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Resource Compensation from the Extended Family: Grandparents, Aunts, and Uncles in Finland and the United States

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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. Moreover, existing studies on extended family members have focused on grandparents, with only a couple of studies considering aunts and uncles. We examine the role of both grandparents' and aunts and uncles' resources in Finland and the United States using longitudinal panel data (Finnish Census Panel and the Panel Study for Income Dynamics (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 upper secondary education and the avoidance of low pay in both countries. The results suggest that compensation by aunts and uncles takes place for the avoidance of marginalization and is particularly likely when both parents and grandparents have low resources.

Introduction

A wide range of existing research has concluded that parental background plays an important role for socio-economic attainment in all societies. In addition to their immediate family, children often also have access to the resources of their extended family, in particular aunts and uncles as well as grandparents. Indeed, the role of grandparents in intergenerational attainment has become a topic of increasing research interest in the past decade (Chan and Boliver, 2013; Hällsten, 2014; Møllegaard and Jæger, 2015; Bol and Kalmijn, 2016; Deindl and Tieben, 2017). 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). Nevertheless, 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; notable exceptions in this regard are Jæger, 2012; Knigge, 2016; Erola and Kilpi-Jakonen, 2017).

We examine the role of grandparents' as well as aunts and uncles' education and income on their grandchildren's/nieces' and nephews' educational attainment and earnings. In addition to being an additional resource for children, extended family resources may act in specific ways to compensate for lacking parental resources. In particular, the extended family may step in when the immediate family is in need, or extended family resources may be more beneficial for children with low parental resources (Jæger, 2012; Deindl and Tieben, 2017).

We cover a total of four different outcomes—two related to education and two related to earnings—to examine comprehensively how extended family resources are related to socio-economic outcomes in early adulthood. Moreover, we separate two different scenarios in which compensation from aunts and uncles may take place: when parents have been intergenerationally downwardly mobile and when they are intergenerationally stable with low resources. This helps us disentangle whether so-called extended family effects are mainly related to unmeasured parental characteristics.

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 we replicate our analyses in two contrasting contexts: Finland, using high-quality register data, and the United States, using the well-known Panel Study for Income Dynamics (PSID) data. Although our aim is not to conduct a comparative analysis, it is important to acknowledge key institutional similarities and differences. The two countries are relatively similar with regard to the share of the population having attained higher-level qualifications: among the cohort born 1966–1975 (which is relatively close to the one we study here) 46 per cent gained any type of tertiary qualification and 27 per cent a bachelor degree or above in Finland compared to 43 and 33 per cent, respectively, in the United States (OECD, 2012). Previous research has shown persistently stronger intergenerational associations of education and income in the United States than in Finland (Björklund *et al.*, 2002; Hertz *et al.*, 2007; Pfeffer, 2008). The characteristic that distinguishes the two countries the most, though, is the extensiveness of the welfare state, which is reflected, for instance, in the much lower poverty rate in Finland in comparison to the United States.[1]

The following two sections discuss 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. This is followed by the data and methods section and the empirical results. We conclude with a discussion about compensation and social inequality, and what the future may bring with regard to extended family influences.

Theoretical Framework

The Influence of Extended Family Resources for Socio-Economic Attainment

The positive effect of parental resources has been argued to be based on investments that parents are able to make in their children and parental endowments that their children can benefit from (Becker and Tomes, 1976; Coleman, 1988; Esping-Andersen, 2015). Investments usually refer to time and money spent on children's upbringing and care, whereas endowments may refer to both economic and material resources as well as parental social networks that children can exhaust for their own good, the role model parents provide, as well as genes that influence children's outcomes independently of their will.

Similarly, extended family members may also have endowments that children can benefit from and they may invest in their grandchildren/nieces and nephews. For example, the extended family may be able to provide information about access to certain educational institutions or certain jobs, they may act as role models, and they may contribute material resources through presents as well as buying of services. The extended family's motivations to invest in the well-being of their relatives has been linked to 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). Nevertheless, children may also benefit from their extended families' resources even without active investments, for instance when the latter act as role models.

There is a growing literature on the investments that grandparents make in their grandchildren in terms of both time and money (Albertini, Kohli and Vogel, 2007; Hank and Buber, 2009). There may also be more enduring grandparental endowments that are beneficial for their grandchildren, since neither contact nor even an overlap in lifetimes is necessarily a prerequisite for an influence to be observed (Knigge, 2016). However, there are also reasons to believe that the grandparental influence may be rather limited in scope. Many grandparents are not able to invest in their grandchildren due to their age and level of frailty (Astone *et al.*, 1999). Grandparental resources also tend to be relatively low due to historically lower educational levels and the lower level of monetary resources that many elderly have. A recent review of the literature concluded that just over half of the published analyses considering grandparental effects on education have found them and that, on average, 70 per cent of the grandparental effect is mediated by the parental generation (Anderson, Sheppard and Monden, 2018).

In contrast to grandparents, aunts and uncles represent a different generation—one that has higher resources and whose knowledge of the educational system and labour market contacts are more up-to-date. One of the ways in which extended family members may contribute
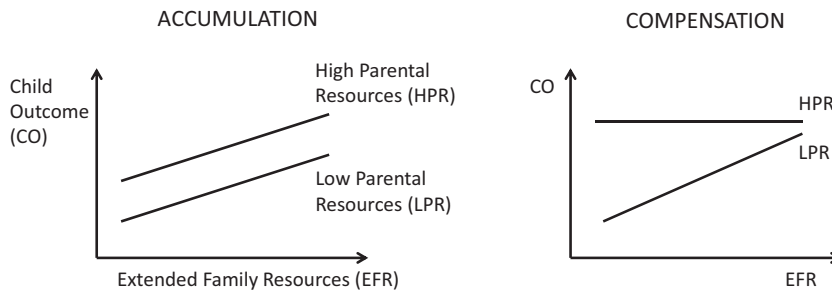
Figure 1. The accumulation of extended family resources (left panel, corresponding to *Hypothesis 1*) and compensation from extended family resources (right panel, corresponding to *Hypothesis 2*).

to socio-economic 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 (Greenberger, Chen and Beam, 1998; Chang *et al.,* 2010). Aunts and uncles can be important mentors in a variety of matters, including those related to education and the labour market (Milardo, 2010). In addition to giving advice directly, aunts and uncles may influence their nieces and nephews by acting as role models or as a further reference frame for their parents' decisions. It is likely that in modern Western societies, aunts and uncles tend to provide endowments for their nieces and nephews rather than making direct monetary investments (Prix and Pfeffer, 2017). This also means that their influence should not necessarily be related to whether they have children of their own. Whereas investments can become diluted with the number of own children, acting as a role model, giving information or providing networks should not be similarly affected.

