



Persistent educational inequality among the children and grandchildren of refugees?

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Abstract

Recent years have seen a global increase in the number of refugees fleeing from persecution at home. Measuring their adaptation in receiving countries is a key first step towards minimizing and preventing inequality. However, it has become apparent that an intergenerational perspective is required in order to fully capture the long-run challenges faced by refugees and their descendants. This paper uses Swedish register data to examine the importance of family structures and parental socio-economic status in the educational attainment of the children and grandchildren of refugees, relative to those with four Swedish-born grandparents. Surprising findings emerge. Not only do we reveal signs of increasing inequality for later generations of refugees' descendants, but we also show that these inequalities are determined by parental socioeconomic inequality in multiple domains of life. Counter to theoretical expectations, those who are most likely to experience education inequality are the descendants of refugees with mixed—native-born and foreign-born—parents or grandparents. These findings suggest a need for policies that help refugees to obtain levels of socioeconomic status—in education, employment and earnings—that are typical of those in their new destination, not only because this is of benefit to themselves, but also because this is likely to result in considerable benefits for their children.

Keywords: *Education, adaptation, intergenerational, children of refugees, grandchildren of refugees, second generation, third generation, Sweden*

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The incorporation of immigrants and their descendants into society is a significant challenge facing many countries around the world. Although many aspects of the lives of immigrants and their descendants are relatively well understood, much less is known about the lives of forced migrants and their descendants, particularly in the decades after their initial forced displacement. This gap has become increasingly relevant in the many countries that have received large numbers of refugees and asylum seekers, such that more and more countries not only need to accommodate forced migrants, but also enable the long-run incorporation of their descendants into mainstream society (Fransen and de Haas 2022). Indeed, it is increasingly recognized that a comprehensive understanding of integration over the long-run can only be achieved by studying the adult lives of immigrants' descendants (Drouhot and Nee 2019; Zhou and Gonzales 2019), or in the case of forced migration, the children and grandchildren of refugees. In order to help address this challenge, we carry out a case study of Sweden, which has a long history of receiving large numbers of refugees, and therefore a large number of refugees' descendants. We use this context, and Sweden's high-quality register data, to understand intergenerational inequalities and their role in determining the incorporation of children and grandchildren of refugees.

To date, research on the descendants of voluntary immigrants far exceeds that of descendants of refugees. There is also a tendency to group the two categories together, thus preventing any understanding of diverging incorporation (FitzGerald and Arar 2018; Zhou and Gonzales 2019). Most scholars who recognize this heterogeneity have dealt with it by excluding descendants of refugees from the analysis (one exception being Bloch and Hirsch 2017). Those who focus specifically on refugees and their descendants mainly publish small-N studies, qualitative evidence, or purely theoretical observations (Bloch and Hirsch 2017; Castles 2002; Soong et al. 2022). This has led to a shortage of theoretically rigorous and statistically sound evidence to document if and how socio-economic attainments of native-born descendants of refugees diverge from that of the children and grandchildren of the native-born population.

Two competing theories have been at the center of much academic debate about the inequalities that are experienced by the descendants of immigrants: the classical (or neo-classical) theory of 'straight-line' intergenerational adaptation (also referred to as assimilation) and the theory of segmented adaptation (Portes et al. 2009; Zhou and Gonzales 2019). While the former predicts that the descendants of immigrants will be more advantaged than their parents, the later

predicts that this will not be the case, at least for the children of parents who struggle to achieve upward social mobility (Portes et al. 2009). To some extent, there is evidence for both of these theories. With respect to educational attainment, children of immigrants in the United States perform better in standardized tests than those from native-born families, on average (Duong et al. 2016; Kao and Tienda 2004). However, large variations in the educational attainment of the second generation have been uncovered, not only in the US but also in many other OECD contexts, with differences driven by parental background and parental socioeconomic status (Dustmann, Frattini, and Lanzara 2012; Kihara 2022), as well as by individual characteristics like sex and ethnic background (e.g. Baert, Heiland, and Korenman 2016; Riele 2006). In this study, we not only aim to expand existing knowledge by carrying out one of the first intergenerational studies of educational inequality for the children and grandchildren of refugees, but we also aim to use our empirical findings to advance our understanding of intergenerational adaptation, the extent to which it is segmented, and the extent to which is explained by family background and parental socio-economic status.

Inequalities in education are an important determinant of social disadvantage later in life (Heckman 2006; Marmot 2017). Based on the theory of straight-line adaptation, some scholars hypothesize that descendants of immigrants will eventually experience equity in compulsory education, and therefore have an equal opportunity to compete with the rest of the population for places in higher education, or in the labor market, without additional support or intervention (Drouhot and Nee 2019). While this may not be true for the second generation, the theory implies a pattern of convergence toward equal opportunity, such that inequalities are smaller for the children of immigrants as compared with their parents' generation, and smaller still for the grandchildren of immigrants. Alternatively, the theory of segmented adaptation predicts that inequalities are transmitted, and in some cases amplified, across generations (Zhou and Gonzales 2019). While educational attainment is by no means a summary measure of social progress, it is an important indicator of disadvantage, not least because it determines many other inequalities later in life, such as poverty and poor health (Marmot 2017). An understanding of educational inequalities can also help the design of effective policies and interventions, not least because interventions prior to adulthood have been found to be the most beneficial for improving life-course outcomes of disadvantaged groups (Reynolds et al. 2011).

Here, we go beyond the existing literature in several meaningful ways. First, we focus on descendants of refugees, who are not only overlooked in most prior research, but also a potentially vulnerable group due to the trauma and insecurity experienced by their parents (FitzGerald and Arar 2018). Second, we not only study the second generation (G2)—native-born children of refugees—but also the rarely-studied grandchildren of immigrants, in this case the grandchildren of refugees (G3). This also enables us to investigate the persistence of educational inequalities across generations. Third, we take advantage of highly detailed data for the entire Swedish population, which enables us to study small-N minority groups by detailed categories of parental background, while also controlling for a range of factors such as period and school fixed effects. In doing so, we develop new understanding about the determinants of intergenerational inequality for several understudied minority groups, in particular those whose parents and grandparents arrived as refugees.

Contrary to the predictions of straight-line adaptation, we find that Swedish-born grandchildren of refugees have a lower average test score at the end of compulsory schooling compared with both Swedish-born children of refugees and Swedish-born children who have four Swedish-born grandparents. Parental socio-economic status—earnings, unemployment, and education—helps to attenuate these inequalities, although some groups benefit more than others from parental social mobility. Those who consistently lag behind their peers are those with one parent who is Swedish-born and one who arrived in Sweden as a refugee. They score on average between 6 and 19 points lower than ‘ancestral Swedes’—those with two Swedish-born parents and four Swedish-born grandparents—depending on model specification. While this may not seem like a large difference on the 0-320 scale, it is large enough to make the difference between getting into a preferred high school, and in some cases can determine whether the student is able to continue in education at all. Counter to prior studies that conceptualize ‘intermarriage’ as a barometer of integration, our findings demonstrate that partnership with the native-born population is not necessarily synonymous with upward social mobility and does not automatically improve prospects of intergenerational adaptation.

