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For Better or for Worse, for Nephews or for Nieces?

Resource Compensation and Multiplication from Extended Family Members

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Abstract

The majority of studies on social and educational mobility neglect the role of the extended family. We argue that this misses important ways in which extended family members may help compensate disadvantage in children's immediate family or further multiply existing advantage. We examine the role of grandparents' and aunts and uncles' resources in Finland and the United States using longitudinal panel data (Finnish Census Panel and the PSID). Our results suggest that aunts and uncles' resources contribute more than those of grandparents. Moreover, we find evidence for extended family compensation in completing high school and avoiding poverty and similarly for multiplication in college graduation and reaching the highest income decile in both countries.

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Introduction

A wide range of existing research has concluded that parental background plays an important role for socioeconomic attainment in all societies; parents with more resources (such as education and income) are usually able to secure a better adult position for their children. However, children often have access to the resources not only of their immediate family members (i.e. parents) but also of their extended family members, in particular aunts and uncles as well as grandparents. While there is now a growing literature on intergenerational (im)mobility across three generations and the effect that grandparental resources have for their grandchildren (e.g. Chan and Boliver 2013; Hertel and Groh-Samberg 2014; Mare 2011; Pfeffer 2014), the role of aunts and uncles remains a neglected aspect of the literature both in social stratification research as well as family sociology (Milardo 2010, a notable exception in this regard is Jæger 2012).

We argue that extended family resources are not only an additional resource for children but that they may act in specific ways to either compensate for lacking parental resources or, in contrast, to further entrench inequalities by multiplying parental resources. In the first case, extended family resources are particularly important when the resources of the immediate family are low and so can be said to compensate for parental resources (Jæger 2012). In the second case, children with higher parental resources are better able to take advantage of extended family members' resources so that high resources in both the immediate and extended family multiply each other, thus making extended family members' resources part of processes of cumulative advantage (DiPrete and Eirich 2006). Moreover, we argue that these two contrasting mechanisms of how immediate and extended family resources work together are likely to manifest themselves for different child outcomes: whereas we may expect compensation to be more likely in the avoidance of positions of marginality, multiplication may be more likely for the attainment of high-status positions.

We examine the role of grandparents' as well as aunts and uncles' education and income for adult educational attainment and earnings in Finland and the US. Education and earnings have been chosen as the dependent variables in order to gain a comprehensive picture of socioeconomic attainment that includes both educational (decision-making) processes and labor market outcomes. In addition, analysing these two outcomes also brings in some life-cycle factors since educational attainment tends to be completed when

individuals are in their twenties, whereas our earnings analyses focus on early thirties, when labour market careers begin to stabilize. Earnings therefore capture more persistent intergenerational influences.

Finland has been found to have relatively high levels of social fluidity in terms of low levels of intergenerational inheritance of education and income (e.g., Hertz et al. 2007; Jäntti et al. 2006). Combined with a relatively extensive welfare state, this may mean that any influences that we see from the extended family are likely to represent a lower-bound estimate of these effects. Therefore, we also conduct our analyses for the US, a somewhat contrasting institutional context, in order to see whether the processes that we see in Finland can be expected to be generalizable.

The following two sections discuss in detail the theoretical and empirical background behind extended family influences, beginning with a general discussion and then moving on to consider why we might expect differential effects depending on the situation of the immediate family. We then consider the institutional context in Finland and how it might affect the relationship between extended family resources and individuals' outcomes, contrasting it with the US context. This is followed by the data and methods section as well as the empirical results. We conclude with a discussion about compensation, multiplication and social inequality, and what the future may bring with regard to extended family influences.

Theoretical framework

Intergenerational transfers: the influence of the extended family

The general conclusion from decades of research on socioeconomic inheritance suggests that parental resources correlate positively with children's adult educational and socioeconomic outcomes (e.g. Breen and Jonsson 2005; Ganzeboom, Treiman, and Ultee 1991; Hout and DiPrete 2006; Solon 1999). The literature suggests that the positive effects of parental resources are based on either investments that parents are able to make in their children or parental endowments that their children can benefit from (Becker and

Tomes 1976; Coleman 1988; Esping-Andersen 2015; Musick and Mare 2006; Rosenzweig 1990).

Grandparents also have various reasons to invest in the wellbeing of their grandchildren, including sociological explanations related to intergenerational solidarity and reciprocity as well as evolutionary explanations related to inclusive fitness (Coall and Hertwig 2010; Tanskanen, Rotkirch, and Danielsbacka 2011). An increasing amount of research has become interested in the importance of grandparents for intergenerational attainment. The main reason behind this is a demographic one: due to increasing longevity, grandparents are more likely to be part of their grandchildren's lives than before (Mare 2011). While these studies often find evidence of grandparental effects (Chan and Boliver 2013; Hällsten 2014; Hertel and Groh-Samberg 2014; Møllegaard and Jæger 2015), they tend to be relatively small in size, leading to sometimes negligible or mixed results (Bol and Kalmijn 2016; Hodge 1966; Warren and Hauser 1997; for a broader review, see Dunifon 2013) and further to a discussion of their importance in social mobility in general (Chan and Boliver 2013; Erola and Moisio 2007).

There are indeed many reasons why grandparental influence may be rather limited in scope. It has been noted that many grandparents are not able to invest in their grandchildren even if they wanted to due to their age and level of frailty (Astone et al. 1999). Moreover, grandparental resources are in many cases relatively low due to historically lower educational levels and the lower level of monetary resources that many elderly have. In some cases this can even lead to negative grandparent effects: the local competition model suggests that sometimes the presence of the grandparents leads to negative child outcomes because of the competition over scarce resources within the family (Strassmann and Garrard 2011). The existing economic endowments of grandparents are not necessarily advantageous for grandchildren either. When grandparents die, their inheritance tends to go to the generation in-between rather than directly to the grandchildren. Because grandparents tend not to be active in the labor market at the time when their grandchildren enter it, they do not necessarily have labor market contacts that their grandchildren could use. With regard to grandparental education, the large-scale changes in many educational systems over the last decades are likely to mean that grandparental first-hand knowledge of the education system is not up-to-date either and thus less relevant for giving advice to grandchildren.

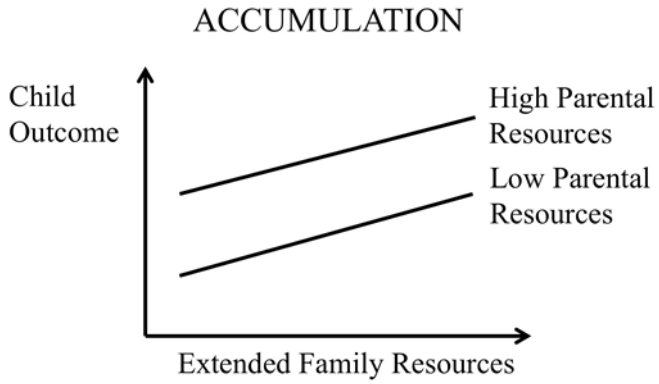
On the other hand, aunts and uncles represent a different generation; one that has both higher and more-relevant resources when it comes to the education and labor market activities of their nieces and nephews. Jæger (2012) has suggested that rather than having a direct effect, the grandparental effect is largely channeled through parents as well as aunts and uncles. Although investing in kin is more reliable than investing in non-kin (Astone et al. 1999) – and aunts and uncles can also be seen to have an evolutionary incentive to invest in their kin beyond the immediate family (Coall and Hertwig 2010) – their incentives to do so should be weaker than in the case of parents and grandparents because of the smaller proportion of shared genes (Hamilton 1964). Nevertheless, direct monetary assistance from aunts and uncles to nieces and nephews does take place when families pool economic resources in order to educate the next generation, though this is likely to be more typical for societies that do not have developed social welfare or credit institutions and where family sizes are large (Peterson 1990).

One of the ways in which extended family members may contribute to socioeconomic attainment is by being part of the social capital available to families (Coleman 1988; Milardo 2010). The presence of "Very Important non-parental Persons" in young people's lives has been found to lead to better developmental outcomes and extended family members tend to come up rather high on these lists of VIPs – aunts and uncles often higher than grandparents (Chang et al. 2010; Greenberger, Chen, and Beam 1998). Moreover, for some young people aunts and uncles are important mentors in a variety of matters, including those related to education and the labor market (Milardo 2010). However, the literature on social capital effects on children's educational outcomes tends to neglect the resources that the individuals contributing the social capital have. Yet from research on the importance of social capital for employment, we know that a key aspect of social capital is the status of the people reached through social ties (Bourdieu 2011; Lin 2002). For both educational decision making and access to high status employment, the success of aunts and uncles in these fields are likely to be important if they are to act as givers of advice. Another way in which aunts and uncles may influence their nieces' and nephews' lives is through their acting as role models.

