

Accumulating advantages before birth? Parental age and parental earnings inequalities across childhood

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Introduction

Children’s socioeconomic attainment depends not only on the level of parental resources but also on changes in these resources over time. For example, family earnings volatility is negatively associated with children’s educational attainment and school attendance (Gennetian et al., 2018; Hardy, 2014) and socioeconomic achievement gaps emerge even before children enter school, suggesting that parents’ resources during early childhood are vital (Skopek & Passaretta, 2021; Von Hippel & Hamrock, 2019).

Although these studies indicate that the distribution of parental earnings across childhood can influence children’s socioeconomic attainment, little is known about *inequalities in parental earnings trajectories* from the *children’s perspective*. Most studies on earnings and wage inequalities focus on differences within and between workers after their labour market entry (Cheng, 2014; Cheng et al., 2019; Grotti & Passaretta, 2023; Hällsten & Yaish, 2022). However, as children’s access to parental resources depends on the overlap between parents’ and children’s life courses, this literature does not reveal the parental earnings children experience while growing up.

Alongside socioeconomic characteristics, *fertility timing* is an important dimension that may explain variation in parental earnings trajectories while children grow up. For example, delayed parenthood may be linked to higher earnings at the transition to parenthood and steeper earnings growth, as later parenthood allows future parents to invest in human capital. Especially in light of the rising age at first birth (Mills et al., 2011; Sobotka, 2004) it is crucial to advance our understanding of the social consequences of fertility timing.

We address these research gaps by investigating two questions: (1) How do inequalities in the socioeconomic environments that children experience (measured through their mothers’ and fathers’ earnings) evolve as they grow up? (2) To what extent are these inequalities explained by parental age at first birth?

Data and methods

Our analysis draws on data from the German Socio-Economic Panel (SOEP), following 1127 mothers and 1356 fathers from their first child’s early childhood to early adulthood (ages 1 to 16). We analysed the earnings trajectories of both biological parents of first-born children, born between 1995 and 2004. The sample includes all parents, regardless of their partnership status, residency, or employment. We excluded earnings from the year of the child’s birth (age 0) to avoid capturing pre-birth earnings, but for readability, refer to age 1 as the birth of the child. We focused only on first births to avoid overrepresenting families with multiple children.

We measured parental earnings using the logarithm of mothers’ and fathers’ net earnings. Our main explanatory variable, parental age at the transition to parenthood, was categorised into four groups: 25 years old or younger, 26–30, 31–35, and 36 or older.

Following Cheng (2014) we distinguished three properties that capture the multidimensional nature of inequality in earnings trajectories. Figure 1 illustrates these properties using two hypothetical parents. The figure shows *trajectory heterogeneity* (differences in earnings growth), *cumulative advantage* (higher baseline earnings are associated with steeper earnings growth), and *random variability* (fluctuation around the trend

line). We used these three properties to describe inequality in parental earnings and examine how parental age relates to them.

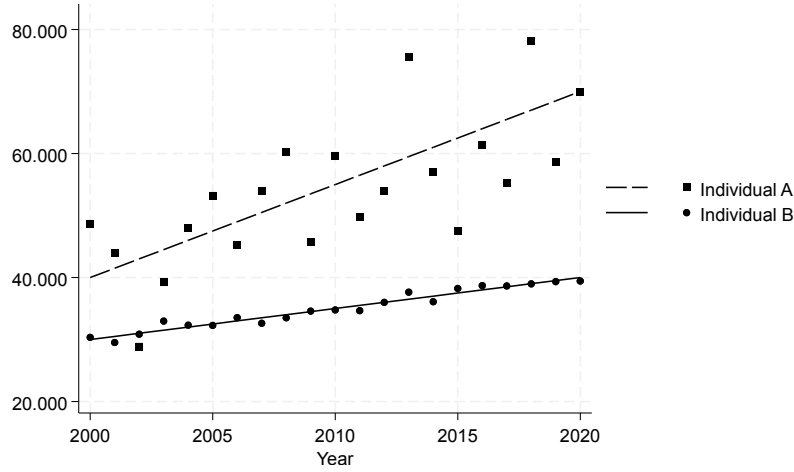


Fig. 1. Schematic illustration of trajectory heterogeneity, cumulative advantage, and random variability.

