Mediating Inequality: Educational Performance and Incorporation

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Abstract

This project asks if the school performance of second generation immigrants in Sweden is influenced by family incorporation experiences. The project uses data from the Swedish Interdisciplinary Panel (SIP), which provides immigration and demographic information on the entire Swedish population born between 1973 and 1993. The SIP is combined with the Swedish Multigenerational Register, providing a means to link family members. Focusing on performance at the time of the transition from primary to upper-secondary school at age 16, we conduct regression analyses on school performance, namely average grades, controlling for country of origin and time spent in Sweden. Using parent identifiers, the same models are reanalyzed using sibling fixed-effects, providing a way to control for the role of genetic variation while highlighting the marginal utility of additional time on education performance among second generation immigrants. There is no clear pattern whether the 2.5 generation (one foreign-born and one-native born parent) outperforms the 2.0 generation, with some country of origin groups displaying such a pattern, while others do not. Upon decomposing the 2.5 generation into whether it is the father or the mother that is foreign-born, we find the 2.5 generation with foreign-born mothers largely outperform both the 2.0 generation and the 2.5 generation with foreign-born parents. We also explore the effect of parent's years in Sweden on their children's educational performance, again decomposing respondents by their detailed second generation status. In the OLS models, parent's additional time in Sweden has a positive effect on their child's performance regardless whether the respondent is 2.0 or 2.5 generation. However, after running the results using a sibling fixed-effect approach, the 2.0 generation females are the group for whom parent's additional years in Sweden have an effect, while there is no consistent pattern among the 2.0 generation boys or either of the 2.5 generation groups.

Introduction:

Immigrants and their descendants comprise roughly fifteen and eleven percent of the Swedish population, respectively (Bengtsson, Lundh and Scott 2005; OECD 2013). As this figure has grown, so too has public and academic interest in the incorporation experience of immigrants and their descendants. The few earlier studies on the educational attainment of second generation immigrants in Sweden find that they have lower grades and are less likely to continue and finish their education programs than native-born Swedes (Arai, Schröder and Vilhelmsson 2000; Jonsson and Rudolphi 2011; Similä 1994), though a natural variation exist depending on gender and parent's origin (Jonsson and Rudolphi 2011).

Relative to other European countries, Sweden has a notably track-free education program until secondary school (roughly similar to high school in the US.). Before that point, students take identical curriculum, making performance between students far more comparable than is the case in countries with a higher degree of early tracking. Although students in Sweden are given a degree of choice as to the track they choose at the upper-secondary level, it requires a basic level of academic performance, and, among more competitive tracks, selection is based on grade performance (Jackson, Jonsson and Rudolphi 2012; Jonsson and Rudolphi 2011).

Among the children of immigrants, factors that influence academic performance are similar to portions of incorporation theory, specifically with acculturation and structural assimilation (Alba and Nee 2003; Portes and Rumbaut 2001). These include linguistic, residential, institutional, human and cultural capital assimilation. The goal of this paper is to measure the influence of immigrant family incorporation, while also better considering the role of prior family experiences and school characteristics, on school performance from Swedish primary to secondary school.

Using improved incorporation measures on a greater breadth of immigrant groups as well as sibling and school data, our empirical analyses will provide insight into the role that family incorporation has on school performance and choice. Through this, we will gain some understanding on the impact of incorporation processes on educational inequalities while also improving upon earlier studies by better controlling for genetic inheritance. If children of immigrants whose parents spend more time in Sweden having higher grades, it points towards the influence of incorporation processes.

Background and Theory:

Immigration to Sweden
Though Sweden has only a relatively recent history of large scale immigration, first and second generation immigrants make up over twenty-percent of the population in Sweden (Bengtsson, Lundh and Scott 2005), roughly similar to the US (Grieco et al. 2012). Immigration patterns to Sweden have changed considerably over the latter half of the twentieth century, and can be regarded in two distinct periods (Bengtsson, Lundh and Scott 2005). Post-World War II Sweden found itself in need of additional laborers, so, in 1954, they formed a common labor market agreement with other Nordic countries, bringing a number of immigrants from Finland, Denmark and Norway. Despite wide scale migration to Sweden from other Nordic countries, in particular Finland, this still did not satisfy labor demand, and so Sweden opened up large-scale non-Nordic immigration in the late 1950s and the 1960s. This brought immigrants from Southern and south-eastern Europe, namely Germany, Italy, Greece, Yugoslavia and Turkey.

The latter half of the 1960s in Sweden saw a changing economy lead to a reduction in the need for unskilled industrialized labor, leading to a decreased demand for unskilled immigrants that made up the bulk of labor migrants. The changing conditions led labor unions to pressure government to halt accepting additional labor immigrants from non-Nordic countries. Also about this time, rising standards of living and employment conditions in fellow Nordic countries led to a near halt in migration from those countries.

Although labor migration more or less fell to a trickle by the end of the 1960s, refugee and family reunification migrants grew in size. Refugee groups have specific periods that the bulk of migration occurred in; Latin America, especially Chile, in the 1970s, Middle Eastern and Asian countries in the 1980s and Yugoslavia and Africa through the 1990s. It should be noted some of these groups, such as Turks and those coming from former Yugoslavia, had previously contributed to labor migration, and as a result, migration to Sweden occurs over many years and has a broader range of potential push and pull factors. Over the past several decades, immigration shifted from predominately Nordic and European countries to non-European so that, by the period of 1990 to 1997, only thirteen-percent of all migrants were labor migrants. In contrast, during the same period, over half of immigrants were either refugees themselves or relatives of refugees who were recipients of family reunification permits. A strength of this study is that by covering a much broader range of time than prior studies, we can compare education outcomes for the large bulk of second generation immigrant groups, rather than focusing on a few years which might miss substantia portions of certain immigrant groups.

Education in Sweden:
The Swedish school system, relative other European models, is largely track free. Compulsory school, completed from ages 7-15, does not employ ability tracking and the education a student receives should be identical regardless of where one attends school. The earliest introduction of tracking is done at age 16, when students choose an upper-secondary track in which to enroll (Halldén 2008). Broadly, these options include vocational education and higher university preparatory (academic) education, which can be further subdivided into 13 vocational programs and 4 academic programs. Although this is the first juncture at which students are separated into distinct education trajectories, the results can have large downstream implication (Breen and Jonsson 2007). Specifically those who take a vocational rather than academic education but then decide to attend university are likely to have to take an additional year of preparatory coursework before enrolling.

The vocational program in Sweden carries more esteem than it does in other countries and do not suffer a stigma as can be found elsewhere (Kuczera et al. 2008). Despite this, entrance into vocational programs is less rigorous and affords fewer post-secondary options than do the academic programs. To qualify to choose a vocational or academic program, students must receive a passing grade in math, English and Swedish (specific classes for those who speak Swedish as a second language are available) as well as a passing grade in 5 or 9 additional courses, respectively, in compulsory school. Although students who meet these qualifications are free to choose any program, there are only so many slots available in each program and admittance can be competitive and based on grade performance. The absence of tracking and the free choice of education programs make the Swedish education system more open than many others, while the requirements and competition for admittance means performance still has a central role. Differences in education outcomes between second generation and Swedish children, then, can be parceled into components of choice and performance.

Education Performance:
Educational performance among immigrants and their descendants in Sweden have found that, on average, they have lower teacher evaluated grades (Jonsson and Rudolphi 2011; Miho Taguma 2010) and performance on international tests (Dustmann, Frattini and Lanzara 2012). Factors that influence student's grade performance include parental involvement and capacity to help with school work (Schneider and Coleman 1993; Waanders, Mendez and Downer 2007), early socialization of cultural values (Bourdieu 1984; Lee and Bowen 2006), and differences in cultural and economic capital that serve to influence children before and during their early education careers (Lareau 2011). Limited parental linguistic skill and cultural unfamiliarity with a school system can have detrimental consequences on the education performance of their child. A study in the US found that immigrant parents who were less able to assist their child due to linguistic incompatibility resulted in lower performance by their children (Turney and Kao 2009), but that additional time and language skills helped to mitigate this effect. Further, cultural distance and unfamiliarity with the host country's school system can also reduce parental involvement in academic work as well as in interacting with the school (Hornby and Lafaele 2011; Kristen 2008; Turney and Kao 2009).

Genetic transfer, in addition, is a primary component of educational performance (Brody 1997). Though this is identified as an important factor in school performance, past studies looking at second generation ethnic minority educational inequalities had no way to control for it (Jackson, Jonsson and Rudolphi 2012; Jonsson and Rudolphi 2011). Those that do take such an approach (Nielsen and Rangvid 2012) only considers the second generation broadly, ignoring heterogeneity in academic performance by country of origin. We improve upon earlier research by using sibling fixed effect models to take advantage of the variation in years since migration thereby controlling for genetic inheritance as well as shared environment (Lawlor, Lawlor and Mishra 2009) across country of origin groups.