In sum, not only the resources of the immediate family but also the different resources of extended family members are likely to be advantageous for children and lead to the

accumulation of resources. Our *Hypothesis 1* assumes that extended family members' resources are beneficial for all individuals (Figure 1).

Figure 1. The accumulation of different types of resources: extended family members' resources are beneficial for all (Hypothesis 1).

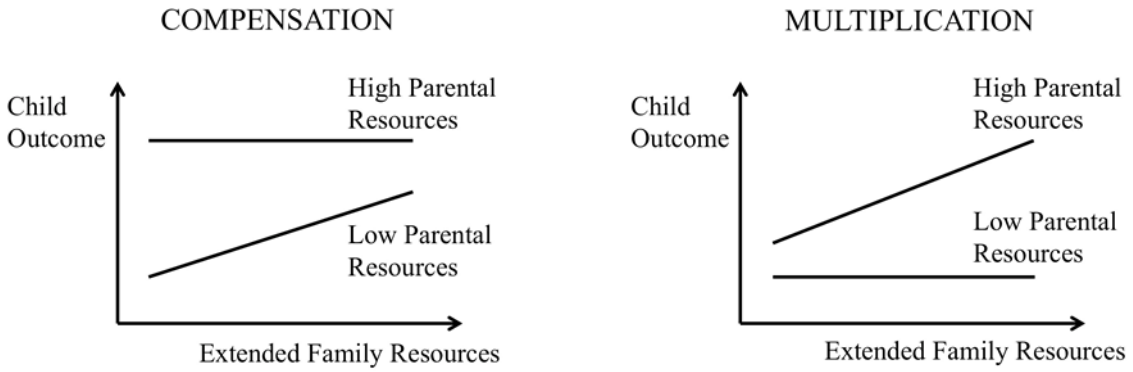


Compensation and multiplication in intergenerational transfers

The discussion above suggests that extended family resources are beneficial for all, but it may also be the case that they are more influential in some situations compared to others. Earlier studies suggest that the willingness to invest in grandchildren is especially strong in times of need. For instance, grandparents have often been identified as a source of assistance when parents separate (Astone et al. 1999; Hank and Buber 2009) or when working single parent mothers need help with childcare (Guzman 1999; Monserud and Elder 2011). Further, the growth of three-generation households in the wake of the 2007 recession in the US has been suggested to be a response to financial hardship (Tach 2015). Additionally, aunts and uncles have been found to mainly influence their nieces and nephews when the latter have immediate families with low resources (Jæger 2012).

In these cases, extended family members' resources mainly benefit individuals whose parents have low resources. Thus they *compensate* for the lost, reduced, or missing parental resources. On the other hand, they may have no or very little effect on individuals whose parents have high levels of resources. This could occur either because the children with plenty of immediate family resources do not need the extended family resources or because of ceiling effects: they cannot benefit more from having additional resources available. Our *Hypothesis 2* assumes that extended family members' resources are most beneficial for individuals with low immediate family resources (left side of Figure 2).

Figure 2. Contrasting effects of extended family resources on child outcomes depending on the level of parental resources (Hypotheses 2 and 3).



In contrast to these possible compensatory processes, other processes of resource transfer may actually lead to the *multiplication* of advantages (DiPrete and Eirich 2006). In this case, the extended family does not help children to get ahead when parental resources are very low but only when there are also immediate family resources available. Thus the extended family resources have an influence as a multiplier of the immediate family resources by being more advantageous the more parents are able to provide resources for the benefit of their children. This could be the case in particular when the extended family are able to provide information about access to certain educational institutions or to certain jobs; if the immediate family has not already promoted access to higher education or to high status employment in general, the more specific information from extended family members may not be of any use. In previous literature this type of multiplication process has sometimes been referred to as a Matthew effect (Merton 1968). Our *Hypothesis 3* assumes that extended family members' resources are most beneficial for individuals with high immediate family resources (right side of Figure 2).

Although we have set up these three competing hypotheses as mutually exclusive ones, it seems reasonable to expect that in real life accumulation is often combined with either compensation or multiplier effects. For instance, even if the extended family resources were particularly valuable for those with low immediate family resources, it is unlikely that they would not be advantageous at all to other children. In a similar manner, multiplication can be combined with accumulation as well. This would come close to social-multiplier effects mentioned in the previous literature (Dickens and Flynn 2001).

In the previous literature on intergenerational attainment, the concept of compensation has sometimes been applied in the context of advantaged parents being able to compensate for their children's disadvantages in education (Bernardi and Boado 2014; Bernardi and Grätz 2015). This has been explained through risk-averse decision making: the primary goal in educational choice is believed to be the the avoidance of downward mobility (Breen and Goldthorpe 1997), meaning that decision making at educational transitions depends on the class of origin. In a similar manner, it seems plausible to expect that compensation is likely to occur when the aim is to avoid marginality. For these relatively low likelihood outcomes – such as dropping out of education or income poverty – only few additional resources from anyone either in the immediate or extended family may be necessary to ensure that the negative outcome is avoided. Thus compensation is likely to occur for the avoidance of the lowest levels of socioeconomic attainment (*Hypothesis 4*). The same principle but reversed can be extended to the opposite end of the distribution: we may expect that achieving a high status position requires both immediate and extended family resources. Thus the multiplication of family resources is likely to occur for the attainment of the highest levels of socioeconomic attainment (*Hypothesis 5*).

It may also be the case that these three cases (beneficial for all, compensation, multiplication) do not cover all potential differential effects. For example processes of countermobility would lead to negative extended family (in particular grandparental) effects for individuals with high immediate family resources and positive extended family effects for individuals with low immediate family resources (Hertel and Groh-Samberg 2014). In this case we could also expect the estimated regression lines to cross. This process could also be seen as regression towards the mean (Becker and Tomes 1979).

Institutional contexts

In principle, the mechanisms behind the influence of extended family members' resources could be expected to apply irrespective of the institutional context. For this reason it is interesting to test our hypotheses in two contrasting institutional contexts: Finland and the US. There are stark differences between the countries in terms of welfare state provision and the extent of income inequality. However, the two countries are relatively similar with regard to the level of education. There are also other institutional

characteristics that are similar in both countries, such as female full-time employment patterns, but we will not go into these further here.

With regard to the level of education, among the cohort born 1966–75 (which is relatively close to the one we study here) 46 percent gained a tertiary qualification in Finland compared to 42 percent in the US (OECD 2012). In terms of educational inequalities, research shows persistently stronger intergenerational associations in the US than in Finland (Hertz et al. 2007; Pfeffer 2008). Intergenerational associations in earnings have also been shown to be stronger in the US than in Finland (Björklund et al. 2002; Jäntti et al. 2006).

The characteristic that distinguishes the two countries the most is poverty. In Finland, welfare state policies and a relatively equal income distribution have protected families from low income (e.g. Jäntti and Danziger 2000). While the poverty rate has been growing since the 1970s, in 2010 it was still 15.0 for the full population and 11.2 among families with children (using the 60% of median income threshold). Is the US, the poverty risk is considerably greater: 23.9 for the full population and 29.3 for families with children. Similar inequalities also manifest in top incomes: the 90/10 income percentile ratio for Finland in the same year was 3.2 whereas it was 5.7 for the US.[2]

It has been hypothesized that a strong welfare state erodes intergenerational solidarity (e.g. Beck-Gernsheim 1998; Coleman 1988). Following this logic, we may assume that in Finland the role of extended family members would be weak and independent of parental resources (as in Figure 1 but with very shallow or even nonexistent gradients for extended family members' resources). Instead of family, compensation would come from the state, which provides both income transfers as well as services that are particularly useful for those with low resources, such as universally available low-cost daycare services and entirely tuition-free education. In the US, on the other hand, the welfare state does not step in to such a great extent but, following Coleman's (1988) arguments, the influence of extended family members may be conditional on an immediate family member being available to channel the influence, which is more likely in the most well-

[2] Luxembourg Income Study. 2015. "Inequality and Poverty." Retrieved May 16, 2015, from http://www.lisdatacenter.org/data-access/key-figures/inequality-and-poverty/.

off families, leading to a situation of multiplication of advantages (as on the right side in Figure 2).