To conclude, 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, so that the observed effects of different family members are additive and independent of each other. Therefore, we formulate the following hypothesis, which is also illustrated in Figure 1 (left side):

Hypothesis 1: Extended family members' resources are beneficial for all individuals.

Compensation in Intergenerational Transfers

The discussion above suggests that extended family resources are beneficial for all, but it may be the case that

their influence depends on the immediate family's circumstances. Earlier studies suggest that willingness to invest in grandchildren is especially strong in times of need. For instance, grandparents have 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 (Guzman, 1999; Monserud and Elder, 2011). By contrast, they may have very little effect for individuals whose parents have high levels of resources. Children with plenty of immediate family resources may not need additional extended family resources or there may be ceiling effects so that they cannot benefit more from additional resources. Previous research has indeed found aunts and uncles to mainly influence nieces and nephews whose immediate families have low resources, in other words to compensate for the latter (Jæger, 2012).[2] We thus formulate the following hypothesis, which is also illustrated in Figure 1 (right side):

Hypothesis 2: Extended family members' resources are more beneficial the lower the immediate family's resources are.

Compensation has previously been identified as particularly relevant for ensuring that low-performing children from advantaged families do not end up being downwardly mobile (compensatory advantage, Bernardi and Boado, 2014; Bernardi and Grätz, 2015; Bernardi and Ballarino, 2016) and, from the point of view of the extended family, for ensuring that high-status families do not encounter multigenerational downward mobility (Chan and Boliver, 2013; Wightman and Danziger, 2014). Deindl and Tieben (2017) refer to this as the buffer hypothesis: grandparents are likely to be particularly influential for children with low immediate family resources because they act to prevent sustained downward mobility.

We argue that the extended family's resources should be influential not only in cases where the immediate

family has encountered downward mobility—where the immediate family may be considered as the 'black sheep' within the extended family—but also in cases where there is an aunt or uncle who has become successful despite coming from a low-status family. When a parent has encountered downward mobility relative to their own parents and siblings, the measured influence of the extended family can be a combination of both unmeasured parental characteristics (such as parental expectations, see Wightman and Danziger, 2014) as well as a real influence of the extended family who act to avoid sustained downward mobility. When there is at least one aunt or uncle who has risen from a low-status family, there is less potential for unmeasured parental characteristics to be the driving force behind any measured influences that we may find.

Therefore, we aim to separate whether compensation from aunts and uncles applies equally for children whose parents are the 'black sheep' within their own family and for children whose parents have not encountered downward mobility. We concentrate here on aunts and uncles because grandparental *compensation* always happens (if it happens) in cases of intergenerational parental downward mobility. Therefore, for aunts and uncles we break down *Hypothesis 2* into two more specific hypotheses:

Hypothesis 3: Aunts and uncles' resources are helpful when their nieces'/nephews' parents have encountered downward mobility (i.e. in situations where grandparents have high resources but parents have low resources).

Hypothesis 4: Aunts and uncles' resources are helpful when they have risen from low-status families, but their nieces'/nephews' parents have not (i.e. in situations where both grandparents and parents have low resources).

In other words, *Hypothesis 3* covers expectations based on compensatory advantage and the avoidance of sustained downward mobility, whereas *Hypothesis 4* relates to a process that could be termed a compensatory push.

Alternative Influences of the Extended Family

It is also the case that these two processes (beneficial for all, compensation) do not cover all potential processes of three-generation resource transmission. Although we do not formulate alternative hypotheses for these effects, the analyses conducted below will provide further evidence on their roles in intergenerational attainment.

On the one hand, it is possible that extended family resources act as a multiplier of immediate family resources by being more advantageous the more resources parents can provide. This type of process has been referred to as a social multiplier effect (Dickens and Flynn, 2001, see also DiPrete and Eirich, 2006), as a booster (Deindl and Tieben 2017), as augmentation (Anderson, Sheppard and Monden, 2018), or as a complementary effect (Becker *et al.,* 2015). When this is the case, it might be that extended family resources are not at all beneficial when parental resources are very low but only when there are also high levels of immediate family resources available. Relatedly, a stronger effect of grandparental education on grandchildren's education has been found for children in intact families than those whose parents have separated (Song, 2016).

On the other hand, processes of countermobility (Hertel and Groh-Samberg, 2014) would mean that grandchildren with high grandparental resources end up in higher-status positions even if their parents had low resources, or vice versa, low grandparental resources would lead to low-status despite high parental resources. In other words, grandparents' resources would have positive and significant effects, and parents' resources low or even non-existent effects, with no interaction between them.

Data and Methods

Data

Relatively few data sets enable the analysis of both grandparents as well as aunts and uncles. For Finland we can use the Finnish Census Panel, whereas for the United States, the PSID is suitable for these purposes (PSID, 2016). The Finnish Census Panel (1950–2007) 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 5 years and also followed until the end of the panel. Information on qualifications, income, and employment for all individuals in the sample has been drawn from administrative registers and matched with census data. Altogether the panel covers approximately 10 per cent of the population and is particularly suitable for following households and generations over time.

The PSID (1968–2013) is also inherently multigenerational in its 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 (McGonagle *et al.,* 2012). 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.

In both data sets we can only observe the extended family on either the paternal or maternal side for each individual. Whereas the Finnish data include information about all immediate and extended family members (from one side of the family), some may be missing in the PSID.[3] 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.[4] For Finland we use individuals born 1964–1977, totalling 38,270 individuals. For the United States we use individuals born 1968–1981, totalling 1,713 individuals.

Dependent Variables

We use four dependent variables to analyse the influence of immediate and extended family resources on children's educational attainment and earnings in adulthood. We assume that compensation should be more likely to occur in avoiding marginality, whereas the influence may wane for outcomes at the top of the social spectrum. Therefore, we analyse two positions at the opposite ends of the educational and earnings hierarchies.