Background, data and methods

Refugees and their family members have dominated migration flows to Sweden since the early 1970s (Bevelander 2011). We study descendants of refugees who are old enough to have taken examinations at the end of compulsory education, typically at age 16. This means that their parent(s) arrived in Sweden as early as the 1970s, with the majority arriving in the 1980s and 1990s from Iran, Iraq, Chile, Ethiopia, Poland or Vietnam (Migrationsverket 2022). The grandchildren of these refugees are still very young, which prevents the analysis of their outcomes in early adulthood. Given our interest in studying both the children and grandchildren of refugees, we therefore focus on their compulsory schooling, measured by their examination scores at the end of grade 9. These are national exams and the scores received are influential for those who want to continue their education and enter gymnasium.¹

A very small minority of the Swedish-born population require a residence permit in order to live in Sweden. We therefore focus on those who do not require a residency permit to live in Sweden, and who took their examinations at the end of grade 9 between 1990 and 2020. The nativity restriction ensures that any differences captured in the analysis are not due to discrepancies in language capabilities or residential uncertainty. We then compare three groups: (1) Swedish-born individuals with two Swedish-born parents and four Swedish-born grandparents (ancestral Swedes, N=1,685,686); (2) Swedish-born individuals who have at least one refugee parent and no refugee grandparents (G2 children of refugees, N=41,705); and (3) Swedish-born individuals who have at least one refugee grandparent (G3 grandchildren of refugees, N=14,779).²

We note that among the G3 grandchildren of refugees, only 125 (0.8%) have two Swedish-born parents.³ We therefore focus on G3 grandchildren of refugees who are predominantly the children of immigrants who came to Sweden as children (i.e. the children of those who are often called G1.5 immigrants). In other words, they are the grandchildren of the (refugee) parents

¹ Students get evaluated by their teachers on 16 subjects. Each subject grade takes value 20, 10 or 0. Students need at least 10 points to pass each subject, and are non-eligible for gymnasium (upper secondary schooling) unless they pass all three core subjects: Swedish, mathematics and English.

² To aid interpretation, we exclude those who had two parents who were foreign-born and did not have a first residence permit in Sweden indicating refugee status. We also exclude those with one parent who is Swedish-born and one who was foreign-born and did not have a first residence permit in Sweden indicating refugee status. For those whose (four) grandparental countries of birth are not all known, we carry out additional analysis in the appendix.

³ Given the size of this subgroup, we exclude them from the analysis in order to aid interpretation of the results.

who accompanied these G1.5 immigrants. Most descendants of refugees do not have Swedish-born parents. However, the rate of partnership with someone who is Swedish-born is higher among parents of the G3 grandchildren of refugees than among parents of the G2 children of refugees (18.4% vs 14.4%), which some may interpret as a sign of intergenerational adaptation.

We use Swedish register data, containing annual observations from 1990 to 2020. Each individual who resides in Sweden is given a mandatory personal identity number by the Swedish Tax Agency, which is then widely used for everyday purposes (e.g. to open a bank account, to enroll in a school) and required whenever individuals interact with public authorities. Thus, this number links individuals to various administrative registers, which we use for our analysis. The high-quality data-sets have very few misreported or missing observations, which enables us to study rare populations such as children and grandchildren of refugees.

We use linear regression to estimate the role played by parental socioeconomic status in children's school attainment at grade 9 (roughly the age of 16), marking the end of compulsory education in Sweden. We compare mean differences in test scores between ancestral Swedes on the one hand, and the children and grandchildren of refugees on the other. The final score is a grade point sum of 16 subject grades, ranging from 0 to 320. We standardize these grades using measures of age and sex, as well as period and school fixed effects. The main explanatory variables are parental socioeconomic status (measured as income from earnings, unemployment, family disposable income and highest educational level⁴ of both the mother and the father) and parental partnership background (measured as whether neither, one, or both parents were recorded as a refugee when they were first registered in Sweden⁵).

⁴ Since these measurements refer to status on the last day of the year, we use the data from the previous year in order to avoid post-estimation bias.

⁵ We also conducted the analysis accounting for the number of refugee parents and grandparents. However, the difference between a refugee and a foreign-born non-refugee family member is blurred, as these two scenarios demonstrate: 1) Family A – mother, daughter, father – enters Sweden together at the same time and claims asylum. All members receive a refugee permit and therefore the daughter appears in our analysis as having two refugee parents. 2) Family B – father enters Sweden first and receives refugee status. When the mother and daughter eventually join the father, they receive family reunification permits. The daughter in this family will then appear in our analysis with 1 refugee and one foreign-born non-refugee parent. The differences between Family A and B are not problematic when identifying generational status of their descendants, as the condition for the allocation is “at least one member has a refugee permit”, but can be problematic if we try to estimate the number of parents or grandparents with a refugee permit.

Results

As shown in Fig.1 (*left panel*) the children and grandchildren of refugees have a similar, left-skewed, grade distribution. The same figure (*right panel*) shows that G3 grandchildren of refugees have a lower average grade (208.38) than G2 children of refugees (211.81) and ancestral Swedes (213.25). Fig.1 (*right panel*) also shows that having one Swedish-born parent is associated with disadvantage for the descendants of refugees. Those who belong in this category seem to fall behind not only students who are ancestral Swedes, but also their peers who have either two refugee parents or one refugee and one non-refugee foreign-born parent.

