



Parental education, class and income over early life course and children's achievement



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ABSTRACT

Very few studies on intergenerational achievement consider the high correlation between separate measures of parental socioeconomic position and possible life course variation in their significance for children. We analyse how socioeconomic characteristics of mothers and fathers over children's life course explain children's occupational outcomes in adulthood. Using Finnish register data, we matched the occupational position (ISEI) of 29,282 children with information on parents' education, occupational class and income when children are 0–4, 5–9, 10–14, 15–19, 20–24 and 25–29 years old. We fitted three-level random effects linear regression models and decompose family-level variance of siblings' ISEI by each measure of parental status. We show that parental education explains family variation in siblings' occupation most and income explains it least. Status characteristics of fathers together explain approximately half of children's outcomes, and those of mothers explain slightly less. These explanations vary only a little during children's life course. We also find that independent, non-overlapping effects of observed parental indicators vary over time. Mothers' education explains independently most in infancy, whereas that of fathers in early adulthood. The influence of class alone is minor and time constant, but the effect of income alone is negligible over the entire follow-up. The independent effects are overall relatively small. The largest proportion of children's outcomes explained by these parental measures is shared and cannot be decomposed into independent effects. We conclude that bias due to ignoring life course variation in studies on intergenerational attainment is likely to be small.

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1. Introduction

Despite the relatively high degree of equality of opportunity in many developed countries, family background still plays an important role in the inheritance of social class (e.g. Breen, 2004; Erikson & Goldthorpe, 1992), education (Björklund & Salvanes, 2011; Hauser & Featherman, 1976; Sieben, Huinink, & de Graaf, 2001) and income (Björklund, Eriksson, Jäntti, Raaum, & Österbacka, 2002). These commonly applied indicators of socioeconomic status are highly correlated; nevertheless they sometimes lead to different conclusions as to the strength in inheritance, thereby providing grounds for both an academic and a political debate over the importance of socioeconomic background (e.g. Blanden, Gregg, & Macmillan, 2013; Blanden & Machin, 2004; Erikson & Goldthorpe, 2010; Goldthorpe & Jackson, 2007).

It may be asked whether the mixed and sometimes opposite conclusions of social mobility research follow to a large extent from ignoring the life course variation of parental characteristics. Many studies have suggested that economic conditions are particularly important during early childhood (Duncan & Brooks-Gunn, 2000; Duncan, Brooks-Gunn, & Klebanov, 1994; Erola, 2012; Heckman, 2006); that the parental characteristics influencing educational choice matter more during adolescence (Breen & Jonsson, 2005; Erikson & Jonsson, 1996; Jæger & Holm, 2007); and that parental social status and networks are especially important in early adulthood, at the time of entering labour market (Erola, 2009; Härkönen & Bihagen, 2011). These effects are likely to be different for fathers and mothers: while fathers are more likely to be working full time and to have higher earnings than mothers, thereby contributing more to intergenerational achievement through material assets (i.e. Beller, 2009), mothers are often found to contribute through factors more closely associated with their educational attainment (Korupp, Ganzeboom, & Van Der Lippe, 2002). Fathers, however, also retire earlier, whereas mothers stay longer in the labour market. A mother is also more likely to be the head of a single-parent household. Thereby it seems likely that strength of socioeconomic

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inheritance depends on the age when different characteristics of different parents are observed.

If life course variation in the influence of different parental characteristics is extensive, it may simply be that certain parental background indicators are decisive at a certain point in life, while others are important at another age. Ignoring this by measuring parental status at certain point in time or using permanent status indicators could lead to biased conclusions as to factors driving intergenerational social mobility. However, we do not know if such a variation has a substantive effect on conclusions drawn from the results. There have been very few previous studies dealing with the role played in intergenerational mobility by life course variation in parental status (see Plewis & Bartley, 2014), and to our knowledge none considering this variation systematically over the early life course.

In this paper we compare the contribution of maternal and paternal education, occupational class and income—observed at different ages during childhood and youth—to children’s adult socioeconomic status. We apply sibling models and estimate both the shared and the direct effects of each socioeconomic factor by decomposing family variance according to the proportions explained by them. The analyses are conducted using high-quality register data comprising 29,282 Finnish children born in the period 1966–1975.

2. Theoretical framework

2.1. Causal relationship between education, class and income

It can be argued that parents influence the adult socioeconomic attainment of their children through two types of pathway: *endowments* and *investments* (Becker & Tomes, 1976; Behrman, Rosenzweig, & Taubman, 1994; Coleman, 1988; Erola & Jalovaara, 2014; Esping-Andersen, 2011; Musick & Mare, 2006; Rosenzweig, 1990). Any parental resources or characteristics that children can potentially benefit from are called endowments. In addition to economic and material resources, endowments include human or cultural capital, social status and networks, as well as aspects of the genetic background influencing cognitive skills, non-cognitive traits and physical characteristics. Investments refer to *intentional* parental behaviour aimed at influencing child outcomes. They

include the money that parents spend on their children’s well-being, education and living conditions, as well as the amount of time and effort they put into supervising and supporting their offspring.

Endowments and investments cannot usually be distinguished from each other. Rather, parental education, class or income is applied as a proxy for family background, under the assumption that they are more or less interchangeable indicators of it. However, as previously pointed out by others (e.g. Bukodi & Goldthorpe, 2013; Jæger, 2007), they can be assumed to measure somewhat different aspects of family background: the level of education provides an estimate for example of cognitive skills and non-cognitive traits, occupational class one of social status, and income one of economic and material resources. Unfortunately, when controlled for alone, each one covers not only those aspects of socioeconomic background to which it is assumed to be closest, but also those typical of other types of socioeconomic status with which each measure is strongly correlated. For instance, when controlling for parental occupational class we also control for the educational qualifications that have led to the occupational status, as well as the earnings that will follow from it. Consequently, using a single indicator of parental socioeconomic status we are likely to underestimate the total effect of family background and overestimate the influence of the specific social status characteristic we are controlling for (Bukodi & Goldthorpe, 2013).

The identification of the independent contributions of strongly correlated indicators of socioeconomic background can be somewhat tricky. One usually ignored aspect of these characteristics, however, is that the effects of education, occupational class and income can be arranged causally, as shown in Fig. 1. It may be argued that parental education has a direct or independent effect on the adult status of the children, for instance as a proxy for the skills and traits that can be inherited genetically or by learning. Education, however, also contributes through occupational standing; it may for instance have helped the parents to achieve a certain status in the labour market. In this case the effect of education would be shared with occupational class. Effects operating in the opposite direction are not likely; in most cases, occupational standing cannot have an impact on educational qualifications. In some cases educational qualifications may have a direct effect on the level of income, for instance if one’s salary increases more or less automatically after gaining a better educational qualification.