Our first educational outcome variable focuses on whether an individual has completed upper secondary education (either academic or vocational in Finland; high school, including General Equivalency Diplomas (GED), in the US context). Completing upper secondary has become almost self-evident for the vast majority of students in both countries. Roughly 90 per cent of men and women under the age of 45 have attained at least this level of education in both countries (OECD, 2012: 35; see also 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. At the upper end of the educational hierarchy, we focus on whether individuals have gained at least a bachelor's degree. As shown in Table 1, around 23 per cent of both our Finnish and US samples have attained this level of qualification. We measure these two outcomes at age 30 for Finland and at the last available measurement point when respondents were at least 22 and at most 30 years old for the United States. Due to the smaller sample size and panel attrition, we allow for earlier measures of our outcomes in the PSID and control for the age at which education is measured.

With regard to earnings, we study first the avoidance of low pay using the threshold of average annual earnings less than 60 per cent of the sample median. In our samples, 77 per cent had managed to avoid low pay in Finland and 72 per cent in the United States (Table 1). At the top end of the earnings distribution, we analyse whether individuals reached the highest earnings decile of the sample distribution. For both of these measures, we average annual earnings between ages 30–36 in Finland and ages 24–35 in the United States. Again, the US models include an additional control variable for the average age at which earnings were measured. In addition, weights were used to calculate the thresholds (60 per cent of median and top decile) in the PSID. Due to missingness in the measurement of earnings, our sample sizes for the analyses based on earnings are slightly smaller: 36,758 in Finland and 1,345 in the United States.

Independent Variables

Educational and economic resources of parents and aunts/uncles are measured when the children in our data were approximately 16 years old, a critical age for educational decision making. However, we measure grandparents' resources around the time of (grand)children's birth. We do this to gain a more accurate measure of grandparental economic resources, aiming to capture them before retirement, and to include more grandparents before they pass away. In the PSID, grandparents' income is measured as an average from when the child was of age 0–6 years. In the Finnish data, we use the age span of 0–11 years because we have 5-year gaps in the income information for the 1970s and early 1980s. The age range for aunts and uncles' as well as parents' average yearly income is 10–16 years.

We measure parents', aunts/uncles', and grandparents' educational attainment as the maximum years of schooling they had obtained, choosing the family member with the highest education within each of these categories. The same number of years carries slightly different connotations in the two country contexts. The proportion of the population with at least upper secondary education (12 years) in previous generations is substantially higher in the United States than in Finland due to the later timing of educational expansion in Finland (Goldin, 1998; Statistics Finland, 2007). A bachelor's degree can be obtained in 3 years in Finland and 4 years in the United States. While this is usually regarded as the main university 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 5 years after entering university to complete a master's degree.

Table 1. Descriptive statistics of the dependent, independent, and control variables

Variables	Finland		The United States[a]	
	Mean	Standard deviation	Mean	Standard deviation
Dependent variables				
At least upper secondary education (dummy)	0.87	0.33	0.90	0.29
College degree (dummy)	0.24	0.43	0.22	0.41
Avoidance of low pay (dummy)[b]	0.77	0.42	0.72	0.45
Highest decile earnings (dummy)[b]	0.10	0.30	0.10	0.30
Independent and control variables				
Parents' education (years)	10.5	3.3	13.1	2.3
Aunts/uncles' education (years)	11.3	3.3	13.9	2.1
Grandparents' education (years)	7.8	2.2	11.4	2.8
Equivalized household income[c]	23,318	11,429	38,401	31,649
Aunts/uncles' income[c]	30,739	16,063	63,331	64,035
Grandparents' income[c]	12,983	13,286	51,373	38,278
Lives with two parents at age 16 (dummy)	0.84	0.37	0.57	0.50
Number of children in household	2.20	0.88	2.47	0.96
Female (dummy)	0.49	0.50	0.51	0.50
Language: Swedish (dummy)	0.05	0.22		
Non-White (dummy)			0.23	0.42
Age when upper secondary measured			29.0	1.7
Age when college graduation measured			28.8	2.0
Average age when earnings measured[b]			29.6	1.0

Note: $N = 38,270$ for Finland; $N = 1,713$ for the United States.

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

[b]$N = 36,578$ for Finland; $N = 1,345$ for the United States.

[c]Deflated to 2014 currency values and entered into models as deciles, centred at V decile (weighted by family-weight for PSID).

Economic resources of the immediate and extended family are measured in deciles of total income deflated to the 2014 values of each national currency. For immediate family household income, we use the total family income equivalized by dividing it with the square root of the number of household members. For extended family income, we use individual income of biological extended family members (i.e. spouses of aunts and uncles are excluded).[5] Again, we use the highest one observed within each category of extended family members. We applied longitudinal family weights when constructing the deciles in the PSID. Correlations between immediate and extended family resources are in the Supplementary Appendix.

Our models also control for gender, parental divorce by age 16 years, and the number of children living in the household at age 16 years. In the Finnish analyses, we additionally control for registered language[6] and grandparental farming background. In the US analyses, we additionally control for children's race/ethnicity (defined as White versus non-White) and sample type (originating from the low-income subsample versus probability

sample in the first wave of the PSID) as well as the controls related to age at measurement as described above.

Methods

We use multilevel random effects logistic regression models and present coefficients' estimated average marginal effects. 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 set-up of Jæger (2012). The main motivation for using three-level models is to account for the clustering of the data into immediate and extended families.

We conduct separate analyses for the two countries. First, we analyse the main effects of parental, grandparental, and aunt/uncle resources. In particular, we aim to see whether the effects of the extended family are independent of each other. We control for immediate family resources in all models. The Supplementary Appendix provides additional analyses where immediate family resources are excluded from the models, and where education and

income are entered into separate models. These are provided as additional information for interested readers and as material for further analyses such as those performed by Anderson, Sheppard and Monde (2018).

In the second step, we test interactions between extended and immediate family resources to see whether processes of compensation take place. We include 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. Again, average marginal effects are estimated based on the results of the logistic regression. We estimate the average marginal effects of extended family resources at specified high and low levels of parental resources (10 vs. 15 years of parental education and II vs. IX parental income decile). The significance of the interactions is then evaluated through the difference in these estimated average marginal effects. This is done to overcome the well-acknowledged problems in the interpretation of interaction terms in logistic models. To visualize these results, we plot predicted probabilities based on the models where we found significant interaction effects. All models with interactions include all the main effects of the other immediate and extended family resources as well as the control variables. In cases where several interactions are found to be significant for the same outcome, we also test them simultaneously in the same model and report the results in the text.