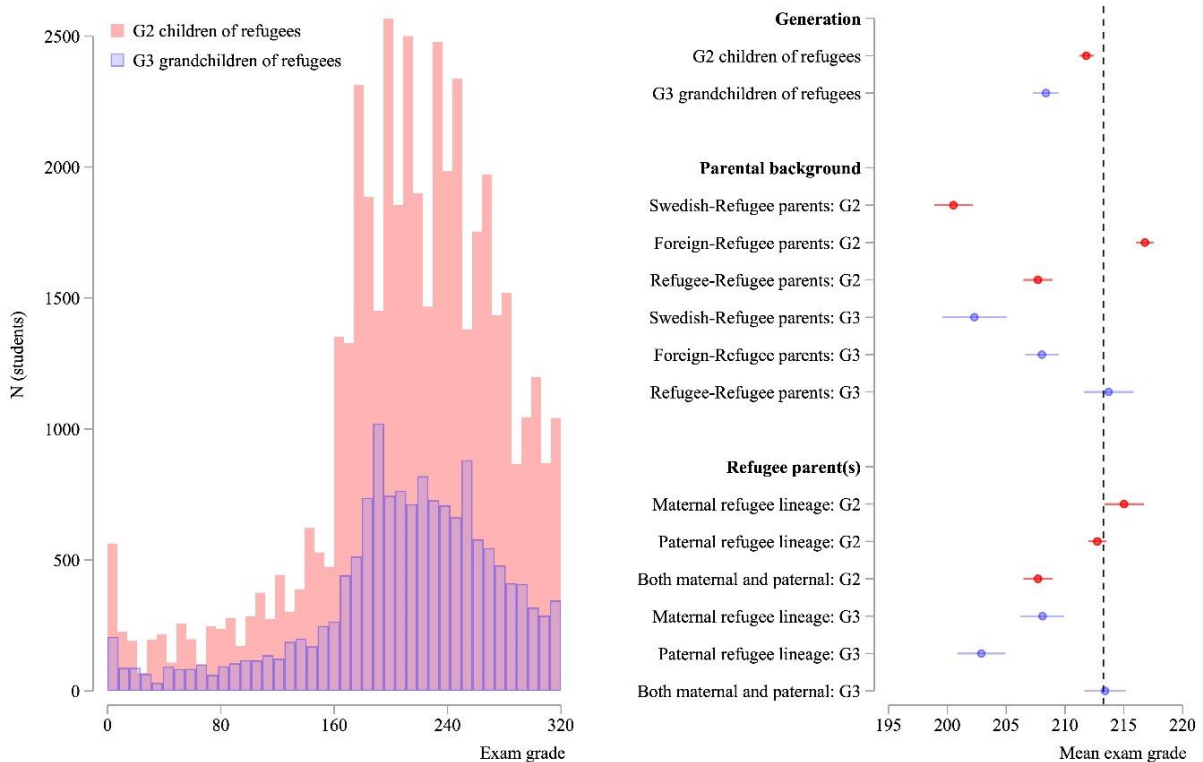


Figure 1: Exam grades of Swedish-born students by parental background. The left-hand panel shows the grade distribution of all Swedish-born children and grandchildren of refugees. The right-hand panel shows the average exam score at the end of grade 9 by parental background. Dotted vertical line represents the mean grade for ancestral Swedes.

Fig.1 not only shows the persistence of inequality across generations, but also that later generations fare worse on average than earlier generations. Some may already interpret this as evidence of segmented adaptation but we note that the results in Fig.1 are unstandardized. Moreover, given the prominent role of social mobility as a mechanism in all theories of adaptation, it is therefore reasonable to ask whether, and to what extent, these inequalities can be explained by parental socioeconomic status.

Our analysis of this question is summarized in Fig. 2, which shows that the schooling performance of children and grandchildren of refugees in Sweden is indeed determined by parental socioeconomic status, but that its role as a determinant is highly dependent upon the nativity and refugee background of both parents.

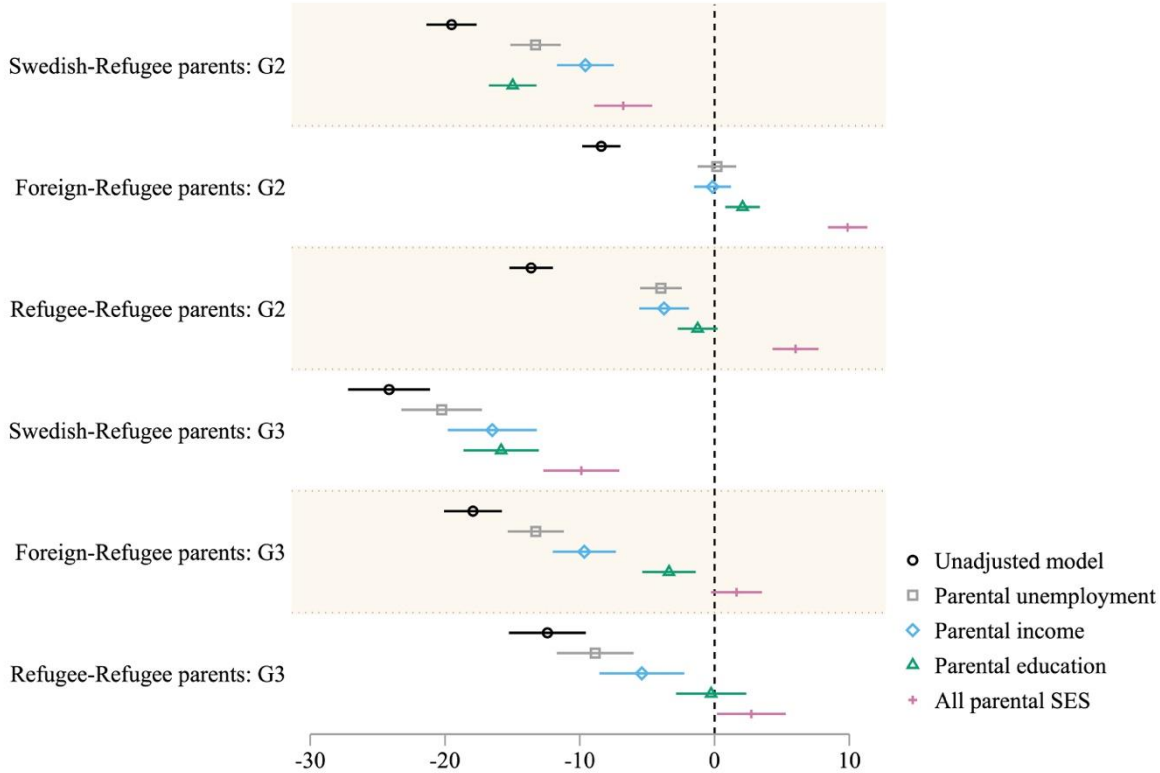


Figure 2: The role of parental socioeconomic status on children's educational performance. The coefficients, with the 95% confidence intervals, show grade point difference between ancestral Swedes (dotted vertical line) and children of refugees (upper three groups), as well as grandchildren of refugees (bottom three groups). All models include school and year fixed effects, as well as gender and age controls.

The descendants of refugees have lower average test scores than ancestral Swedes even after standardizing (controlling) for age and sex, as well as period and school fixed effects (Fig.2, *unadjusted model*). Depending upon the migration background of their parents and grandparents (i.e. the six different groups in Fig.2), this conditional difference ranges between 8.4 and 24.1 points. After controlling for different measures of parental socioeconomic status, these differences are diminished, but for most groups they do not disappear (i.e. become positive) unless jointly controlling for the education, income and unemployment of parents. This suggests that children and grandchildren of refugees will continue to experience educational inequalities unless their parents achieve a similar level of socioeconomic status as the parents of ancestral Swedes, on average, in multiple domains of life.