Incorporation:
With time spent in Sweden, parents' linguistic skill and institutional familiarity as well as their economic and social capital will increase, which, according to assimilation theory (Alba and Nee 2003), should have the effect of improving the education performance of their children. Further, children who have one foreign-born and one native-born parent (2.5 generation) have been shown to have outcomes somewhere between the 2.0 generation and the native-born majority (Becker 2011; Ramakrishnan 2004; van Ours and Veenman 2010), which accords with the assimilation hypothesis. As a result, the 2.0 and 2.5 generation groups will be considered separately. An alternative perspective, the segmented assimilation hypothesis, is that, while this pattern may hold for some, not all groups will follow this path. Instead, those groups with low human capital, non-white phenotypes with weak social ties are likely to have children and parents acculturate at different rates (Haller, Portes and Lynch 2011; Portes et al. 2010; Portes and Rumbaut 2001). As a result, increasing levels of linguistic skill, human and social capital are not foregone conclusions, and increased time in a host country will not produce these positive effects. From these perspectives, we derive two hypotheses:

1. Assimilation theory predicts that structural assimilation and acculturation will occur with time and generation spent in country. The theory leads us to hypothesis 1: *With more incorporation experiences, as measured by parent's time in Sweden, a child's performance and educational decision should converge towards that of native born Swedes.*

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2. Segmented assimilation theory predicts that, even with greater time and experience in a host country, the education performance of the second generation can remain distinct from that of native Swedes. Segmented assimilation produces two sub hypothesis predicated on dissonant and selective acculturation. Hypothesis 2*: Increased exposure to the host country will not necessarily lead to a process of assimilation and a convergence towards improved educational performance.*

Data

Data for the project comes from the Swedish Interdisciplinary Panel (SIP) database. The SIP is ideal for studying the effects of incorporation on educational performance by exploiting the family linkages and the detailed information spanning several decades. Data is available for the entire Swedish population for cohorts born from 1973-1993. Information on education outcomes for these cohorts is available from 1989 to 2011, and will serve as the primary period of interest. In addition to education outcomes, The SIP also has information on demographic characteristics, including immigration and emigration history to and from Sweden. The SIP has been linked to information from several Swedish registers, including the Swedish multigenerational register, which allows us to identify parents and their children, as well as the 1960, 1965 and 1970 Censuses. The intergenerational linkage is a particular strengths of this study as a means of isolating the effects of incorporation and dealing with unobserved individual heterogeneity (Lawlor, Lawlor and Mishra 2009).

Measures:
Education Performance:
Educational performance is a measure of their average grade in their 16 best subjects during the final year of primary school (grade 9). This grade is of particular importance since it can strongly influence a student's options in both attending and choosing an upper-secondary education track (vocational vs. university preparatory). The grading system in Sweden underwent reform in 1997-1998, resulting in two distinct grading scales. The first, referred to as "average grade", is based on a 5 point scale and is used for respondents from 1989-1997. The second, referred to as "merit value", has been used since 1998 to present day and is based on a 320 point scale. These have been standardized by year and, as a result, reflect relative grade standing by year and not necessarily the absolute grade. Using yearly relative standing rather than absolute performance across the years has the advantage that it considers respondents against those whom they may be competing with for upper-secondary seats as well as accounting for a known issues of increasing grade inflation, particularly on the merit value instrument (Wikström 2005).

Parent country of origin:
To identify the respondent and parents countries of origin, we rely on an individual's birth country. Respondents are identified as third-generation Swedish (hereafter referred to as "Swedes") if they and their parent(s) were born in Sweden. They are identified as second generation if the respondent is born in Sweden and at least one of their parents is foreign-born. Dependent on classification by Statistics Sweden, historical experience and general characteristics, we identify individuals by country of origin as follows: Africa (excluding East Africa), East Africa (Ethiopia, Somalia and Eritrea), Iraq, Iran, Lebanon, Turkey, Thailand, Vietnam, Asia/Oceania, Chile, South America, non-EU-27 and Czech/Slovakia, Former Yugoslavia, former USSR and Poland, North America, EU-27 and Nordic countries. Among those whose parents come from two separate countries, they are assigned the "closest" in the listed order.

Years since Migration:

Previous literature has shown second generation Swedes to have lower grade performance than Swedes, on average (Miho Taguma 2010). However, little is known whether additional time and experience in Sweden can serve to aid the educational performance of second generation immigrants in Sweden, and even less is known how this might vary by country of origin. We seek to fill these gaps by exploiting the detailed immigration information that allows us to identify the country of origin of both parents along with dates of birth and migration. Migration information provided by Statistics Sweden contains exact dates of immigration and emigration to and from Sweden starting in 1970. For those that arrived before 1970, we rely on the 1960, 1965 and 1970 Censuses to assess if they were present in Sweden before 1960, between 1960 to 1965 or 1965 to 1970. When constructing age at migration, these individuals will be ascribed to the years 1959, 1962 and 1967, respectively. We derive age at migration by taking the difference in parent's initial year of migration and their birth year. Together, we have information on when an individual immigrated to Sweden, at what age they immigrated to Sweden, and how long they were in the country before their child was born. This is done by taking the difference in the year of parent's migration and the year of the child's birth.

Principle mechanisms of education disadvantage among the children of immigrants are parents' lack of linguistic skills and familiarity with the school system. Those who are the child of an immigrant and native coupling (2.5 generation) are at a distinct advantage in this regard as at least one parent is fluent and familiar with the school system. As such, they would be expected to outperform those with two foreign-born parents (2.0 generation) on this alone, making comparison problematic when they are considered in unison. This has been found elsewhere for specific immigrant groups (Ramakrishnan 2004) as well as by the specific gender of the foreign-born parent (Rooth and Ekberg 2003). Although some studies make a base distinction between those with a native-born parent, and some go as far to consider whether the foreign-born parent is Western or non-Western in origin (Jonsson and Rudolphi 2011), exactly how the 2.0 and 2.5 generations compare by country of origin are unknown. With the 2.5 generation accounting for large proportions of several immigrant groups, this research is missing the lived experience for a nontrivial proportion of the second generation population. Therefore, in considering the role of increased time and experience in Sweden has on education performance, we conduct separate analysis comparing the 2.0 and the 2.5 generation to native-born Swedes, respectively. Additionally, we consider whether the parent who is foreign-born is the mother or the father and whether the respondent is male or female.

Parent's Highest Education:

The singular highest parent education is considered as a way to measure the socioeconomic standing of a household. These categories consists of primary education broken up into 0-6 and 7-9 years, upper secondary vocational school, upper secondary academic and non-academic tertiary, university or professional license, and doctorate degree.

Sibling:

We identify siblings as those who share two identical parents matched via the multigenerational register. By linking the siblings together and using their birth information, we can identify the birth order. For this project, we identify those who are the oldest sibling or an only child as a way to control for their advantage in educational achievement (Black, Devereux and Salvanes 2005).

Methods:

Descriptive statistics for each country of origin group's immigration characteristics are first presented. Next, information on educational performance is presented across all groups, and these are then considered in combination with migration background. Finally, the additional covariates are presented, again, by country of origin groups. These include parent's highest education attainment and the proportion of each group that is the oldest sibling (or an only child) relative younger siblings.

Following the descriptive statistics, we present results from years fixed effect regression results on standardized performance. These are presented by 2.0, 2.5 father foreign-born and 2.5 mother foreign-born generation status, using identical Swedish reference groups. These are presented in models controlling for sex (base model), parent's years since migration (PYSM model), parent's highest education (P Educ. Model) and finally a full model incorporating all variables. The initial results (Table 2) contrast the groups and use a single parent's years since migration control variable. Table 3 then provides these results, but with an interaction between parent's country of origin and years since migration, giving each group its unique slope. Finally, Table 4 shows results on standardized performance controlling for a single interaction term of parent's country of birth, year's since migration and sex of the respondent, along with a dummy variable if the respondent is the oldest sibling, using a family fixed effects approach.

Next, we consider the effect of parent's years since migration on academic performance using family fixed-effect models in Table 4. This approach controls for time invariant family characteristics as well as unobservable characteristics and between family heterogeneity that might otherwise bias results. This will give us greater purchase on the true effect of parent's additional years in Sweden on the educational performance of their children.

Results & Discussion

Figure 1 shows the frequency of second generation immigrants in the sample, excluding Finns who are such a large group (103,052) they would skew the scale. Some groups have been collapsed due to their size and their similarities (e.g. former Yugoslavia; USA, Canada and Mexico). Although some groups are small (e.g. Thai, Vietnamese), they are distinct from other groups in their characteristics, so there is value in retaining them as individual groups. Broadly, these immigrant groups are labor or marriage migrants from other Western countries (e.g. North America, Germany), or from second or third world countries (e.g. Turkey, Thailand) or refugee groups (e.g. Iran, Iraq, Chile).

Figure 1: Frequency of second generation groups in SIP, excluding Finns (Nordic=137,625 so are excluded to keep a realistic y-axis)
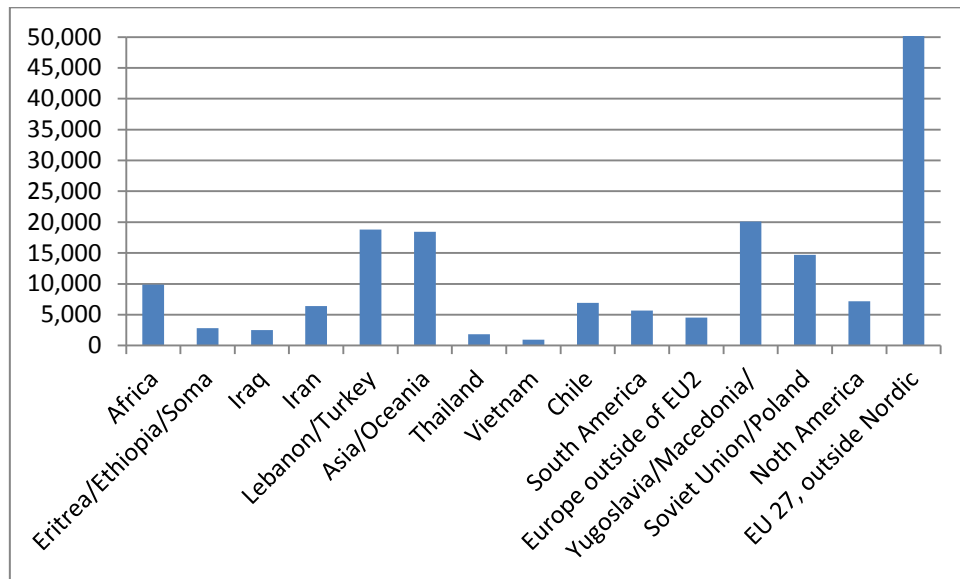
Immigration from these groups has not occurred constantly and continuously over time, so to get a sense of the ebb and flow by country, Figure 2 displays the mean year of migration by parent's country of origin. The earliest arriving groups whose mean year of arrival is 1973 or earlier are labor migrants that came initially from other Nordic countries (Finland, Norway and Denmark) before expanding to include other Western and Southern European countries (e.g. Germany, Italy, Greece and Czechoslovakia). Some groups, such as the Turks, had a presence in Sweden prior to 1973, but the patterns of family reunification over the subsequent decades pushes up their mean year of arrival.

