Mapineq

Inequalities in early childhood and families

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Mapineq – Mapping inequalities through the life course– is a three-year project (2022-2025) that studies the trends and drivers of intergenerational, educational, labour market, and health inequalities over the life course during the last decades. The research is run by a consortium of eight partners: University of Turku, University of Groningen, National Distance Education University, WZB Berlin Social Science Center, Stockholm University, Tallinn University, Population Europe, and University of Oxford

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Executive summary

This work package examined how inequalities in early childhood and family environments shape children's life chances across Europe, with a particular focus on education as a central life-course outcome. The aim was to understand how family structure, parental resources, early institutional settings, and genetic and social factors interact to produce or mitigate educational and socioeconomic inequalities from early childhood onward. Research combined cross-national survey data with high-quality Nordic population register data and genetically informed designs, enabling both broad comparisons and causal inference.

Across all countries studied, parental education emerged as the most powerful and consistent predictor of children's economic and educational outcomes. Children growing up in highly educated families experience systematically better economic conditions than those in lower-educated families. Although household structure differs by parental education — with more stable two-adult households and fewer siblings among highly educated families — these structural differences explain only a relatively small share of inequalities. Most disparities are driven by differences in parental earnings and labour market returns to education, rather than by family composition itself.

Analyses of parental income in Sweden and Finland suggest that childhood economic resources have a causal impact on children's chances of completing higher education. Research designs using instrumental variables and sibling fixed effects demonstrate that standard correlational models underestimate these effects. Stable parental employment, especially attachment to the labour market, is at least as important as income itself, indicating that work-related stability provides both material and psychosocial advantages. Economic shocks at the regional level, such as recessions, can create long-lasting inequalities when they disrupt parental employment during children's formative years.

The work also treated family human capital as dynamic rather than fixed. Family disruptions — notably parental separation or death — are common and are strongly associated with lower educational attainment. Contrary to previous findings, there was not evidence of re-partnering compensating for these losses, and it may, in some contexts, deepen disadvantage. Parental educational upgrading during a child's upbringing shows only weak and non-causal associations with children's own educational outcomes once family-level selection is properly controlled. This indicates that while parental education matters greatly, later improvements in parents' education rarely translate directly into improved outcomes for children.

Beyond the family, the project examined the role of geographical mobility and local opportunity structures. Living close to higher education institutions substantially increases the likelihood of completing tertiary education. However, residential mobility itself is disruptive: children who move during childhood perform worse educationally than those who remain in stable environments, even when moves improve institutional access. Importantly, place-based expansion of opportunity structures — such as the Finnish polytechnic expansion — benefits children who grow up locally, reducing the need for

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disruptive mobility. Family instability, particularly parental unemployment and separation, amplifies the negative effects of moving.

A final contribution of this work package concerns early childhood education and care (ECEC/daycare) and genetic–social interplays. The findings show that greater daycare availability is associated with a stronger correlation between genetic predispositions and observed educational outcomes, regardless of social background. In other words, daycare does not reduce or widen social gaps directly. Rather, it appears to function as an institutional context in which individual genetic potential is more fully realized. Daycare thus shapes the degree of gene–environment correlation, increasing the predictive power of genetic differences for later outcomes without altering average achievement levels or selectively benefiting particular social strata.

Taken together, the evidence leads to a clear conclusion: inequalities originate early and are primarily structured by parental education, economic stability, family continuity, institutional quality, and their interaction with genetic predispositions. Policies aimed at reducing inequality should therefore prioritise early-life interventions: strengthening educational and labour market opportunities for parents, reducing negative consequences of family instability, investing in high-quality universal daycare, and improving local opportunity structures. Intervening early is far more effective than attempting to compensate for disadvantage later in the life course, as inequalities established in childhood tend to persist into adulthood.

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Abbreviations

SES Socioeconomic status

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Inequalities in early childhood and families

The early childhood family contexts are considered formative for adult educational and socioeconomic outcomes. We study the intergenerational impacts of parental education and economic resources, as well as family structure, and consider the modifying effects of local educational opportunity structures on social and genetic influences on educational and socioeconomic attainment.

Childhood family structure has a modest impact on adult attainment compared to parents' educational and socioeconomic resources, independently of the country context.

While parental education remains the most consequential factor for children's attainment, parental economic resources remain crucial and are often empirically underestimated.

Universally available local educational opportunity structures increase educational attainment and can even boost the chances of meeting genetic potential for everyone.