Among the G2 children of refugees, those with two foreign-born parents, one who has a refugee background, fare best, conditional on parental socioeconomic status. This group will not experience educational inequality if their parents achieve equivalent labor market outcomes as ancestral Swedes, while equivalent parental education (alone or in combination with the other socioeconomic status indicators) helps these children outperform ancestral Swedes. Somewhat similarly, those with two parents who have a refugee background do not experience educational inequality after controlling for all measures of parental socioeconomic status.

For the G2 children of refugees, the only group who continue to experience inequality after controlling for all three measures of parental socioeconomic status are those who have one parent who has a refugee background and one who is Swedish-born. Interestingly, this is the same for the G3 grandchildren of refugees. Even in the case where their parents achieve parity with other groups in terms of their education, income, and unemployment, these children and grandchildren of refugees will continue to experience standardized educational inequalities (after standardizing for sex, period, age and school fixed effects). It is evident that having a Swedish-born parent is associated with a greater risk of experiencing inequality for the children and grandchildren of refugees.

Explaining the results

It is often assumed that later generations of immigrants' descendants will be less likely to experience inequality than their parents, for example as predicted by (neo-)classical theories of intergenerational adaptation (Drouhot and Nee 2019; Zhou and Gonzales 2019). Our findings provide strong evidence against these theories, and in support of the theory that adaptation is segmented. Indeed, we not only reveal signs of increasing inequality for later generations of refugees' descendants, but we also show that inequalities only disappear after controlling for socioeconomic status in multiple domains of life. This is important given that theories of segmented adaptation usually posit (socioeconomic) social mobility as one of the principle mechanisms of segmentation.

Another cause of segmented adaptation may be the fact that inequalities are often experienced in multiple domains of life at the same time. They may reinforce one another, and even if they are surmounted in one domain, they might persist in another. This has been shown in prior studies of the Swedish-born second generation with a parental refugee background, where some groups continue to experience employment inequalities in adulthood, at age 30, despite experiencing an educational advantage (Harber-Aschan et al., 2022). Our findings suggest that the same may be the case for the grandchildren of refugees, such that it may be imperative to monitor the development of inequalities as they complete the transition to adulthood.

Another common assumption in migration scholarship is the link between intermarriage—or more broadly family formation between someone who is foreign-born and someone who is native-born—and adaptation (Waters and Jiménez 2005). Again, however, we find evidence to the contrary. The children and grandchildren of refugees who are most likely to experience educational inequality are those who have one parent with a refugee background and one Swedish-born parent.

We note that those who have one parent who has a refugee background and one who is Swedish-born background were categorized as such based on the Swedish-born parent not requiring a residency permit to live in Sweden. If we adopt a narrower definition of having a 'Swedish-born parent', as someone who was born to two Swedish-born parents, we would lose 25% of the sample. Some 950 G3 grandchildren of refugees (34.7%) and 1,687 G2 children of refugees (22.0%) who were initially classified in the Swedish-Refugee parents category have some

foreign-born ancestry on the Swedish-born parent's side. In Table B1 of the appendix, we replicate the findings excluding this group. If anything, the differences between ancestral Swedes and descendants of refugees with one Swedish-born parent become even more pronounced. We can therefore rule out the possibility that this group faces ancestry-based discrimination which is masked by the fact that one parent is Swedish-born.

Even though our findings are contrary to the expectation that a Swedish-born parent may facilitate intergenerational adaptation, we note that this aligns with several other studies which show relative disadvantage for children of mixed native-born and foreign-born parents as compared with other groups. For example, they have a higher risk of poor mental health (Loi et al. 2021; Tegunimataka 2022) and their parents have a higher risk of separation (Milewski and Kulu 2014). We therefore carry out further analysis to examine the role of parental separation in explaining our results.

To do this we examine living arrangements. Children of mixed couples—i.e. those with one parent who is Swedish-born and one who arrived in Sweden as a refugee (abbreviated in some of our analysis as SWE-REF)—are more likely to live with only one parent. Almost 70% of ancestral Swedes live with both their parents, while the equivalent percentage for G2 children of refugees who have one Swedish-born parent is only 40.4%, and for G3 grandchildren of refugees with one Swedish-born parent is it 44.1% (see Figure B1 in Appendix). In spite of these differences, we conclude that parental separation does not (by itself) explain our findings of the relationship between parental socioeconomic status and school grades for the descendants of refugees. Even among children who live with both parents, those who have one Swedish-born parent and one parent with a refugee background continue to have significantly lower grades compared with their peers (Table B2 in the appendix).

Another potential explanation for our results, in particular for the role of mixed parentage, is the sex of the parent with a refugee background. The role of sex (and gender, which typically overlaps) may be evident in at least two important ways. First, we know that it is more common for children to take the father's surname and that having a 'native-sounding' surname is associated with less discrimination (Behtoui 2004; Rubinstein and Brenner 2014). We may therefore expect that the descendants of refugees with a Swedish-born parent will have different life course outcomes depending on whether the Swedish-born parent is male or female.

In Table 1 we show that those with a Swedish-born father have higher test scores than ancestral Swedes (5 points on average), and approximately 20 points higher than those with Swedish-born mothers.

Table 1: Inequalities based on sex of the refugee parent

Parental refugee background	<i>All descendants of refugees</i>		<i>Descendant of refugees with one Swedish parent</i>	
	<i>N</i>	<i>Mean grade</i>	<i>N</i>	<i>Mean grade</i>
G2: Maternal refugee background	5,879	215	1,076	219
G2: Paternal refugee background	28,305	213	4,917	197
G2: Both maternal and paternal	11,064	208	-	-
G3: Maternal refugee background	4,957	208	602	217
G3: Paternal refugee background	4,546	203	1,190	198
G3: Both maternal and paternal	5,278	213	-	-

Note: The mean grade for ancestral Swedes is 213.

Sex may also play a role in determining inequalities if fathers with a refugee background are more likely than otherwise similar mothers to impose a traditional/conservative upbringing on their children, such as one that encourages sons to focus on labor market careers and daughters to focus on family formation. This is hard to examine in detail. However, we can investigate how the sex of the student interacts with that of the parent who has a refugee background. Interestingly, we do not find any support for this hypothesis at the parental level, but we do find some variation when looking at the sex of the grandparent (Appendix D). Female students score on average 20 points higher than male students across almost all sub-groups, and the only sub-group for which male and female students' grades are similar (210 vs 213) is those who are descendants of male refugees at the grandparental level. Having only grandfather refugees as ancestors appears to be linked with advantage for male students, but disadvantage for female students. We are unfortunately limited in what we can learn about these subgroups outside of descriptive statistics, in part because the sample sizes are very small. However, this analysis suggests a potentially fruitful direction for future research.