As the Swedish migration policy became more restrictive to non-Nordic immigrants and the oil crisis of 1973 brought the labor shortage to an abrupt, labor migration was restricted and replaced with humanitarian immigration along with the family reunification cases for previously arrived labor migrants. These groups arrived from Africa, the Middle East, Eastern Europe, Asia and South American countries. Many of these refugee groups, excluding Iranians, are characterized by their low levels of education.

Figure 2: Parents mean year of migration by country of origin

Panel A: European/Western Countries of Origin

Panel B: Non-Western Countries of Origin

* Eritrea/Ethiopia/Somalia
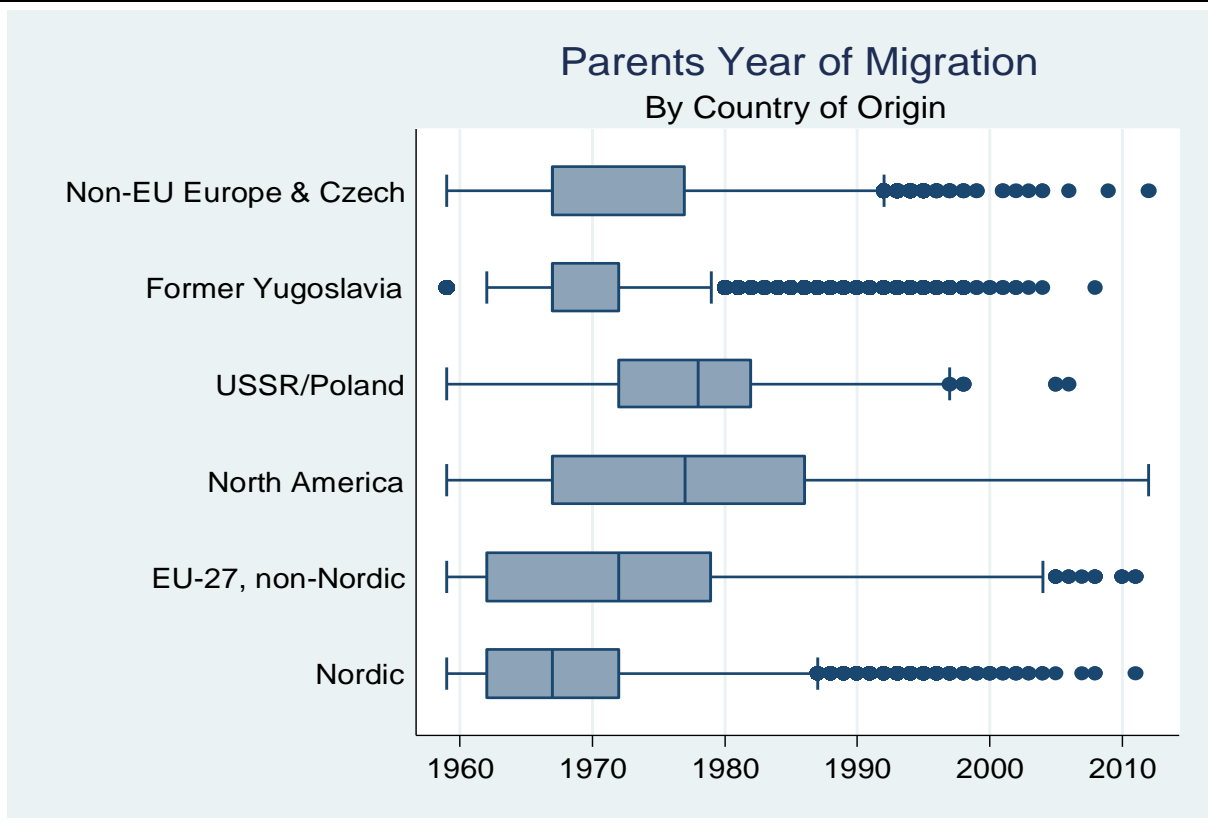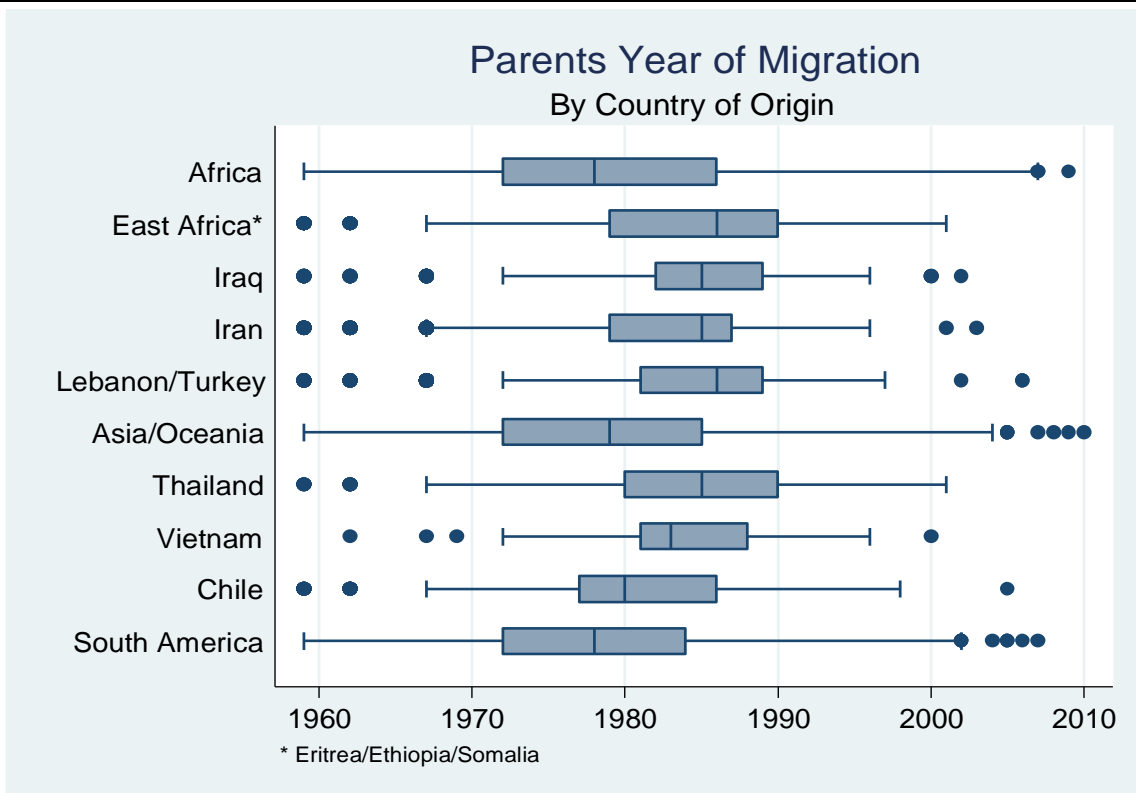
Figure 3 Parents mean age at migration, by country of origin