Cross-national evidence supporting these assumptions is weak. Intergenerational assistance is in many cases more common in Nordic welfare states than in more familialistic Southern European ones, even if it is less intensive in nature when it takes place (Albertini, Kohli, and Voger 2007; Daatland and Lowenstein 2005; Hank and Buber 2009). These findings are more in line with the arguments of Esping-Andersen (2004), indicating the importance of the extensiveness of the Nordic welfare state for socioeconomic inheritance. Daycare and educational systems are available for all families, whereas special social policies are targeted to those with specific needs, especially in the form of welfare transfers. This could reduce the necessity of compensation, but would not inflate the extended family's interest in and possibilities to compensate in Finland. In the US, on the other hand, compensation by the extended family is likely to be more necessary and could be particularly observable with regard to economic resources. However, our aim in this article is not to asses country differences in these processes but rather to see whether similar processes can be found in these two contrasting country cases, thus assessing the generalisability of our findings.

Data and methods

Data

There are relatively few datasets that allow us to analyze the effects of both grandparents as well as aunts and uncles on grandchildren/nieces and nephews. For Finland we can use the Finnish Census Panel, whereas for the US, the Panel Study for Income Dynamics (PSID) is suitable for these purposes. In order to slightly reduce the complexity of our models, we have chosen to restrict our samples to individuals with observed extended family members in both generations. In other words, we exclude all individuals who have either no aunts/uncles or no grandparents.

Our Finnish sample stems from the Finnish Census Panel 1950–2007, which is based on matched and expanded samples from the 1950 and 1970 Finnish Censuses. The data are

expanded prospectively, so that new family members are added to the data every five years and also followed until the end of the panel. Altogether the panel covers approximately 10% of individuals who have lived in Finland during this time and is particularly suitable for following households and generations over time. We should note, however, that we can only observe the extended family on either the paternal or maternal side for each individual. Information on qualifications, income and employment for all individuals in the sample have been drawn from administrative registers and matched with individuals' census data. We focus on the birth cohort of 1964–77, totaling up to 36,129 individuals.

Originated in 1968, the PSID has become the longest-running household panel in the world (McGonagle et al. 2012). What makes the PSID a particularly rich resource for our study is its inherent multigenerational design: individuals interviewed in the first wave pass on their sample membership to their descendants, who are then followed as they set up their own independent households.[3] As a consequence, not only does the PSID preserve family structures that include grandparents, parents and children, but several cohorts can also be matched to their aunts and uncles as well as first cousins. Similarly to the Finnish data, information on the extended family comes only from one side of the family. The data consists largely of contemporaneous information rather than retrospective recollection on the part of the participants, improving its validity. In addition to a nationally representative household sample, the first wave of the PSID also contained a subsample that over-represents low-income households in 1968. We restrict the PSID sample to individuals born in 1968–81, who are descendants of households included in either of the samples of the first wave, totaling up to 1,725 individuals. Their information is matched with that of their parents, grandparents, and aunts and uncles.

There are two substantial differences between the two datasets. While the PSID has many attractive features relevant to our research questions, it nonetheless relies on proxy responses obtained during survey interviews. In contrast, the Finnish data is based on census data linked with administrative registers. This difference in data sources has obvious consequences for our study, given that attrition (other than due to death or

[3] Hill, Martha S. 1992. "The Panel Study of Income Dynamics: A Users Guide." Retrieved February 6, 2015, from http://www.popline.org/node/315958.

emigration) does not exist in our Finnish data and a much larger sample is available than in the US case. As a result, our US variables are operationalized with reference to a somewhat broader age span of respondents compared with those of Finland. It should also be noted that the Finnish data includes information about all immediate and extended family members (from one side of the family), whereas some may be missing in the PSID.

Dependent variables

We use four dependent variables to analyse the influence of immediate and extended family resources on children's socioeconomic attainment in adulthood: two measures of educational attainment and two measures related to earnings. Our Hypotheses 4 and 5 assume that compensation should be more likely to occur in avoiding marginality, whereas multiplication should take place especially when trying to reach the top of the social spectrum. Because of these expected differences, we focus on the positions at the opposite ends of the educational and earnings hierarchies. In this way, we are able to accommodate the possibility that reaching the top or falling to the bottom may be subject to distinct dynamics.

Despite stark differences in their respective educational systems, completing upper secondary schooling has become almost self-evident for the vast majority of students in both Finland and the US. Roughly 90% of men and women under the age of 45 have attained at least this level of education in both countries (OECD 2012, 35); a fact that is also reflected in our sample (Table 1). With secondary schooling having become an almost basic qualification, failing to achieve this level of schooling may in turn have increasingly marginalizing consequences. For this reason, our first educational outcome variable focuses on whether or not an individual has completed high school (upper secondary education in the European context). In addition to a high school diploma, we also include GED diplomas into our definition of high school attainment in the US and both academic and vocational upper secondary qualifications are counted in Finland.

At the upper end of the educational hierarchy we focus on whether or not individuals have gained at least a bachelor's degree. As shown in Table 1, around 28% of both our Finnish and US samples have attained this level of qualification. While this figure is in line with official statistics in the Finnish case, the share of college graduates in our US sample is

slightly below the 33% found in official statistics for this age group (OECD 2012, 36). This deviation is partly due to variations in the timing of measurement for our educational variables. Educational attainment in Finland is measured at age 30–36. By contrast, in our US samples, both educational outcome variables refer to a point in time when the individuals in our sample were at least 22 and at most 35 years old, thus slightly earlier than in Finnish case. Due to a lower sample size and attrition from the survey, we allow a larger age span in the US data compared to the Finnish sample for measuring our outcomes.

Table 1. Descriptive statistics of the main dependent and independent variables

	Finland		USA[a]	
	Mean	St. dev.	Mean	St. dev.
At least high school education (dummy)	0.88	0.32	0.91	0.28
College degree (dummy)	0.28	0.45	0.27	0.44
Not poor (dummy)	0.77	0.42	0.72	0.45
Highest decile earnings (dummy)	0.10	0.30	0.10	0.30
Parents' education (years)	10.6	3.3	13.1	2.3
Aunts/uncles' education (years)	11.3	3.3	13.9	2.1
Grandparents' education (years)	7.8	2.1	11.4	2.8
Childhood family income[b]	1102.3	6007.4	18,796.4	15,363.8
Aunts/uncles' income[b]	30,910.4	16,182.1	55,872.1	48,558.1
Grandparents' income[b]	13,332.3	13,367.9	35,702.6	22,855.6
Lives with two parents at age 16 (dummy)	0.83	0.37	0.57	0.50
Number of children in household	1.90	0.82	2.47	0.96
Female (dummy)	0.49	0.50	0.51	0.50
Non-white (dummy)			0.23	0.42

N = 36,129 for Finland, except not poor and highest decile earnings N = 34,558; N = 1,725 for USA, except not poor and highest decile earnings N = 1,347

[a] Descriptives for the US sample have been weighted using individual longitudinal PSID-weights

[b] Deflated to 2014 currency values and entered into models as deciles (weighted by family-weight for PSID)

For measuring economic outcomes, we focus on individuals' average annual earnings. Adopting the same strategy as with education, we consider separately the processes leading to positions at the bottom and top of the earnings hierarchy. We study the avoidance of poverty using the threshold of average annual earnings lower than 60% of the sample median (an internationally recognised threshold for relative income poverty). In our samples, 77% had managed to avoid poverty in Finland and 72% in the US. At the top end of the earnings distribution, we analyse whether or not individuals are in the highest earnings decile of the sample distribution.

The age brackets used for calculating these annual averages again slightly vary between our Finnish and US samples. For Finland, we averaged annual earnings between ages 30–36, whereas for the US the variable refers to ages 26–34. Because individuals in our US sample are younger when we measure their average earnings, the time span considered is longer than in the Finnish case. In the US there is also within-sample variation with regard to the ages at which earnings have been measured, and therefore the US models include an additional control variable for the average age at which earnings are measured. In addition, weights were used to calculate the thresholds (60% of median and top decile) in the PSID.

Independent variables

Given that decisions taken during teenage years have a substantial influence on subsequent educational and socioeconomic pathways, family resources available or lacking during this time are particularly relevant for children's adult outcomes. As a consequence, the variables that we use for measuring educational and economic resources of immediate and extended family members in our models refer to the time when the children in our data were approximately 16 years old. However, with regard to grandparents, these reference points differ somewhat to accommodate the possibility that children's grandparents may have deceased by the time the children reach adolescence or young adulthood. For this reason, we measure grandparents' income around the time of (grand)children's birth and grandparents' education based on their highest observed attainment.

