend to show that children from previous unions have a negative effect on childbearing in higher-order unions for men and women (Buber and Prskawetz 2000; Kalmijn and Gelissen 2007; Stewart 2002; Wineberg 1990). Aggregate evidence from Finland suggests that overall, MPF does not make up for fertility loss due to union dissolution (Andersson et al. 2022).

The processes leading up to MPF (age at first birth, civil status, union dissolution) have a strong socioeconomic gradient (Thomson 2015). First births in cohabiting unions tend to result in separation at a higher rate for less educated individuals (Perelli-Harris et al. 2012; Lichter et al. 2016), and MPF is prevalent in groups with high rates of union dissolution, such as socioeconomic disadvantages (Guzzo and Furstenberg 2007; Manlove et al. 2008; Monte 2018; Thomson et al. 2014; Jalovaara, Andersson, and Miettinen 2021). MPF, along with family complexity and a high number of family re-constitutions, is sometimes seen as a facet of socioeconomic disadvantage (McLanahan and Percheski 2008). In contrast, there is less consensus regarding SES differences in the risk of MPF contingent on union dissolution and repartnering. Prevalence of MPF appears to be marginally higher for women compared to men—recent figures from the United States suggest a two percentage point gap (Monte 2018)—although high SES sometimes
see a higher risk of parity progression conditional on remarriage (Lappegård and Rønsen 2013).

**Singlehood.** The third and final aspect of the modal trajectory of partnerships and childbearing is the overwhelming dominance of childbearing in unions. Prevalence of singlehood (not married or in a cohabiting relationship) shows a flat trend in Finland at about 50 percent at the ages 25–30 and decreasing with age to about 30 percent at the ages 45–49 (Jalovaara and Andersson 2023). Research on lifetime childlessness tends to find that never-partnering or long-term singlehood forms a substantive proportion of the childless (Jalovaara and Fasang 2017) and that having never-partnered in midlife predicts future nulliparity (Mikolai 2017) and current fertility expectations (Hayford 2009). Childlessness is often found to be associated with union instability (Hart 2019; Tanturri and Mencarini 2008) or expressing concerns about not finding a suitable partner (Berrington and Pattaro 2014).

Despite notions of individualization and a relative increase in the economic feasibility of single householding for men and women, partnership formation remains a highly ranked priority among men and women (Smart and Shipman 2004). Recent theoretical perspectives highlight an enduring trend in valued partnerships (Bergström and Moulin 2022). In France, the median age at first co-resident increased from 23.8 to 26.0 among the generation born at the beginning of the 1950 to 1970 birth cohorts. Yet, individuals engage with their partner at about the same age; what is postponed is the sequential move from dating to cohabitation and marriage.

The educational gradient in the transition from singlehood to first cohabitation differs across countries for women, potentially suggesting that opportunity costs to partnerships remains important for women’s partnership trajectories (Mikolai, Berrington, and Perelli-Harris 2018); in contexts supportive of dual-earner and caretaker models, singlehood shows a clear negative socioeconomic gradient for women as well as men (e.g., Erola and Kilpi-Jakonen 2021). In most high-income countries, men are more often nonpartnered than women (Andersson Thomson, and Duntava 2017; Sandström and Karlsson 2019; Jalovaara and Andersson 2023), and childless men are also more likely to never have been partnered (Bellani, Esping-Andersen, and Nedoluzhko 2017; Jalovaara and Fasang 2017). These gender difference in never-partnering is often explained by partner preferences and norms related to SES, where low-SES men are more disadvantaged than low-SES women in the partner market (Walter et al. 2020). For women, never-partnering by age 30 negatively predicts first birth in Western and Northern Europe while the opposite is true in Southern and Eastern Europe, suggesting that union trajectories and their relationship to childbearing vary by context (Mikolai 2017). Likewise, disadvantaged groups are more likely to have conception outside a union, also more likely
to remain single following childbirth, and less likely to enter stable unions (as measured by civil status) (Lichter, Sassler, and Turner 2014).