Conclusion

There are very few contexts in which it is possible to study the educational outcomes of children and grandchildren of refugees, and yet this study demonstrates clearly that they are at considerable risk of experiencing educational inequality. Moreover, we show that this inequality is determined to a great extent by whether both parents are born abroad, or not, and by parental socio-economic status. We find that the descendants of refugees will continue to experience educational inequalities unless their parents achieve a similar level of socioeconomic status as the parents of ancestral Swedes, on average, in multiple domains of life. This suggests a need for policies that help refugees to obtain levels of socioeconomic status—in education, employment and earnings—that are typical of those in their new destination, not only to benefit themselves, but also to benefit their children.

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Appendix

A – Detailed specifications for models in the paper:

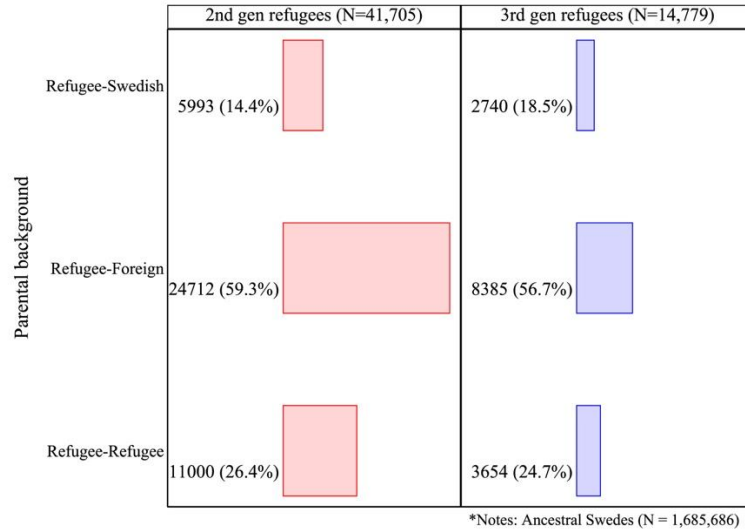


Fig A1: Population size

Table A1: Control variables robustness check

	(1)	(2)	(3)	(4)	(5)
G3 grandchildren of refugees	-7.40*** (1.05)	-16.33*** (1.11)	-21.05*** (1.02)	-19.48*** (1.08)	-19.48*** (1.40)
Year of birth		49.68*** (0.28)	50.56*** (0.27)	45.40*** (0.26)	45.40*** (0.42)
Ego's sex		20.90*** (0.09)	21.05*** (0.09)	20.73*** (0.09)	20.73*** (0.14)
Year		-48.83*** (0.28)			
School		-0.00 (0.00)			
Observations	1,690,074	1,617,817	1,690,074	1,617,817	1,617,817
R-squared	0.00	0.08	0.08	0.15	0.15
Year Fixed Effects	No	No	Yes	Yes	Yes
School Fixed Effects	No	No	No	Yes	Yes
Robust Standard Errors	Yes	Yes	Yes	Yes	No
School Clustered SE	No	No	No	No	Yes

Notes: All individuals are born in Sweden and have 4 observed grandparents. Comparison group: ancestral natives. Outcome variable is the score received in Grade 9 assessments (scale 0-320). Model 5 is currently used in the main analysis. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A1: The role of parental income and education on children's educational performance

	Unadjusted model	Parental unemployment	Parental income	Parental education	All parental SES
Swedish-Refugee parents: G2	-19.51*** (0.95)	-13.28*** (0.96)	-9.58*** (1.08)	-14.98*** (0.90)	-6.78*** (1.10)
Foreign-Refugee parents: G2	-8.41*** (0.72)	0.17 (0.73)	-0.15 (0.70)	2.08** (0.66)	9.87*** (0.75)
Refugee-Refugee parents: G2	-13.61*** (0.82)	-3.98*** (0.79)	-3.75*** (0.94)	-1.25 (0.76)	6.01*** (0.87)
Swedish-Refugee parents: G3	-24.15*** (1.55)	-20.25*** (1.53)	-16.49*** (1.69)	-15.83*** (1.43)	-9.89*** (1.44)
Foreign-Refugee parents: G3	-17.93*** (1.09)	-13.27*** (1.06)	-9.67*** (1.20)	-3.38*** (1.01)	1.63 (0.96)
Refugee-Refugee parents: G3	-12.40*** (1.46)	-8.86*** (1.45)	-5.40*** (1.61)	-0.26 (1.33)	2.73* (1.30)
Mum unemployed (t-1)		-27.89*** (0.33)			-12.80*** (0.45)
Dad unemployed (t-1)		-24.96*** (0.35)			-10.07*** (0.46)
Log(Mum's salary t-1)			7.64*** (0.08)		
Log(Dad's salary t-1)			6.55*** (0.12)		
Mum's education (t-1)				0.11*** (0.00)	0.10*** (0.00)
Dad's education (t-1)				0.09*** (0.00)	0.09*** (0.00)
Log(Family income t-1)					14.79*** (0.24)
Observations	1,667,403	1,598,143	1,359,753	1,631,293	518,782
R-squared	0.15	0.17	0.18	0.25	0.34
Year fixed effects	✓	✓	✓	✓	✓
School fixed effects	✓	✓	✓	✓	✓
Additional controls	✓	✓	✓	✓	✓

Notes: Clustered standard errors at the school level. All individuals are born in Sweden. Comparison group: ancestral natives. Outcome variable is the score received in Grade 9 assessments (scale 0-320). All models include year and school fixed effects, as well as additional controls for sex and age of student at exam date. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

B - Robustness checks and model specifications

Table B1: Using both ancestry and country of birth to measure parental background