1. Introduction

The WP2 in the MAPINEQ project focused on early childhood and family processes related to educational and socioeconomic attainment in adulthood, especially differences and changes in families and broader social environments. Regarding **early childhood,** we refer to the initial years of the life course, from birth to the start of compulsory education. In the literature on social inequalities, this **pre-market** period is viewed as the most influential for later achievement: it is when the foundations for cognitive and non-cognitive skill development are established (e.g., Duncan & Brooks-Gunn, 2000; Heckman, 2006).

We differentiate the effects of *family background* from those of *the non-family environment*. The effects of family background are transmitted from parents to children through *social* or *genetic* influences. Social influences are usually associated with parents' socioeconomic and other social group-related characteristics, such as their educational attainment, occupational status and income (Erola & Kilpi-Jakonen, 2017). Parental resources related to these characteristics tend to be crucial for the kind of immediate family environment in which children are brought up. For instance, parental income largely determines the family's *economic circumstances*, including its material wealth and even the neighbourhood of the family home. However, different types of family resources tend to correlate. As education is the most important contributor to occupational attainment,

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and jobs tend to be the main sources of income for most families, the effects of parental education, occupation status and income on children's future educational and socioeconomic attainment tend to overlap considerably (Erola et al., 2016).

While the genes children acquire from their parents are fixed, their effects on later attainment (and subsequent trends in social inequalities) are not, but also vary according to both family- and non-family-related social influences (Mills & Tropf, 2020). Most family background effects observed in social scientific studies are in fact a mix of both, as well as the non-family environment: for instance, educational attainment typically depends on parental influences on the educational choices of children, children's own abilities linked with their genetically inherited cognitive skills, and the institutional environment providing the context for *educational opportunities* (e.g., access to academic track education).

The structure of the **immediate family environment** is a crucial aspect of many developments during early childhood. It has been argued that the diffusion of non-standard family forms among low-educated and low SES parents is strengthening intergenerational inequalities in Western societies (Cherlin, 2014; Esping-Andersen, 2007; McLanahan & Percheski, 2008). The benefits of parents' economic resources and the time allocated for child rearing are likely to depend on the *age of the child* and the *sibship composition*, whereas the role models or the values parents provide are not expected to suffer as much from dilution.

Both types of family influences are susceptible to variation in the non-family environment. For the latter variation, we focus on local-level differences in educational opportunity structures, namely the availability of early childhood education and higher education institutions.

2. Economic circumstances of children living in higher and lower-educated families and the contribution of household structure

Laura Heiskala, Minna Tuominen, Jani Erola, and Elina Kilpi-Jakonen

In this deliverable (D2.1), later slightly revised and published as a peer-reviewed article (Heiskala et al., 2025), we assessed the extent to which household structure explains differences in children's economic circumstances across higher- and lower-educated households. We also studied whether the importance of household structure for this income gap varies between European countries and regions. While previous research has typically used adults or households as the unit of analysis, this study adopts a *child-centred perspective*, focusing on income disparities between *children* living in higher- and lower-educated families. The analysis draws on cross-nationally comparable data from the Generations and Gender Survey, covering more than 60,000 children in 11 European countries, and employs both descriptive methods and Blinder–Oaxaca decomposition techniques. In our study, higher-educated households are defined as those in which at least one adult has completed a tertiary-level degree.

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Across all countries studied, children in highly educated households enjoy better economic circumstances than those in lower-educated households. These differences are substantial: in some countries, the gap in country-specific income percentile based on equivalence-scaled household income reaches more than 30 percentile points. The size of the educational group income gap varies considerably between countries, being smallest (around 15 percentage points) in the Netherlands, Poland, and Norway and largest in Romania. Despite these variations, the overall pattern is clear: parental education is strongly associated with children's economic circumstances. Furthermore, we assessed whether differences in household structure explain the gap in children's economic circumstances between higher- and lower-educated families, or whether it mainly reflects returns to education.

Our descriptive results show that children of highly educated parents are more likely to live in two-adult households, have fewer siblings, and have parents who entered parenthood at older ages than children in lower-educated households. But do these differences in household structure explain their better economic circumstances, and if so, to what extent? Our decomposition analyses reveal that these household characteristics account for only a modest share of the income gap: typically around 5 percentage points in absolute terms, and up to 20 per cent in relative terms in some countries. Somewhat unexpectedly, the differences across countries were rather small, particularly regarding the contribution of household structure to the income gap between children from lower- and higher-educated households in absolute terms. In other words, while family composition matters, most of the advantage enjoyed by children in highly educated households stems from differences in parental earnings and returns to education, rather than from diverging destinies due to socioeconomic differences in household structures, and this pattern appears to be consistent across all European countries studied.