To analyse inequalities in parental earnings trajectories, we estimated multilevel growth curve models with a two-level structure: person-year observations (Level 1) nested within individuals (Level 2) (Cheng, 2014). At Level 1, we predicted log monthly net earnings E for person i at time t . First, we estimated a null model with a person-specific random intercept (β_{0i}) and a residual term (e_i), but without additional predictors. The second model includes a person-specific random intercept (β_{0i}) which reflects the log net earnings at the birth of the first child, a person-specific linear ($\beta_{1i}t$) and a fixed quadratic term (β_2t^2) reflecting earnings change since the birth of the first child, as well as a residual term (e_i) (Equation 1). At level 2, we predicted the person-specific random intercept (β_{0i}) and random slope ($\beta_{1i}t$), with S_1 reflecting parental age at the transition to parenthood (Model 3, Equations 2 and 3).

$$E_i = \beta_{0i} + \beta_{1i}t + \beta_2t^2 + e_i \quad (1)$$

$$\beta_{0i} = \gamma_{00} + \gamma_{01}S_{1i} + u_{0i} \quad (2)$$

$$\beta_{1i} = \gamma_{10} + \gamma_{11}S_{1i} + u_{1i} \quad (3)$$

Preliminary findings

Table 1 reveals greater variance in mothers’ compared to fathers’ earnings (Model 1). Within-person changes account for approximately 30% of this total variance for mothers and 40% for fathers.

Model 2 estimates a curvilinear trend, showing that fathers experience steeper earnings growth (0.036) than mothers (0.021). Children’s experience of parental earnings inequality differs by parents’ gender. Mothers exhibit substantially greater inequality in baseline earnings than fathers (variance in individual intercepts: 0.728 vs. 0.247) and greater heterogeneity in earnings trajectories (variance in slopes: 0.003 vs. 0.001). This means that inequalities in mothers’ earnings slightly widen over time. Furthermore, mothers’ baseline earnings are *negatively* associated with earnings growth, as indicated by the negative covariance between individual intercepts and slopes. In contrast, fathers show no such relationship between baseline earnings and earnings growth.

Model 3 introduces parental age as a predictor. The results reveal that parental age explains inequalities in parental earnings at the transition to parenthood: older mothers and fathers have considerably higher earnings at the birth of their first child. However, earnings growth rates do not differ significantly across age groups.

Substantial residual variance remains across all models, indicating considerable volatility in earnings that cannot be explained by curvilinear trends and age group differences.

Figure 2 displays predicted average parental earnings by parents' age at first birth and the age of the first child. The results illustrate that later parenthood is associated with higher earnings at the transition to parenthood. Differences in earnings growth rates are small: over time, earnings trajectories across age groups remain largely parallel. Only for fathers, earnings differences across age groups converge over time, except for the youngest group, which remains distinct.

Table 1. Growth curve models predicting log monthly net earnings

	Mothers			Fathers		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Age child (β_1)		0.021* (2.48)	0.019 (1.89)		0.036*** (8.18)	0.039*** (5.65)
Age child ² (β_2)		0.001** (3.22)	0.001** (3.19)		-0.001* (-2.38)	-0.001* (-2.33)
Parenthood timing (ref. ≤ 25)						
26–30			0.237** (2.80)			0.366*** (5.86)
31–35			0.332*** (3.46)			0.601*** (9.45)
≥ 36			0.549*** (3.94)			0.672*** (9.51)
26–30 x age child			0.002 (0.30)			-0.000 (-0.01)
31–35 x age child			0.006 (0.68)			-0.004 (-0.71)
≥ 36 x age child			0.007 (0.58)			-0.009 (-1.40)
Constant (β_0)	6.479*** (279.52)	6.145*** (138.74)	5.928*** (80.62)	7.541*** (473.82)	7.312*** (345.40)	6.858*** (117.97)
<i>N Observations</i>	7521	7521	7521	10202	10202	10202
<i>N Individuals</i>	1127	1127	1127	1356	1356	1356
Between (Intercept)	0.508	0.728	0.701	0.292	0.247	0.208
Within (Residual)	0.363	0.290	0.291	0.199	0.178	0.178
Slope (Age child)		0.003	0.003		0.001	0.001
Cov. intercept-slope		-0.024	-0.024		0.000	0.001