Panel A: European/Western Countries of Origin

Parents age at Migration by Country of Origin

Panel B: Non-Western Countries of Origin

Parents age at Migration by Country of Origin

* Eritrea/Ethiopia/Somalia
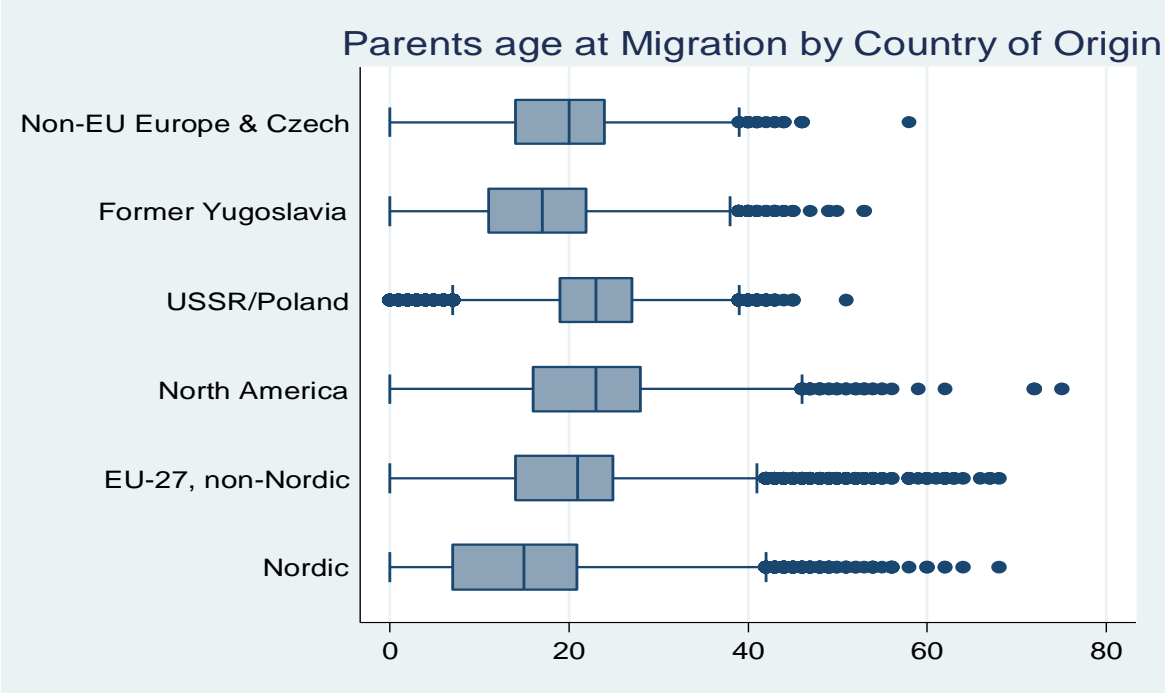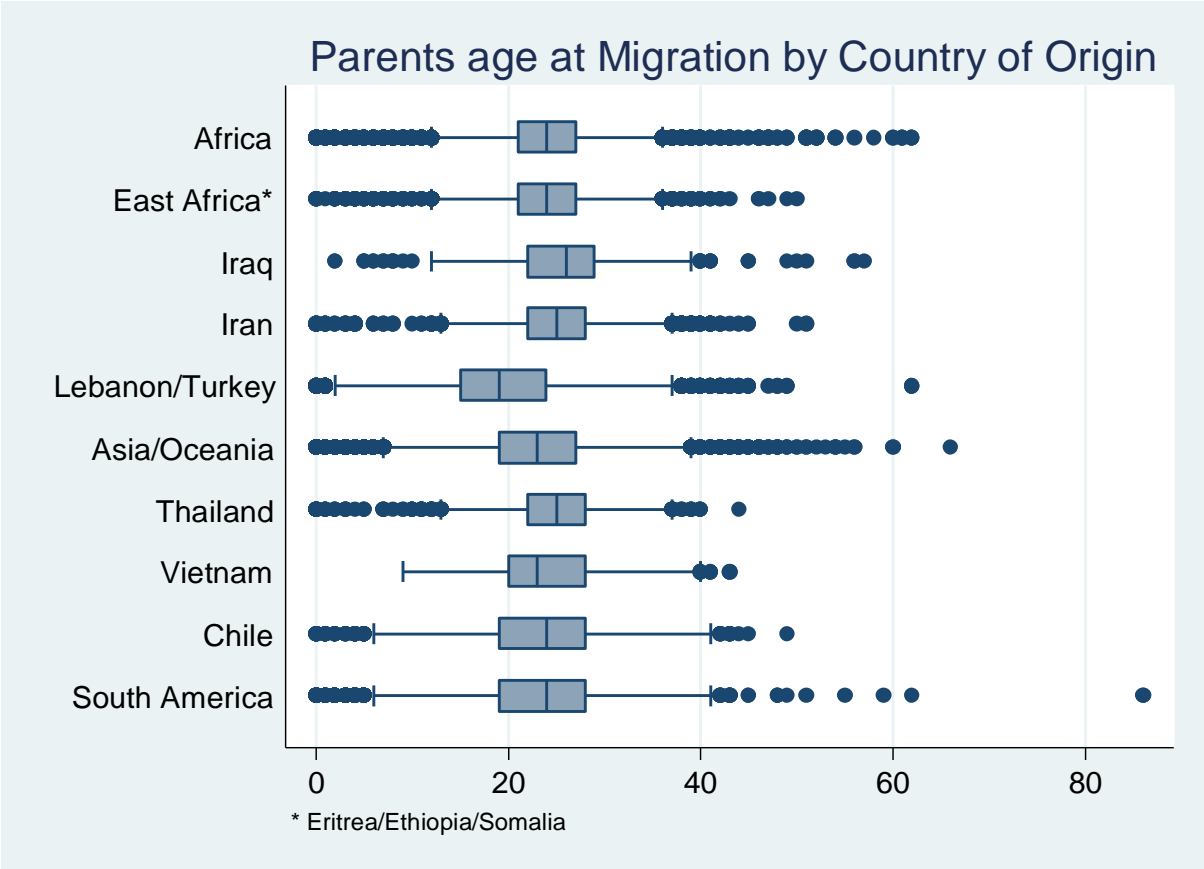
Figure 3 displays the mean time between the initial act of migration and when the respondent was born. Comparing those from European and Western countries of origin to those from non-Western countries of origin, a pattern emerges that the former have much more time in Sweden before the respondent is born than the latter. Given that labor migrants from fellow European and Western countries arrived in Sweden at earlier ages and come from countries with later childbearing norms, it makes sense that they would have more time in Sweden before having children.

Figure 3: Parent's Mean Years in Sweden when Child Entered Secondary School
Panel A: European/Western Countries of Origin

Parent Years since Migration
By Country of Origin

Years between P Migration and R Birth

Parent Years since Migration
By Country of Origin

Years between P Migration and R Birth

* Eritrea/Ethiopia/Somalia
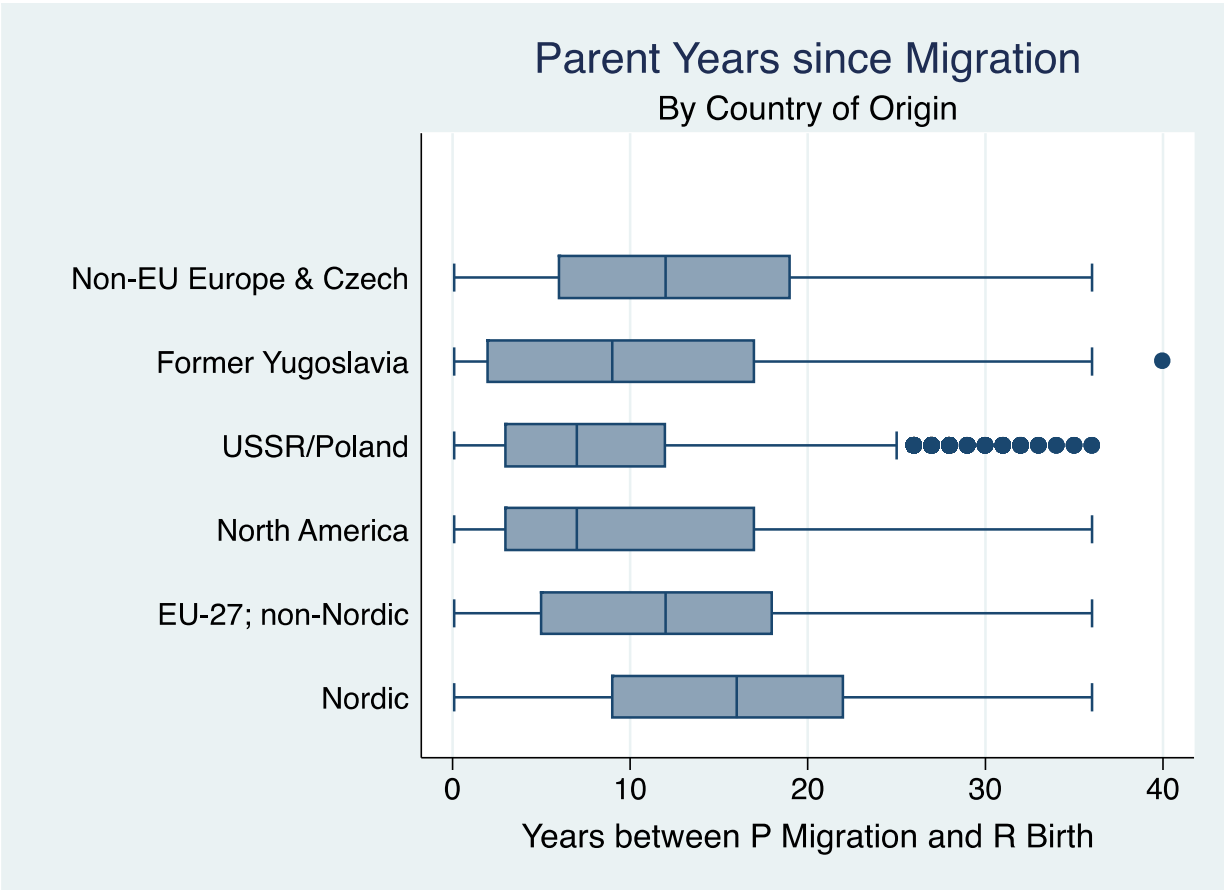
Figure 4 provides the percentage of second generation respondents who are have two foreign-born parents who are both foreign-born and those who have one foreign-born and one native-born parent (2.5 generation). The 2.5 generation is further decomposed by whether the foreign-born parent is the mother or the father. Although there is a trend that children of labor migrants are more likely to be 2.5 generation, it is not without exception. There are a fairly large percentage of children of African, Thai and South American descendants who are 2.5 generation, while those whose parents come from the former Yugoslavia are more likely to be 2.0 generation.