Theoretical perspectives on the partnership context of birth

No unified theory exists that purport to make sense of the multitude of changes in demographic behavior and their resulting life course trajectories. Frameworks that do theorize the partnership context of birth within a comprehensive societal or historical process include SDT theory, extensions of the new economics of the household, and the concepts of life course destandardization. Likewise, heterogeneity in partnership context across SES, gender, ethnicity, and more, have been analyzed using concepts such as diverging destinies (McLanahan 2004) or patterns of disadvantage (POV) (e.g., Perelli-Harris 2011). SDT theory addresses changes in partnership practices, such as divorce, as a response to self-actualization in the absence of social cohesion by kin, religious institutions, and the wider community. However, SDT and modernization theses do not propose a “deep” transformation of partnerships and childbearing; the core importance for childbearing of establishing an enduring partnership is not questioned. Critical scholars have proposed that contemporary societies well could encompass—but actively repress—single households, multiple-adult households, and nonresiding parents, as the foundation for childbearing and parenthood (Berkowitz 2009). Legislation or advocacy against nonconfirmative partnerships is here considered part of the preservation of patriarchal and heteronormative modes of reproduction (Stacey 2006). Other perspectives highlight the partnership context of birth as a reflection of the household economy (de la Croix and Doepke 2003). Here the journey from (prescribed) universal marriage to ‘serial monogamy’ occurs because the sum of economic constraints no longer motivates a widespread practice to a single reproductive partner or a single life-long union, leading to a shift in the entire “fertility regime,” including associated cultural changes. Finally, partnership contexts of birth have been discussed in terms of life-course (de)-standardization or differentiation (Elzinga and Liefbroer 2007; van Winkle 2017 2020). Here, the issue at heart is whether the variance has increased or decreased over cohorts regarding (among other things) the sequence and timing of partnership formation and parenthood status across the life course.

Strains from the above theory are also drawn upon to understand socioeconomic and educational gradients in the partnership context of birth. Arguments on SES gradients in cohabiting versus marital childbearing have posited explanations of ideation and individualism as championed by SDT against the notion of POV (Perelli-Harris 2011). The latter argues that the bulk of single and cohabiting births (and the negative socioeconomic gradient therein) is driven by women’s lack of finding a partner feasible for a
stable marriage and thus the result of deprivation or absolute poverty. A similar argument lends itself to partnership contexts of birth more broadly. For example, singlehood and higher-order partnership and childbearing therein may see either a positive gradient (as predicted by SDT, at least during periods of ideational transformation) or a negative gradient as predicted by POV.

**Study contribution**

In summary, a rich empirical literature examines the individual-level contingencies and determinants of partnerships and births in different partnership contexts. Moreover, core demographic theory is concerned explicitly or implicitly, with the partnership context of birth. What, then, is the added value of a macro perspective of partnership contexts of birth as presented in this study?

First, the argument presented by notions of “partnering regimes” and fertility regimes as well as the explanatory focus of SDT theory, all pertaining not only to patterns of prevalence or timing of partnering forms and childbearing but to how population-level fertility is achieved with respect to partnering. Yet, aggregate empirical cues on how partnerships contexts reflect on fertility are fragmented, focus on single partnership-related behaviors, alter the denominator by conditioning on previous events such as divorce, often draw on period measures or age-truncated measures, and often for one sex rather than the full population (mainly women). On the other hand, while the concepts of the grand theory inform research questions in individual-level studies, the results do not readily measure or inform understanding of how childbearing reflects on the population-level fertility. Naming conventions further spread conceptual incongruence. For example, as noted by Thomson and colleagues (2020), the term MPF is a misnomer because while the term implies a population rate, it is mainly used in reference to individual propensities rather than to describe the fertility of a population by order of the reproductive partners.

This study provides a systematic aggregate-level account of cohort fertility across partnership contexts of birth. Moreover, the proposed analysis allows us to parsimoniously link palpable midrange theory concepts of partnership from individual-level studies (singlehood, higher-order unions, MPF) with cohort fertility. The resulting description caters to broad questions of the above-mentioned theories, such as whether we see a strong modal form or rather heterogeneous types of reproduction in contemporary societies. We know from previous research that the exposure to birth outside the “traditional” first-entered union has an SES gradient—union dissolution, higher-order unions, and reconstituted households all are more prevalent in low SES groups on average. Yet, there is no consensus regarding socioeconomically stratified patterns of childbearing in these
contexts. Providing cues to the stratification of aggregate reproduction with respect to the partnership context of births, complement existing assessments of POV.

Finally, the question of where children are born has accumulated a host of popular narratives. Folk and media accounts of contemporary family and partnering practices often argue that transitioning through relationships and MPF represents the new “normal” pathway in terms of childbearing (Rubin 2020). Yet, the magnitude of these predictions remains conjecture, as few studies link partnership context to cohort fertility. Importantly, in practice, the rise of divorce and family complexity need not at all translate into heterogeneity concerning the partnership context of childbirth. Even if the number of single parents increases, single births can remain rare; that an increasing number of children live in reconstituted families need not imply that a substantial fraction of all children born is born in these households. Such moderate predictions find support in sociological theory. The cultural scripts (Bellah et al. 2007; Swidler 2001) that influence partnerships across the life course are not necessarily the same as those that affect childbirth at a given point in time. Ethnographic work shows that while people morally approve of divorce/separation from children, they at the same time see the establishment of stable relationships as the main hurdle and necessary condition to childbearing (Bäck-Wiklund and Johansson 2012). The same duality appears on the institutional level. Many countries have adopted no-fault divorce, individual rather than household taxation, and welfare transfers that support single households. Yet, the socialization of childcare and housing policies in these same countries typically promotes childbearing within couple (two-headed) family units (Nieuwenhuis and Maldonado 2018; Orloff 2009). Empirical data of how births in specific contexts relate to fertility, therefore, carry significance as cues for how reproduction is structured and complement extant statistics on household structure and childbearing.