The MapIneq 2.1. deliverable also explored regional variation within countries, finding that differences in the role of household structure for the educational group income gap are even smaller at the regional level than across countries. Thus, the patterns observed across regions largely mirror those observed between countries. This suggests that national contexts, such as welfare regimes and social policies, play a more important role than local environments in shaping these patterns.

Taken together, these findings underscore the importance of educational inequalities in shaping children's living conditions. While differences in household structure contribute to disparities, they do so only marginally. The economic circumstances of children in Europe are strongly tied to parental education, and this association persists across diverse demographic and policy contexts. Household structure plays a secondary role, explaining only a fraction of the observed disparities. The policy implications are clear: interventions aimed at reducing child poverty or inequality should focus primarily on improving educational opportunities rather than on influencing family composition. These results underline the well-established finding that education is a key determinant of intergenerational inequality.

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3. Parental income and the achievement of higher education in Sweden and Finland

Markus Jäntti and Esa Karonen

This deliverable (D2.2.) examines the influence of parental economic resources during childhood on the subsequent educational attainment of children in Sweden and Finland. Drawing on high-quality, extensive register data covering the period from 1987 to 2020, the study aims to deepen our understanding of how variations in parental income, employment status, and social benefits impact intergenerational mobility, particularly during the economic recessions of the 1990s. The analysis focuses on two main research questions: assessing the strength of the association between parental resources during childhood and children's chances of attaining higher education, defined as completing a university degree, and determining whether this association persists after addressing potential endogeneity concerns. To this end, the authors employ advanced econometric techniques, combining instrumental variables (IV) estimation with sibling fixed-effects models, thereby enabling a nuanced analysis that accounts for unobserved heterogeneity at the individual and family levels.

By leveraging regional, age-, and gender-specific variations in local labour market conditions, the IV approach seeks to isolate the causal effect of parental income on children's educational outcomes. Regional fluctuations, especially during the economic downturn of the early 1990s, provide external variation in parental employment and income that can be used as instruments. This strategy addresses biases inherent in simple correlations, which are often confounded by factors such as parental education, innate ability, or familial environment, all of which remain unobserved in basic models. The sibling fixed-effects approach further strengthens causal inference by controlling for stable family-specific factors shared among siblings, including genetic predispositions, parenting styles, and early household conditions. Together, these methods allow the authors to disentangle the dynamic influence of parental economic resources on educational trajectories.

Findings indicate that naive model estimates tend to underestimate the true magnitude of the effect of parental income on educational attainment. When applying IV estimation, the effects are systematically larger, confirming that parental economic resources during childhood exert a more substantial causal impact than simple correlations suggest. Labour income shows a more consistent and robust association with children's educational attainment than disposable household income, underscoring the importance of parental labour market attachment beyond financial resources alone. In several specifications, maternal income appears to exert a stronger influence than paternal income, although the direction and magnitude of this difference vary between Sweden and Finland. These differences suggest that the role of maternal employment and earnings in shaping educational outcomes may be context-dependent, potentially linked to country-specific labour market structures, social policies, and household dynamics.

The study also highlights that parental labour market participation, measured by employment status, has a significant impact that can surpass the effect of household disposable income alone. This finding reinforces the idea that stable employment provides

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benefits for children beyond income flow, possibly through improved social capital. Regional labour market conditions, especially during recessions, emerge as critical mechanisms through which economic shocks influence childhood resources. However, it can be assumed that regions that recovered more rapidly from the downturn, often those with diverse, skill-intensive industries, offered better prospects for parental employment and income stability, fostering more equitable educational opportunities for children. By contrast, regions heavily affected by economic downturns saw stronger adverse effects, which may contribute to persistent inequalities across geographical areas.

Despite the robustness of these findings, the study acknowledges limitations concerning the validity of the instruments used in the IV strategy. The assumption that regional, age-, and gender-specific employment rates are exogenous and influence educational outcomes solely through parental income is plausible but cannot be guaranteed. Changes in regional labour markets might also directly affect household wealth, property values, or local social conditions, complicating causal interpretation. The authors therefore advise caution in interpreting the estimated effects as purely causal, recognising the possibility of residual confounding.

The implications of this research are substantial for policymakers concerned with promoting social mobility and reducing inequality. The evidence suggests that policies aimed at stabilising parental employment and income, especially during economic downturns, would ensure that children's educational opportunities are not undermined by macroeconomic shocks. Employment-support programmes, social safety nets, and targeted regional economic development initiatives could help mitigate the negative effects of economic volatility on childhood resources and educational outcomes. Furthermore, the findings point to the potential importance of maternal employment, which may warrant targeted measures to enhance women's labour market participation and address gender disparities in family economic dynamics.