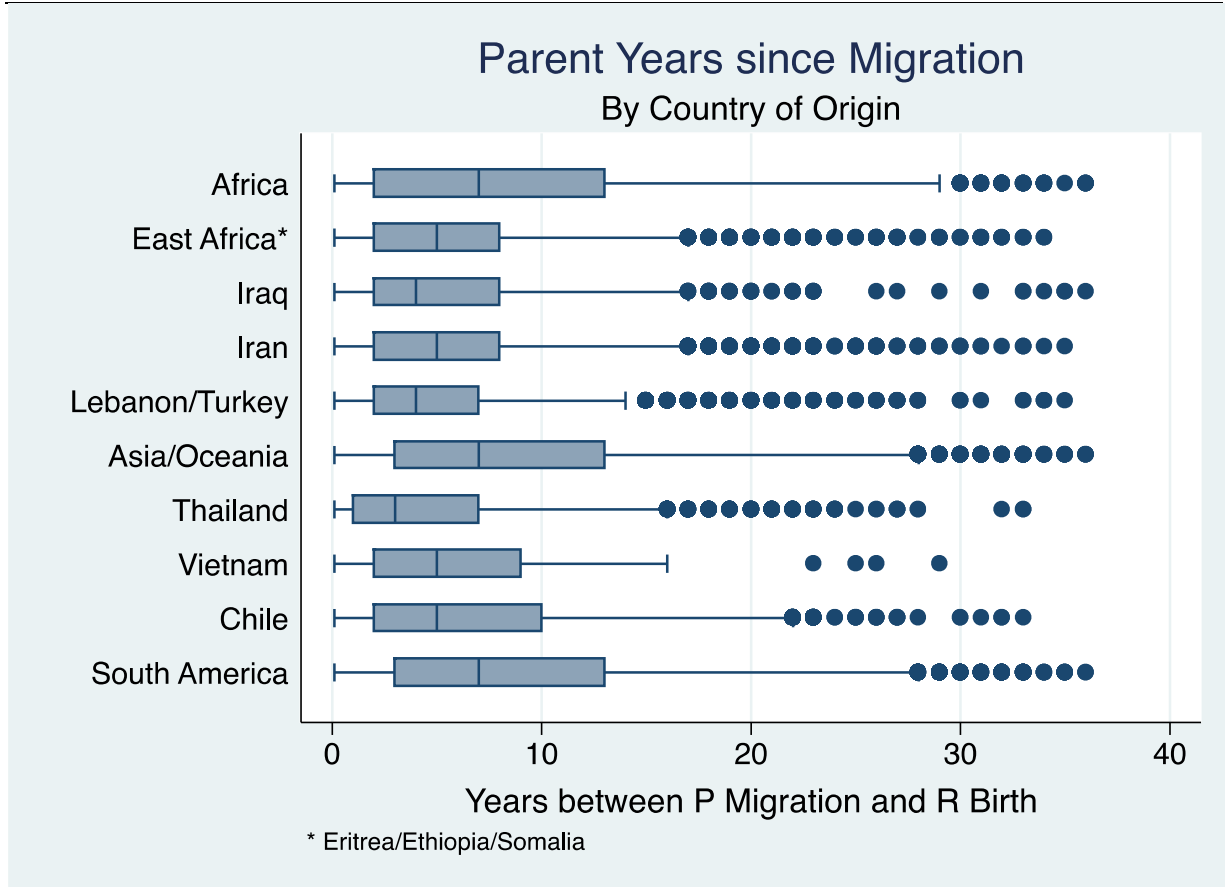Looking specifically at the composition of the 2.5 generation, some groups have roughly equal numbers of a foreign-born mother or father, while others are far more unequally divided. Among Western countries, the 2.5 generation makes up more than half of each group, except the Former Yugoslavia, and, with the possible exception of Former Yugoslavia and USSR/Poland, the division in whether it is the mother or father who is foreign-born is roughly equal. Among immigrants from non-Western countries, the 2.0 generation becomes far more numerous, with only Africa, Thailand and South America being comprised of more than fifty-percent 2.5 generation respondents. The gender composition is also more likely to be skewed, with 2.5 generation respondents from Africa, East Africa, Iraq, Iran, Lebanon and Turkey more likely to have a foreign-born father, while those from Thailand are most likely to have a foreign-born mother. From this, we gather that controlling for the 2.5 generation using a single dummy variable would be over influenced by those from Western countries. Further, if there is an effect of whether it is the mother or father that is foreign-born as has been found elsewhere (Rooth and Ekberg 2003), the disproportionate composition of some of the groups may be missed and the results would be biased as a result.

Figure 4: Detailed breakdown of the second generation

European/Western Countries
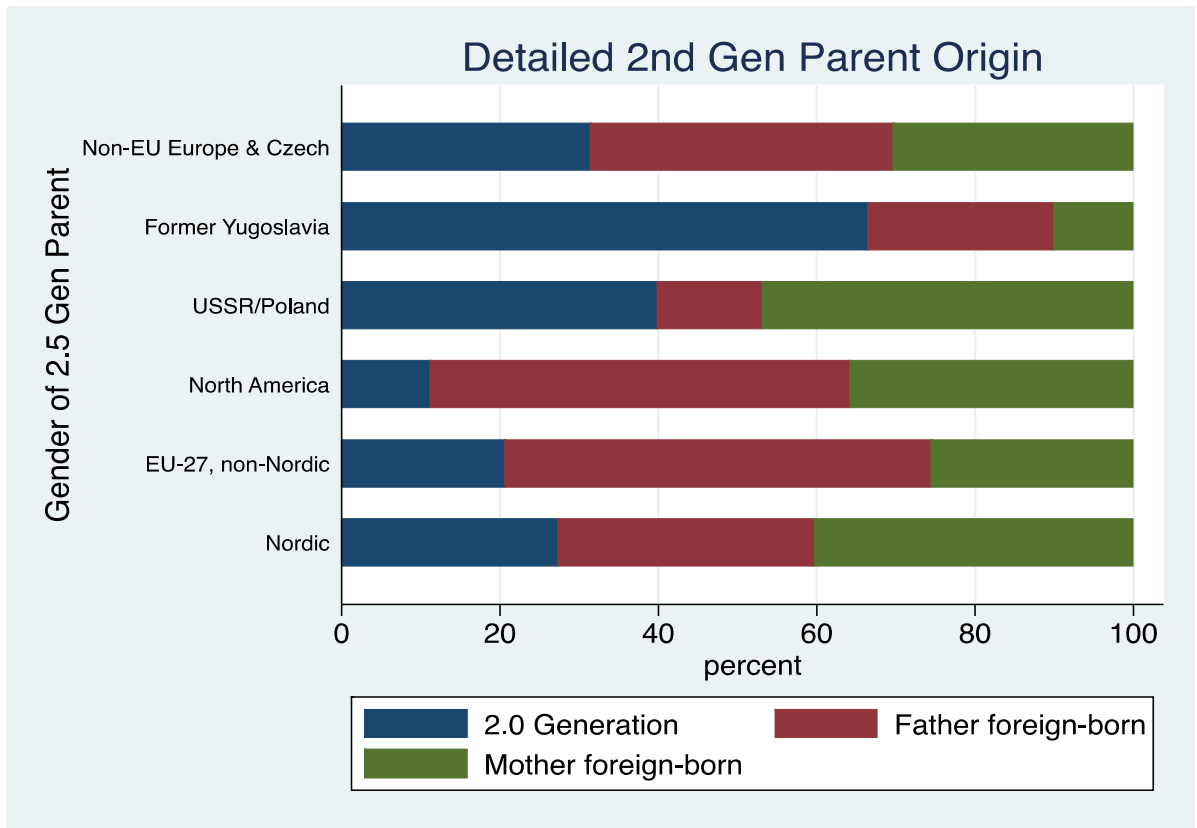
Non-Western Countries of Origin
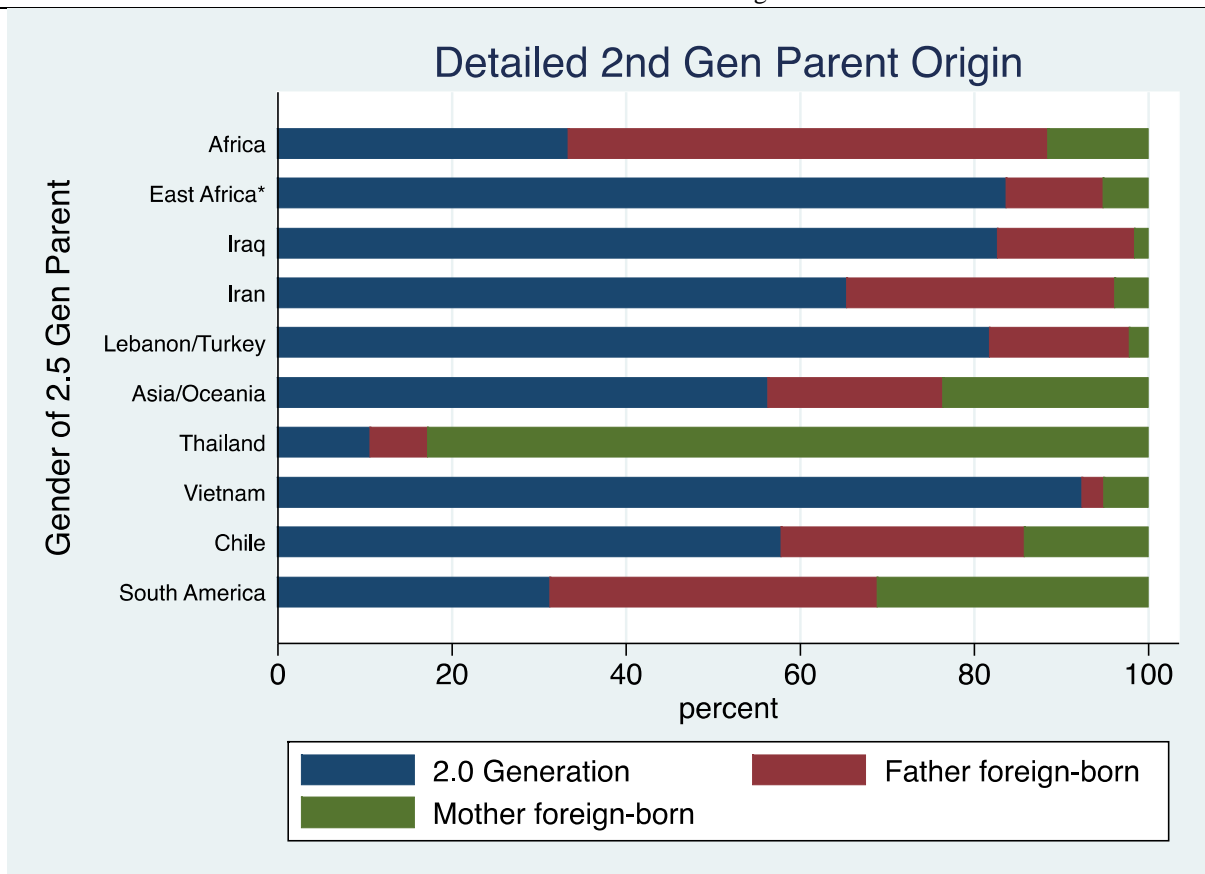
Figure 5 presents the highest education attainment by parent's country of origin. Parents from other Western countries tend to have equal if not higher education levels than the children of Swedish parents, except for those from Former Yugoslavia and other Nordic countries. Among those from non-Western countries, there is considerable heterogeneity. Some groups, such as African, Iran and South America have similar if not better education characteristics than Swedes do, while the rest have less, and in the cases of the Lebanese, Turks and Vietnamese, considerably less.