We measure parents', aunts/uncles' and grandparents' educational attainment as the maximum years of schooling they had obtained during these reference periods, choosing the family member with the highest education within each of these categories. Since there are a number of differences between the educational systems of Finland and the US, the same number of years carry slightly different connotations in the two country contexts. While high school (upper secondary) education takes about 12 years to complete in both countries, a bachelor's degree can be obtained in three years in Finland and four years in the US. While the bachelor's degree is usually regarded as the main undergraduate degree in the US context, bachelor's degrees have historically played a minor role in the Finnish educational system until the Europe-wide Bologna reforms of 2005. In Finland, students

tend to take a minimum of five years after entering university to complete a master's degree.[4]

Economic resources of the immediate and extended family are measured in deciles of total income deflated to the 2014 values of each national currency. In Finland, we use individual taxable income for the extended family's income, and for the immediate family the total family income divided by the number of persons in the household. In our US data, the measure of household income consists of all family unit members' taxable and transfer income divided by the number of persons in the household in the case of immediate family and by the number of adults in the household in the case of the extended family. As with education, extended family incomes refer to the highest ones observed during the reference period within each category. We applied longitudinal family weights when constructing the deciles in the PSID.

Our models also control for gender, parental divorce by age 16, the number of children living in the household at age 16, as well as in the US case for children's race/ethnicity (defined as white versus non-white) and sample type (originating from the low-income subsample versus probability sample).

Methods

We use multilevel (random effects) linear probability models for all our dependent variables. The hierarchical structure comes from individuals being nested in immediate families (with siblings), which in turn are nested in extended families (with first cousins), similarly to the setup of Jæger (2012). We base our main findings on the regression coefficients and marginal effects based on the main effects and interactions. The main advantage of using three-level models is to account for the clustering of the data into immediate and extended families. This is particularly important for the PSID since it means that our standard errors are more robust.

[4] Finnish Ministry of Education and Culture. 2015. "Studies and Degrees." Retrieved May 20, 2015, from http://www.minedu.fi/OPM/Koulutus/yliopistokoulutus/opiskelu_ja_tutkinnot/?lang=en.

We model all four dependent variables separately in the two countries. First we analyse the main effects of parental, grandparental and aunt/uncle education. In particular, we want to see whether the effects of the extended family are independent of each other. In the second step we test interactions between extended and immediate family resources to see whether processes of compensation or multiplication take place. We test only one interaction per model and interact the same types of resources with each other: immediate family education with extended family education, and immediate family income with extended family income. A negative interaction term is indicative of compensation and a positive one of multiplication. All these models control for all the main effects of the other immediate and extended family resources as well as the control variables.

We also compare variances and sibling and cousin correlations between models, in particular comparing an empty model (Model 0) to the one where all immediate and extended family characteristics as well as other controls are included (Model 1). These are based on the three variance components for unobserved heterogeneity in our models (for individual, immediate and extended family levels) and shown in the Appendix. In the case of the empty models, sibling and cousin correlations (indicating the proportion of the total variance shared by either siblings or cousins) can be interpreted as proxies for the total effect of the immediate and extended family (Hällsten 2014; Jæger 2012). By comparing the variance components between Models 0 and 1, we can approximate the proportion of the total effects of immediate and extended family background that is explained by the observed extended family characteristics.

Results

Table 2 presents the main effects of immediate and extended family resources on our two educational measures in Finland and the USA. These models show that in Finland aunts and uncles' education and income have a positive impact on both high school and college graduation and the size of the effect is between one-fifth and a half of that of parents. Although the absolute size of the effects are larger for college graduation, in comparison with the size of the parental effects, the aunt/uncle effects are more substantial for high school graduation. On the other hand, the effect of grandparental income seems to be negative for both of these outcomes (when controlling for grandparental education), and grandparental education has a positive effect on college graduation but its effect on high

school graduation is not significant. When controlling for both grandparents' and aunts/uncles' resources at the same time, we can see that the latter are largely independent of the former, but that part of the grandparent effec goes through aunts and uncles. Overall, it seems that processes of multigenerational inheritance can be at work even in a relatively egalitarian country like Finland.

Our educational models based on US data by and large reproduce these general trends, although they are clearly characterized by lower statistical power due to much smaller data. More specifically, the results suggest that only aunts and uncles' education has a positive influence on their nieces' and nephews' education and that the magnitude of this effect is approximately two-thirds of the parental effect for high school graduation and one quarter for college graduation. These effects are largely independent of grandparental effects, which themselves are not significant for high school graduation, but for college graduation there is a possible positive effect of education but a negative one for income.

[TABLE 2 ABOUT HERE]

The negative effect that grandparents' income appears to exert on children's educational attainment in both countries: holding other extended and immediate family resources constant, grandparents with higher levels of income make it *less* likely for their grandchildren to graduate from college in both countries and from high school in Finland. The negative effect comes about when controlling for grandparental education, which is likely to indicate that income at this relatively old age – and the related fact that for some grandparents we measure their pension income whereas for others their earnings – is not a good measure of their socioeconomic status, or even their ability to assist their children and grandchildren.

Table 3 presents the main effects of the immediate and extended family's resources on children's economic status in early adulthood. For avoiding a vulnerable socioeconomic position as well as for making it among the top earners, children in Finland rely not only on their immediate family, but also on their aunts/uncles' and grandparents' economic resources. The size of the aunt/uncle effects is approximately one-fifth to one-quarter in

size as compared to that of parents. In addition, a positive effect of both aunts/uncles' and grandparents' education can be seen for reaching the top decile, whereas grandparents' education seems to have a negative effect on the avoidance of poverty when other immediate and extended family resources are held constant.

Within the US context, our models did not produce statistically significant coefficients, which may in part be due to the lower sample size of our PSID data. The only exception to this is the positive effect of aunts/uncles' education on earnings in the top decile, which is estimated to be even larger than the parental effect.

[TABLE 3 ABOUT HERE]

Overall, our models thus far suggest that the extended family does play a role in socioeconomic attainment in both countries, and more clearly so for education than for earnings. In addition the role of aunts and uncles tends to be stronger than that of grandparents. But can we assume that the educational and economic resources of aunts, uncles and grandparents really operate independently and in addition to what parents provide for and bestow onto their children, like assumed in Hypothesis 1? Or is it more likely that some children may benefit more than others from any available resources in the extended family, in line with our Hypotheses 2–5?

We test this with a series of models including both the main effects and the interaction terms one-by-one. This allows us to differentiate the extent to which aunts', uncles', and grandparents' resources either compensate for children's educational and socioeconomic disadvantage deriving from their parents' lack of education or finances or further multiply the advantage of children from well-off immediate families for reaching well-off positions themselves. The main results of our interaction models for both countries are presented in Table 4 for education and Table 5 for earnings.

Tables 4 and reveal a number of statistically significant interaction terms, which however vary in their direction. This is also what we would expect, as a compensation of disadvantage would presuppose a negative interaction term: the lower the educational attainment or income in children's immediate family, the stronger any available resources

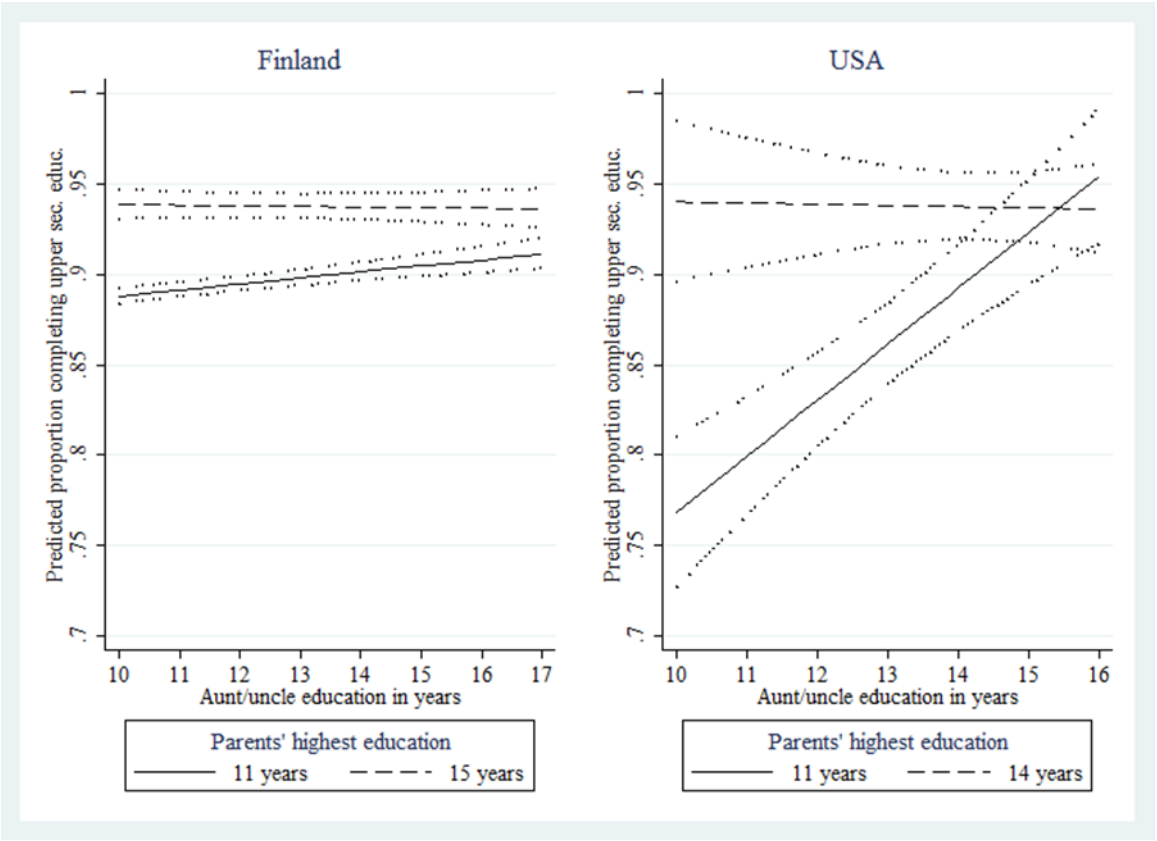
in the extended family may impact on children's outcomes. On the other hand, positive interaction terms are a clear sign of a multiplication of advantage: children from families affluent in education or income derive an even greater benefit for their educational or economic attainment if these resources are matched by equally high levels in their extended family.