Estimates on what Settersten and Mayer (1997) call “demographic biographies” include cohort prevalence of childbearing-marriage sequences (Wu and Li 2005), parity progression by reproductive partner (Thomson et al. 2014), comparing cohort fertility to married and remarried individuals (Van Bavel, Jansen, and Wijckmans 2012), or decomposing cohort fertility into age-specific births (Beaujouan and Sobotka 2022). Such studies inform on life course events in the nexus of childbearing and partnering relate to aggregate fertility.

As an additive to this battery of demographic biographies, we argue, measures that explicitly quantify cohort fertility as the sum of births across partnership contexts can provide novel relevant perspectives on family dynamics. We know of only one study that takes this approach: Thomson, Gray, and Carlson (2020) used the gender and generations surveys and synthetic cohorts to describe the share of period fertility due to births
to higher-order reproductive partners and in a state of singlehood. They find that MPF contributes between 3 percent and 12 percent of fertility and that country-wise differences in this share were not associated with TFR. This study seeks to improve on this seminal work and argues that it is necessary to (a) use a comprehensive schema of partnership states rather than focusing on one particular behavior, (b) study patterns across salient societal groups with known disparities in partnering and childbearing, and (c) move from a period to cohort fertility perspective, as the former is known to distort union-specific estimates of fertility (Hoem and Mureşan 2011; van Imhoff 2001).

The chief contribution of the present study is to describe how cohort fertility comprises births across several fundamental partnering contexts. Drawing on unique population-wide sources of co-residence and fertility of the total reproductive period of four entire birth cohorts, we can assess this question with great accuracy and at a granular level.

A Schema for births in standard and nonstandard partner contexts

We delineate three dimensions of union context of birth: the union (birth within vs. outside union), the union order (birth in a first vs. higher-order union), and reproductive partner order (birth to a first vs. higher-order reproductive partner). These dimensions are chosen because they (a) have precedence in influential concepts in family sociology, (b) are building blocks to more complex relations, (c) are not mutually exclusive but intersect to form a complete schema, and (d) are fairly objective rather than socioculturally contingent measures, thereby facilitating comparability for future research (Thomson 2015).

The Venn diagram in Figure 1 overlays the states’ birth outside union (blue), higher-order union (red), and higher-order reproductive partner (green). This produces seven different union contexts. The eighth and final possible union context, not visualized in Figure 1, is the presumed modal birth context: a birth within a union, which is also the index person’s first union, to a first reproductive partner. Note that a necessary condition of a union order distinction is that a first union and a first union dissolution take place: A higher-order union birth is just one out of many potential contexts of births following first union dissolution. Therefore, we use the event of union dissolution to delineate the union order dimension.

To illustrate this argument, consider a hypothetical population where cohort fertility is driven to a substantial extent by birth within higher-order unions (category B in Figure 1). Under this “serial monogamy fertility regime,” the standard pattern of giving birth in one’s first union is abandoned. Union dissolution and repartnering before entering parenthood are so prevalent that childbearing mainly occurs in higher-order unions. The first union is no longer predictive of first births and gains a different
FIGURE 1  Venn diagram of partnership contexts of birth. Union status (single) to the upper left, union order (after first union dissolution) to the upper right, reproductive partner order (higher-order reproductive partner) center-bottom. The birth contexts of in union, to first union, to first reproductive partner were excluded from the diagram.

Excluded from Venn diagram: Birth in first union, to first reproductive partner: “Modal pattern”.
A: Birth within union, in first union, to higher-order reproductive partner.
B: Birth within union, in higher-order union, to first reproductive partner.
C: Birth within union, in higher-order union, to higher-order reproductive partner.
D: Birth outside union, before first union dissolution, to first reproductive partner.
E: Birth outside union, after first union dissolution, to first reproductive partner.
F: Birth outside union, after first union dissolution, to higher-order reproductive partner.

meaning in terms of entry into adulthood. Yet, couplehood remains the norm, as does the behavior of settling with one single companion to pursue childbearing (Andersson 2015; de la Croix and Doepke 2003). Alternatively, cohort fertility could primarily be the product of individual births to different reproductive partners (category D in Table 1). Here, individuals do not pick a reproductive partner for life but distribute childbearing between unions and hence serial monogamy takes on a very different meaning.