Figure 5: Parent's highest level of schooling, by Country of Origin
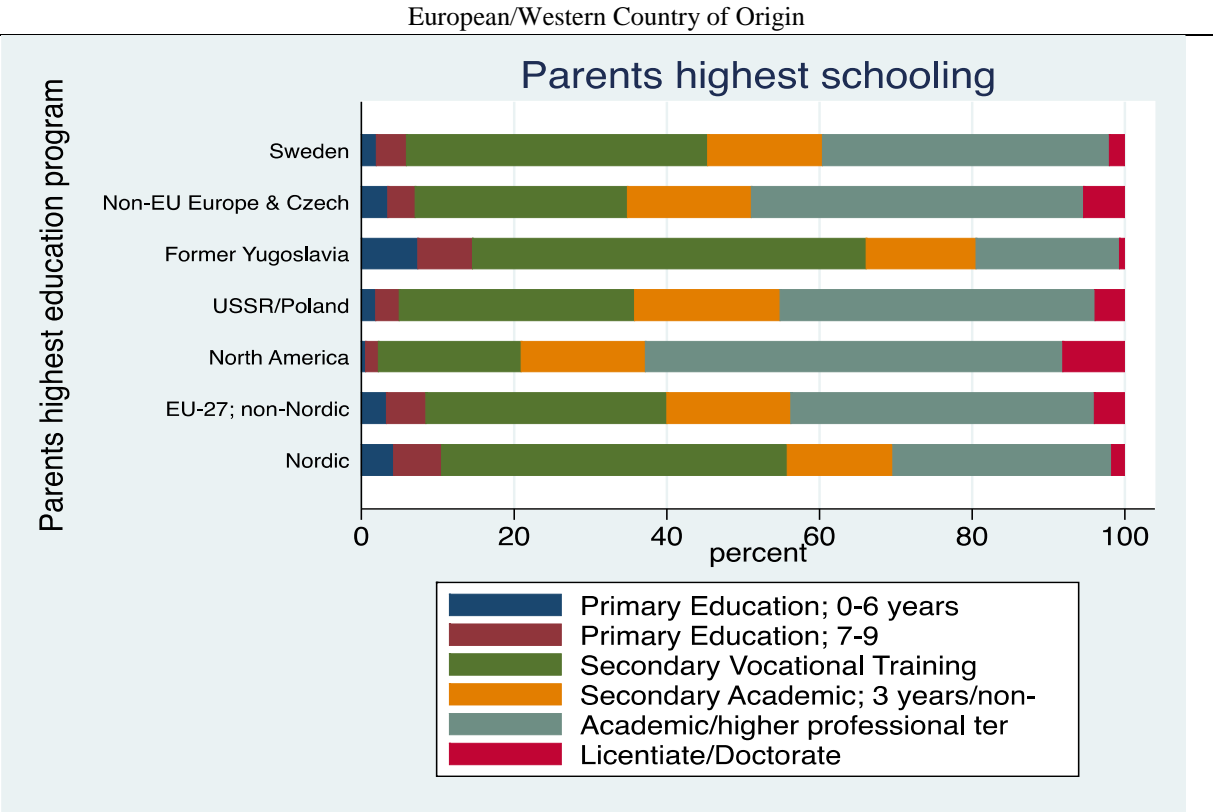
European/Western Country of Origin

Parents highest schooling

Legend:
- Primary Education; 0-6 years
- Primary Education; 7-9
- Secondary Vocational Training
- Secondary Academic; 3 years/non-
- Academic/higher professional ter
- Licentiate/Doctorate

Parents highest schooling

Bar chart. Y-axis: Parents highest education program. X-axis: percent (0 to 100).

Categories (top to bottom): Africa, East Africa*, Iraq, Iran, Lebanon/Turkey, Asia/Oceania, Thailand, Vietnam, Chile, South America

Legend:
- Primary Education; 0-6 years
- Primary Education; 7-9
- Secondary Vocational Training
- Secondary Academic; 3 years/non-
- Academic/higher professional ter
- Licentiate/Doctorate

Figure 6 displays the average standardized grades and merit value by parent's country of origin. The xline represents the average performance of the Swedish born majority. There is considerable group heterogeneity, with some who perform considerably better than the Swedish majority, while other groups do much worse. This tends to break across Western/non-Western lines, but with some notable exceptions. East Africans, Iranians, Asia/Oceania and Vietnam are doing similarly if not better than the Swedish majority, while those from the fellow Nordic countries are doing worse.

Figure 6: Mean Standardized Performance with 95% confidence intervals by Parent Country of Origin, xline represents Swedish mean

Mean Standard Performance
By Country of Origin, 1989-2011
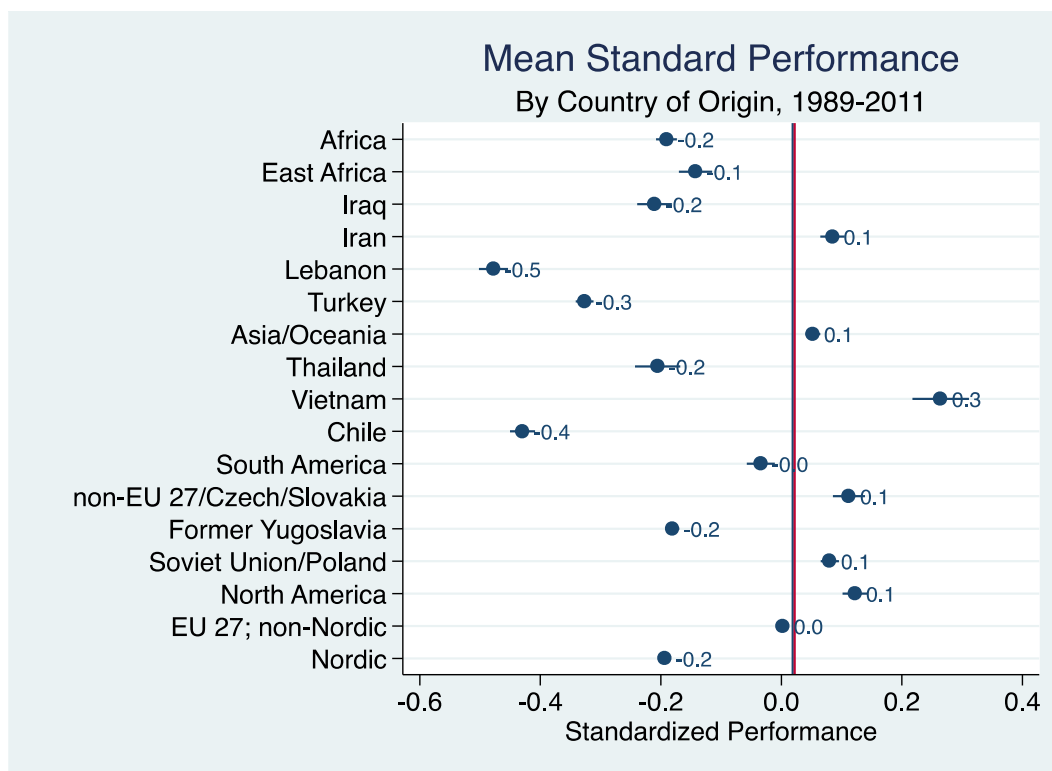
Source: SIP, 1989-2011

Figure 7 shows the difference in the mean standardized performance by sex and parent country of origin. Generally, the difference between boys and girls among second generation groups is similar to the difference between Swedish boys and girls. This consistent difference suggests a single sex dummy covariate can be used without an apparent need for interaction by country of origin. Much of these trends in academic performance by country of origin and sex have previously been found (Jonsson and Rudolphi 2011), and we now turn to investigate whether parent's time and experience in Sweden mediates or exacerbates these differences.

Figure 7: Mean Standardized Performance and 95% confidence interval by Sex and Parent Country of Origin (xlines represent Swedish male and female values, respectively
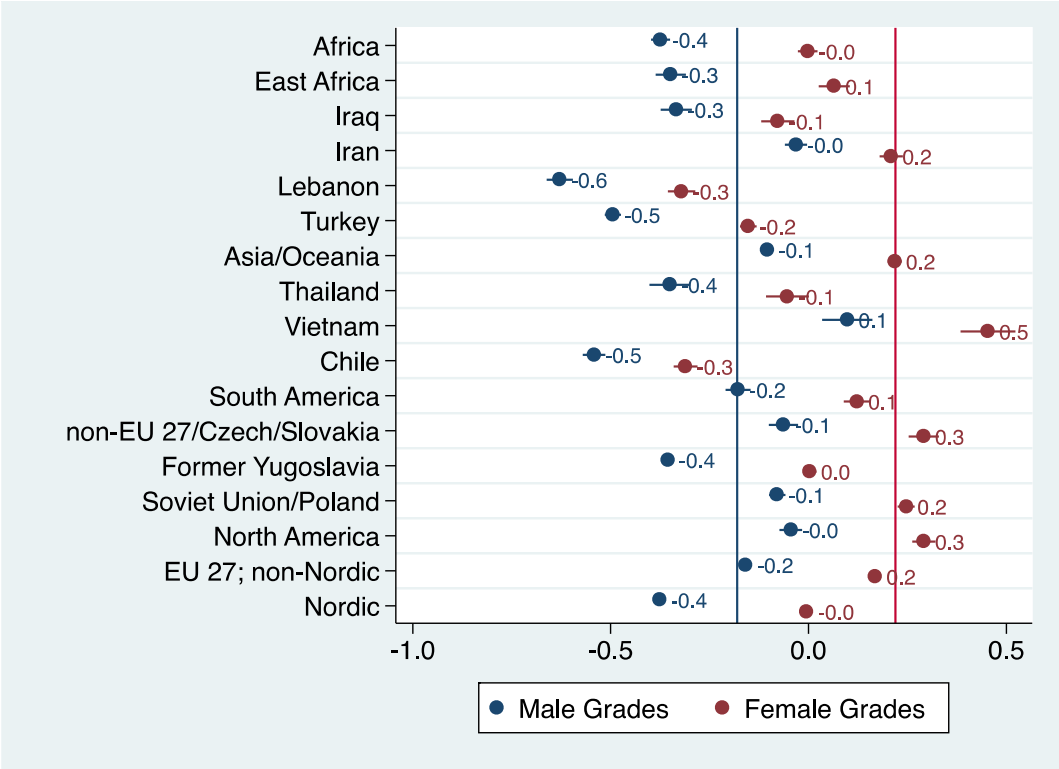
Figure 8 breaks the second generation into a 2.0 and 2.5 grouping. There is clear performance advantage for the 2.5 generation over the 2.0 generation among East Africans, Chileans, South Americans, North Americans, and some evidence of an advantage among the Lebanese, European countries not in EU 27 and other Nordic Countries. Among those with parents from Iraq and Iran, there is an inverse relationship, while among Turks, Asian and Oceanic, Thailand, Vietnam, Former Yugoslavia, Soviet Union/Poland, and EU-27 countries there is little difference in whether the respondent has two foreign-born or one foreign-born and one native-born parent. This provides mixed evidence concerning out hypotheses. Some of the 2.5 generation groups are clearly outperforming the 2.0 generation counterparts, as incorporation theory would predict, but not all. Further, those groups with improved outcomes come from a range or origins, including Africa, the Middle East, South and North America and Nordic countries, spanning a range of racial and ethnic backgrounds. Although there is heterogeneity in the effect of being the product of an intermarried union on academic performance, the heterogeneity does not seem to work within the framework of segmented assimilation theory, with the possible exception of the children of Iranians and Iraqis. We next look at the results of regressions by detailed second generation status relative an identical Swedish born majority reference group.