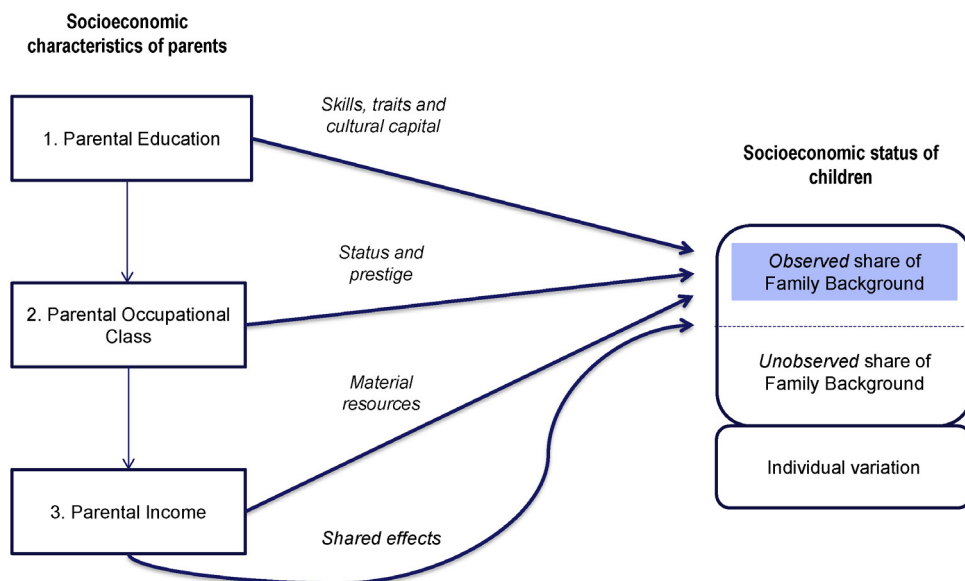


Fig. 1. Effect of parental resources on socioeconomic status of children.

Such an effect is more common in specific occupational fields and positions.

Parental occupational class in turn is the main determinant of parental income and thereby an indirect indicator for the material resources available in the childhood family. But it may also be a signal of social status or prestige that may be helpful for the children. Parental income, on the other hand, may have a direct effect on children as well, but in most cases it is dependent on the parents' occupational standing.

Finally, parental education, class and income influence together, because a certain kind of education (or lack of it) leads to certain occupations, in turn providing a certain level of income. These shared effects are more or less indistinguishable. The shared effects also cover the effects of any unmeasured factors that correlate with all three socioeconomic characteristics. For instance, advantageous parental social networks may consist of their peers from school, their social connections in the labour market, and acquaintances met during leisure. One type of social network might be specific to one of the above-mentioned socioeconomic characteristics, but might also be associated with all of them. Similarly, some parental skills and traits related to their education may be helpful for the children only because they offer the parents access to a certain kind of occupation.

2.2. Life course specific parental effects

The few previous studies considering the life course variation of parental status do suggest that changes in parental status matter (for parental income in the US, see Akee, Copeland, Keeler, Angold, & Costello, 2010; for parental class in the UK, see Plewis & Bartley, 2014). These studies, however, do not shed any light on possible variation in the importance of different parental socioeconomic characteristics over the individual's life course. As already argued, parental education, class and income seem to exert different long-term impacts during the different phases of the individual's childhood and youth. The importance of the early childhood environment is often approached from the viewpoint of the multifaceted effects of economic deprivation, especially child poverty (Duncan, Telle, Ziol-Guest, & Kalil, 2011). If material resources are the ones that matter, in particular father's income during early childhood should play a key role in explaining the importance of early experiences for adult attainment, since fathers have earnings more often than mothers during their children's early childhood. If this is the case, however, the mother's contribution should increase as the children grow older, when it becomes more common for mothers to work, while the father may leave the workforce or move out of the household in case of partnership separation.

The effects of economic and material resources, however, are not limited to only the direct effects of extreme poverty, such as malnutrition and child mortality (Duncan et al., 1994; Heckman, 2006). Instead, the intergenerational effects of economic resources are often mediated by other factors. For instance, Hauser & Sweeney (Hauser & Sweeney, 1995; see also Warren, Sheridan, & Hauser, 2002) used the Wisconsin Longitudinal Panel to show that the effect of adolescent poverty on various socioeconomic adult outcomes was modest or non-existent when maternal education and family structure were controlled. Guo and Harris (2000) examined the effect of low income on children's intellectual development in the U.S. and found that the effect of poverty was mediated above all by lower *cognitive stimulation* at home (e.g., availability of quality books and newspapers, trips to museums). The second most important factor was a more negative *parenting style*, due to psychological stress levels associated to economic problems. Moreover, they found that poverty had no direct effect, which means that the sole lack of economic resources did not matter. Likewise

Jæger (2007), studying multiple indicators of parental economic status, was unable to find any direct effect on children's completion of upper secondary education in Denmark for the generation born from 1975 to 1985. Furthermore, Mayer (1998) analysed U.S. panel data to show somewhat similarly that once the basic needs of children are met, higher income does not improve child outcomes much but parental characteristics become more influential. She also found that unlike Guo and Harris, parental income does not appreciably influence children's outcomes by affecting parental stress or parenting style, although parent-child interaction itself appears to be important.

The findings above suggest that economic conditions alone are of lesser importance than other types of family resources. For instance, Bukodi and Goldthorpe (2013) found that parental education was the strongest predictor of children's education in the UK, although parental class and social status mattered as well. These findings fit with the life course theories on education and human capital (Becker, 2009; Mayer, 2009; Pallas, 2003). According to these theories, parental human capital is accumulated through education and has a salient effect on first educational choices, which will continue through life.

Many other studies have underlined specifically the importance of mother. For example Korupp et al. (2002) using data from the Netherlands, West Germany and the U.S., showed that resources from the lower-status parent matter for children's educational attainment—this parent usually being the mother. Buis (2013), using eleven Dutch surveys covering birth cohorts born between 1931 and 1991, found that the mother's education mattered more in children's attainment than that of the father, especially when the mother was not employed. Likewise Conley (2008) found that the influence of the family background (sibling similarities) increased over the life course for children with highly educated mothers, while a different pattern surfaced for the children of mothers with less education.

The mothers' greater influence on the children's attainment through their own and the children's education may be explained by the above-mentioned better parenting skills of educated mothers. If this is the case, the mother's education should matter the most when the child is very young. But even more simple explanations may apply; the parent who spends more time with a child may be more likely to be a role model in making educational choices, and during childhood this is often the mother. On the other hand, in many educational systems the key educational choices are made during adolescence, when the mothers have often returned to work. It is thus possible that the differences between the contributions of mothers and fathers are smaller during that time of life than they may have been earlier. Furthermore, the parents' education does not change much after the children are born; thus they will be "exposed" to the same level of parental education throughout whole life. Because of this most of the life course variation in the importance of parental education should presumably result from the growing or diminishing importance of the other parental characteristics in socioeconomic inheritance that can change, in our case class and income.

Parental occupational class can be seen as a necessary link between their education and their income; having a good education does not alone guarantee material wealth, well-being or high social status for individuals or their families. The main source of income for most people in developed societies consists of earnings from work (either current or previous) or from a job held by another family member. In addition to its role as a link between education and income, class may be seen as a proxy for social standing and social prestige, as well as an indicator for both cultural and social capital (i.e. Weeden & Grusky, 2005). Even if the aspects of occupational standing that can be associated with income and education are controlled for, it is thus likely that occupational class will still

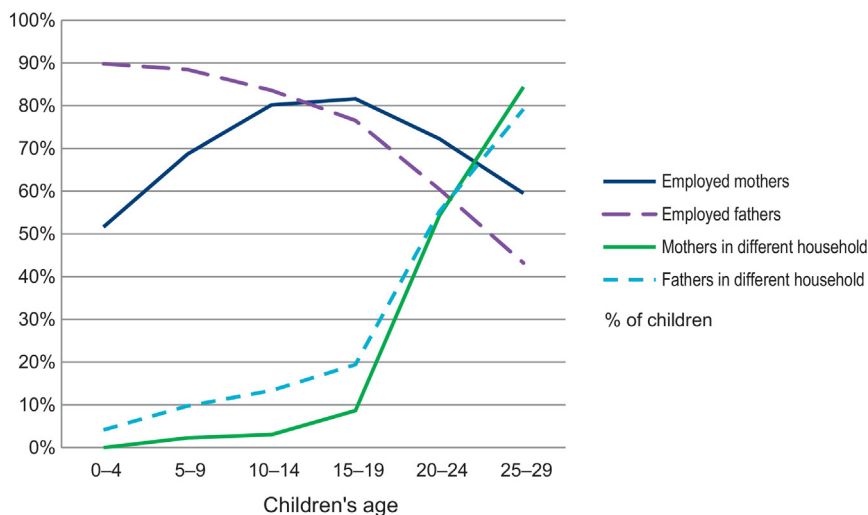


Fig. 2. Proportion of children with employed and non-co-residing parents at different ages of children (%).

prevail as a significant proxy for many other valuable aspects of socioeconomic status.