Note: Standard errors in parentheses *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

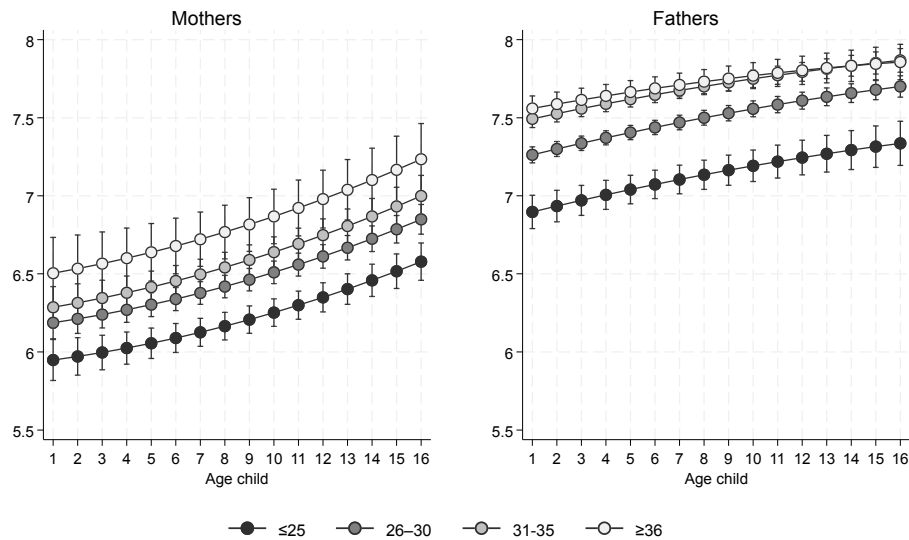


Fig 2. Predicted average log monthly net earnings by parental age at the birth of the first child

Outlook

Our preliminary findings indicate that children of older parents are born into families with higher parental earnings. However, this initial advantage does not translate into steeper earnings growth. Older fathers even experience slightly slower earnings growth, suggesting that men who have children later in life have already reached career stages characterised by earnings plateaus rather than steep earnings growth. This suggests that the socioeconomic advantage associated with delayed parenthood *arises before birth and persists rather than accumulates* as children grow up.

In the next phase of this project, we will examine to what extent these patterns are driven by education. Highly educated parents tend to postpone childbearing; hence, they are overrepresented among the late-parenthood groups. That means, while our preliminary findings show inequalities in earnings by parental age groups, future analyses will reveal whether these differences stem from career stages, education, or both.

Looking ahead, we plan to advance this project by studying family earnings, the sum of mothers' and fathers' earnings. This shift in focus is crucial because mothers and fathers may counterbalance each other's earnings, potentially shielding children from income instability. For instance, mothers may increase their labour force participation when men become unemployed (Lundberg, 1985). Understanding such dynamics would help link research on gendered life-course inequalities and intergenerational mobility. Moreover, when studying both parents together, the age gaps between parents and children are not only a function of *fertility timing* (*when* someone has children) but also of *age-assortative mating* (*with whom* someone has children in terms of age). For example, a child with two 20-year-old parents may have fewer resources than a child whose parents are 20 and 30 years old. By studying how fertility timing and age-assortative mating shape inequalities in childhood family earnings, we will contribute to understanding how demographic processes translate into intergenerational inequalities.

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