Figure 8: Mean Standardized Performance by Detailed Generation 2.0 status and Parent's Country of Origin, (xline is Swedish value)
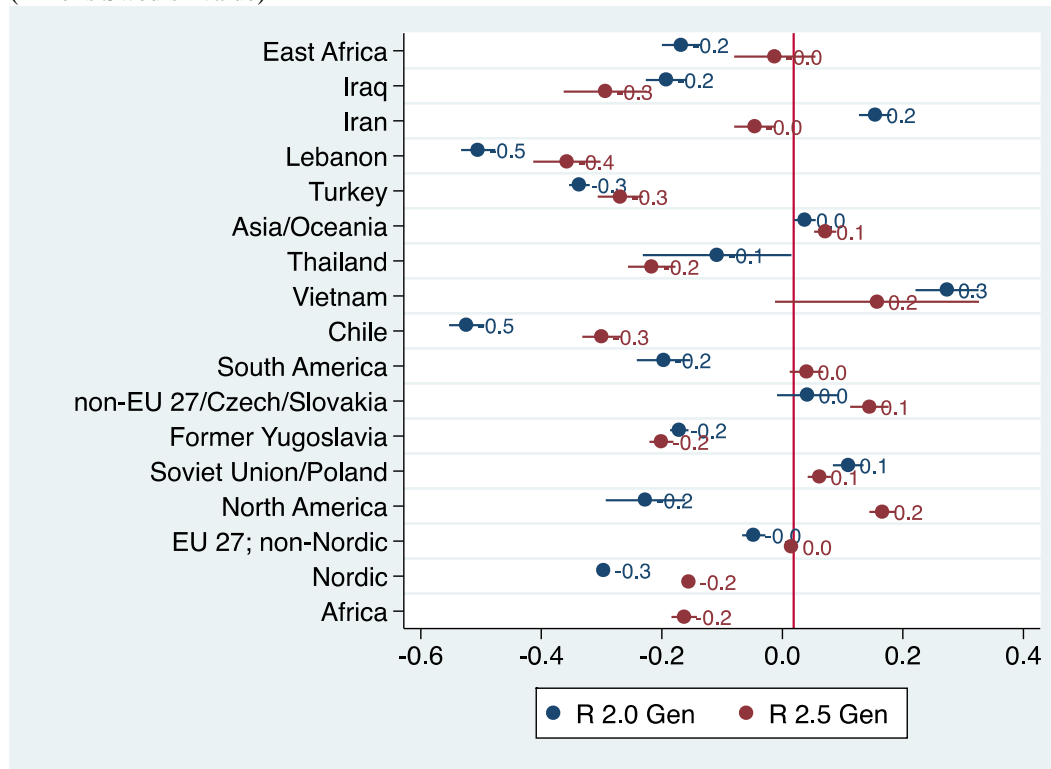
Source: SIP, 1989-2011

Table 2 presents regression results on standardized performance by generation status, controlling for parent's country of origin, sex, parent's education and a general parent's years since migration variable. In the base model, there is a advantage found among the 2.5 generation is mostly located in those cases that the mother is foreign-born. Among every group aside from Thailand, those 2.5 generation families with a foreign-born mother outperform the 2.0 and/or the 2.5 generation whose fathers are foreign-born. In the parent's years since migration models, among the 2.5 generation, having a foreign-born father or mother has a positive or negative effect of .01, but, unexpectedly, not among those with two foreign-born parents. Among the 2.5 generation, someone whose parent had been in Sweden for ten years, as was the average among some of the groups, could expect to have an increase or decrease of .10 standardized score in grade performance. To provide some context, this is roughly the same effect of being an oldest sibling or only child. Controlling for education and then education and parent's years in Sweden combined does not temper the advantage in educational performance among those with a foreign-born mother. Instead, there is something persistent about having a mother from a foreign-born country and a native born-father that provides an academic advantage, so much so that for groups such as Africans, East Africans, Iraqis, Turks and non-Nordic EU-27, the 2.0 generation and the 2.5 generation have significantly lower standardized performance while the 2.5 generation whose foreign-born parent is the mother has similar if not significantly higher performance than the native-born Swedish reference group.

Table 2: Regression on standardized performance by individual detailed 2nd generation status categories, controlling for sex, parent's years since migration and parent's educational attainment

	Panel A: Base and Parent Years Since Migration Models					
	Base			PYSM Model		
	2.0	2.5 F FB	2.5 M FB	2.0	2.5 F FB	2.5 M FB
Sweden	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Africa	-.28***	-.23***	.00	-.28***	-.26***	.04
	(.01)	(.01)	(.03)	(.02)	(.01)	(.03)
East Africa	-.20***	-.09*	.07	-.20***	-.14***	.13*
	(.01)	(.04)	(.06)	(.02)	(.04)	(.06)
Iraq	-.22***	-.38***	.25*	-.22***	-.41***	.29*
	(.02)	(.04)	(.11)	(.02)	(.04)	(.11)
Iran	.13***	-.09***	.16**	.12***	-.13***	.20***
	(.01)	(.02)	(.05)	(.01)	(.02)	(.05)
Lebanon	-.54***	-.42***	-.04	-.54***	-.45***	.01
	(.01)	(.03)	(.08)	(.01)	(.03)	(.08)
Turkey	-.36***	-.33***	-.04	-.37***	-.38***	.02
	(.01)	(.02)	(.05)	(.01)	(.02)	(.05)
Asia/Oceania	.01	.00	.08***	.01	-.04**	.12***
	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)
Thailand	-.15**	-.22**	-.24***	-.15**	-.26***	-.23***
	(.06)	(.07)	(.02)	(.06)	(.07)	(.02)
Vietnam	.25***	-.11	.26*	.25***	-.14	.28**
	(.02)	(.15)	(.10)	(.02)	(.15)	(.10)
Chile	-.55***	-.36***	-.25***	-.56***	-.40***	-.21***
	(.01)	(.02)	(.03)	(.01)	(.02)	(.03)
South America	-.21***	-.00	.04	-.22***	-.05**	.08***
	(.02)	(.02)	(.02)	(.02)	(.02)	(.02)
non-EU 27/Czech/Slovakia	.02	.06**	.19***	.01	-.02	.24***
	(.02)	(.02)	(.02)	(.02)	(.02)	(.02)
Former Yugoslavia	-.20***	-.26***	-.15***	-.20***	-.33***	-.07***
	(.01)	(.01)	(.02)	(.01)	(.01)	(.02)
Soviet Union/Poland	.08***	.00	.04***	.08***	-.06**	.07***
	(.01)	(.02)	(.01)	(.01)	(.02)	(.01)
North America	-.27***	.11***	.18***	-.27***	.06***	.24***
	(.03)	(.01)	(.02)	(.03)	(.01)	(.02)
EU 27; non-Nordic	-.07***	-.03***	.04***	-.08***	-.09***	.10***
	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)
Nordic	-.32***	-.26***	-.12***	-.33***	-.35***	-.05***
	(.00)	(.00)	(.00)	(.01)	(.01)	(.01)

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| | | Base | | | PYSM Model | |
	2.0	2.5 F FB	2.5 M FB	2.0	2.5 F FB	2.5 M FB
Male	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Female	.36***	.36***	.36***	.36***	.36***	.36***
	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
PYSM	-	-	-	.00	.01***	-.00***
				(.00)	(.00)	(.00)
Constant	-.15***	-.15***	-.15***	-.15***	-.15***	-.15***
	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
Observations	2,042,313	2,019,539	2,004,662	2,042,306	2,019,494	2,004,556
R-squared	.039	.036	.035	.039	.036	.035

Source: SIP, 1989-2011
Standard errors in parentheses
* p<0.05 ** p<0.01 *** p<0.001