The Finnish context

Union instability, repartnering, and complex family formations are fairly prevalent in Finland, and the country is considered a forerunner in second demographic transitions (Lesthaeghe 2010). A high level of female labor market participation (FLMP) and pro-natal, pro-FLMP social policy counter, relative to many contexts, the obstacles and unfavorable consequences of union separation (Eerola et al. 2019). Recent research has
highlighted in particular a strong educational gradient in fertility (Jalovaara et al. 2018) particularly male fertility (Nisen et al. 2014) and separation rates from both cohabitation and marriage (Hellstrand, Nisén, and Myrskylä 2022), although union instability, in general, does not seem to drive the sharp decline in fertility rates experienced by the country since the 2010s (Hellstrand, Nisén, and Myrskylä 2020, 2022). Importantly, the country has the longest-running administrative registration of co-residence. This provides a unique opportunity to examine our research question using cohabitation as well as marriage, and from a cohort rather than synthetic cohort perspective, and at the highest possible level of statistical certainty and granular detail. Table 1 gives an overview of results from research key markers of the relationship between partnership and fertility roughly pertaining to the cohorts used in the present study. We focus particularly on studies covering both men and women and that contrast results by educational level. Some overarching patterns include that partnering and fertility behavior show a strong educational gradient. For example, the share of parents with birth to more than one reproductive parent is 32 percent among low-educated women and 14 and among highly educated women. The possibility for variation in union contexts of birth is relatively high, supporting the relevance of Finland as a context for our analyses because about two-fifths of men and women have repartnered by age 45.

Methods

Data

We used Finnish register data comprising yearly individual-level information on births and co-residential union status. Our population covered the entire female birth cohort of 1969–1975, which we follow from age 18–45 ($N = 239,577$). The male birth cohorts from 1969 to 1970 are followed to age 50 ($N = 58,123$). A condition for inclusion was being registered in Finland from their 18th birthday till the age of 45 (or age 50 for men), so as to obtain complete partnership histories. Statistics Finland documents cohabiting unions from 1987, based on individuals' residence. Cohabitation union status is assigned to individuals that share a dwelling with a nonrelative of the opposite sex for more than 90 days, who are no more than 20 years apart in age (unless married or have common children). This method, sometimes called the POSSLQ approach (people of the same sex sharing living quarters), is used in a number of studies using register data in Finland, Norway, Sweden, and elsewhere (Jalovaara and Kulu 2018; Kennedy and Fitch 2012). Union dissolution is measured both by bereavement and union separation. Birth records are close to complete and very reliable.
### TABLE 1  Summary of metrics on partnering and fertility in Finland across sex and education

<table>
<thead>
<tr>
<th>Educational level (if specified)</th>
<th>Men</th>
<th></th>
<th></th>
<th>Women</th>
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<th></th>
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<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Childlessness (%)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>36</td>
<td>28</td>
<td>21</td>
<td>22</td>
<td>21</td>
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<td>CFR (rate)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.35</td>
<td>1.7</td>
<td>1.85</td>
<td>1.88</td>
<td>1.9</td>
<td>1.9</td>
</tr>
<tr>
<td>PPR1 (%)&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>17</td>
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<td>PPR2 (%)&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>39</td>
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<td>32</td>
<td>40</td>
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<tr>
<td>MPF among parents (%)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>28</td>
<td>15</td>
<td>14</td>
<td>32</td>
<td>19</td>
<td>12</td>
</tr>
<tr>
<td>Separation rates age 30–34 (separation per 1000 unions)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>117</td>
<td>70</td>
<td>44</td>
<td>105</td>
<td>71</td>
<td>40</td>
</tr>
<tr>
<td>Share in marriage or cohabitation at age 30–34 in 2019 (%)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>40</td>
<td>56</td>
<td>68</td>
<td>45</td>
<td>65</td>
<td>73</td>
</tr>
<tr>
<td>Experienced first partnership by age 22</td>
<td>50</td>
<td>77</td>
<td>90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experienced first birth by age 22</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative incidence of first birth by years in union 5</td>
<td>0.61</td>
<td>0.82</td>
<td>0.87</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never partnered</td>
<td>partnered once</td>
<td>ever repartnered (%)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>12</td>
<td>51</td>
<td>37</td>
<td>8</td>
</tr>
</tbody>
</table>


<sup>c</sup> Jalovaara and Andersson (2023).