In Hypotheses 3 and 4, we are interested in whether the compensatory influence of aunts and uncles differs depending on whether the immediate family comes from a disadvantaged background or whether they have experienced downward mobility. To do this, we divide parental and grandparental resources into two categories: high resources (at least some tertiary education and income above the median) and low resources (upper secondary education or less and income below the median). We estimate our models for children with low parental resources and include an interaction between aunt and uncle resources and grandparental resources. In this way, we can see whether compensation from aunts and uncles takes place when parents but not grandparents have low levels of resources (*Hypothesis 3*, compensatory advantage or 'blacksheep' effect) or when both parents and grandparents have low levels of resources (*Hypothesis 4*, compensatory push).[7] The results are presented in figures where predicted probabilities are plotted.

Results

Tables 2 and 3 present the main effects of immediate and extended family resources on education and earnings, respectively. Starting with Finland, these models show that aunts and uncles' education has a positive impact on upper secondary and college graduation, and their income influences all four outcomes. The size of the net education estimate is approximately one quarter of that of parents. More specifically, an additional 5 years of aunt/uncle education is estimated to increase the chances of completing upper secondary by 1.8 percentage points[8] and of college graduation by 2.9 percentage points (based on Model 4, Table 2). The size of the net income estimate is approximately one-third of that of parents for the educational outcomes (a difference of five income deciles increases upper secondary completion by 0.8 percentage points and college graduation by 2.8 percentage points, Model 4, Table 2) and slightly over one-fifth for the income-related outcomes (a difference of five income deciles increases avoidance of low pay by 1.4 percentage points and reaching the top earnings by 1.2 percentage points, Model 4, Table 3). The estimates for grandparental resources are not significant for educational outcomes, whereas the estimates for grandparental income are significant for the earnings-related outcomes and similar in size to those of aunts and uncles. The net estimate of grandparental education is significant and negative for avoidance of low pay.

With regard to all four outcome, when controlling for both grandparents' and aunts/uncles' resources at the same time, we can see that the effects of the latter are largely independent of the former (Model 3 compared to Model 4).[9] The grandparent effect seems to be mediated to a certain extent by aunts and uncles though (Model 2 compared to Model 4). The measured gross influence of parents (Model 1) is also attenuated slightly by the inclusion of the extended family, in particular aunts and uncles (Models 3 and 4). In other words, the effect of parental resources is a slight overestimation of the true effect when it is estimated without taking into consideration aunts and uncles' resources, which tend to correlate with those of parents. Overall, it seems that processes of multigenerational inheritance are at work even in a relatively egalitarian country like Finland.

The US results by and large reproduce these trends, although they are clearly characterized by lower statistical power due to much smaller data. The results suggest that only aunts and uncles' education has a positive influence on their nieces' and nephews' education as well as reaching top earnings, and that the magnitude of this estimate is approximately half of the parental estimate for upper secondary completion (5 years translate

Table 2. Immediate and extended family resources and educational outcomes

	Finland				The United States			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
At least upper secondary								
Parental education	0.014***	0.014***	0.013***	0.013***	0.030***	0.028***	0.026***	0.025***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.004)	(0.005)	(0.004)	(0.005)
Household income	0.005***	0.006***	0.004***	0.005***	0.016***	0.015***	0.014***	0.014**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.004)	(0.004)	(0.004)	(0.004)
Grandparent education		0.002		0.000		0.004		0.002
		(0.001)		(0.001)		(0.003)		(0.003)
Grandparent income		0.000		−0.000		0.004		0.003
		(0.001)		(0.001)		(0.003)		(0.003)
Aunt/uncle education			0.004***	0.004***			0.012**	0.011*
			(0.001)	(0.001)			(0.004)	(0.004)
Aunt/uncle income			0.002*	0.002*			0.004	0.004
			(0.001)	(0.001)			(0.003)	(0.003)
Variance immediate family	1.422	1.400	1.415	1.392	0.658	0.623	0.537	0.540
(siblings)	(0.147)	(0.146)	(0.147)	(0.145)	(0.621)	(0.618)	(0.600)	(0.604)
Variance extended family	0.361	0.288	0.332	0.267	0.900	0.899	0.832	0.836
(cousins)	(0.079)	(0.076)	(0.078)	(0.075)	(0.492)	(0.504)	(0.483)	(0.494)
AIC	26,966.6	26,850.8	26,916.3	26,805.9	904.8	904.7	896.3	898.6
BIC	27,060.7	26,970.5	27,027.5	26,942.7	975.6	986.4	978.0	991.2
College degree								
Parental education	0.029***	0.028***	0.026***	0.027***	0.048***	0.046***	0.042***	0.042***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.005)	(0.005)	(0.005)	(0.005)
Household income	0.016***	0.016***	0.014***	0.015***	0.018***	0.018***	0.016***	0.017***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.004)	(0.004)	(0.004)	(0.004)
Grandparent education		0.002		−0.000		0.007		0.004
		(0.001)		(0.001)		(0.004)		(0.004)
Grandparent income		0.001		−0.000		−0.009*		−0.010*
		(0.001)		(0.001)		(0.004)		(0.004)
Aunt/uncle education			0.006***	0.006***			0.013*	0.012*
			(0.001)	(0.001)			(0.005)	(0.006)
Aunt/uncle income			0.006***	0.006***			0.003	0.003
			(0.001)	(0.001)			(0.004)	(0.004)
Variance immediate family	1.143	1.146	1.114	1.117	2.131	2.042	2.227	2.188
(siblings)	(0.107)	(0.107)	(0.106)	(0.106)	(0.841)	(0.832)	(0.869)	(0.872)
Variance extended family	0.244	0.209	0.233	0.204	0.313	0.452	0.137	0.258
(cousins)	(0.052)	(0.051)	(0.052)	(0.051)	(0.450)	(0.468)	(0.463)	(0.490)
AIC	37,657.3	37,582.0	37,495.5	37,429.3	1,266.4	1,263.1	1,261.1	1,258.7
BIC	37,751.4	37,701.7	37,606.7	37,566.2	1,337.2	1,344.8	1,342.8	1,351.3

Notes: Average marginal effects after logistic regression. *N* (Level 1) = 38,270, *N* (Level 2) = 24, 929, *N* (Level 3) = 13,833 for all Finnish models, *N* = 1,713, *N* (Level 2) = 1,086, *N* (Level 3) = 687 for all US models. All models control for gender, living with two parents, number of children, language, and farmer grandparents for Finland, and for the United States for ethnicity, age at measurement, and sample type. AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion. Standard errors in parentheses, *P < 0.05; **P < 0.01; ***P < 0.001.

into 5.5 percentage points in Model 4) and a quarter for college graduation (5 years translate into 6.0 percentage points). For reaching the top earnings, the estimate is 1.5 times larger than that for parents (5 years translate into an increase of 4.7 percentage points). These estimates are largely independent of grandparental resources (Model 2 compared to Model 4), of which only a negative estimate of income on college graduation is significant.[10] As in Finland, the estimates of parental resources (Model 1) are also attenuated by the inclusion of extended family resources, in particular those of aunts and uncles (Models 2–4).