	Simple	Unemployment	Income	Education	Various SES
G2: SWE-REF parents	-18.60*** (1.07)	-12.56*** (1.08)	-8.60*** (1.25)	-14.90*** (1.03)	-6.52*** (1.23)
G2: FOR-REF parents	-8.41*** (0.72)	0.17 (0.73)	-0.14 (0.70)	2.08** (0.66)	9.82*** (0.74)
G2: REF-REF parents	-13.63*** (0.82)	-4.00*** (0.79)	-3.75*** (0.94)	-1.26 (0.76)	5.95*** (0.87)
G3: SWE-REF parents	-22.62*** (1.83)	-18.97*** (1.80)	-15.43*** (1.95)	-15.78*** (1.70)	-9.67*** (1.75)
G3: FOR-REF parents	-17.95*** (1.10)	-13.29*** (1.07)	-9.67*** (1.20)	-3.39*** (1.02)	1.57 (0.97)
G3: REF-REF parents	-12.44*** (1.46)	-8.89*** (1.46)	-5.42*** (1.61)	-0.27 (1.33)	2.67* (1.31)
Mum unemployed (t-1)		-27.90*** (0.33)			-12.83*** (0.45)
Dad unemployed (t-1)		-24.98*** (0.35)			-10.08*** (0.46)
Log(Mum's salary t-1)			7.63*** (0.08)		
Log(Dad's salary t-1)			6.55*** (0.12)		
Mum's education (t-1)				0.11*** (0.00)	0.10*** (0.00)
Dad's education (t-1)				0.09*** (0.00)	0.09*** (0.00)
Log(Family income t-1)					14.78*** (0.24)
Observations	1,665,084	1,595,950	1,358,305	1,629,114	517,216
R-squared	0.15	0.17	0.18	0.25	0.34

Notes: Clustered standard errors at the school level. All individuals are born in Sweden. Comparison group: ancestral natives. Outcome variable is the score received in Grade 9 assessments (scale 0-320). All models include year and school fixed effects, as well as additional controls for sex and age of student at exam date. In Table 2, the SWE-REF combination defined Swedish based on country of birth; here, we adopt a stricter definition - born in Sweden with 2 Swedish-born parents. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

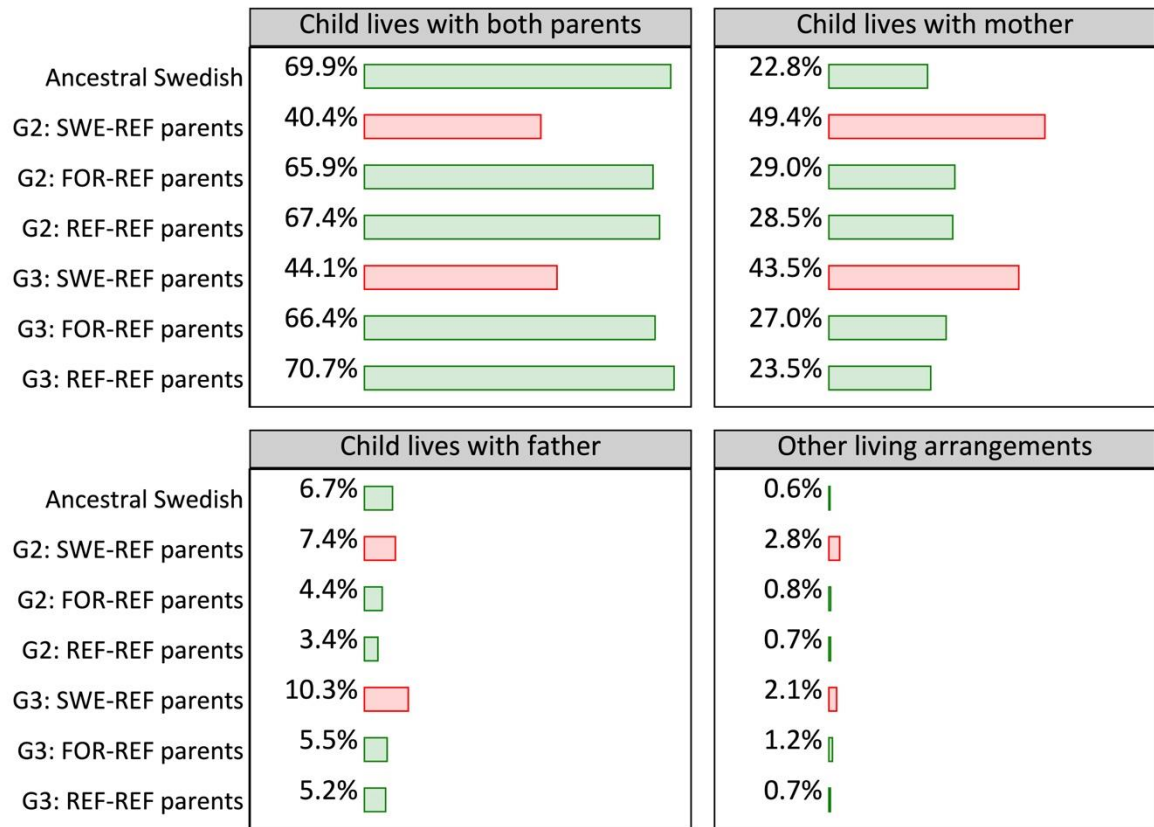


Fig B1: Cohabitation demographics by generational status of the children and parental background