[TABLE 4 ABOUT HERE]

Looking at the Table 4, we find evidence for both compensation and multiplication processes in both countries. Educational resources of aunts/uncles (both countries) as well as grandparents (particularly the USA) can compensate to some extent for parents' low educational attainment, when it comes to children's chances of completing high school and thus avoiding educational marginalization. Figure 3 translates this relationship graphically by plotting the predicted probabilities to complete high school for children with different levels of educational family resources.[5] In both countries, children with low-educated parents can make up some of their disadvantage, if they have aunts or uncles with higher levels of educational attainment than their parents (Figure 3). Grandparental educational resources appear to take on a similar but weaker compensating role for children's chances of completing high school. Compared to Finland, compensation processes at this level of educational attainment are stronger in our US models, where they operate both via the economic and educational resources of the extended family.

[5] High school graduation rates in our US sample are close to 100% for children whose parents are college graduates. Due to this lack of variation and the generally lower statistical power in our US sample, Figure 3 focuses on a slightly lower level of educational attainment in the generation of parents and aunts/uncles. The values chosen to represent high levels of educational resources refer to parents with college-level training below the first undergraduate degree in both countries. In Finland, this is typically a bachelor's degree (15 years of education). In the US, high educational resources refer to an associate's degree or an incomplete bachelor's degree (14 years of education).

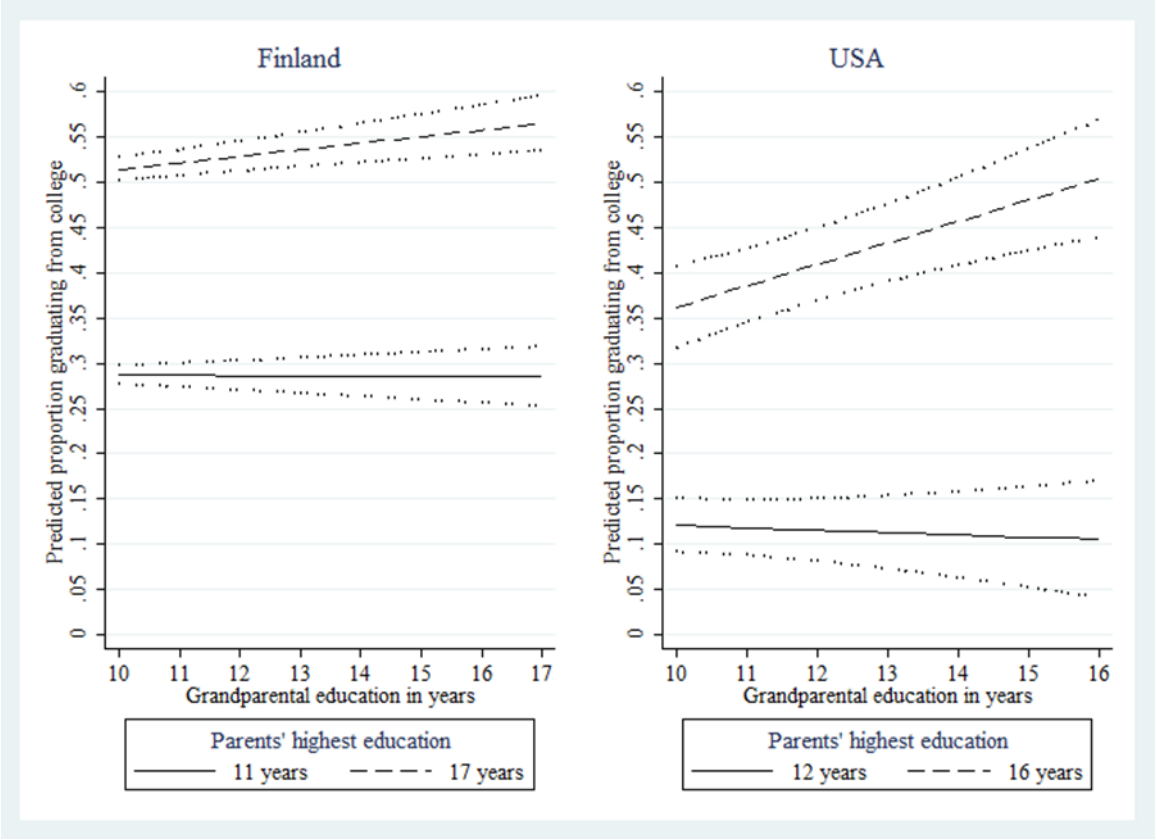
Figure 3. Compensation effect: aunts and uncles' educational attainment compensating low parental educational resources with regard to children's chances to complete high school in Finland and the USA.



A clearly different picture arises once we shift our focus to the chances of completing a college degree: at the upper end of the educational hierarchy, it is the already better-off who are more likely to additionally profit from an extended family high in educational and economic resources. In Finland, better educated grandparents further increase the chances for children of well-educated parents to obtain a college degree, and aunts/uncles' income has a multiplicative effect together with parental income. In the US, the results are even stronger, and in contrast with Finland, highly educated aunts and uncles also disproportionately benefit children with highly educated parents. Figure 4 further illustrates this multiplicative relationship by plotting the predicted probabilities of children with different combinations of parental and grandparental resources to graduate

with a university degree. Children with college-educated parents increase their already beneficial chances for a college degree if they had highly educated grandparents.[6]

Figure 4. Multiplication effect. Higher-educated grandparents further increase the chances of children with college-educated parents to obtain a college degree, while no effect is observed for children whose parents have lower educational resources.



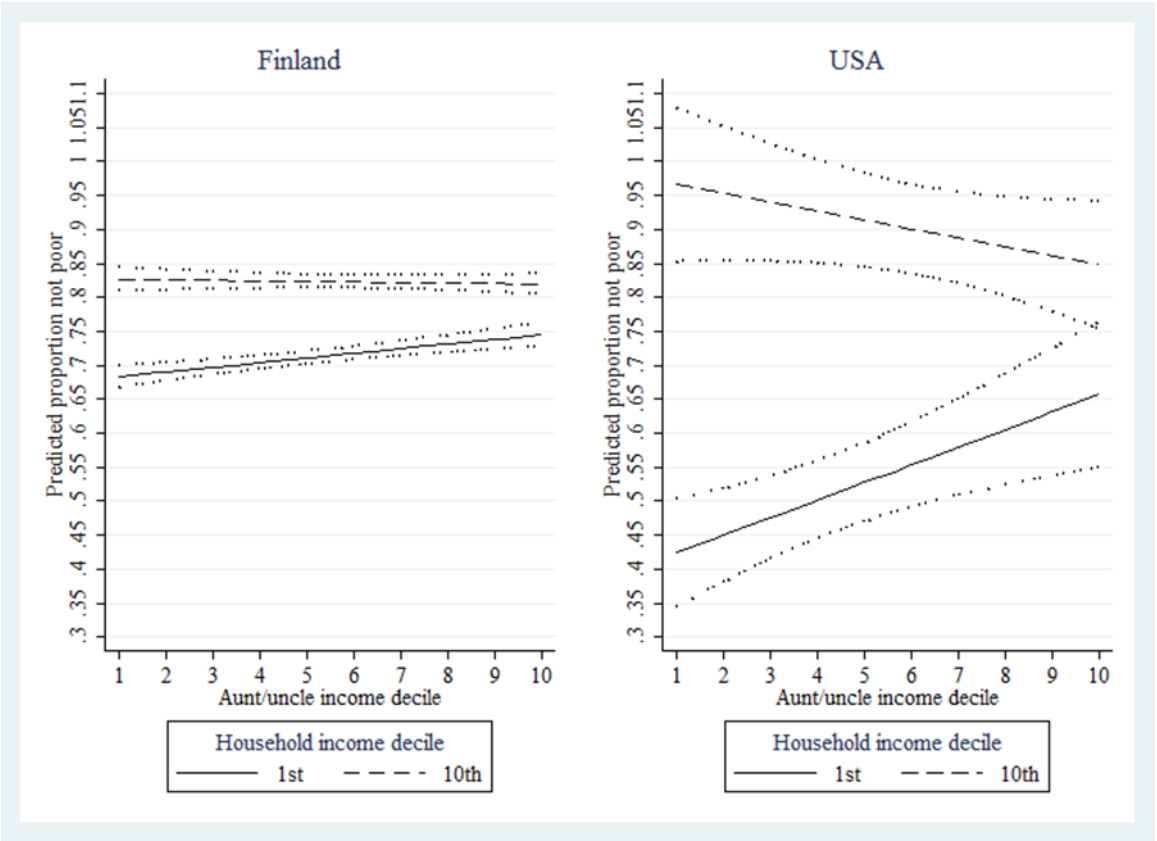
Moving on to our earnings models (Table 5), we can see a broadly similar trend: extended family member's resources may work in a compensatory fashion when it comes to avoiding poverty. In both countries this mainly works through extended family members' income rather than education. As an example of this, the compensatory effect of aunts and uncles' income is shown in Figure 5.