<sup>e</sup> Andersson, Jalovaara, Ugla, and Saarela 2022 (1969–1972 birth cohorts, measured up to age 45).
Analytical strategy

We constructed partnership contexts based on information on individuals' union status at a given year (risk of birth in or outside a co-residing or marital), on the union trajectory status (risk of birth in a first union or higher-order union), and on the parental trajectory status (risk of birth to a first or higher-order reproductive partner). A person was considered at risk of birth in a standard partnership context if he or she is in a (first) union and childless or with a partner who is also the first and only reproductive partner—a birth in a first union to a first reproductive partner. Any union beyond the first (e.g., second, third, and onward) was measured as exposure to the risk of birth in a higher-order union. Likewise, any reproductive partner beyond the first was measured as a higher-order reproductive partner. We differentiated between the risk of birth in union and outside union, and between the risk of births outside union, that occur before and after a first union dissolution. A person was considered at risk of birth to a higher-order reproductive partner if that person was a parent and had separated from their first reproductive partner or if the person was a parent and had never resided with the first childbearing partner. Tables A1 and A2 in the online Appendix shows the person-year exposure and births of the combination of possible states based on union status, parental, and union trajectory.

Finally, we quantified the fraction of CFR that could be attributed to births in a given partnership context. In Equation (1), we calculated age-specific fertility rates (ASFR) for each age $n$ and state $x$ ($f_{nx}$) and multiplied this rate by the share of women at each age and in each state ($p_{nx}$), and took the sum of this measure (see Barclay and Kolk 2020 for similar applications using cohort fertility). These main analyses were meant to establish the baseline minimum level of union context of birth heterogeneity across key dimensions of partnering. It considered the individual’s point of view but not the partner’s union or reproductive partner history. In additional analyses, we discriminated birth events by the other partner’s union and reproductive partner history. Because we were interested in the total cohort fertility, we focused our study on all births and their respective birth context, rather than analyzing parity-specific birth. However, in supplementary analyses, we reiterated Equation (1) for first and higher-order births, separately.

We performed the same exercise for separate educational groups. We used the highest level of education attained by age 45 and dichotomized it into one group with tertiary education and one group without, using the 2012 ISCED schema (UNESCO 2012). We used the educational level as a stratifying variable instead of income because women’s educational levels at age 45 were not sensitive to yearly fluctuations and did not change due to childbearing. At the same time, it was a valuable resource as human capital. Previous research has shown substantive differences in partnering, fertility,
and other demographic behaviors across educational levels (Dronkers and Härkönen 2008; Hoem 1997; Jalovaara et al. 2021; Kalmijn 2013; Perelli-Harris et al. 2010; Sandström and Karlsson 2019; Testa and Stephany 2017; Van Bavel 2014; Wood, Neels, and Ki 2014). The main results are presented for men and women across educational levels. For parsimony and ease of interpretation, some of the intermittent analyses with the purpose of clarifying the process of deriving our measures, are presented for women only (for these analyses, results across sex and education are given in the supplementary material).

\[
CFR = \sum_{n=1}^{\text{fnn}} f_{nx} \cdot p_{nx}.
\]  

Results

Main results

Figure 2 describes the CFR as the sum of age and union-specific fertility rates (ASFR) for men and women with tertiary and nontertiary educational attainment. CFR is measured to age 45 for women and to age 50 for men. For women with nontertiary education, plot A shows that of a CFR of 1.94. About two-thirds (64.6 percent) of this fertility is derived from births in a ‘modal trajectory’: births in a union, which is also the first entered union, and to a first reproductive partner; while women with tertiary education (plot B) see about 5 percentage points more of CFR due to such births (71.4 percent). Men with nontertiary education have a CFR of 1.61 and two which is comprised of two-thirds of modal-trajectory births, while men with tertiary education have a higher share of CFR (73.6) due to such births. Thus, for a large majority of the most recent cohort for which we can assess completed fertility in Finland today, births take place under the circumstances often associated with a ‘traditional’ partnership context of birth. However, a substantive minority, about one-third of CFR, are from other types of partnership contexts. This means that births either occurred outside of a union, in higher-order unions, or with a higher-order reproductive partner. Births in such partnership contexts are marginally more common for women than men, and more common for individuals without tertiary education; the highest discrepancy is found for men where nonmodal births were 7 percentage points higher share of CFR among nontertiary educated compared to the tertiary educated population.