We should expect the importance of maternal and paternal class to vary much as in the case of income. Female employment, socioeconomic status, and consequently also other work-related resources are usually lower during the infancy of their children and increase when the children are growing up, while fathers are likely to retire earlier or (in the case of parental separation) become non-co-residing parents. Social class is also sometimes viewed as a particularly good proxy for permanent income (c.f. Erikson & Goldthorpe, 2010) and is closely related to unemployment risk (Goldthorpe & McKnight, 2006).

According to the previous literature, however, other patterns of life course variation can be expected as well. Earlier research on occupational mobility suggests that in particular entry into the labour market may be decisive for the “final” or long-term occupational standing achieved by the children (Erola, 2009; Härkönen & Bihagen, 2011). It may be argued that parental social networks, especially those built up at work, may be particularly advantageous for children at that point in their life course.

2.3. Institutional context: Finland

We analyse the intergenerational influence of parental socioeconomic status during the children’s childhood and youth using Finnish data. This societal context provides a particularly interesting setting for examining the importance of different socioeconomic resources of mothers and fathers. The Nordic welfare state itself provides a number of income transfers targeted in particular at low-income families, thus mitigating the disadvantages caused to economically vulnerable families by economic deprivation. Young people’s independent living is supported by the government and the local authorities, in the form of housing subsidies and needs-based subsidies for rent deposits and moving costs. These institutional characteristics of Finnish society should reduce the importance of parental economic resources from children’s adolescence onwards.

The heavily subsidised daycare system is universally accessible and of high quality, possibly also reducing the influence of parenting skills. The comprehensive educational system introduced in 1966 has been shown to reduce the importance of family background in socioeconomic attainment (Pekkarinen, Uusitalo, & Kerr, 2009). Education in Finland is free of charge and higher education has been entirely tuition-free since 1974. The comprehensive

school begins at the age of 7 and continues until the age of 16. The most significant transition occurs after this when children choose an academic (general upper secondary) or vocational track, both lasting for 3 years. From the general upper secondary school, they often continue to study at the university (master or bachelor level courses) or polytechnic schools (bachelor level courses). The education system does not have official dead ends: in principle, anyone can apply from secondary level education to university through an intake exam or special targeted (but much smaller) quotas (Ministry of Education and Culture, 2015).

It is therefore not surprising that in country comparisons Finland appears to be a fairly open society in terms of equality of opportunity (Erola, 2009; Jäntti, Saari, & Vartiainen, 2006). On the other hand, in Finnish society education plays a particularly strong role in socioeconomic achievement. Formal educational qualifications are required for many public-sector occupations, and are often considered important in private-sector recruitment as well (Kivinen, Ahola, & Hedman, 2001).

From the point of view of the current study, however, perhaps the most interesting institutional aspect is the female labour participation rate. This has traditionally been high in all Nordic countries, but particularly in Finland. In 1970 the female labour-force participation rate was already 61%, and by 1980 it was over 70% (OECD, 2014). As shown in Fig. 2, more than half of Finnish mothers having pre-school children work full-time. While it is likely that female labour force participation is strengthened by the availability of daycare and the comprehensive school system, the employment rate of women was high already before these systems became widely available (Julkunen & Nätti, 1999). This suggests that female employment has long been seen as a norm rather than being a recent development. At the same time, however, the female-male earnings gap has remained rather persistent, at around 20% (Mandel & Semyonov, 2005). Women also appear to have weaker access to high-status professional class occupations (Erola, 2009). If it is employment alone that matters, we should therefore not expect to observe great differences in the contribution of mothers and fathers in intergenerational socioeconomic achievement. If, on the other hand, resources acquired through work are more important, we should expect fathers to contribute more.

2.4. Hypotheses

The above discussion provided a number of assumptions as to how parental socioeconomic characteristics might be associated

with the occupational achievement of their children. Our first hypothesis compares the importance of each status characteristic, and is based on the causal order of parental characteristics argued above (shown in Fig. 1) and on the Finnish institutional context, which reduces the importance of income differences between families:

H1. Parental education has the strongest unconditional effect on children's occupational achievement, parental class status the second strongest and parental income the weakest.

This hypothesis simply considers the total effect of each parental characteristic alone, before taking into account the variation due to other socioeconomic factors. When this is the case, the observed influence of each characteristic includes the effect of other correlated characteristics as well, which is why they are referred to as *unconditional effects*.

Secondly, we expect mothers and fathers to differ in when and to what extent their employment-related status characteristics, *class and income*, explain the children's adult outcomes. Considering their divergent employment patterns during the children's childhood and youth, the class and income of the father should matter particularly during early childhood and become less important later. This, again, should be associated with the increasing importance of the *direct effect of education*, as we expect its shared effects with class and income to diminish while the level of education remains fixed. In contrast, the contribution of the mother's class and income should strengthen towards the children's adolescence and youth, in association with the diminishing *direct effect of education*. In order to test the second hypothesis, we therefore distinguish between the *direct* and *shared* effects of maternal and paternal socioeconomic factors by decomposing these effects with the approach described above:

H2. The unconditional effects of maternal and paternal class and income over the children's life course on their occupational achievement follow the diverging employment patterns of mothers and fathers, while the direct effect of education follows a reverse trend.

Our third hypothesis assumes that the decomposed, direct effects of parental socioeconomic characteristics vary over the children's early life course. First, the economic situation in the family has been found to be especially important in early childhood. Second, parental education should be particularly important in adolescence, when educational choices are made; and third, parental class is expected to matter in early adulthood, when children usually enter the labour market.

H3. Parental income has the greatest direct effect on children's occupational achievement during early childhood, parental education during adolescence, and parental class in early adulthood.

The third hypothesis to some extent contradicts the second one, assuming that the key periods for the effect of parental income and class are different. Further, while parental education is expected to change only little after the children are born, and thus to undergo only modest changes in its unconditional effect over the life course of the children, we may expect to observe variation in the proportions explained by parental education directly and as a shared effect with other socioeconomic characteristics.

3. Data and methods

3.1. Data

The analyses were conducted using the longitudinal Finnish Census Panel (FCP), a register-based panel dataset provided by Statistics Finland. The data were collected by taking a one-percent

random sample of the Finnish population in 1970, then expanding the dataset to include all their family members between 1970 and 2005. The data include various socioeconomic and demographic variables, including occupational status, income, educational level, sex and year of birth. The variables were collected from different administrative sources and linked together to provide the information for each individual. The whole sample covers around 1,000,000 Finns, i.e. about one fifth of the Finnish population. The major strength of register-based data is that they suffer less from missing data, measurement and response bias or attrition than do survey data. Some limitations specific to this data apply as well: information for the years 1970–1985 is available only for every fifth year, and due to the low rate of immigration to Finland before the 1970s it does not include many immigrant families.