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

	Finland				The United States			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Avoidance of low pay								
Parental education	0.004***	0.004***	0.004***	0.004***	0.006	0.006	0.003	0.003
	(0.001)	(0.001)	(0.001)	(0.001)	(0.007)	(0.007)	(0.007)	(0.008)
Household income	0.013***	0.013***	0.013***	0.013***	0.042***	0.041***	0.040***	0.039***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.006)	(0.006)	(0.006)	(0.006)
Grandparent education		−0.004***		−0.004***		−0.002		−0.004
		(0.001)		(0.001)		(0.005)		(0.005)
Grandparent income		0.004**		0.003**		0.008		0.007
		(0.001)		(0.001)		(0.005)		(0.005)
Aunt/uncle education			0.000	0.000			0.005	0.005
			(0.001)	(0.001)			(0.007)	(0.007)
Aunt/uncle income			0.003**	0.003**			0.008	0.007
			(0.001)	(0.001)			(0.005)	(0.005)
Variance immediate family (siblings)	0.442	0.443	0.438	0.440	0.840	0.847	0.806	0.814
	(0.075)	(0.075)	(0.075)	(0.075)	(0.454)	(0.457)	(0.449)	(0.451)
Variance extended family (cousins)	0.070	0.065	0.070	0.065	0.019	0.030	0.012	0.024
	(0.037)	(0.037)	(0.037)	(0.037)	(0.257)	(0.259)	(0.255)	(0.257)
AIC	37,072.8	37,053.3	37,064.3	37,044.7	1,428.6	1,430.1	1,428.8	1,430.6
BIC	37,166.4	37,172.4	37,174.9	37,180.9	1,496.3	1,508.2	1,506.9	1,519.1
Highest decile								
Parental education	0.009***	0.009***	0.009***	0.008***	0.009*	0.009*	0.006	0.006
	(0.001)	(0.001)	(0.001)	(0.001)	(0.004)	(0.004)	(0.004)	(0.004)
Household income	0.011***	0.011***	0.011***	0.011***	0.022***	0.022***	0.020***	0.020***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.004)	(0.004)	(0.004)	(0.004)
Grandparent education		0.001*		0.001		0.000		−0.002
		(0.001)		(0.001)		(0.003)		(0.003)
Grandparent income		0.002***		0.002***		0.000		−0.000
		(0.001)		(0.001)		(0.003)		(0.003)
Aunt/uncle education			0.001*	0.001			0.009*	0.009*
			(0.001)	(0.001)			(0.004)	(0.004)
Aunt/uncle income			0.002***	0.002***			0.000	0.000
			(0.001)	(0.001)			(0.003)	(0.003)
Variance immediate family (siblings)	0.786	0.782	0.788	0.787	1.468	1.465	1.449	1.467
	(0.155)	(0.154)	(0.155)	(0.155)	(1.160)	(1.160)	(1.159)	(1.169)
Variance extended family (cousins)	0.111	0.099	0.102	0.092	0.289	0.294	0.220	0.209
	(0.081)	(0.081)	(0.081)	(0.081)	(0.798)	(0.802)	(0.814)	(0.826)
AIC	20,546.3	20,514.7	20,518.7	20,496.5	580.9	584.9	579.5	583.1
BIC	20,639.9	20,633.8	20,629.3	20,632.6	648.6	663.0	657.5	671.6

Notes: N (Level 1) = 36,578, N (Level 2) = 24,202, N (Level 3) = 13,549 for all Finnish models, and N = 1,345 (Level 1), N (Level 2) = 885, N (Level 3) = 586 for all US models. All models control for gender, living with two parents, and number of children. In the Finnish models also for language and farmer grandparents, and in the US models also for ethnicity, sample type, and average age when earnings measured. AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion. Standard errors in parentheses. *$P < 0.05$; **$P < 0.01$; ***$P < 0.001$.

The few negative grandparent estimates that we observe are only evident when holding other extended and immediate family resources constant (see also Online Appendices). A negative estimate of grandparental income on educational outcomes is also observed in Finland when grandparental farming background is not controlled for. However, similar controls did not change the results for the United States and were left out because they reduced model fit. Despite extensive tests of alternative explanatory mechanisms, we have not been able to find adequate

explanations for the remaining negative estimates. Previous results from Sweden have also found similar negative estimates with the inclusion of a number of parental and grandparental variables (Hällsten and Pfeffer, 2017).

We next turn to examine whether some children benefit more from their extended family resources, in particular whether children coming from immediate families with low resources benefit more, as *Hypothesis 2* predicts. Table 4 presents the predicted slopes (marginal effects) of extended family resources, contrasting children from low- and high-resource families. These predictions are based on models that include an interaction between the corresponding immediate and extended family variables. For the educational outcomes, we only present results where immediate family education is interacted with extended family education. For the earnings-related outcomes, we present results for the interaction between immediate family income and extended family income. This is because these were the ones that produced the most interesting results. Altogether Table 4 thus presents results from 16 different models, and a further 16 have been run but are not presented.

We find evidence in both countries that aunts and uncles' education compensates for low parental education in the attainment of upper secondary education: the predicted slope for aunts' and uncles' education is positive and significant when parental education is relatively low (10 years), and it is close to 0 when parental education is relatively high (15 years), and this difference is statistically significant (Table 4). We find somewhat similar results for aunts and uncles' income and the avoidance of low pay, although neither the slopes nor their difference are statistically significant in the United States. In Finland, we see a similar pattern for grandparental income and the avoidance of low pay, but when we include the interaction with aunts and uncles' income in the same model, only the latter remains statistically significant (not shown).

Figure 2 translates these relationships graphically by plotting the predicted probabilities of completing upper secondary for children with different levels of parental educational resources and of avoiding low pay for children with different levels of household income. Due to differences in the educational distributions, we use a wider range of aunt and uncle years of education in Finland than in the United States. In Finland, the predicted probability of children from lower educated families (10 years) to complete upper secondary education improves from 86 to 88 and further to 90 per cent as aunts/uncles' education increases from 7 to 11 and further to 17 years, whereas in the United States the predicted probability of children from similar families increases from 78 to 91 per cent as aunts/uncles' education increases from 11 to 17 years. As already mentioned, the probability for children with rather high levels of parental education remains largely unchanged in both countries. When aunts and uncles' education is sufficiently high, the difference between children with low and high parental education is no longer statistically significant in the United States. Similarly for the avoidance of low pay, the expected probability for children from low-income families (II decile) increases from 70 to 75 in Finland and from 50 to 65 in the United States, as aunts and uncles' income increases from the I to the X decile.