In conclusion, this research provides robust evidence that parental economic resources during childhood and their stability are vital determinants of higher education attainment. By combining comprehensive register data with advanced econometric methods, the study demonstrates that intergenerational mobility is shaped not only by family characteristics but also by broader economic conditions. Ensuring equitable access to education, therefore, requires interventions that protect families from income instability, particularly during children's formative years, and that promote regional economic resilience to prevent localised economic shocks from creating lasting barriers to educational opportunity.

4. Change in human capital of the immediate family

Laura Heiskala, Sanna Kailaheimo-Lönnqvist, Esa Karonen, and Jani Erola

This deliverable (D2.3.) studied whether changes in household human capital are associated with children's educational outcomes. Previous research has consistently shown that parental education is strongly correlated with children's achievements, but it has typically treated parental education as a static resource. Our approach is different: we

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consider household human capital as a dynamic resource that can either increase or decrease during childhood. We focused on three main channels of change: the loss of human capital due to parental separation or death, the potential compensation through co-residing stepparents, and the increase in human capital when parents obtain new educational degrees.

We used Finnish full-population register data to study this topic, covering birth cohorts from 1987 to 1999 (N = 702,038) and followed individuals and their childhood households from birth to age 18. We measured their years of education as the outcome at age 23. In the analysis, household human capital is treated in two ways. First, we use this household human capital variable as time-invariant, measured at age 0, by summing both parents' years of education (who are living in the household) and dividing the total into four quartiles. Second, we use a dummy variable indicating whether any adult living in the household (mother, residential father, or residential stepfather) attained a new higher degree when the child was between the ages 1 and 18. Using linear regression models and sibling fixed-effects analyses, we examine both between-family and within-family variation. The within-family design enables us to better isolate the association between parental educational upgrading and children's educational outcomes from potential selection bias.

Our findings show that changes in family structure are common. Approximately 37 per cent of children experienced a loss of household human capital through parental separation or death. These events are negatively associated with children's educational attainment: children from disrupted families complete, on average, half a year less education than those from stable two-parent households (Figure 1). Re-partnering does not compensate for this loss. In fact, children living with a stepparent tend to achieve even lower levels of education than those who experienced only separation or death. This may be explained by the timing of the loss of human capital within the household. These patterns are consistent across all parental education groups.

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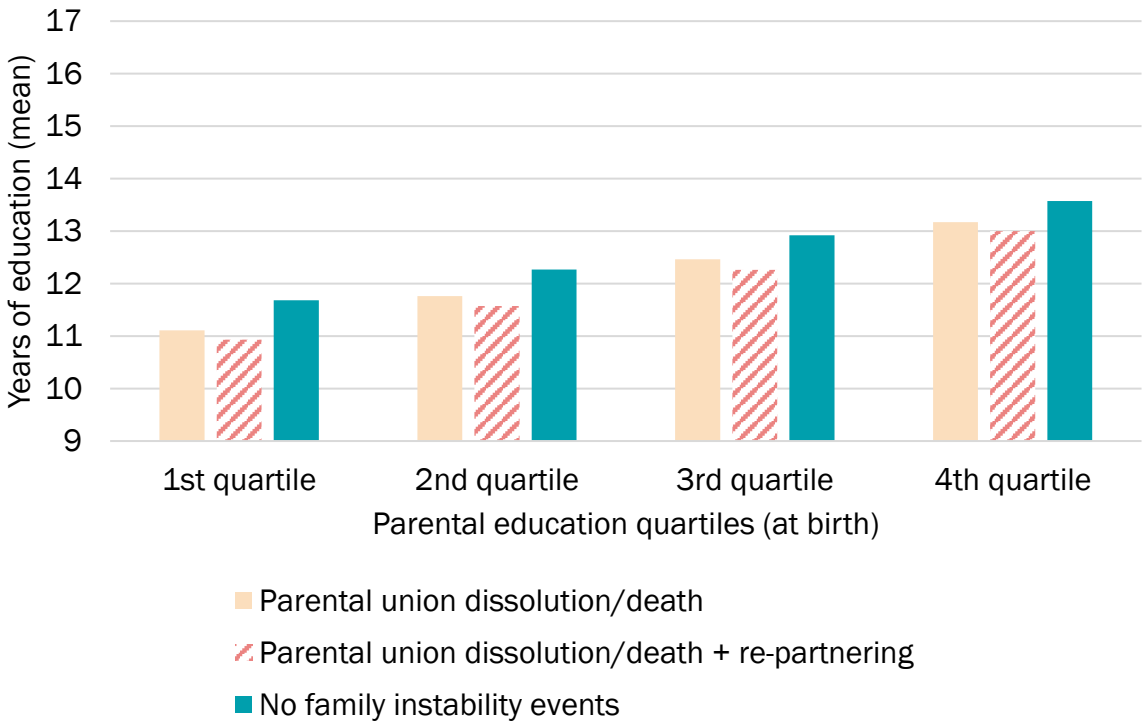
Figure 1. Mean years of education by parental education quartiles and family (in)stability (N=702 038). Adapted from Heiskala et al. 2024.