We selected individuals born during 1966–1975 and matched them with their sibling(s), if any, born during the same period. Then we matched children with information on their mother at the time the children were 0–4. Finally, we matched this information to fathers living in the same household. We followed these parents until the children were 25–29 years old, whether or not they continued to live in the same household. We dropped individuals whose mother was over 46 at the time of the child's birth ($N=221$, 0.8%), to not confuse mothers with grandmothers. The final data contain complete information on 29,282 children, consisting of 14,965 (51.1%) sons and 14,317 (48.9%) daughters, as well as information on 20,293 (95.3%) fathers and 21,297 (100%) mothers.

Our dependent variable is the child's occupational status in adulthood measured by ISEI scores, which we observed twice, at the ages of 25–29 and 30–34. The main reason for using ISEI scores as measurement for occupational status is its multidimensional character. ISEI scores form a scale of occupations which is constructed by regressing occupations with their income and education, thus making them closely related to both (Ganzeboom, De Graaf, & Treiman, 1992). As it is constructed from occupational data, it is also a good proxy for social class. Occupational data are also less sensitive to short-term variation than income, but include more long-term variation during the different phases of life than education. It may also be argued that occupational status is a more direct measurement of social status than education; the latter merely reflects a person's success potential, rather than success itself. Although the ISEI scores are originally derived from income and educational data of men only (see Ganzeboom et al., 1992), in the Finnish case the index has been shown to work more or less equally well for women. In our data, for instance, an equal proportion of mothers and fathers have at least one recorded occupational status. The ISEI scores were also z-standardised across the whole data, including both men and women, to normalise the ISEI score distribution and fixing the mean at zero. Standardising the z-scores separately for women and men did not change the results significantly.

We used three different socioeconomic status measures to estimate the importance of different aspects of parental background. *Education* was coded into five levels: compulsory education (1 – Basic), vocational track (2 – Lower secondary) matriculation (3 – Higher secondary), lower tertiary education in universities or polytechnics (4 – Lower tertiary) and higher tertiary in universities (5 – Higher tertiary). *Parental occupational EGP class* is measured with seven levels: I – Higher Professional, II – Lower Professional, III Routine non-manual, IVab – Self-employed, IVc – Farmers, V–VI – Skilled workers and VII – Other workers. And third, *income* is measured with logged individual income.

The parental socioeconomic characteristics were measured at different ages during childhood and youth: when the children were 0–4, 5–9, 10–14, 15–19, 20–24 and 25–29 years old. The first observation of parental status is from the year 1970, and the last one for the children is from 2005.

Missing observations of parental class and income were handled as follows. If parental EGP class was missing at a given age of the children, we replaced it with the previous observation. Values that were missing when the children were 0–4 (3.1% of fathers, 26.0% of mothers) could not be imputed by carrying values forward as previous observations were not available. Therefore, we coded them as missing. At this time point, the explanation for a missing occupation among women is mainly maternity leave or home carers status, leading to non-random missing data in the beginning of follow-up. At the same age of the children, information on income was lacking for 35.4% of the women (only 3.4% of the men). This was because the data provider Statistics Finland had coded any income less than 100€ as missing, although these mothers often had very low or no income. Thus, these missing values were replaced by the theoretical median, 50€. This solution also provided statistically better fit than other options, multiple imputation and replacement by mean, and also better fitting results than setting the missing income to zero or 100€.

In all models we controlled for the mother's age when the child was born (as a linear variable), the child's year of birth (as dummies) and the child's gender (as a dummy). The mother's age when the child was born was included as a control, since the socioeconomic statuses of older mothers may be higher than those of younger ones.

3.2. Method: family variance decomposition

In order to estimate the impact of paternal and maternal status on the socioeconomic status of their children, we used a family variance decomposition method. The justification of this approach in studying the influence of the family background follows the same reasoning as in the case of sibling similarities: the more siblings are alike, the greater the impact of the shared background is expected to be. This shared family variation reflects anything common among siblings, including their living surroundings in childhood and youth, parental resources, and the shared genetic background.

To estimate the family variances needed for the decomposition, we fitted three-level random-effects (mixed-effects) linear regression models in which the observations are clustered according to families and individuals (random effects). The families have up to eight children, and there are two observations of occupational status for each sibling, which allows us to fit models with random effects for unobserved heterogeneity (unexplained variance) at the level of both the family and the individual. The model can be expressed as the following regression equation:

$$y = \beta'X_{ijk} + \delta_i + \varepsilon_{ij} + u_{ijk}$$

X_{ijk} includes observed parental and child characteristics; residual δ_i reflects differences in occupational status due to unobserved family-level heterogeneity, which does not vary between children of the same family; ε_{ij} refers to unobserved individual-level heterogeneity, which is constant over the two observations on occupation for each individual (at the ages of 25–29 and 30–24); and u_{ijk} refers to the residual (temporal) variance.

We are primarily interested in unobserved family-level heterogeneity that should include all the sources of background variation that are not yet controlled for in each model. Controlling for anything shared among siblings, such as maternal or paternal education, occupational status, or income, reduces this variation. The individual heterogeneity component includes the unobserved individual-level variation in occupational achievement that does not originate from the shared background; controlling for factors that are specific to each sibling and are not shared would reduce this variation. In principle, controlling for parental characteristics could also reduce the individual level variance. This would be the case,

for instance, if sons and daughters were treated differently by their parents (in which case we should allow the individual level variance to vary according to gender; however, the unreported analyses showed that only individual-level heterogeneity differed between boys and girls at a statistically significant level). In fact, none of the parental variables included in the models reduced individual-level variation statistically significantly, suggesting that any differential treatment of children by their parents did vary systematically according to parental education, class or income. Thus we were confident in ignoring both individual-level and residual heterogeneity components in the results reported below (for similar reasoning, see also Mazumder, 2005). The estimates are available from the authors.

In order to decompose the family-level variation in proportions indicating how much the observed socioeconomic characteristics explain separately (independent or direct effects) and to what extent together (shared effects), we first ran an “empty” model, including only the control variables (child's gender, mother's age at birth, child's year of birth) but none of the observed parental socioeconomic characteristics. As we were interested in changes over time, separate empty models were run for all the included age periods during the children's childhood and youth. These models provided the baseline level of family variance. We then fitted separate models, first including only one parental characteristic at a time, next all pairwise combinations of characteristics and finally all characteristics together. By comparing the extent to which unobserved family-level heterogeneity is reduced in each model compared to the baseline model, we were able to partial out the family background effect according to different parental socioeconomic factors.

Our baseline model, for example, may have indicated that family variance was 0.272, and when we in the next model controlled simultaneously for paternal education, EGP class and income for the period when the child was 0–4 years old, family variation dropped to 0.144. This suggests that any aspect of the family background related to these socioeconomic characteristics at that age of the child contributed to $0.272 - 0.144 = 0.128$ to the family level variation. This indicates that the father's education, class and income (and all factors associated with them) at the child's age of 0–4 explain approximately $0.128/0.272 = 47\%$ of the family variation. By comparing the proportion that each combination of the parental background variables explains of the family variation, we can estimate how much each of them explains of the family variance directly and in combinations. We also estimate the confidence intervals or standard errors for each proportion using the delta method (Agresti, 2002; Oehlert, 1992). When errors are not reported they are available from the authors.