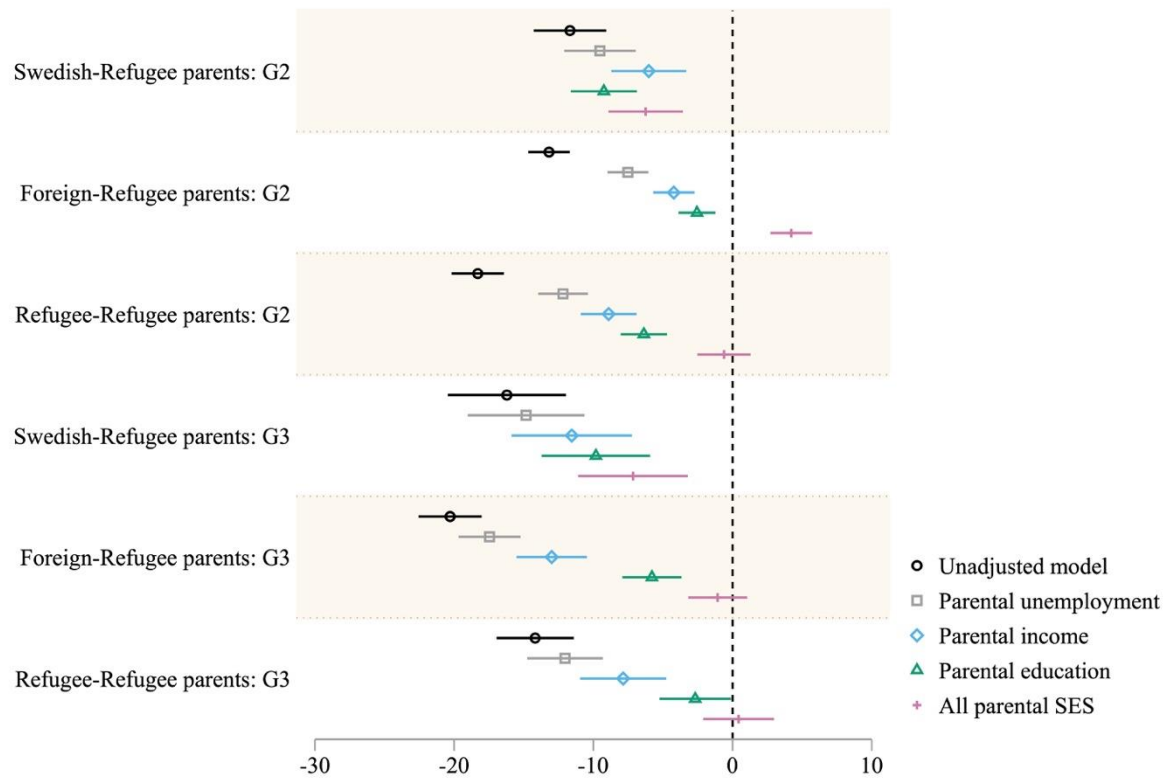


Fig B2: The role of parental SES on children's educational performance, conditional on child living with both parents in the year of the exam

Table B2: The role of parental SES on children's educational performance, conditional on child living with both parents in the year of the exam

	Simple	Unemployment	Income	Education	Various SES
G2: SWE-REF parents	-11.68*** (1.33)	-9.53*** (1.31)	-6.01*** (1.38)	-9.24*** (1.22)	-6.24*** (1.37)
G2: FOR-REF parents	-13.19*** (0.76)	-7.52*** (0.75)	-4.22*** (0.76)	-2.55*** (0.68)	4.21*** (0.77)
G2: REF-REF parents	-18.30*** (0.96)	-12.18*** (0.91)	-8.90*** (1.02)	-6.37*** (0.85)	-0.61 (0.97)
G3: SWE-REF parents	-16.36*** (2.16)	-15.01*** (2.14)	-11.82*** (2.21)	-9.90*** (1.98)	-7.32*** (2.01)
G3: FOR-REF parents	-20.29*** (1.16)	-17.46*** (1.14)	-13.00*** (1.29)	-5.79*** (1.09)	-1.07 (1.08)
G3: REF-REF parents	-14.18*** (1.42)	-12.03*** (1.39)	-7.85*** (1.58)	-2.68* (1.31)	0.44 (1.30)
Mum unemployed (t-1)		-20.89*** (0.40)			-10.28*** (0.60)
Dad unemployed (t-1)		-16.55*** (0.44)			-4.69*** (0.65)
Log(Mum's salary t-1)			6.41*** (0.09)		
Log(Dad's salary t-1)			5.32*** (0.13)		
Mum's education (t-1)				0.09*** (0.00)	0.09*** (0.00)
Dad's education (t-1)				0.08*** (0.00)	0.09*** (0.00)
Log(Family income t-1)					11.40*** (0.30)
Observations	1,163,068	1,142,970	1,003,444	1,161,672	354,716
R-squared	0.16	0.17	0.18	0.26	0.32

Notes: Clustered standard errors at the school level. All individuals are born in Sweden. Comparison group: ancestral natives. Outcome variable is the score received in Grade 9 assessments (scale 0-320). All models include year and school fixed effects, as well as additional controls for sex and age of student at exam date. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

C – Additional investigation

We can also highlight the adaptation trajectories of those G3 grandchildren of refugees with 4 observed grandparents. This group is important because a complete family network of 6 members (2 parents and 4 grandparents) enables us to make more reliable comparisons with the ancestral Swedes for whom we also have complete background information. Furthermore, it eliminates unobservable confounding factors stemming from a smaller family network. The grandchildren of refugees with 4 observed grandparents (N=4388) have either 2 refugee and 2 Swedish-born grandparents (N=1107); 2 refugee and 2 foreign-born non-refugee grandparents (N=925); or 4 refugee grandparents (N=961). Other grandparental combinations exist, but are much rarer than the three mentioned above.

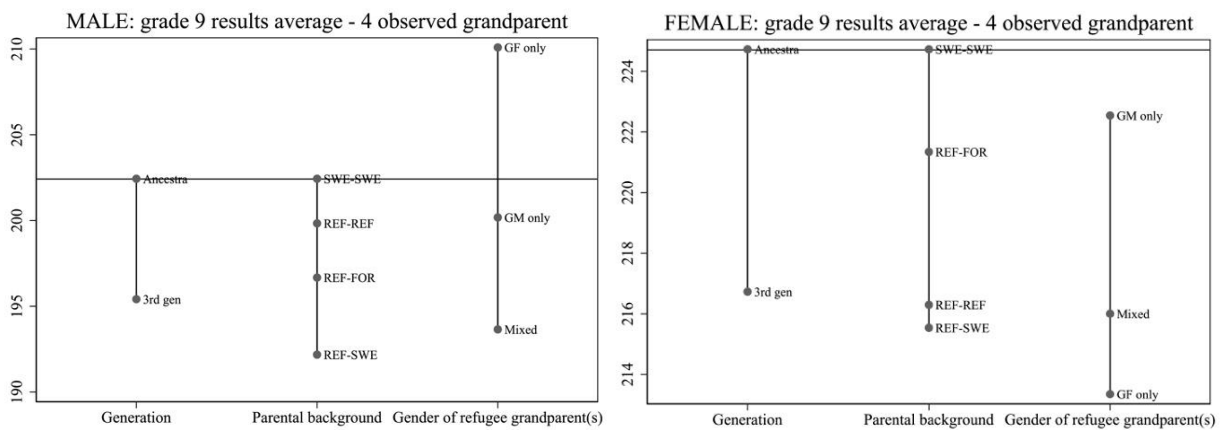


Fig C1. Mean difference in grades at age 16 for male (Left) and female (Right) grandchildren of refugees, relative to ancestral Swedes

Table C1 shows that parental socio-economic status explains the variation in the educational performance of grandchildren of refugees relative to ancestral Swedes at the end of compulsory schooling. The more educated and economically well-integrated parents are, the better their children perform in school, to the point where they are statistically indistinguishable from the ancestral Swedes. The explanatory power of the model also increases significantly, suggesting that parental adaptation plays a key role in the model. Aside from these optimistic finding, we reveal some heterogeneity among the grandchildren of refugees. Having 4 grandparents in Sweden is not an indicator of a more effective support network. Descendants of refugees matching this criterion perform consistently worse (scoring on average 4 grades lower) than the average grandchild of refugee. These findings suggest that the family composition is a potential mediating factor.

Table C1: Can parental SES explain the difference in children's educational performance?