We also examine whether parental educational upgrading during childhood benefits children. This analysis focuses on families with no changes in structure, which account for 63% of children in our sample. Among these children, one in four experienced a parental educational upgrade between ages one and eighteen. Descriptive analyses indicate a modest positive association: children whose parents attained a new degree during their childhood tend to achieve slightly higher educational levels, particularly in families with moderate initial human capital (Figure 2). In other words, in families where parents had very low or very high levels of education at the time of the child's birth, subsequent educational upgrading was not strongly associated with improvements in children's education. However, when we compare siblings within the same family using sibling fixed-effects models, the effect of parental educational upgrading disappears. This suggests that the observed positive association in between-family models, particularly among families with moderate initial levels of household human capital, is largely explained by selection bias: parents who pursue additional education may differ in unobserved ways that also benefit their children, rather than the upgrade itself causing the improvement.

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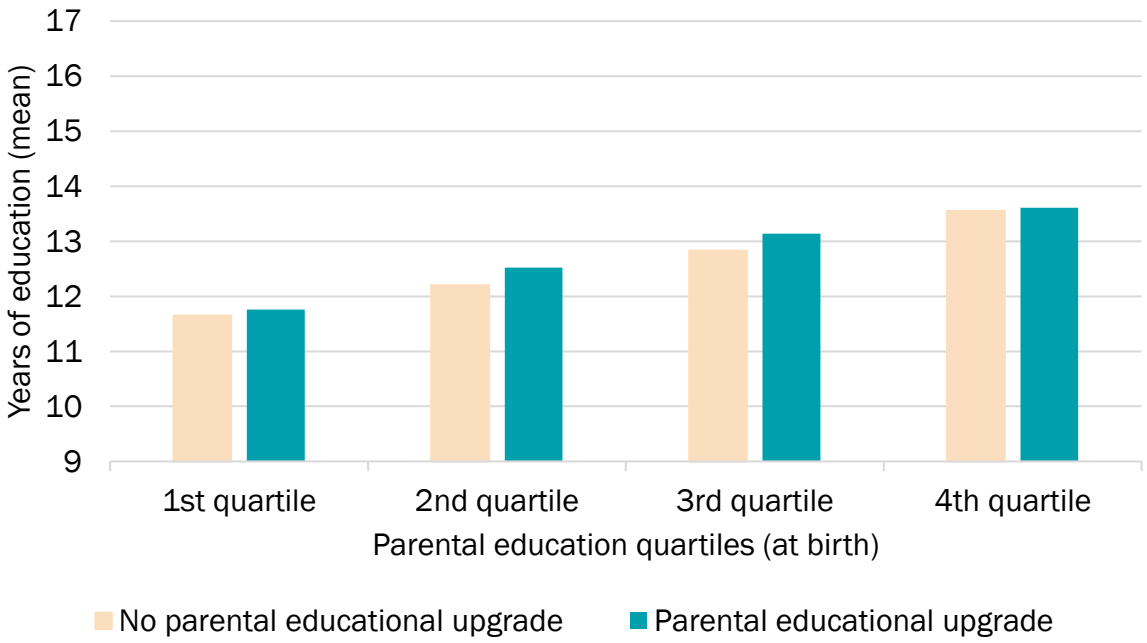
Figure 2. Mean years of education by parental education quartiles and parental educational upgrade (N=439 906). Adapted from Heiskala et al. 2024.



Following the empirical pattern found in most of the previous literature, our results indicate that a transition from a two-parent household to a single-parent household is negatively associated with children's years of education. All changes in family structure, including re-partnering, are linked to lower educational attainment. An increase in household human capital through new parental degrees shows a positive association with children's education, particularly in families with moderate initial levels of human capital. However, sibling comparisons do not support these findings, which calls for caution in interpreting them. Although parental education is strongly associated with children's educational outcomes, *changes* in the immediate family's human capital rarely lead to improvements in children's education. On the other hand, parental educational advancement does not cause harm, even though it may require parents to spend time away from work and family to pursue their studies.