4. Results

We begin the presentation of our findings by describing the variation in the parents' employment rates and non-co-residence with their children from the children's childhood to late youth (Fig. 2). When the children were 0–4 years old, almost all the fathers and about half of the mothers were working; when the children were 15–19 years old, on the other hand, the mothers' employment rates exceeded those of the fathers. This was also the age when the mothers' employment peaked.

By the time the children were 10–14 years old, over 10% of the fathers were already living in different households. The most important reason for this is parental separation, which is usually found to have a negative effect on children's socioeconomic attainment, in Finland as well (Amato, 2000; Erola, Härkönen, & Dronkers, 2012; Erola & Jalovaara, 2014). At the age of 15–19 children began to move into their own households in Finland, the first ones probably being those who moved away to study. At the age of 25–29 only

Table 1
Descriptive statistics for parental socioeconomic variables at children's ages 0–4 and 25–29 years.

	Father Age of children		Mother Age of children	
	0–4	25–29	0–4	25–29
<i>Parental education</i>				
Basic	55	49	58	48
Lower secondary	26	29	25	32
Higher secondary	10	11	11	13
Lower tertiary	5	6	4	4
Higher tertiary	4	5	2	3
Total	100	100	100	100
<i>Parental class (EGP)</i>				
No occupation information	3	1	26	2
Other workers	26	22	14	25
Skilled workers	27	23	5	5
Farmers	12	11	13	10
Self-employed	5	12	5	6
Routine non-manual	6	4	27	36
Lower professional	11	17	7	14
Higher professional	10	10	4	3
Total	100	100	100	100
<i>Parental income (€)</i>				
Median	18,632	23,363	3392	18,491

about one fifth of the children were living with either of their parents; most of them were thus out of the immediate reach and control of the parents. By this age the most important educational choices have usually already been made.¹

Table 1 gives descriptive statistics for the parental socioeconomic variables when the children were 0–4 and 25–29 years old. As expected, parental education changes less than other variables. However, approximately 10% of the fathers and 15% of the mothers have a different educational level at the last observation compared to the earliest one. In class status the equivalent numbers are as high as 42% for fathers and 62% for mothers. The income of both parents also grows substantially between the two observations, especially for mothers.

We begin our analyses by considering what proportion of the family variance in the SESs of adult children is explained by all three maternal and paternal status characteristics combined, observed at different ages during childhood and youth. These proportions are shown in Fig. 3. The changes over time are small and not statistically significant. The fathers' education, class and income explain approximately half of the family background variation. The proportion is somewhat smaller both when the children are very young and when they have reached adulthood. For the mothers, this proportion is slightly smaller, approximately 40%. Maternal and paternal characteristics combined explain more of the variation, almost 60%. On one hand, this suggests, as also found in previous studies (Beller, 2009; Korupp et al., 2002), that both maternal and paternal characteristics matter. The results, however, also suggest that the overlapping proportion explained by maternal and paternal characteristics remains constant over the child's life course. Otherwise the proportion explained by them together would change over time, whereas the share explained by maternal and paternal characteristics separately would not. In the following, our analyses will thereby be reported for mothers and fathers separately.

¹ One aspect that may play a role here is parental death. Because of the way our data has been constructed, we cannot observe parental deaths before the earliest observation of the children at the age of 0–4. At this age deaths are nonetheless very rare. Parental deaths become more commonplace as children age and are more usual for fathers. By the age of 25–29 years every tenth father had died, but only 3 % of mothers.

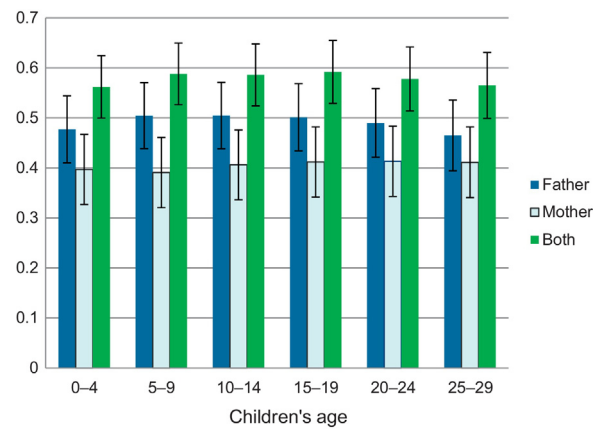


Fig. 3. Proportion of family variance of siblings' ISEI explained by father's and mother's status characteristics together (education, social class and income) at different ages of children, with 95% confidence intervals.

The influence of education, occupational class and income observed in combination does not yet provide information to evaluate our hypotheses. In order to do this, we separated the direct and shared effects of parental education, class and income at the different ages of children. These results are shown in the three panels of Fig. 4.

Let us first consider the figures from the point of view of Hypothesis 1. The unconditional effect of each of the factors is the total amount that direct and shared effects explain together. Education appears to explain family variance most, with the exception that before the age of 20, the importance of fathers' education and EGP class is approximately the same. For mothers, the difference between education, class and income is clear throughout the age groups covered. As expected, income is the weakest explanatory factor. Thus, we might say that the results shown in Fig. 4 support Hypothesis 1: parental education explains children's achievement best and income explains it worst. Further, compared to Fig. 3, the different patterns for mothers and fathers stand out more clearly now. With all measures of parental status and at all ages of the children, paternal resources explain a greater proportion of the family variance in siblings' occupational standings.

According to our Hypothesis 2, the unconditional impact of parental class and income should follow their employment rates, while in the case of the direct effect of education the trend should be the reverse. The three panels of Fig. 4 also more or less confirm this in the case of class and education; the importance of the fathers' class diminishes while that of the mothers' class is highest at the time their employment rate is highest as well. The direct effect of maternal education is greatest during early childhood, while that of paternal education begins to matter more during early adulthood. The unconditional effect of income, however, does not follow the pattern predicted in the Hypothesis 2, as we did not expect the unconditional impact of income to increase during the childhood of the children. This most likely reflects the importance of increased earnings—and the presumably increased variance in earnings—of the fathers during their early careers.

In our Hypothesis 3, we expected parental income to matter independently most during early childhood, parental education to matter most during adolescence, and parental class to matter most in early adulthood. As already mentioned, this hypothesis is partly in contrast with Hypothesis 2. Panel C of Fig. 4 shows that income has a very weak direct effect on the family variance during the whole period observed, regardless of which parent is involved; none of the direct effects explain a statistically significant proportion of the family variation. Moreover, for fathers the direct effects of each three socioeconomic factor are rather small

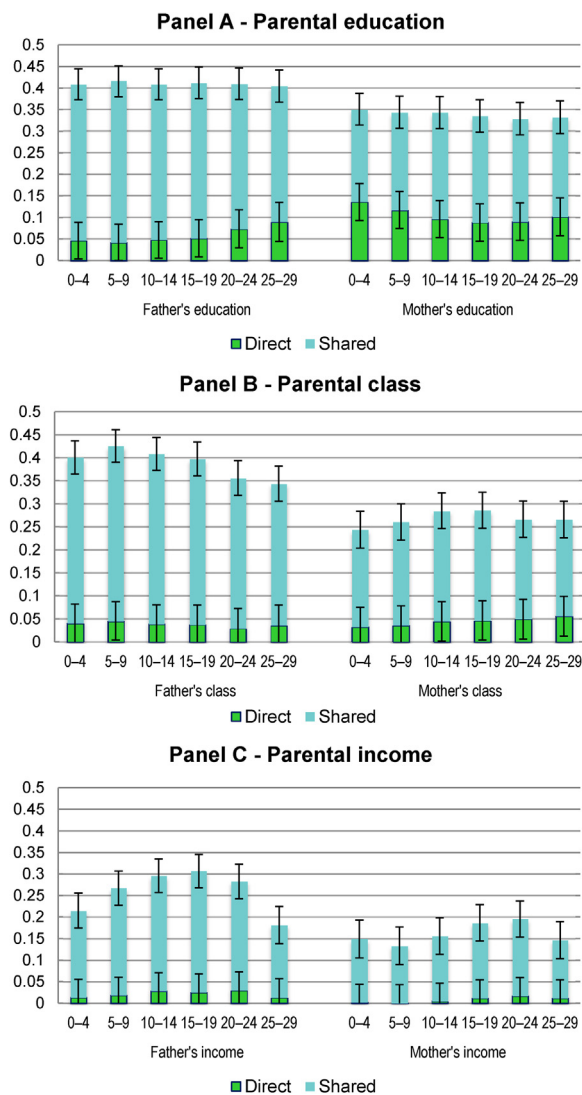


Fig. 4. Proportion of family variance in siblings' ISEI explained by father's and mother's education, social class (EGP) and income at different ages of children. Direct and shared effects, with 95% confidence intervals.