[6] The years of schooling for the parent and grandparent generation refer to the minimum required time to complete an undergraduate degree in both countries. In Finland, the five-year master's degree has historically been the typical first degree in Finland (17 years of education), while in the USA this role is played by the 4-year bachelor's degree (16 years of education).

[TABLE 5 ABOUT HERE]

In the US, however, this relationship may still be more complex, as shown by Figure 5: while extended family income (similar results for both aunts/uncles and grandparents) may play a compensatory role for children from low-income families, it may simultaneously also make low earnings a more likely outcome for those from better-off families. One of the possible explanations is that children in this case have lower pressures to earn their living in the future and take longer time to study or settle down otherwise for a steady life course with stable earnings. This result may also demonstrate either counter mobility or regression to the mean as discussed above.

Figure 5. Compensation effect. Aunts and uncles' economic resources makes the economic marginalization of children from low-income families less likely.



For reaching elite positions in terms of earnings, on the other hand, Table 5 shows that in Finland only aunts/uncles' education has a multiplicative effect, whereas other extended

family resources tend to have a cumulative impact (with grandparental income having no effect). On the other hand, the results for the US suggest a more uniform multiplicative pattern: with the exception of grandparental income, all extended family resources multiply with parental resources. Figure 6 plots children's chances to reach the top positions in the earnings hierarchy depending on various levels of their aunts/uncles' and their immediate family's economic resources. In the case of Finland, the plotted lines for children from the poorest and richest family backgrounds are near parallel, suggesting the absence of an interactive relationship between the economic resources of the extended and the immediate family. In the US, on the other hand, having well-off aunts or uncles gives children from the richest families a further boost to obtain top earnings as young adults, whereas no such thing can be said of those from the poorest backgrounds.

Figure 6. Multiplication of advantages: particularly in the US, aunts/uncles' incomes increase the chances of children from rich backgrounds to reach top earnings, whereas children from low-income families derive no such benefit from their aunts/uncles' economic resources.

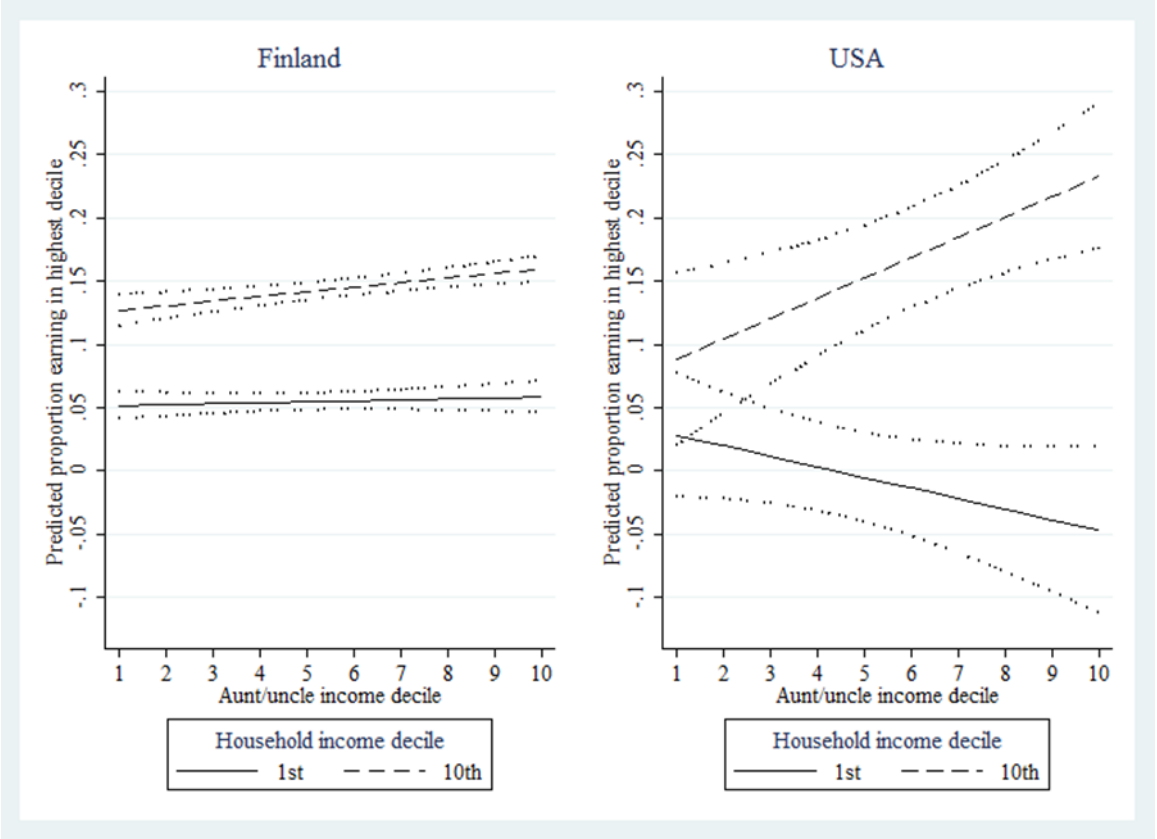


Table 6 provides a summary of our findings with regard to extended family members' role for socioeconomic attainment in young adulthood. We found evidence supporting a

beneficial effect (Hypothesis 1) of aunts and uncles' resources for all four outcomes studied in Finland. Resource compensation (Hypothesis 2) emerged in both our Finnish and US models, particularly in instances where children face the risk of marginal educational and economic outcomes (Hypothesis 4). However, extended family member's resources were also found to extend and consolidate children's existing advantage (Hypothesis 3), particularly when it comes to securing elite positions in terms of education or earnings (Hypothesis 5). This latter finding was more clearly observed in our US models compared to the Finnish ones.

Table 6. Summary of statistically significant interaction terms ($p < 0.05$)

	Finland		USA	
Avoidance of marginalisation				
	At least upper secondary	Not poor (>60% median)	At least upper secondary	Not poor (>60% median)
H1: Equal benefit for all	*negative:* GP-Inc	*negative*: GP-Edu	–	–
H2/4: Compensation	AU-Edu AU-Inc	AU-Edu AU-Inc GP-Inc	AU-Edu AU-Inc GP-Edu GP-Inc	AU-Inc GP-Inc
H3/5: Multiplication	–	–	–	–
High status attainment				
	College graduation	Highest decile	College graduation	Highest decile
H1: Equal benefit for all	AU-Edu *negative:* GP-Inc	AU-Inc GP-Edu	*negative:* GP-Inc	
H2/4: Compensation	–	–	–	–
H3/5: Multiplication	AU-Inc GP-Edu	AU-Edu	AU-Edu AU-Inc GP-Edu	AU-Edu AU-Inc GP-Edu

Notes: AU = aunts and uncles; GP = grandparents; Edu = education; Inc = income.