	Simple		Unemployment		Income		Education		Various SES	
	4 known grandparents	All 3rd generation	4 grand parents	All 3rd gen	4 grand parents	All 3rd gen	4 grand parents	All 3rd gen	4 grand parents	All 3rd gen
Grandchildren of refugees	-16.33*** (1.11)	-14.30*** (0.59)	-12.26*** (1.10)	-8.79*** (0.59)	-8.01*** (1.21)	-4.66*** (0.67)	-3.67*** (1.05)	0.01 (0.57)	-0.13 (1.07)	4.86*** (0.60)
Mum unemployed (t-1)			-33.66*** (0.27)	-33.54*** (0.27)					-16.23*** (0.46)	-15.98*** (0.45)
Dad unemployed (t-1)			-29.02*** (0.30)	-28.85*** (0.29)					-10.86*** (0.49)	-10.70*** (0.48)
Log(Mum's salary t-1)					9.09*** (0.06)	9.08*** (0.06)				
Log(Dad's salary t-1)					7.90*** (0.06)	7.90*** (0.06)				
Mum's education (t-1)							0.11*** (0.00)	0.11*** (0.00)	0.10*** (0.00)	0.10*** (0.00)
Dad's education (t-1)							0.09*** (0.00)	0.09*** (0.00)	0.11*** (0.00)	0.11*** (0.00)
Log(Family income t-1)									17.61*** (0.20)	17.62*** (0.20)
Observations	1,617,817	1,626,496	1,550,975	1,559,392	1,332,227	1,337,838	1,584,552	1,592,881	485,525	492,893
R-squared	0.08	0.08	0.10	0.10	0.12	0.12	0.20	0.20	0.30	0.30

Notes: Robust standard errors in parentheses. All individuals are born in Sweden. Outcome variable is the score received in Grade 9 assessments (scale 0-320), and the reference group is ancestral Swedes. All models control for sex, year of exam and age of student at exam date, as well as the school in which the exam was taken. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

D – Further discussion on the role of sex:

We investigate the role of parental SES on pupils' grades using refugee background as a differentiating status: descendants of refugees from paternal background, from maternal background, from both maternal and paternal, and from neither – ancestral Swedes. This measurement of parental ancestry yields very different results from the ones presented in Figure 2 (detailed also in Table A1). We actually find that parental socio-economic status explains away all differences between descendants of refugees and ancestral Swedes.

Table D1: Grandchildren of refugees by sex of the ego and of the refugee grandparent(s)

	Ego: Male		Ego: Female	
	<i>4 known grandparents</i>	<i>< 4 known grandparents</i>	<i>4 gpar</i>	<i>< 4 gpar</i>
Grandma and grandpa refugees	1892	3257	1771	3064
Grandfather(s) refugee	123	549	106	549
Grandmother(s) refugee	321	1508	283	1467

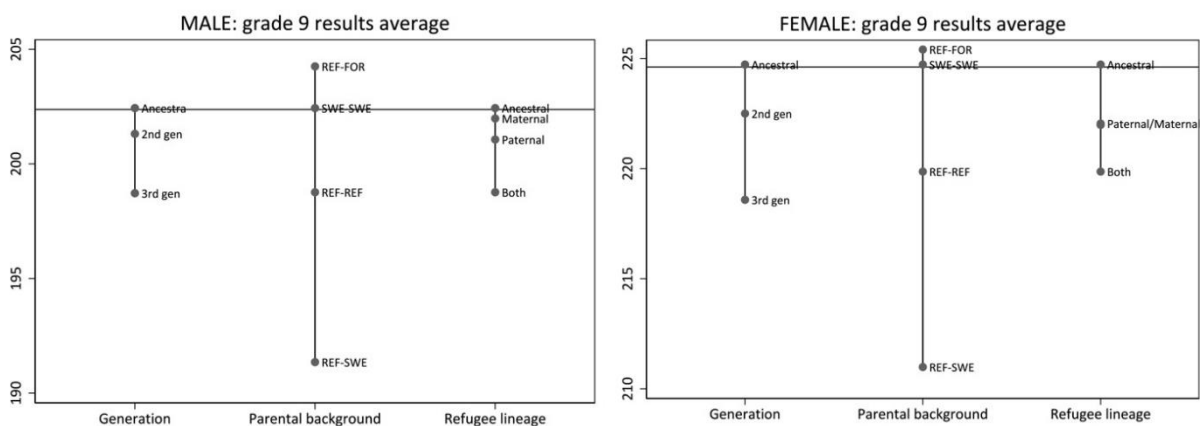


Fig D1: Ancestral Swedish vs. descendants of refugees: Mean difference in grades at age 16 by sex of the ego and of the refugee parent

Table D2 below clearly shows that the second generation outperform natives, while the third are statistically indistinguishable from them.

Table D2: The role of parental income and education on children's educational performance, by parental background

	Simple	Unemployment	Income	Education	Various SES
G2: Maternal refugee background	-9.05*** (1.04)	-1.32 (1.06)	-2.88* (1.18)	0.73 (1.06)	6.39*** (1.30)
G2: Paternal refugee background	-11.65*** (0.64)	-3.57*** (0.65)	-2.65*** (0.65)	-2.81*** (0.59)	6.05*** (0.68)
G2: Both maternal and paternal refugee background	-13.82*** (0.82)	-4.25*** (0.79)	-3.87*** (0.94)	-1.60* (0.75)	5.51*** (0.87)
G3: Maternal refugee background	-18.14*** (1.22)	-13.90*** (1.19)	-11.39*** (1.35)	-5.58*** (1.15)	-2.00 (1.12)
G3: Paternal refugee background	-22.02*** (1.37)	-17.26*** (1.35)	-12.61*** (1.50)	-8.31*** (1.27)	-1.91 (1.24)
G3: Both maternal and paternal refugee background	-14.24*** (1.21)	-10.49*** (1.21)	-6.78*** (1.33)	-2.31* (1.13)	1.68 (1.09)
Mum unemployed (t-1)		-27.83*** (0.33)			-12.73*** (0.45)
Dad unemployed (t-1)		-24.93*** (0.35)			-10.01*** (0.46)
Log(Mum's salary t-1)			7.63*** (0.08)		
Log(Dad's salary t-1)			6.55*** (0.12)		
Mum's education (t-1)				0.11*** (0.00)	0.10*** (0.00)
Dad's education (t-1)				0.09*** (0.00)	0.09*** (0.00)
Log(Family income t-1)					14.82*** (0.24)
Observations	1,667,416	1,598,156	1,359,762	1,631,306	518,795
R-squared	0.15	0.17	0.18	0.25	0.33

Notes: Clustered standard errors at the school level. All individuals are born in Sweden. Comparison group: ancestral natives. Outcome variable is the score received in Grade 9 assessments (scale 0-320). All models include year and school fixed effects, as well as additional controls for sex and age of student at exam date. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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