(not differ statistically significantly from zero) during early childhood. In the case of education, the top panel of Fig. 4 shows that the direct influence of maternal education is the reverse of that predicted by Hypothesis 3—and indeed in line with Hypothesis 2: the effect is strongest during infancy and early childhood, and weakens as the children grow older, though remaining stable after the age of 15–19. For fathers (Fig. 4), education starts to pick up only after adolescence. Finally, the importance of the direct effect of parental class in intergenerational achievement does not vary much during the follow-up period, thereby no increase in early adulthood is found. Further, the direct effects explain a statistically significant proportion of the family variation in only few cases. When we distinguish between the parts of the shared effect that are related to each combination of the three variables (reported in Appendix), a new pattern emerges: all the substantial effects appear to be related to education—either independently, together with EGP, or together with income.

To sum up: our third hypothesis is not supported, as income does not have the strongest influence during early childhood, education does not matter most in adolescence, and the effect of class does not peak in early adulthood.

5. Conclusions

We have analysed the intergenerational influence of socioeconomic position of mothers and fathers—as observed during early life-course of the children—on children's occupational achievement in adulthood. We used high-quality Finnish register data to compare the effects between each parent and between the different parental socioeconomic characteristics (education, class and income), and to carry out a life course comparison. Status indicators were observed separately for both parents at five time-points during the childhood and youth of their children: at the ages of 0–4, 5–9, 10–14, 15–19, 20–24 and 25–29. In order to compare the contribution of parental background at different life course stages, we decomposed the family variances in siblings' socioeconomic statuses as adults according to education, EGP class and log-income of each parent.

The first key conclusion to be drawn from the results is that the proportion of family variation explained together by parental education, class and income is relatively independent of the children's age at which the characteristics are observed. This could be interpreted as good news for previous studies on intergenerational socioeconomic attainment measuring parental status only at certain point during childhood or youth; the bias caused by ignoring the life course variation is likely to be small.

Further, the results supported our *first hypothesis*: parental education matters most and parental income least. This result was expected on basis of both the causal order of these socioeconomic measures underlining the importance of educational qualifications and the earlier studies finding a relatively small importance of family income, especially in the context of the Nordic welfare state. There are some important additions to this conclusion. First, before the children are 20 years old, paternal class and education are equally important, as proportions explained by paternal class and education were very similar. Second, at the age of 15–19 the difference between the unconditional proportions explained by each background characteristic was not statistically significant. This actually supports claims that at that age, if only one of the three status dimensions considered here can be used, basically any of them can be applied as a proxy for parental status. Third, the shared effect was much bigger than the direct effect in all cases (each status type, both parents, at every age), whereas the direct effects of each status type separately—except perhaps for maternal education—were fairly small. By concentrating on a single measure of socioeconomic status, however, we would oversimplify our theoretical models explaining the socioeconomic influence of the parents. This is because the mechanisms related to the correlating measures of parental socioeconomic status contributing to the shared effects are ignored. Similar conclusions have been drawn by some previous studies (e.g. Guo & Harris, 2000).

Our *second hypothesis* was largely supported. The proportion of family variation explained—unconditionally—by parental class followed the pattern of parental employment, while changes in the direct effect of education were the reverse. In the case of income, changes in the unconditional effect were more contrasted than predicted by the hypothesis; in particular, we observed statistically significant growth in the unconditional effect of fathers' income during childhood and youth, most likely reflecting their growing average earnings.

The *third hypothesis* did not gain support. Contrary to its assumptions, maternal education had its strongest direct effect in early childhood. In the case of fathers, however, the pattern was the opposite—education began to have a stronger direct effect in early adulthood. An explanation of these findings may be that parent–child interaction mediates the effect of education-related resources, values and attitudes on children. When fathers, for

example, exit the labour market, they may be more in contact with children, and thus, their professional and economic resources become relatively less meaningful than their educational ones. For the mothers this goes just the opposite. Educational level may also signal different types of mechanisms for fathers and mothers. In the case of mothers, it may reflect their parenting skills (e.g., Guo & Harris, 2000); in the case of fathers, it may reflect their cultural or social capital, for instance (Jæger, 2007).

Further, the direct effect of class was relatively fixed and did not acquire more importance during youth or early adulthood, although it may still play a role at the period of entering into the labour market. In terms of our hypotheses, however, the most unexpected result concerns the importance of income: contrary to what is often assumed, the independent effect of income during early childhood was non-existent in practice. Later too, income mattered only as a shared effect, together with either education or class or both. In the context of the Finnish welfare meritocracy, a finding like this is logical and expected. However, similar results have been found in other types of institutional contexts (Farkas, 2003; Guo & Harris, 2000; Mayer, 1998). One conclusion to be drawn from this finding is that those using very early childhood or early adulthood data for parental income as a proxy for all family background effects are likely to miss the most, whereas those using parental education observed at any age are likely to miss the least.

Some other findings are also worth noting. As in many previous studies (e.g. Guo & Harris, 2000, Korupp et al., 2002), our results underline the importance of parental education, for both mothers and fathers. As mentioned, the effects of both class and income were also dependent on it. However, for fathers, it appears that education alone did not matter much during either childhood or adolescence but only jointly with class. This finding suggests that for fathers, a complementary relationship exists between the indicators; the total proportion explained by the three factors together did not change much, even though the importance of education alone increased. We may ask whether this signals a compensatory mechanism; when fathers exit from the labour market and their occupational class and income become less advantageous than before, this is offset by other education-related resources that can be invested in children.

Our approach to finding out the relative importance of the parental socioeconomic characteristics at certain ages of the children—by decomposing the family variance—has its limitations. Family variance includes anything the siblings share, also shared factors not directly related to the parents, such as the effects of peers and schools (Duncan et al., 2011). It may therefore be argued that the shared family variance overestimates the effect of the parental background. On the other hand, our approach to estimating the importance of the family background may leave some parental influence unnoticed, leading to underestimation of the total effect; this would be the case for example if the parents purposely treated siblings differently or favoured some sibling(s) over others (see Rohde et al., 2003). Measuring the family background

through family variance alone can thus be criticised for a certain level of ambiguity (e.g. Duncan, Boisjoly, & Harris, 2001).