Cousin and sibling variances are reported in the appendix (Table A1). The table also reports cousin correlations, which is the proportion of the total variance shared by cousins, and a conditional sibling correlation, which is the proportion of the family variance shared by siblings but not by the cousins. The more often reported regular sibling correlation is

the sum of cousin and conditional sibling correlations. Model 0 is an empty model without any controls. Based on these numbers, the regular sibling correlation for high school graduation in Finland is .28 (.06 cousin correlation + .22 conditional sibling correlation), for college graduation .40 (.10+.29), for avoidance of poverty .11 (.02+.09) and for highest decile earnings .15 (.03+.12). The results indicate that in the case of income, multigenerational inheritance matters particularly little in Finland. The equivalent numbers are a great deal higher in the US (.40 (.13+.27) for high school graduation , .61 (.15+.36) for college graduation, .39 (.11+.28) for avoidance of poverty and .51 (.22+.29) for highest decile earnings),[7] indicating a stronger family background effect in the US, particularly when it comes to the attainment of the highest positions in society. In all cases variances at the cousin level are largely explained with the observables controlled for in the full model. Cousin correlations suggest a somewhat stronger importance for the extended family context than appears to be the case if only the estimates for the observed extended family characteristics are considered. This is not surprising because the observed effects are lower-bound estimates due to only observing extended family members on one side of the family.

Discussion and conclusion

We set out to examine the role that extended family members' resources play in intergenerational socioeconomic attainment. Our aim was to see whether extended family members compensate for lacking parental resources, in particular for the avoidance of positions of marginality (not completing high school and ending up in poverty), or in contrast, whether they multiply the advantages of high parental resources, in particular for achieving high status outcomes (graduating from college and earning in the top decile). Moreover, we examined not only the influence of grandparents – who have received the most attention in the extended family literature to-date – but also aunts and uncles, who thus far have largely been neglected, but who we argued are likely to be more influential than grandparents.

[7] To the extent that they can be compared, these numbers as well as the cousin correlations are largely in line with those reported previously for the PSID (Conley 2008) as well as those for the NLSY and Wisconsin data (by Jæger 2012).

The results support our hypotheses about the role of compensation and multiplication in intergenerational attainment. We find a consistent pattern of compensation in the case of avoiding marginalization in both Finland and the US and a similarly consistent pattern for multiplication in achieving high status. Although it is clear that immediate family resources matter more than extended family ones, the overall effect of aunts and uncles' resources was found to be moderately strong in many cases. Moreover, in the case of compensation, aunts and uncles' resources were even found to fully compensate for low parental resources in completing high school in the US. On the other hand, as immediate and extended family resources correlate to some extent, the potential equalizing impact at a societal level is reduced.

Tentative conclusions about the differences between the two countries suggest that different institutions may influence both compensatory and multiplicative effects. Because of the higher quality of the Finnish data, we are able to observe effects pointing to the same direction as in the US, although the effect sizes are often much smaller in Finland. This is not necessarily only a consequence of differences in data. While it may be that the welfare state limits the negative consequences associated with the loss of resources and thus compensation in these cases, it may also reduce the costs of compensation by allowing even small investments to make a difference. Moreover, more intergenerational mobility should mean that the extended families of those comparatively worse off are more likely to include others with higher resources. Recent research also suggests that social and economic polarization limits the resources the poor can access through their networks (Letki and Mieriņa 2015). Overall, the evidence suggests that strong welfare states do not do away with intergenerational solidarity, despite what some pessimistic commentators have predicted (e.g. Coleman 1988; Beck-Gernsheim 1998).

The fact that we find multiplication of advantages and that these effects are likely to be stronger in the US particularly in education is not surprising either, given the existing evidence for legacy effects in entry into elite colleges and universities (i.e. relatives of alumni gain entry more easily) (Hurwitz 2011). The great financial costs of attending four years of university may also play a role here. Overall, the multiplication of advantages seems to provide support for Coleman's (1988) idea that there needs to be someone in the immediate family channeling the positive effect of the extended family.

How should we then interpret compensation and multiplication in relation to equality of opportunity? The answer appears to be twofold. First, compensation counterbalances a disadvantageous immediate family background for those who have extended family resources available. It seems obvious that this would signal higher equality of opportunity than the multiplication of advantages. At the same time, however, it also increases inequality among those in disadvantaged families. Therefore, compensation may reduce the sense of meritocratic fairness at the bottom of the stratum, most of whom are excluded from the advantages of the extended family resources because they do not usually have them either. On the other hand, the multiplication effects only tend to signal for the inequality of opportunity.

The analyses show that in many cases the effect sizes for aunts and uncles are larger in size than those for the grandparents. This suggests that the resources of grandparents are not as relevant as those of the younger generation. Here the possible limitations of our analyses need to be considered. One of them is that grandparents are rarely economically active at the time when their grandchildren are in early adulthood. This means that their incomes are not necessarily an appropriate measure of the kinds of economic resources that they may be able to offer their grandchildren, particularly when some grandparents have already retired whereas others are still earning. A potentially important economic resource could be grandparental wealth. However, we cannot measure wealth with the Finnish dataset and, as we have argued above, wealth is more likely to be transmitted via the parental generation rather than directly to grandchildren.

Further, we cannot rule out that non-monetary investments made by grandparents are influential. What grandparents may be able to offer is their time, in particular if they are retired, although some research suggests that employed grandparents actually provide childcare more often than do non-employed ones (Guzman 2004). This may partly be due to health effects. Our own supplementary analyses (not shown) suggest that grandchildren in Finland benefit educationally from grandparents who were retired at the time when they were born. This would suggest that grandparental investment of time in their grandchildren could be beneficial. On the other hand, Bol and Kalmijn (2016) did not find grandparental contact to moderate the impact of grandparental resources: they found no grandparental effects even when there was close contact between grandparents and grandchildren.

Demographic changes in terms of increased life expectancy have been cited as reasons for a potentially stronger role of grandparents in their grandchildren's lives in the future (e.g. Bengtson 2001; Mare 2011). On the other hand, smaller family sizes are likely to mean that children have fewer aunts and uncles in their extended families, but also fewer cousins. Whether this means that resources are reduced or that they become more concentrated is an open question. In any case, it is likely to mean that fewer children will have an aunt or an uncle to provide those resources. Moreover, if higher order births (i.e. larger family sizes) begin to correlate positively with the amount resources in the family (e.g. Kolk 2014), this development is likely to increase intergenerational inequality in contemporary societies.

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Tables in the text

Table 2. Immediate and extended family resources and educational outcomes

	Finland				USA			
At least high school	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Parental education	0.012***	0.012***	0.011***	0.011***	0.022***	0.019***	0.018***	0.016***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.004)	(0.004)	(0.004)	(0.005)
Household income	0.004***	0.004***	0.004***	0.004***	0.015***	0.014***	0.014***	0.013**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.004)	(0.004)	(0.004)	(0.004)
Grandparent		0.002		0.001		0.005		0.004
education		(0.001)		(0.001)		(0.003)		(0.003)
Grandparent income		-0.002*		-0.002***		0.005		0.005
		(0.001)		(0.001)		(0.003)		(0.003)
Aunt/uncle			0.003***	0.003***			0.012*	0.010*
education			(0.001)	(0.001)			(0.005)	(0.005)
Aunt/uncle income			0.002*	0.002*			0.001	0.000
			(0.001)	(0.001)			(0.003)	(0.003)
College degree	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Parental education	0.038***	0.037***	0.035***	0.035***	0.059***	0.057***	0.054***	0.053***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.006)	(0.006)	(0.006)	(0.006)
Household income	0.015***	0.015***	0.014***	0.014***	0.022***	0.023***	0.020***	0.022***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.005)	(0.005)	(0.005)	(0.005)
Grandparent		0.006***		0.004**		0.010*		0.008
education		(0.001)		(0.001)		(0.004)		(0.004)
Grandparent income		-0.002*		-0.004***		-0.010*		-0.011*
		(0.001)		(0.001)		(0.004)		(0.004)
Aunt/uncle			0.007***	0.008***			0.014*	0.013*
education			(0.001)	(0.001)			(0.006)	(0.006)
Aunt/uncle income			0.005***	0.005***			0.003	0.004
			(0.001)	(0.001)			(0.004)	(0.004)

Notes: N (level 1) = 36,129, N (level 2) = 23,855, N (level 3) = 13,559 for all Finnish models, N = 1,725, N (level 2) = 1,092, N (level 3) = 688 for all US models. All models control for gender, living with two parents, number of children, and for the US also for ethnicity and sample type. Standard errors in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3. Immediate and extended family resources and earnings-related outcomes