Before turning to analyze the full combination of partnership contexts across Gender and educational level, we more closely analyze the separate partnering dimensions of union status (a), union order (b), and reproductive partner order (c). For parsimony, we now give estimates for all women. Corresponding figures for men are found in the appendix (Figures A1–A3 in the online Appendix). Figure 3 shows that, for women, single births account

(a): Women, non-tertiary education

(b): Women, tertiary education

(c): Men, non-tertiary education

(d): Men, tertiary education
for 4.4 percent of CFR, while births after a first union dissolution account for almost one-third. Birth to higher reproductive partners, in other words, multipl-epartner fertility, accounts for roughly 7 percent of CFR. Each of these dimensions can overlap. For example, the majority of births outside
FIGURE 4 ASFR contributed to CFR of specific birth context: Births outside a union, births after a first union dissolution, births to higher-order reproductive partner. Finnish women born 1969–1976

(a): Outside union

(b): After 1st union dissolution

(c): With 2nd+ Reproductive partner

of unions may also be births to higher-order reproductive partners. Accordingly, what share of births after first-union dissolution, a large category, are within repartnered unions? It is possible that a significant proportion of births in higher-order unions may be due to higher-order reproductive partners.

Figure 4 analyzes the overlap of partnering dimensions. Note that Figure 4 separately displays the specific fraction of CFR contributed by single births only (a), births after union dissolution only (b), and births to higher-order partners (c). The rates on the right-hand side of the legend
FIGURE 5 ASFR contributed to CFR of all birth context, excluding births in first unions to first reproductive partners. Finnish women born 1969–1976

![Graph showing age and specific fertility rate by union context](image)

To better summarize the findings presented so far, Figure 5 shows, for women, ASFR from all union contexts but excluding the majority context, that is, those within a first union with a first reproductive partner. Again, we see substantive heterogeneity across the studied behaviors. We also see, however, that the set is dominated (71.4 percent) by individuals who have children within a union with a first reproductive partner but who have dissolved one or more previous (childless) unions. In other words, the product of serial monogamy on aggregate fertility to a large extent reflects sequential transitions of childless unions.

Differences across sex and education

After establishing the size and the character of nonstandard birth contexts in the full women population, we analyze how these aggregate statistics differ across educational levels and gender. Table 2 describes men’s and women’s cohort fertility separately for those with and without tertiary education,
TABLE 2  Female cohort fertility (measured until age 45) and male cohort fertility (measured until age 50) by attainment of tertiary education

<table>
<thead>
<tr>
<th>Event</th>
<th>Nontertiary</th>
<th>Tertiary</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td>Percentage of CFR due to other than modal birth context (Not birth in first union, to first reproductive partner)</td>
<td>33.5</td>
<td>35.4</td>
</tr>
<tr>
<td></td>
<td>(1.63)</td>
<td>(1.94)</td>
</tr>
<tr>
<td>Percentage of nonmodal CFR due to Birth outside union, after first union, to second+ reproductive partner</td>
<td>5.6</td>
<td>8.7</td>
</tr>
<tr>
<td></td>
<td>3.7</td>
<td>2.9</td>
</tr>
<tr>
<td>Birth within union, in second + union, to second reproductive partner</td>
<td>16.7</td>
<td>17.5</td>
</tr>
<tr>
<td>Birth within union, in second + union, to first reproductive partner</td>
<td>66.9</td>
<td>59.7</td>
</tr>
<tr>
<td>Birth outside union, before first union, to second+ reproductive partner</td>
<td>1.9</td>
<td>1.5</td>
</tr>
<tr>
<td>Birth outside union, before first union, to first reproductive partner</td>
<td>5.6</td>
<td>5.8</td>
</tr>
<tr>
<td>Birth within union, in first + union, to second+ reproductive partner</td>
<td>1.9</td>
<td>2.9</td>
</tr>
</tbody>
</table>
decomposed into our eight partnership contexts of birth. Extensive literature has shown higher family complexity and more unstable partnering trajectories among the nontertiary educated. A similar pattern is found in our measures, where CFR of the highly educated is a result of birth in the “modal trajectory” union context. The share of the CFR attributable to nonstandard births differs by seven percentage points (35.4 percent among nontertiary educated and 28.6 percent among tertiary educated).

Nontertiary educated women have more heterogeneous birth contexts (35.4 percent nonmodal). There are substantial educational discrepancies within nonmodal birth contexts. The union context in Figures 3–5 was found to be the modal state for the full population of women (births in second unions to first reproductive partners) accounting for 59.7 percent of the nontertiary educated but about 81.6 percent for the tertiary educated women. Birth outside unions has a particularly small influence on the fertility of tertiary educated, whereas it adds up to almost a fifth of the nonmodal share of CFR among the nontertiary educated. Overall, while men have lower CFR, the absolute contribution of partnership context specific to CFR is very similar to that of women, and the educational gradient follows the same pattern as women but is somewhat more pronounced. The largest gender differences are for births in higher-order unions, which has a greater impact on CFR for nontertiary-educated men compared to nontertiary-educated women. Age-specific statistics are reported in Figures A4 and A5 in the online Appendix. There we can see that the well-established educational gradient in age-specific fertility rates is clearly reflected, with births at earlier ages being more common among the nontertiary educated than the tertiary educated.