Interestingly, we do not find support for compensation coming from grandparents in either country (Table 4). The US results for college graduation also hint at processes of multiplication, whereby the benefit of extended family resources is more beneficial the higher the immediate family resources. However, none of the differences in slopes (or interactions) are statistically significant.

Figure 3 presents the results testing Hypotheses 3 and 4 on the two different situations in which aunts and uncles' influence may be seen for children with disadvantaged parents. The figure shows support for *Hypothesis 4* in both countries and for both outcomes studied here. Aunts and uncles' education is beneficial for upper secondary completion when both the grandparents and parents had attained only low levels of education. Similarly, children with poor parents and grandparents are more likely to avoid low pay as young adults if their aunts and uncles had risen from this low-income background. In terms of *Hypothesis 3*, the results suggest that aunts and uncles' education does not matter (as much) for upper secondary education when parents have encountered downward mobility. For the avoidance of low pay, we see evidence of compensatory advantage also taking place. In other words, we find that both types of compensation take place for the avoidance of low pay, but for upper secondary completion we mainly see evidence of a compensatory push.

Discussion and Conclusion

We set out to examine the role that extended family members' resources play in intergenerational socio-economic attainment. Our aim was to see whether extended family members compensate for lacking parental resources. Moreover, we examined not only the influence of grandparents—who have received the most attention in

Table 4. Interaction between immediate and extended family resources. Results as predicted slopes (average marginal effects) of extended family resources at different levels of immediate family resources, each interaction in a separate model

	Finland		The United States	
	Upper secondary	College	Upper secondary	College
Predicted slope: grandparents' education				
At low parental education	0.001	−0.001	0.000	0.001
	(0.001)	(0.002)	(0.006)	(0.004)
At high parental education	0.000	−0.000	0.003	0.007
	(0.001)	(0.001)	(0.003)	(0.006)
P-value (test of difference)	0.451	0.434	0.647	0.342
Predicted slope: aunts and uncles' education				
Low parental education	0.004***	0.006***	0.023**	0.006
	(0.001)	(0.001)	(0.008)	(0.005)
High parental education	0.001	0.006***	0.001	0.018*
	(0.001)	(0.001)	(0.004)	(0.009)
P-value (test of difference)	0.000	0.525	0.019	0.198
	Not low pay	**Highest decile**	**Not low pay**	**Highest decile**
Predicted slope: grandparents' income				
At low household income	0.006***	0.003***	0.008	0.002
	(0.001)	(0.001)	(0.009)	(0.002)
At high household income	0.001	0.001	0.006	−0.003
	(0.001)	(0.001)	(0.006)	(0.006)
P-value (test of difference)	0.016	0.170	0.819	0.412
Predicted slope: aunts and uncles' income				
Low household income	0.006***	0.003***	0.016	0.003
	(0.001)	(0.001)	(0.009)	(0.003)
High household income	0.000	0.002	−0.001	−0.004
	(0.001)	(0.001)	(0.006)	(0.006)
P-value (test of difference)	0.004	0.265	0.109	0.344

Notes: Average marginal effects after logistic regression including interactions between immediate and extended family resources (in all cases interactions added to the relevant Model 4 as presented in Tables 2 and 3). Low parental education = 10 years, high parental education = 15 years, low household income = II decile, high household income = IX decile.

Standard errors in parentheses, *P < 0.05; **P < 0.01; ***P < 0.001.

the extended family literature to-date—but also aunts and uncles, who thus far have largely been neglected.

Our results suggest that aunts and uncles' resources are positively associated with their nieces' and nephews' socio-economic attainment in both the United States and Finland. Table 5 summarizes our results with regard to our initial hypotheses. Overall, we found aunts and uncles' education to be more strongly associated with their nieces' and nephews' education than their income, whereas at least in Finland, their income is more strongly associated with the avoidance of low pay and reaching top earnings than their education. With regard to grandparents' resources, the only positive and significant estimates that we found net of the generation in-between were between grandparents' income and

earnings-related outcomes in Finland—in a few cases we also found a negative net association.