	Finland				USA			
Not poor	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Parental education	0.005***	0.005***	0.004***	0.004***	0.005	0.005	0.002	0.003
	(0.001)	(0.001)	(0.001)	(0.001)	(0.007)	(0.007)	(0.007)	(0.007)
Household income	0.013***	0.012***	0.012***	0.012***	0.044***	0.043***	0.042***	0.041***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.006)	(0.006)	(0.006)	(0.007)
Grandparent		-0.004**		-0.004***		-0.002		-0.004
education		(0.001)		(0.001)		(0.005)		(0.005)
Grandparent income		0.003**		0.003**		0.005		0.004
		(0.001)		(0.001)		(0.005)		(0.005)
Aunt/uncle education			0.000	0.000			0.003	0.003
			(0.001)	(0.001)			(0.007)	(0.008)
Aunt/uncle income			0.003**	0.003**			0.008	0.008
			(0.001)	(0.001)			(0.005)	(0.006)
Highest decile	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Parental education	0.012***	0.011***	0.011***	0.011***	0.010*	0.010*	0.007	0.007
	(0.001)	(0.001)	(0.001)	(0.001)	(0.004)	(0.004)	(0.004)	(0.004)
Household income	0.010***	0.010***	0.010***	0.010***	0.020***	0.020***	0.018***	0.019***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.004)	(0.004)	(0.004)	(0.004)
Grandparent		0.003**		0.002*		0.002		0.000
education		(0.001)		(0.001)		(0.003)		(0.003)
Grandparent income		0.001*		0.001		-0.001		-0.002
		(0.001)		(0.001)		(0.003)		(0.003)
Aunt/uncle education			0.002**	0.001*			0.010*	0.010*
			(0.001)	(0.001)			(0.005)	(0.005)
Aunt/uncle income			0.002***	0.002***			0.003	0.003
			(0.001)	(0.001)			(0.003)	(0.003)

Notes: N (level 1) = 34,558 N (level 2) = 23,134, N (level 3) = 13,263 for all Finnish models, N = 1,347, N (level 2) = 887, N (level 3) = 586 for all US models. All models control for gender, living with two parents, number of children, and for the US also for ethnicity, sample type and average age when earnings measured. Standard errors in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4. Models of educational outcomes, each interaction in a separate model

	Finland		USA	
	High school	College	High school	College
Models with interaction between parents' and grandparents' education				
Parental education	0.010***	0.040***	0.012*	0.059***
	(0.001)	(0.002)	(0.005)	(0.006)
Grandparent education	0.001	0.001	0.007*	0.003
	(0.001)	(0.002)	(0.003)	(0.004)
Parental education *	-0.000	0.001***	-0.004***	0.005***
Grandparent education	(0.000)	(0.000)	(0.001)	(0.001)
Models with interaction between parents' and aunts/uncles' education				
Parental education	0.011***	0.035***	0.036***	0.038***
	(0.001)	(0.001)	(0.005)	(0.007)
Aunt/uncle education	0.002***	0.008***	0.020***	0.005
	(0.001)	(0.001)	(0.005)	(0.006)
Parental education *	-0.001***	0.000	-0.011***	0.008***
Aunt/uncle education	(0.000)	(0.000)	(0.002)	(0.002)
Models with interaction between household and grandparents' income				
Household income	0.004***	0.014***	0.013**	0.022***
	(0.001)	(0.001)	(0.004)	(0.005)
Grandparent income	-0.002***	-0.003***	0.006	-0.011*
	(0.001)	(0.001)	(0.003)	(0.004)
Household income *	-0.000	-0.000	-0.004***	0.000
Grandparent income	(0.000)	(0.000)	(0.001)	(0.001)
Models with interaction between household and aunts/uncles' income				
Household income	0.004***	0.014***	0.014***	0.021***
	(0.001)	(0.001)	(0.004)	(0.005)
Aunt/uncle income	0.002**	0.005***	0.001	0.003
	(0.001)	(0.001)	(0.003)	(0.004)
Household income *	-0.000*	0.001*	-0.003***	0.003**
Aunt/uncle income	(0.000)	(0.000)	(0.001)	(0.001)

Notes: N (level 1) = 36,129, N (level 2) = 23,855, N (level 3) = 13,559 for all Finnish models, N = 1,725, N (level 2) = 1,092, N (level 3) = 688 for all US models. All models control for all main effects of parental, grandparental and aunt/uncle resources, gender, living with two parents, number of children and for the US also for ethnicity and sample type. Standard errors in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5. Models of earnings-related outcomes, each interaction in a separate model

	Finland		USA	
	Not poor	Highest decile	Not poor	Highest decile
Models with interaction between parents' and grandparents' education				
Parental education	0.004*	0.011***	0.000	0.010*
	(0.002)	(0.001)	(0.008)	(0.005)
Grandparent education	-0.004**	0.002	-0.001	-0.003
	(0.001)	(0.001)	(0.005)	(0.003)
Parental education *	-0.000	0.000	-0.003	0.003**
Grandparent education	(0.000)	(0.000)	(0.002)	(0.001)
Models with interaction between parents' and aunts/uncles' education				
Parental education	0.004***	0.011***	0.003	-0.000
	(0.001)	(0.001)	(0.009)	(0.005)
Aunt/uncle education	-0.000	0.002**	0.004	0.006
	(0.001)	(0.001)	(0.008)	(0.005)
Parental education *	-0.000*	0.001***	-0.000	0.004*
Aunt/uncle education	(0.000)	(0.000)	(0.003)	(0.002)
Models with interaction between household and grandparents' income				
Household income	0.013***	0.010***	0.041***	0.018***
	(0.001)	(0.001)	(0.006)	(0.004)
Grandparent income	0.003***	0.001	0.005	-0.002
	(0.001)	(0.001)	(0.005)	(0.003)
Household income *	-0.001***	0.000	-0.003*	0.001
Grandparent income	(0.000)	(0.000)	(0.001)	(0.001)
Models with interaction between household and aunts/uncles' income				
Household income	0.013***	0.010***	0.043***	0.018***
	(0.001)	(0.001)	(0.007)	(0.004)
Aunt/uncle income	0.003***	0.002**	0.009	0.003
	(0.001)	(0.001)	(0.006)	(0.003)
Household income *	-0.001**	0.000	-0.004**	0.003**
Aunt/uncle income	(0.000)	(0.000)	(0.001)	(0.001)

Notes: N (level 1) = 34,558 N (level 2) = 23,134, N (level 3) = 13,263 for all Finnish models, N = 1,347, N (level 2) = 887, N (level 3) = 586 for all US models. All models control for gender, living with two parents, number of children, and for the US also for ethnicity, sample type and average age when earnings measured. Standard errors in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A1. Variances and intraclass correlations from hierarchical three-level models of high school completion, college graduation, not poor and highest decile earnings

	Finland		USA	
	Empty model	All main effects	Empty model	All main effects
High school				
Variances				
Cousins	0.006	0.004	0.012	0.004
	(0.001)	(0.001)	(0.003)	(0.002)
Siblings	0.016	0.014	0.013	0.012
	(0.001)	(0.001)	(0.004)	(0.004)
Individual	0.080	0.080	0.067	0.065
	(0.001)	(0.001)	(0.003)	(0.003)
Intraclass correlations				
Cousins	0.060	0.036	0.129	0.045
Siblings (cond.)	0.216	0.180	0.271	0.194
College graduation				
Variances				
Cousins	0.020	0.006	0.045	0.006
	(0.001)	(0.001)	(0.007)	(0.005)
Siblings	0.038	0.027	0.020	0.018
	(0.002)	(0.002)	(0.007)	(0.006)
Individual	0.141	0.141	0.116	0.114
	(0.002)	(0.002)	(0.006)	(0.006)
Intraclass correlations				
Cousins	0.102	0.034	0.247	0.0412
Siblings (cond.)	0.293	0.187	0.360	0.171
Not poor				
Variances				
Cousins	0.004	0.002	0.024	0.001
	(0.001)	(0.001)	(0.009)	(0.006)
Siblings	0.013	0.011	0.035	0.022
	(0.002)	(0.002)	(0.011)	(0.010)
Individual	0.162	0.153	0.156	0.153
	(0.002)	(0.002)	(0.009)	(0.009)
Intraclass correlations				
Cousins	0.020	0.013	0.112	0.006
Siblings (cond.)	0.092	0.080	0.276	0.129
Highest decile				
Variances				
Cousins	0.003	0.001	0.016	0.005
	(0.001)	(0.001)	(0.003)	(0.003)
Siblings	0.009	0.006	0.005	0.006
	(0.001)	(0.001)	(0.003)	(0.003)
Individual	0.079	0.076	0.051	0.051
	(0.001)	(0.001)	(0.003)	(0.003)
Intraclass correlations				
Cousins	0.029	0.007	0.222	0.087
Siblings (cond.)	0.124	0.079	0.291	0.187

Notes: For number of observations, see Tables 2–3. Standard errors in parentheses.