5. Childhood Geographical Mobility, Local Opportunity Structures, and the Pursuit of Higher Education

Esa Karonen, Patricia McMullin, Elina Kilpi-Jakonen, and Jani Erola

This task explores how regional mobility in childhood interacts with evolving local opportunity structures to shape educational attainment in adulthood. Using complete population-register data from Finland, it examines whether children who move closer to higher education institutions achieve better educational outcomes by age 30 than those who either remain in place or move without improving access. By examining Finland, a context characterised by free higher education, extensive student support, and minimal financial barriers, the study is able to isolate the association of place, distance, and family

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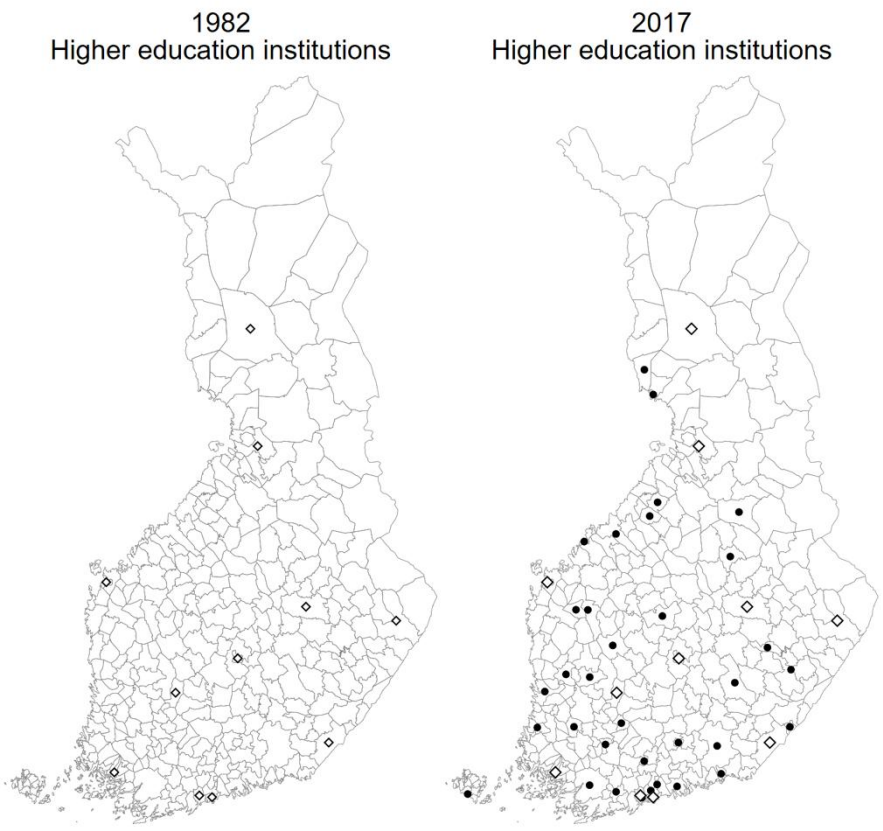
circumstances from the economic constraints that often obscure such relationships in international comparisons.

Regional variation in opportunity structures, such as school quality, access to universities, and local labour markets, plays a central role in determining educational life chances. Families' capacity to navigate these areas is heavily shaped by their social origins, which affect both the feasibility of relocation and resilience to disruptions such as unemployment or separation. While previous research has documented how growing up in disadvantaged neighbourhoods or experiencing multiple moves can hinder children's educational progress, this study integrates these strands by explicitly measuring the intersection between mobility trajectories and local educational opportunity.

The Finnish case offers unique analytical leverage due to the major expansion of polytechnics in the 1990s, which brought higher education within reach of many remote municipalities. Figure 3 illustrates this transformation, showing the distribution of universities and polytechnics between 1982 and 2017. This expansion represents a crucial shift for understanding how place-based improvements may substitute for/or amplify the benefits of family mobility.

Figure 3. Change in the distribution of Finnish higher education institutions from 1982–2017. Circles are university institutions, and black dots represent polytechnics.



The study follows the 1982–1987 Finnish birth cohorts, around one million individuals, tracking them annually from ages 5 to 15, and recording their educational attainment at age 30. Key variables include proximity to a higher education institution (within 30 km) and detailed residential histories, allowing classification into categories such as 'non-