To summarize, educational differences in the total influence of nonstandard births to CFR were salient, patterns were in totality uniform across gender, and there are large qualitative differences within nonmodal birth contexts.

**Supplementary analyses**

Our analyses have to this point considered the partnership context of birth from the individual’s perspective. Birth context can of course also be analyzed from a dyadic perspective, taking into account both partner’s union or reproductive partner history. In Figures A6 and A7 in the online Appendix, we discriminate birth context by both partners union order history and reproductive partner order history. The “modal” context decreases substantially, now accounting for only 58 percent of tertiary-educated female CFR and about half of nontertiary-educated female CFR. It is worth noting that, in the dyadic approach, we undercount the nonmodal contribution to CFR, as some of the partner’s previous unions occurred before 1987. Second, the analyses have thus far focused on recently completed cohorts.
While this is a necessary choice for presenting completed cohort fertility, it also means that we do not describe the partnership context of the birth of more recent birth cohorts who have yet to complete their childbearing years. Indeed, recent research suggests that first-union partnership stability and childbearing therein may be on the decline among younger men and women (Rahnu and Jalovaara 2023). In Table A3 in the online Appendix, we show CFR by age 30 by the union context of the birth of the 1985–1990 birth cohort alongside the previously analyzed older cohorts. While the estimates cannot account for the influence of fertility postponement on completed fertility CFR, they do suggest that nonmodal birth contexts are on the rise in the younger The share of CFR due to nonmodal birth contexts increased between 4 and 7 percentage points in all studied populations. Together the analysis of the dyadic perspective on birth context and the cues for younger cohorts suggest that births within first-partnered unions need not without a doubt remain a modal form of reproduction. Finally, for completion, Figure A8 in the online Appendix presents the relative union context contribution to CFR by parental status.

Discussion and conclusions

Demographers have applied a multitude of approaches to describe the relationship between partnership and fertility. However, few directly relate specific partnership states to completed fertility. We have argued that such a measure would add to understanding the overall partnering and fertility behavior of contemporary societies, characterized by union dissolution and repartnering.

Drawing on Thomson et al. (2021), we have provided the first cohort study analysis in which cohort fertility is decomposed by partner contexts at risk of birth. We decomposed total cohort fertility into age and union-context-specific births rates and used a schema that accounts for the combination of overlapping dimensions, namely (i) before versus after a first union dissolution, (ii) within versus outside of unions, and (iii) while at risk of birth to a first versus a higher-order reproductive partner.

We find that roughly three-quarters of completed fertility is due to births that occur within a union, which is the individual’s first union, with a partner who is their first reproductive partner. Of the remaining quarter of cohort fertility from births in other types of partner contexts, between 60 and 70 percent is due to birth in a second or higher-order union to a first reproductive partner, while multipartner fertility and single births together account for the remaining share. Single birth and MPF account for less than 13 percent of CFR, corroborating earlier results on the topic using synthetic cohorts (Thomson et al. 2021). We observe clear disparities between the population with and without tertiary education. Nontertiary educated women had six percentage points higher share of births that were
not in first unions to first reproductive partner. Out of this quantity, three-quarters were either births outside of union or multipartner fertility, compared to about half in the tertiary educated group. Differences across gender where marginal in absolute terms, but we note that the educational gradient in the union context of birth tends to be sharper for men. When we consider both the index person’s and its partner’s union and reproductive partner history, we find that the nonmodal birth contexts approach half of births among nontertiary educated. Analyzing CFR up to age 30 for younger cohorts, we see signs of increasing importance of births in nonmodal partnership trajectories.