For upper secondary completion and the avoidance of low pay, we found that aunts and uncles' resources compensated for low parental resources in both countries. The compensatory effect thus seems to be limited to avoiding marginalization and does not extend to higher-status outcomes. This may indicate that compensatory effects outside the immediate family may be relevant mainly in cases where the extra push needed from extended family members does not need to be that big. In particular, we found compensation in cases where parents came from low-educated families and remained such themselves, whereas the aunts and uncles had broken this cycle of disadvantage and had attained a higher
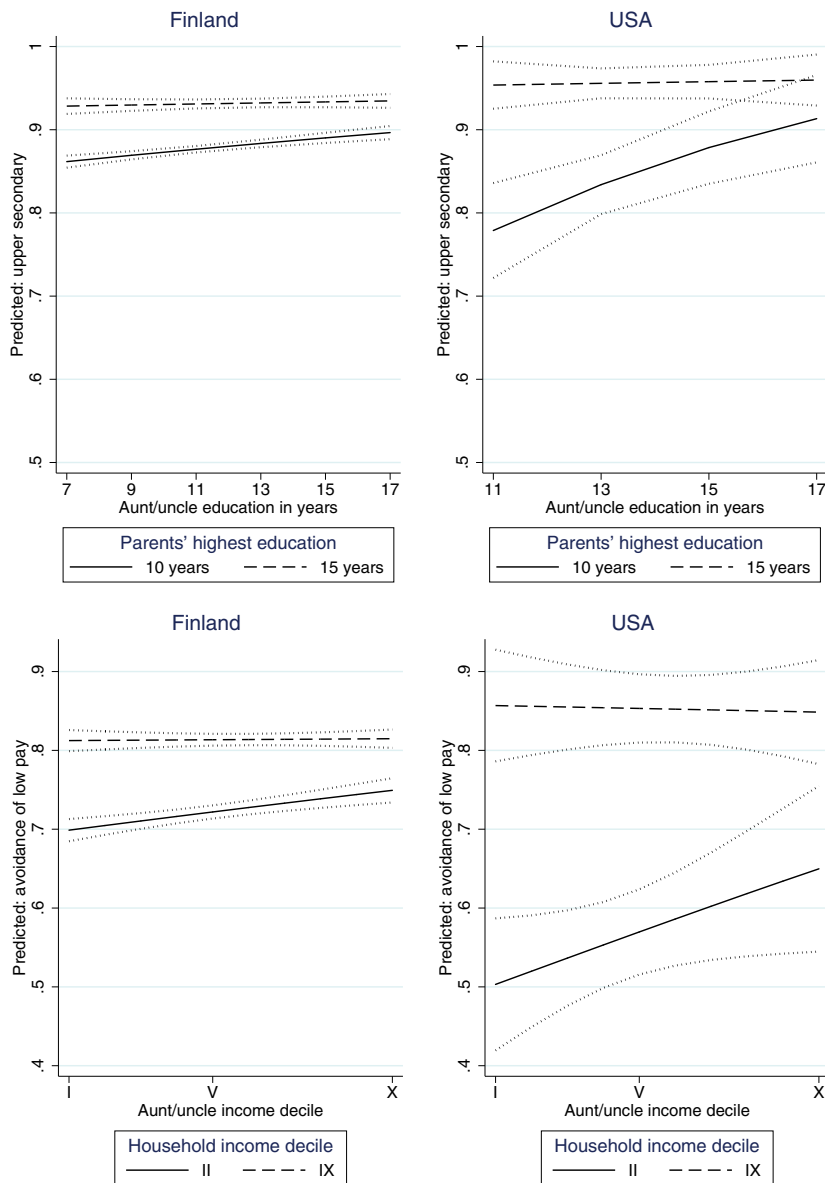
Figure 2. Compensation effect: aunts and uncles' education compensating low parental education with regard to children's chances to complete upper secondary (upper panel) and aunts' and uncles' income compensating low parental income with regard to children's chances to avoid low pay (lower panel). 95 per cent confidence intervals around estimates.

level of education. In contrast to what could have been assumed based on the previous literature (Chan and Boliver, 2013; Wightman and Danziger, 2014; Deindl and Tieben, 2017), we found only weak evidence that aunts and uncles would be particularly influential when parents had been downwardly educationally mobile. With regard to the avoidance of low pay, we found support for both sources of compensation. These findings

are important refinements to previous studies that have not been able to test these mechanisms at this detailed level. In general, our findings provide better evidence than previously that the extended family effects are real rather than artefacts reflecting the unmeasured characteristics of parents.

Although it is clear that immediate family resources matter more than extended family ones, the net
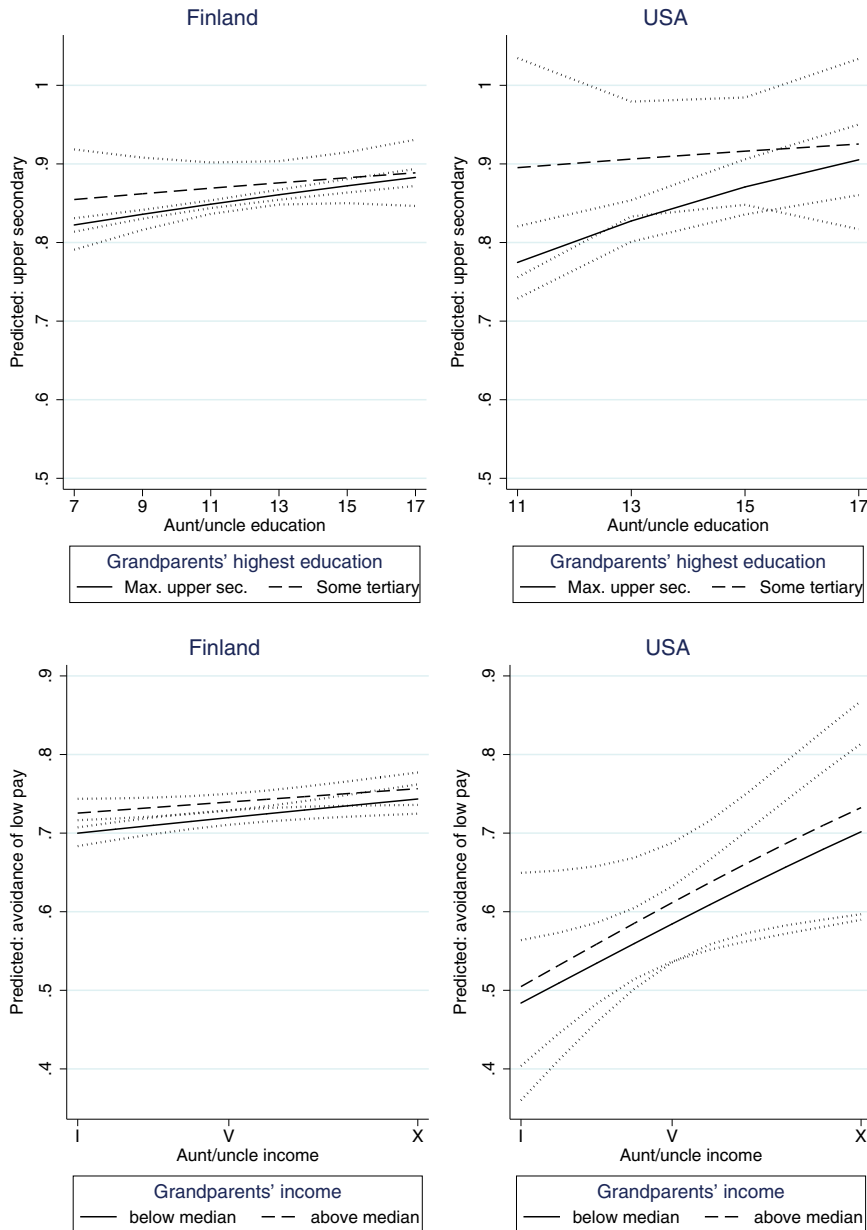
Figure 3. The influence of aunts and uncles' education depending on grandparents' education for children with low parental education (upper panel) and the influence of aunts and uncles' income depending on grandparents' income for children with low parental income (lower panel): examining *Hypothesis 3* (dashed lines) and *Hypothesis 4* (solid lines). 95 per cent confidence intervals around estimates.