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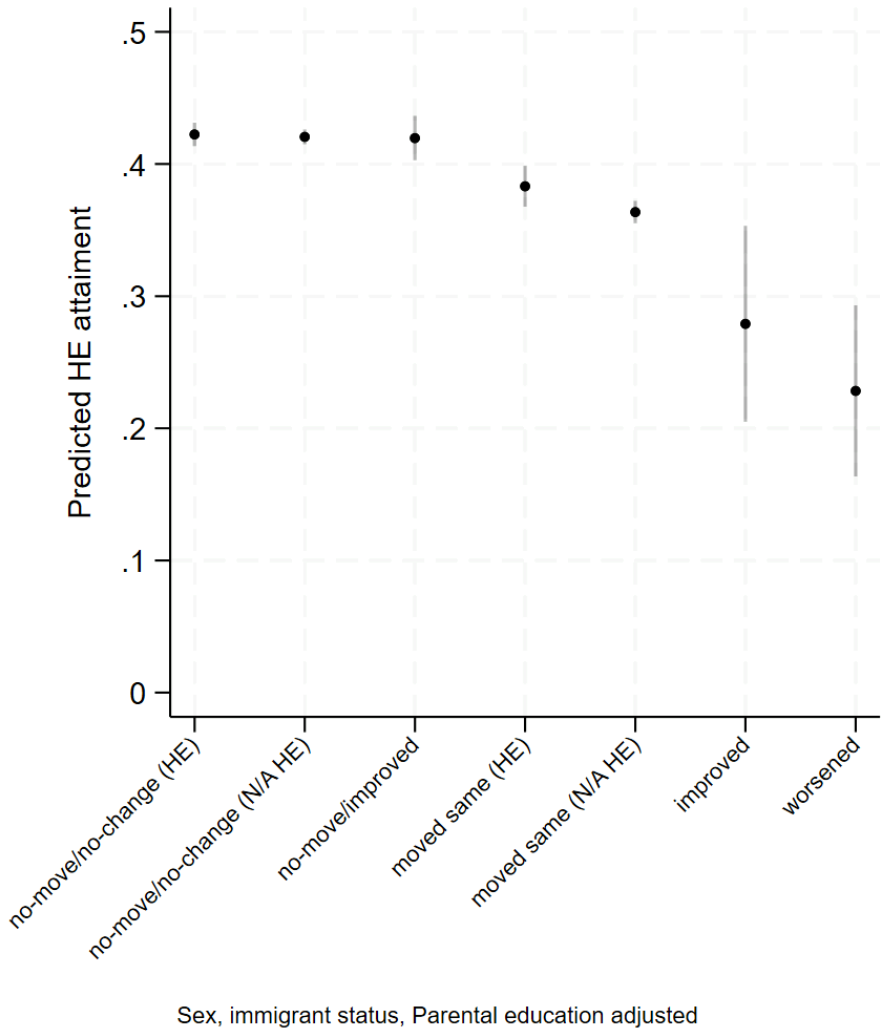
movers with access', 'non-movers gaining access', 'movers to improved opportunity', or 'movers to worse access'. Marginal structural models (MSMs) with inverse-probability weighting adjust for factors such as parental separation and unemployment, which both influence and are influenced by moving decisions.

Figure 4 summarises the main findings. Children who continuously lived in areas with nearby higher education institutions had the highest attainment rates (≈42%). Those who remained in areas that later gained access, through the opening of a new polytechnic or university, also performed strongly. In contrast, children who moved, even into areas with better access, had notably lower probabilities of completing a degree (≈27%). The act of moving itself appears more detrimental than the benefit of the improved opportunity gained.

Figure 4. Predicted probabilities of higher education attainment at age 30 by moving type during childhood (ages 5–15).



In addition, family circumstances strongly shape these patterns: parental separation and unemployment intensify the negative impact of mobility, while stable family conditions can mitigate it. Children who move amid family disruption fare particularly poorly. Thus, place and family stability jointly underpin educational success. The Finnish expansion of polytechnics demonstrates that upgrading local opportunity structures benefits those who

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grew up nearby, including those who would have otherwise had to move to access polytechnics. Moreover, the findings highlight that social policies supporting family stability, such as measures to cushion the impacts of unemployment or separation, could indirectly enhance educational attainment by reducing the impact of mobility-driven disruption.

6. Changes in wider social environments: Daycare

Elina Kilpi-Jakonen, Minna Tuominen, and Jani Erola

In this task, we focused on how the local institutional context, in this case, the availability of early childhood education, is connected to the interplay between social and genetic influences in educational attainment. The existing empirical evidence on the benefits of early childcare on later attainment has been mixed and varies between country contexts. Often, studies have found it to be beneficial for children from disadvantaged family backgrounds (Ruhm & Waldfogel, 2012; Kulic et al., 2019), while others have found indications for the multiplicative benefits for the high-SES family children in some country contexts (Drange & Telle, 2020, also for Norway Laaninen et al., 2024), and others have found barely effects at all (Karhula et al., 2017; Gruber et al., 2023).