However, analysing the variation in family-level unobserved heterogeneity provides valuable estimates for the effect of family background that are hard to achieve otherwise; what part of it is fixed over the early life course, what parts can change, and what environmental and other factors are related to it. In our analyses the proportion explained by the three parental status indicators remained relatively stable over time, covering about half of the family variation. That parental resources are not especially determinative at specific ages is somewhat of a positive finding from the societal point of view. For instance, lower parental socioeconomic status at a certain age of a child may be compensated for by a better status at a different age. Parental education, class and income thus appear to form a distinct, to some extent perhaps interchangeable set of parental background variables, which together explain an almost fixed amount of the intergenerational influence over children's early life course.

Most of the family background variation in socioeconomic outcomes cannot be effectively separated out by parental education, class and income; even if they are controlled for, almost half of variation remains unexplained. Ignoring this fact can lead to misplaced conclusions as to the importance of different mechanisms in socioeconomic inheritance. Therefore, we propose making an effort to identify such factors to learn more about how the parental background effect operates.

Our results suggest that the potential bias due to the life course variation of parental status is small in the studies on intergenerational occupational achievement. It largely does not matter at what age these characteristics are observed. Perhaps a bigger gap in our knowledge relates to the part of the family background effect that is not grasped by parental socioeconomic measures.

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Appendix Table.

Table A1.

Table A1

Proportion of family variance in siblings' ISEI explained by father's and mother's education, social class (EGP) and income at different ages of children: total, direct and all combinations of shared effects. Standard errors in italics.

	Child's age when parental status measure observed					
	0–4	5–9	10–14	15–19	20–24	25–29
<i>Father's status measures</i>						
Education, EGP and income together (including independent and shared effects)	0.477	0.505	0.505	0.501	0.490	0.465
	<i>0.034</i>	<i>0.034</i>	<i>0.034</i>	<i>0.034</i>	<i>0.035</i>	<i>0.036</i>
Independent effect of education	0.046	0.042	0.048	0.052	0.073	0.090
	<i>0.042</i>	<i>0.042</i>	<i>0.042</i>	<i>0.043</i>	<i>0.044</i>	<i>0.045</i>
Independent effect of EGP	0.040	0.046	0.039	0.037	0.029	0.035
	<i>0.042</i>	<i>0.042</i>	<i>0.042</i>	<i>0.043</i>	<i>0.044</i>	<i>0.045</i>

Table A1 (Continued)

	Child's age when parental status measure observed					
	0–4	5–9	10–14	15–19	20–24	25–29
Independent effect of income	0.014 0.042	0.019 0.042	0.029 0.042	0.025 0.043	0.029 0.043	0.013 0.044
Shared effect of education & EGP	0.176 0.062	0.150 0.061	0.123 0.061	0.106 0.062	0.105 0.064	0.159 0.066
Shared effect of education & income	0.016 0.060	0.018 0.059	0.020 0.060	0.027 0.061	0.031 0.062	0.019 0.064
Shared effect of EGP & income	0.014 0.060	0.024 0.059	0.029 0.060	0.027 0.061	0.021 0.062	0.012 0.063
Shared effect of education, EGP & income	0.171 0.085	0.206 0.084	0.219 0.084	0.228 0.085	0.201 0.087	0.138 0.090
<i>Mother's status measures</i>						
Education, EGP and income together (including independent and shared effects)	0.397	0.391	0.406	0.412	0.413	0.411
Independent effect of education	0.036 0.136 0.043	0.036 0.117 0.043	0.036 0.096 0.043	0.036 0.088 0.043	0.036 0.090 0.044	0.036 0.101 0.044
Independent effect of EGP	0.033 0.042	0.036 0.042	0.045 0.043	0.047 0.043	0.049 0.043	0.056 0.043
Independent effect of income	0.002 0.042	0.001 0.042	0.005 0.042	0.012 0.042	0.017 0.043	0.012 0.043
Shared effect of education & EGP	0.079 0.062	0.104 0.062	0.110 0.062	0.091 0.062	0.078 0.063	0.108 0.063
Shared effect of education & income	0.016 0.061	0.012 0.061	0.020 0.061	0.026 0.061	0.039 0.061	0.033 0.062
Shared effect of EGP & income	0.012 0.060	0.010 0.060	0.014 0.060	0.018 0.060	0.017 0.061	0.011 0.061
Shared effect of education, EGP & income	0.120 0.086	0.110 0.086	0.117 0.086	0.130 0.086	0.122 0.087	0.091 0.088

References

Agresti, A. (2002). *Categorical data analysis* (2nd ed.). New York: Wiley.

Akee, R. K., Copeland, W. E., Keeler, G., Angold, A., & Costello, E. J. (2010). Parents' incomes and children's outcomes: A quasi-experiment using transfer payments from casino profits. *American Economic Journal: Applied Economics*, 86–115.

Amato, P. R. (2000). The consequences of divorce for adults and children. *Journal of Marriage and Family*, 62(4), 1269–1287.

Becker, G. S. (2009). *Human capital: A theoretical and empirical analysis, with special reference to education*. University of Chicago Press.

Becker, G. S., & Tomes, N. (1976). Child endowments and the quantity and quality of children. *Journal of Political Economy*, 84(4), 143–162.

Behrman, J. R., Rosenzweig, M. R., & Taubman, P. (1994). Endowments and the allocation of schooling in the family and in the marriage market: The twins experiment. *Journal of Political Economy*, 1131–1174.

Beller, E. (2009). Bringing intergenerational social mobility research into the twenty-first century: Why mothers matter. *American Sociological Review*, 74(4), 507–528.

Björklund, A., Eriksson, T., Jäntti, M., Raaum, O., & Österbacka, E. (2002). Brother correlations in earnings in Denmark, Finland, Norway and Sweden compared to the United States. *Journal of Population Economics*, 15(4), 757–772.

Björklund, A., & Salvanes, K. G. (2011). Education and family background: Mechanisms and policies. In E. A. Hanushek, S. Machin, & L. Woessmann (Eds.), *Handbooks in economics* (Vol. 3) (pp. 201–247). The Netherlands: North-Holland.

Blanden, J., Gregg, P., & Macmillan, L. (2013). Intergenerational persistence in income and social class: The effect of within-group inequality. *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, 176(2), 541–563.

Blanden, J., & Machin, S. (2004). Educational inequality and the expansion of UK higher education. *Scottish Journal of Political Economy*, 51(2), 230–249.

Breen, R. (2004). *Social mobility in Europe*. Oxford: Oxford University Press.

Breen, R., & Jonsson, J. O. (2005). Inequality of opportunity in comparative perspective: Recent research on educational attainment and social mobility. *Annual Review of Sociology*, 31(1), 223–243.

Buis, M. L. (2013). The composition of family background: The influence of the economic and cultural resources of both parents on the offspring's educational attainment in the Netherlands between 1939 and 1991. *European Sociological Review*, 29(3), 593–602.

Bukodi, E., & Goldthorpe, J. H. (2013). Decomposing "social origins": The effects of parents' class, status, and education on the educational attainment of their children. *European Sociological Review*, 29(5), 1024–1039.

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, 94(1), 95–120.

Conley, D. S. (2008). Bringing sibling differences in: Enlarging our understanding of the transmission of advantage in families. In A. Lareau, & D. S. Conley (Eds.), *Social class—How does it work?* New York: Russell-Sage Foundation.

Duncan, G. J., Boisjoly, J., & Harris, K. M. (2001). Sibling, peer, neighbor, and schoolmate correlations as indicators of the importance of context for adolescent development. *Demography*, 38(3), 437–447.

Duncan, G. J., & Brooks-Gunn, J. (2000). Family poverty, welfare reform, and child development. *Child Development*, 71(1), 188–196.