To what extent does this description support the notions of standard and nonstandard partnership conditions for childbearing? On the one hand, we demonstrate that—to the extent that moving in with a first partner and having children within that union can be considered one aspect of a standard model—the Finnish population is reproduced mostly via a single, homogeneous pattern of partnering and childbearing of individuals. This result complements the often purported picture of transient relationships preceding childbearing in Finland. Proponents of various life course destandardization theses will, at any rate, have to acknowledge that the behavior of moving in with a first partner and having children with this person displays enough “deep roots” (cf. Wu and Li 2005) to remain the main mode of reproduction also in the most recent completed cohorts of a society that is fairly uncommitted to the institution of marriage and life-long unions. Yet, a sizable part of cohort fertility stems from births (to a first reproductive partner) in people’s second or higher-order unions. This speaks towards the relevance of the concept of serial monogamy as a ubiquitous partnering regime in Finland (de la Croix and Doepke 2003; Lichter and Qian 2008): People find a reproductive partner for life and have children within this union but transit between sequences of unions before (or after) this period of life. The influence of serial monogamy on CFR is particularly brought to bear when measured from a dyadic perspective rather than the results of an individual’s trajectory (although we think both viewpoints have merit). Importantly, later-born cohorts seem to disengage from births in first-entered unions to a greater extent than those cohorts that we can follow until the end of the reproductive period. This might indicate an ongoing shift away from the modal partnership context of birth. Finally, it is worth noting that the partnering behavior dimensions which are most often associated with risk factors in terms of well-being (reproductive partner order and union status) are small partnership contexts of birth: MPF and single parenthood can be salient features of the life course without this being reflected in the conditions of childbirth.

Our findings can also be seen as a different perspective to view the diverging destinies framework at a population level. High and low-educated individuals CFR in terms of partnership context of birth show a palpable
discrepancy. The later see much more heterogeneity and higher contribution of single births and births higher-order reproductive partners.

Ultimately, a concept such as “standard” or “nonstandard” are qualitative constructs that cannot be defined from our data alone (Liefbroer 1999; Thomson et al. 2013). Rather than concluding whether contemporary family dynamics are heterogeneous or uniform, this study is best used to show which aspects display uniformity and which aspects display heterogeneity. To this end, by describing partnering and childbearing through the left of CFRs, our findings provide a new empirical perspective to assess variation of the life course and the role of union formation and dissolution for fertility (Esping-Andersen and Billari 2015; Goldscheider, Bernhardt, and Lappegård 2015).

It is worth noting that we do not argue that single parenthood and family complexity, including half-siblingship and steprelations, are rare occurrences. Instead, we stress that a variety of family conditions develop across the life course, while, at the same time, the bulk of childbearing mainly occurs within the most common one—in unions with first reproductive partners. This distinction between life course experiences, on the one hand, and states where births take place, on the other hand, is important and underexplored in considerations of fundamental underpinnings of fertility.

In Finland, where union dissolution and repartnering are very common, CFR remains dominated by modal a partner context of birth associated with the “traditional” conditions of childbearing. This speaks to the importance of first unions as reproductive contexts. First, in comparison to other industrialized countries, Finnish fertility is high, reaching close to replacement fertility in the most recent cohorts with completed childbearing. Fertility is high partially because of higher-order births, which means that there is ample space for births to higher-order reproductive partners or births after childbearing union dissolution. In a European context, the mean age at first birth is moderately high, another factor that favors non-modal birth contexts. Second, Finland and the Nordic countries have a long history of union dissolution and repartnering, which generate opportunities for “nonstandard” birth contexts (Thomson 2014). Finally, the institutional context is one of high FLMP, socialization of childcare, and social transfers, such as affordable daycare, parental leave, and welfare coverage. Hence, the necessity for establishing and maintaining two-headed households, which promotes a standard partnering birth context, is lower in Finland relative to many other countries. In summary, many factors promoting the nonmodal partnership contexts of birth are present in Finland, possibly suggesting that our estimates are among the upper bounds in a comparative perspective.

The limitations in data and scope of this study set several challenges ahead for future research to produce stylized facts on the contribution of partner context to fertility rates. This study has taken an individual perspective, and family structures on the partner’s side and the influence
of births in stepfamily contexts are yet to be studied. We also lack in identifying qualitative aspects of union contexts. MPF births, for example, may be the result of unintentional pregnancies or the result of family planning of individuals in “living apart together” (LAT) relationships with co-residing children from previous unions. Yet, the usefulness of relatively crude aggregate metrics such as the ones used in this study, is that they facilitate future cross-comparative work and comparison, as shown by recent work using the gender and generations study (Thomson et al. 2021). Particularly, expanding the scope of comparative research to a global scale, such as contrasting low- and middle-income countries or culturally distinct regions, appears a fruitful venue for future research. We have not engaged with nor interpreted the causal relationship between educational attainment, childbearing, and partnerships. It may well be the case that childbearing interrupts educational attainment in some instances and, in others, educational attainment or its correlates may structure partnerships and childbearing. Finally, our cohort perspective does not allow us to illuminate with certainty the pattern of more recent cohorts who have yet to complete their reproductive careers (e.g., Ranhu and Jalovaara 2023). Partnership behaviors have changed rapidly in the past, and this may very well be reflected in the partnership contexts of births of future generations.

Notes

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