In this study, we considered whether the mixed findings may result from the daycare availability moderating the gene-environment interplay. Behavioural genetics studies suggest that family background effects in education are partly shaped by passive gene-environment correlations (Plomin et al., 1977). Parents pass on genes and choose the rearing environment, but genes also matter for rearing environment choices. For instance, higher cognitive skills that are highly heritable are likely contributing to the intergenerational transmission of higher education, but also improve parental earnings that allow them to make more freely choices regarding the family home. Because of this, many effects assumed to result from the rearing environment may in fact be due to unobserved genetic effects. The greater availability of daycare can be expected to homogenise rearing environments and moderate passive gene-environment interactions.

At the same time, this literature assumes that reducing social barriers should increase children's opportunities to realize their genetic potential (Scarr-Salapatek, 1971; Guo & Stearns, 2002; Nielsen, 2006). When this is the case, universally available daycare should strengthen the importance of children's own genes in educational attainment.

We used Finnish register-linked data on birth cohorts 1973–78, with genetic information (polygenic scores for education) available from surveys, and further matched with municipality-level information on daycare availability in 1976–81 (as digitized by Silliman, 2023). Daycare availability was measured at age 3, parental education around age 10–15, and children's education at age 40. Full information on all of these (including polygenic scores) was available for 2,008 individuals. The period was crucial for the expansion of the daycare in Finland. The daycare law was introduced in 1973, and while the service was already widely available in the largest cities, it was only sparsely available in rural municipalities and expanded only after that.

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The findings suggest that the increasing availability of daycare was not associated with improved educational attainment, replicating Silliman's (2023) previous Finnish findings. However, daycare availability appeared to boost the association between genes and educational attainment, as indicated by a positive interaction between daycare availability and the polygenic score (Table 1). There were no substantial differences in this interaction between the children of higher-educated parents and those of other parents, suggesting that the benefit was largely universal.

Table 1. Linear regression analysis of years of education (N=2,008)

	M1	M2	M3
Daycare availability (in towns)	1.262	1.278	1.028
	(1.669)	(1.668)	(1.641)
Rural area * daycare availability	1.627	1.455	0.534
	(3.127)	(3.131)	(3.110)
Polygenic score (PS)	0.653***	0.662***	0.564***
	(0.064)	(0.063)	(0.092)
PS * daycare availability		1.052***	0.670*
		(0.355)	(0.363)
Parental education			X

All models include municipality fixed effects and control for sex and the principal components of genetic variation. M3, which adds parental education, also adds the interaction between parental education and the polygenic score. Daycare availability theoretically varies between 0–1 and has been centred in the analyses at 0.3. Statistical significance: *p<0.05, **p<0.01, ***p<0.001.

The evidence suggests that daycare availability did not make much of a difference to the passive gene-environment interactions. However, they do suggest that daycare may have a boosting effect: the more extensive the availability of daycare, the stronger the association between polygenic score and educational attainment. Thus, the daycare expansion may indeed have increased the likelihood that children from different backgrounds would meet their genetic potential. However, the fact that this boosting effect appeared to be similar across the social strata also suggests that it did not result from the daycare system demolishing the barriers to educational achievement of specific sociodemographic groups, but rather that the benefits of the service made universally available were also mostly universal.

7. Concluding remarks

The findings of Work Package 2 have been extensive, both confirming previous understandings, clarifying others, and refuting others. All in all, the findings suggest that while family structure is consequential for children's adult educational and socioeconomic outcomes, it is much less important than factors related to parents' education, occupational status, and income. This appears to be true across multiple country contexts. This finding further suggests that any policy efforts to improve children's adult outcomes by influencing family arrangements (e.g., divorce laws) are likely to be much less consequential than policies that influence educational and labour-market opportunities.

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Furthermore, while the results also underline the importance of parental education for children's future socioeconomic attainment, they also underscore the limits of the benefits of improvements in family human capital. Neither a parent acquiring a higher educational degree during childhood nor a new, better-educated step-parent entering the family improved the children's educational attainment. Even local educational opportunity structures appeared to have only a limited impact on outcomes. Moving to a new place during childhood tended to have detrimental effects on future education, even if the new place offered better higher education opportunities than the areas the families were moving away from. Overall, even though previous studies suggest that parental income is less consequential for adult outcomes than parental occupational status and education, the findings indicate that the typically applied empirical models underestimate the importance of family income, even in Nordic egalitarian welfare-state contexts with extensive income redistribution.

However, the universally available educational systems can still have benefits, even if the effects may be more limited than is often considered. Those growing up in areas with better access to higher education tended to go further than others. Finally, increasing access to early childhood education appears to improve children's chances of meeting their genetic potential, independent of their background.

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