estimates for aunts and uncles' resources were found to be moderately large: in most cases between a third and a fifth of those of parents. This is similar to what the previous literature has found for grandparents' resources relative to parents' resources on children's education: Anderson, Sheppard and Monden's (2018) meta-

analysis of past three-generation analyses found the median effect size of grandparents' resources to be a quarter of that of parents. Moreover, aunts and uncles' resources were even found to fully compensate for low parental resources in completing upper secondary education in the United States. Nevertheless, as immediate

Table 5. Summary of results related to the hypotheses

	Finland		The United States	
Education	At least upper secondary	College graduation	At least upper secondary	College graduation
H1: Equal benefit for all	AU-Inc	AU-Edu AU-Inc	–	AU-Edu
H2: Compensation	AU-Edu	–	AU-Edu	–
H3: Compensatory advantage	–	–	–	–
H4: Compensatory push	AU-Edu	–	AU-Edu	–
Earnings	**Avoidance of low pay**	**Highest decile**	**Avoidance of low pay**	**Highest decile**
H1: Equal benefit for all	AU-Edu GP-Inc	AU-Inc GP-Inc	(AU-Inc)	AU-Edu
H2: Compensation	AU-Inc (GP-Inc)	–	(AU-Inc)	–
H3: Compensatory advantage	AU-Inc	–	AU-Inc	–
H4: Compensatory push	AU-Inc	–	AU-Inc	–

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

and extended family resources correlate to some extent, the potential equalizing impact at the societal level may not be that strong.

Overall, we found more widespread evidence for the influence of aunts and uncles' education than their income, particularly in the United States. Supplementary results also showed that aunts and uncles' individual incomes rather than their household equivalized incomes were more strongly associated with the outcomes under study. We suggest that this implies that relatively little of the influence of aunts and uncles is related to a direct transfer of resources. Rather it seems that extended family members matter by acting as role models or simply by providing a positive example that has been missing from the immediate family (as also suggested by Prix and Pfeffer, 2017). By and large, previous research focusing on grandparents has found that contact is not a precondition for an influence of grandparents to be found (reviewed in Anderson, Sheppard and Monden, 2018). It thus seems that endowments matter more than direct investments when it comes to the influence of the extended family on children, in contrast with parents' influence where both matter.

Our analyses also suggest that the influence from aunts and uncles may be larger in size than that of grandparents. This may indicate 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 that we could not analyse with the Finnish data is grandparental wealth (see Hällsten and Pfeffer, 2017). Moreover, what grandparents may be able to offer is their time, which may be valuable regardless of the level of their resources. It is also possible that part of the effect we associate with aunts and uncles is in fact associated with cousins or other non-included members of the extended family. In a similar manner, though, the inclusion of aunts and uncles is also likely to reduce the unobserved heterogeneity of parental and grandparental effects.

Whilst our aim has not been to compare the size of the estimates between the two countries but rather to replicate our results with two different data sets from two different contexts and establish common patterns, the results would seem to suggest that compensatory effects may be stronger in the United States. While it may be that the Finnish educational system and welfare state limit 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).

How should we then interpret compensation in relation to equality of opportunity? This may be answered in two different ways. First, compensation counterbalances a disadvantageous immediate family background for those who have better off aunts and uncles available. When it seems that relatively little extra is needed from

aunts and uncles to avoid the most adverse outcomes, this may contribute to the equality of opportunity significantly. At the same time, compensation may reduce the sense of meritocratic fairness at the bottom of the stratum among those who are excluded from the advantages of high aunt and uncle resources.

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 (Bengtson, 2001; Mare, 2011). In addition, the help of extended family members may become more necessary, as single parenthood becomes more commonplace. Yet smaller family sizes are likely to mean that children have fewer aunts and uncles in their extended families, but also fewer cousins to compete for them. 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.

Notes

1 In Finland the poverty rate was 15 for the full population and 11 among families with children (using the 60 per cent of median income threshold) in 2010. In the United States, the poverty risk was considerably greater: 24 for the full population and 29 for families with children (LIS, 2015).

2 A similar effect from the side of welfare state institutions and their interaction with immediate family resources has also been referred to as a substitution effect (Becker *et al.*, 2015).

3 It is also the case that in the PSID, approximately two-thirds of the respondents in our analytical sample have information from the mother's side of the family and only one-third from the father's side. This is likely due to the general gender bias in survey response. In Finland, just under 50 per cent have information from their mother's side, 48 per cent have information from their father's side, and 2.5 per cent from both sides. We have tested our models keeping only individuals who have information from the mother's side, and this did not substantially change our results. In addition, having only information from one side (and potentially incomplete information in the United States even then) means that we may underestimate the effect of extended family members. Supplementary analyses with individuals for whom we have information from both sides (though based on 908 individuals)

suggest that this is indeed the case, but the bias is relatively small.

4 This could potentially bias the data. However, the selection due to this restriction is relatively limited and non-significant. For example, the educational outcomes of children with and without information from aunts and uncles are almost identical in both data sets.

5 We have tested extensively other possible measurements and found these two to be the most fitting across the four different outcomes and two countries. In particular, it should be noted that measures that take into account family size for aunts and uncles (and grandparents) did not fit the data as well as the one which does not, thus suggesting that aunts and uncles' influence is not (strongly) conditional on the number of children that they have.

6 Finland has an approximately 5 per cent Swedish-speaking minority, who tend to have higher levels of education and socio-economic status than the Finnish speakers (Saarela and Finnäs, 2003). Due to the way that the Finnish sample has been constructed (grandparents need to be resident in Finland in 1970), our sample contains only a few individuals whose registered first language is not Finnish or Swedish due to Finland having historically been a country of emigration rather than immigration. They have been included with the Finnish speakers.

7 In Finland, among children with low parental education, 2.2 per cent were downwardly mobile and 97.8 per cent were immobile, and among children with low parental income, 42.5 per cent were downwardly mobile and 57.5 per cent were immobile. In the United States, 11.5 per cent were downwardly mobile and 88.5 per cent were immobile in terms of low education, and 38.7 per cent were downwardly mobile and 61.3 per cent were immobile in terms of low income.

8 This is calculated as $5*0.00355*100$. These numbers differ slightly from those that can be calculated from Table 2, where the coefficient is 0.004, due to rounding in the table.

9 The estimates for aunts and uncles' resources are significantly different from those of grandparents (at $P < 0.05$) in the models predicting education and for educational resources when predicting avoidance of low pay.

10 Due to relatively large standard errors, the estimates for aunts and uncles' resources do not differ significantly from those of grandparents, except for income in predicting college graduation.

Supplementary Data

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