Duncan, G. J., Brooks-Gunn, J., & Klebanov, P. K. (1994). Economic deprivation and early childhood development. *Child Development*, 65(2), 296–318.

Duncan, G. J., Telle, K., Ziol-Guest, K. M., & Kalil, A. (2011). Economic deprivation in early childhood and adult attainment: Comparative evidence from Norwegian registry data and the U.S. panel study of income dynamics. In T. Smeeding, R. Erikson, & M. Jäntti (Eds.), *Persistence, privilege, and parenting: The comparative study of intergenerational mobility*. New York: Russell Sage Foundation.

Erikson, R., & Goldthorpe, J. H. (1992). *The constant flux: A study of class mobility in industrial societies*. Oxford: Clarendon Press.

Erikson, R., & Goldthorpe, J. H. (2010). Has social mobility in Britain decreased? Reconciling divergent findings on income and class mobility. *The British Journal of Sociology*, 61(2), 211–230.

Erikson, R., & Jonsson, J. O. (1996). *Can education be equalized? The Swedish case in comparative perspective*. Oxford: Westview Press.

Erola, J. (2009). Social mobility and education of Finnish cohorts born 1936–75 succeeding while failing in equality of opportunity? *Acta Sociologica*, 52(4), 307–327.

Erola, J. (2012). Family background and the life cycle effects of father's class and income. In P. Lambert, R. Connelly, B. Blackburn, & V. Gayle (Eds.), *Social stratification: Trends and processes*. London: Ashgate.

Erola, J., Härkönen, J., & Dronkers, J. (2012). More careful or less marriageable? Parental divorce, spouse selection and entry into marriage. *Social Forces*, 90(4), 1323–1345.

Erola, J., & Jalovaara, M. (2015). *The replaceable: The inheritance of paternal and maternal socioeconomic statuses in non-standard families*. Working Papers in Social and Economic Issues 2/2015. Turku: TCWR.

Esping-Andersen, G. (2011). The importance of children and families in welfare states. In G. Beets, J. Schippers, & E. R. te Velde (Eds.), *The future of motherhood in western societies*. Dordrecht: Springer Netherlands.

Farkas, G. (2003). Cognitive skills and noncognitive traits and behaviors in stratification processes. *Annual Review of Sociology*, 29, 541–562.

Ganzeboom, H. B., De Graaf, P. M., & Treiman, D. J. (1992). A standard international socio-economic index of occupational status. *Social Science Research*, 21(1), 1–56.

Goldthorpe, J. H., & Jackson, M. (2007). Intergenerational class mobility in contemporary Britain: Political concerns and empirical findings. *The British Journal of Sociology*, 58(4), 525–546.

Goldthorpe, J. H., & McKnight, A. (2006). The economic basis of social class. In S. L. Morgan, D. B. Grusky, & G. S. Fields (Eds.), *Mobility and inequality: Frontiers of research in sociology and economics*. Stanford: Stanford University Press.

Guo, G., & Harris, K. M. (2000). The mechanisms mediating the effects of poverty on children's intellectual development. *Demography*, 37(4), 431–447.

- Härkönen, J., & Bihagen, E. (2011). Occupational attainment and career progression in Sweden. *European Societies*, 13(3), 451–479.
- Hauser, R. M., & Featherman, D. L. (1976). Equality of schooling: Trends and prospects. *Sociology of Education*, 49(2), 99–120.
- Hauser, R. M., & Sweeney, M. M. (1995). *Does poverty in adolescence affect the life chances of high school graduates?* Center for Demography and Ecology, University of Wisconsin–Madison.
- Heckman, J. J. (2006). Skill formation and the economics of investing in disadvantaged children. *Science*, 312(5782), 1900–1902.
- Jäger, M. M. (2007). Educational mobility across three generations: The changing impact of parental social class, economic, cultural and social capital. *European Societies*, 9(4), 527–550.
- Jäger, M. M., & Holm, A. (2007). Does parents' economic, cultural, and social capital explain the social class effect on educational attainment in the Scandinavian mobility regime? *Social Science Research*, 36(2), 719–744.
- Jännti, M., Saari, J., & Vartiainen, J. (2006). Growth and equity in Finland. In *WIDER Discussion Papers/World Institute for Development Economics (UNU-WIDER)*.
- Julkunen, R., & Nätti, J. (1999). *The modernization of working times*. Jyväskylä: SoPhi, University of Jyväskylä.
- Kivinen, O., Ahola, S., & Hedman, J. (2001). Expanding education and improving odds? Participation in higher education in Finland in the 1980s and 1990s. *Acta Sociologica*, 44(2), 171–181.
- Korupp, S. E., Ganzeboom, H. B. G., & Van Der Lippe, T. (2002). Do mothers matter? A comparison of models of the influence of mothers' and fathers' educational and occupational status on children's educational attainment. *Quality and Quantity*, 36(1), 17–42.
- Mandel, H., & Semyonov, M. (2005). Family policies, wage structures, and gender gaps: Sources of earnings inequality in 20 countries. *American Sociological Review*, 70(6), 949–967.
- Mayer, K. U. (2009). New directions in life course research. *Annual Review of Sociology*, 35(1), 413–433.
- Mayer, S. E. (1998). *What money can't buy*. Boston: Harvard University Press.
- Mazumder, B. (2005). Fortunate sons: New estimates of intergenerational mobility in the United States using social security earnings data. *Review of Economics and Statistics*, 87(2), 235–255.
- Ministry of Education and Culture. (2015). *Finnish education in a nutshell*. Helsinki, Finland: Ministry of Education and Culture.
- Musick, K., & Mare, R. D. (2006). Recent trends in the inheritance of poverty and family structure. *Social Science Research*, 35(2), 471–499.
- OECD. (2014). *Labour force statistics by sex and age: Indicators*. Paris: Organisation for Economic Co-operation and Development.
- Oehlert, G. W. (1992). A note on the delta method. *The American Statistician*, 46(1), 27–29.
- Pallas, A. M. (2003). Education transitions, trajectories and pathways. In J. T. Mortimer, & M. J. Shanahan (Eds.), *Handbook of the life course* (Vol. 1993). Boston, MA: Springer.
- Pekkarinen, T., Uusitalo, R., & Kerr, S. (2009). School tracking and intergenerational income mobility: Evidence from the Finnish comprehensive school reform. *Journal of Public Economics*, 93(7–8), 965–973.
- Plewis, I., & Bartley, M. (2014). Intra-generational social mobility and educational qualifications. *Research in Social Stratification and Mobility*, 36, 1–11.
- Rohde, P. A., Atzwanger, K., Butovskaya, M., Lampert, A., Mysterud, I., Sanchez-Andres, A., et al. (2003). Perceived parental favoritism, closeness to kin, and the rebel of the family: The effects of birth order and sex. *Evolution and Human Behavior*, 24(4), 261–276.
- Rosenzweig, M. R. (1990). Population growth and human capital investments: Theory and evidence. *Journal of Political Economy*, 98(5), S38–S70.
- Sieben, I., Huinink, J., & de Graaf, P. M. (2001). Family background and sibling resemblance in educational attainment, trends in the former FRG, the former GDR, and the Netherlands. *European Sociological Review*, 17(4), 401–430.
- Warren, J. R., Sheridan, J. T., & Hauser, R. M. (2002). Occupational stratification across the life course: Evidence from the Wisconsin longitudinal study. *American Sociological Review*, 67(3), 432–455.
- Weeden, K. A., & Grusky, D. B. (2005). The case for a new class map 1. *American Journal of Sociology*, 111(1), 141–212.