	P Educ. Model			Full Add Model		
Panel B: Parent Education and Full Model						
	2.0	2.5 F FB	2.5 M FB	2.0	2.5 F FB	2.5 M FB
Sweden	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Africa	-.14***	-.28***	-.07**	-.14***	-.32***	-.06*
	(.01)	(.01)	(.02)	(.01)	(.01)	(.02)
East Africa	-.04**	-.23***	-.10	-.04**	-.27***	-.08
	(.01)	(.04)	(.06)	(.01)	(.04)	(.06)
Iraq	-.18***	-.41***	.06	-.18***	-.44***	.07
	(.01)	(.03)	(.11)	(.01)	(.03)	(.11)
Iran	.03**	-.21***	.00	.03**	-.25***	.01
	(.01)	(.02)	(.05)	(.01)	(.02)	(.05)
Lebanon	-.26***	-.33***	-.06	-.27***	-.36***	-.04
	(.01)	(.03)	(.08)	(.01)	(.03)	(.08)
Turkey	-.03***	-.24***	-.02	-.03***	-.28***	.00
	(.01)	(.02)	(.05)	(.01)	(.02)	(.05)
Asia/Oceania	.19***	-.07***	.05***	.18***	-.11***	.06***
	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)
Thailand	-.05	-.14*	-.06**	-.05	-.18**	-.05**
	(.05)	(.07)	(.02)	(.05)	(.07)	(.02)
Vietnam	.64***	.08	.20*	.63***	.06	.21*
	(.02)	(.14)	(.10)	(.02)	(.14)	(.10)
Chile	-.40***	-.36***	-.23***	-.40***	-.40***	-.22***
	(.01)	(.02)	(.03)	(.01)	(.02)	(.03)
South America	-.24***	-.16***	-.07***	-.25***	-.21***	-.06**
	(.02)	(.02)	(.02)	(.02)	(.02)	(.02)
non-EU 27 /Czech/Slovakia	.03	-.03	.02	.03	-.10***	.04
	(.02)	(.02)	(.02)	(.02)	(.02)	(.02)
Former Yugoslavia	.01*	-.17***	-.09***	.01	-.23***	-.06***
	(.01)	(.01)	(.02)	(.01)	(.01)	(.02)
Soviet Union/Poland	.01	-.07***	.00	.01	-.14***	.01
	(.01)	(.02)	(.01)	(.01)	(.02)	(.01)
North America	-.30***	-.08***	-.03	-.30***	-.13***	-.01
	(.03)	(.01)	(.02)	(.03)	(.01)	(.02)
EU 27; non-Nordic	.03**	-.10***	-.06***	.02*	-.16***	-.04***
	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)

	P Educ. Model			Full Add Model		
	2.0	2.5 F FB	2.5 M FB	2.0	2.5 F FB	2.5 M FB
Nordic	-.17***	-.18***	-.10***	-.18***	-.27***	-.07***
	(.00)	(.00)	(.00)	(.01)	(.01)	(.01)
Male	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Female	.36***	.37***	.37***	.36***	.37***	.37***
	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
PYSM	-	-	-	.00	.01***	-.00***
				(.00)	(.00)	(.00)
Primary Education; 0-6 years	-.58***	-.58***	-.58***	-.58***	-.58***	-.58***
	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
Primary Education; 7-9	-.71***	-.74***	-.73***	-.71***	-.73***	-.73***
	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
Secondary Vocational	-.44***	-.45***	-.45***	-.44***	-.45***	-.45***
	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
Secondary Academic; /non-academic tertiary	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
University/ professional tertiary	.23***	.23***	.22***	.23***	.23***	.22***
	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
Licentiate/Doctorate	.61***	.61***	.61***	.61***	.61***	.61***
	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
Constant	-.04***	-.03***	-.03***	-.04***	-.03***	-.03***
	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
Observations	2,042,313	2,019,539	2,004,662	2,042,306	2,019,494	2,004,556
R-squared	.156	.157	.157	.156	.157	.157

Source: SIP, 1989-2011
Standard errors in parentheses
* p<0.05 ** p<0.01 *** p<0.001

Table 4 presents regression results interacting parent country of origin with parent year's in Sweden to test if groups have each country of origin group has a distinct relationship between parent's time in Sweden and their child's educational performance. In this instance, we use the Nordic second generation respondents as the reference group since they comprise the largest proportion of immigrant groups. There is considerable heterogeneity in the relationship between parent's years of education and academic performance by country of origin. Among the 2.0 and both 2.5 generation groups, ten out of sixteen countries of origin groups have a significantly positive relationship between parent's years in Sweden and academic performance relative the Nordic reference group. Although there is a general positive trend between a parent's time in Sweden and academic performance among all groups, there is still value gained from considering these groups in their detailed second generation form. For some, one group may be performing distinctly better or worse than the others, such as the 2.5 generation whose mothers are Iraqi, Iranian and Lebanese immigrants, while for others, it is the size of coefficient. Although controlling for education mediates the slope for a few groups, these patterns generally hold.

In sum, the results points more towards a process of positive rather than negative incorporation, though not universally. The groups "most-distant" from Sweden who have the most to learn culturally, linguistically and economically, who are also the most racially/ethnically distinct, have some of the steepest slopes. Conversely, those from "less-distant" countries, who have a smaller learning curve, tend to have flatter slopes, which is what one would expect. There does appear to be a benefit on the educational performance of their children for additional time spent in Sweden. However, a criticism of this approach is that those who are in Sweden for a year or a decade prior to having a child are quite distinct. As a way to control for this interpersonal heterogeneity, we next explore the relationship of additional year's in Sweden using a family fixed effects approach.

Table 4: Regression on standardized performance by individual detailed 2nd generation status categories, controlling for parent's country of origin, parent's years since migration and the interaction of country of origin and parent's years since migration, sex and parent's educational attainment

	Base Interact			P Educ. Interact		
	2.0	2.5 F FB	2.5 M FB			
Sweden	.28***	.32***	-.01	.15***	.24***	.04***
	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)
Africa	.09**	-.01	-.12***	.00	-.12***	-.12***
	(.03)	(.02)	(.04)	(.03)	(.02)	(.03)
East Africa	-.01	.10	-.17	.07**	-.07	-.25*
	(.03)	(.06)	(.11)	(.02)	(.06)	(.10)
Iraq	-.00	-.32***	.50**	-.07**	-.35***	.29
	(.03)	(.07)	(.18)	(.02)	(.06)	(.17)
Iran	.32***	-.02	.36***	.16***	-.16***	.18*
	(.02)	(.03)	(.09)	(.02)	(.03)	(.09)
Lebanon	-.32***	-.21***	.07	-.15***	-.21***	.09
	(.02)	(.05)	(.13)	(.02)	(.04)	(.12)
Turkey	-.07***	-.09**	-.24**	.15***	-.07*	-.05
	(.02)	(.03)	(.09)	(.02)	(.03)	(.08)
Asia/Oceania	.24***	.25***	.06**	.32***	.13***	.09***
	(.02)	(.02)	(.02)	(.02)	(.02)	(.02)
Thailand	.04	.07	-.30***	.01	.07	-.03
	(.10)	(.11)	(.03)	(.10)	(.11)	(.03)
Vietnam	.34***	.03	.20	.63***	.03	.12
	(.04)	(.28)	(.16)	(.04)	(.26)	(.15)
Chile	-.32***	-.25***	-.31***	-.27***	-.28***	-.26***
	(.02)	(.04)	(.05)	(.02)	(.03)	(.05)
South America	.06	.29***	-.00	-.13***	.06*	-.05
	(.03)	(.03)	(.03)	(.03)	(.03)	(.03)
non-EU 27/Czech/Slovakia	.26***	.25***	.12**	.10*	.11**	-.01
	(.04)	(.04)	(.04)	(.04)	(.04)	(.04)

	Base Interact			P Educ. Interact		
	¤					
Former Yugoslavia	.07*** (.01)	-.10*** (.02)	-.28*** (.04)	.14*** (.01)	-.06* (.02)	-.08* (.04)
Soviet Union/Poland	.38*** (.02)	.15*** (.04)	-.01 (.02)	.14*** (.02)	.01 (.04)	.02 (.02)
North America	-.04 (.05)	.43*** (.02)	.21*** (.03)	-.14*** (.04)	.13*** (.02)	-.01 (.03)
EU 27; non-Nordic	.26*** (.02)	.25*** (.01)	.12*** (.02)	.23*** (.02)	.10*** (.01)	.01 (.02)
Nordic	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Male	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Female	.36*** (.00)	.36*** (.00)	.36*** (.00)	.36*** (.00)	.37*** (.00)	.37*** (.00)
PYSM	-.00*** (.00)	.00*** (.00)	-.01*** (.00)	-.00* (.00)	.00*** (.00)	-.00*** (.00)
Primary Education; 0-6 years	-	-	-	-.58*** (.00)	-.58*** (.00)	-.58*** (.00)
Primary Education; 7-9	-	-	-	-.71*** (.00)	-.73*** (.00)	-.73*** (.00)
Secondary Vocational	-	-	-	-.44*** (.00)	-.45*** (.00)	-.45*** (.00)
Secondary Academic/ Non-academic tertiary	-	-	-	Ref.	Ref.	Ref.
University/ Professional tertiary	-	-	-	.23*** (.00)	.23*** (.00)	.22*** (.00)
Licentiate/Doctorate	-	-	-	.61*** (.00)	.61*** (.00)	.61*** (.00)
Sweden * PYSM	Omitted	Omitted	Omitted	Omitted	Omitted	Omitted
Africa * PYSM	-.00* (.00)	.01*** (.00)	.02*** (.00)	.00 (.00)	.01*** (.00)	.02*** (.00)
East Africa * PYSM	.02*** (.00)	.01* (.01)	.03*** (.01)	.01** (.00)	.01 (.00)	.02** (.01)
Iraq * PYSM	.02*** (.00)	.04*** (.01)	-.02 (.02)	.01** (.00)	.03*** (.01)	-.02 (.01)
Iran * PYSM	.02*** (.00)	.03*** (.00)	-.01 (.01)	.01* (.00)	.02*** (.00)	-.01 (.01)

	Base Interact			P Educ. Interact		
Lebanon * PYSM	.02*** (.00)	.01** (.01)	-.00 (.01)	.01*** (.00)	.02** (.00)	-.01 (.01)
Turkey * PYSM	.00 (.00)	.01 (.00)	.02*** (.01)	-.00 (.00)	.00 (.00)	.01 (.01)
Asia/Oceania * PYSM	.01*** (.00)	.01** (.00)	.01*** (.00)	.00** (.00)	.00 (.00)	.00** (.00)
Thailand * PYSM	.01 (.01)	.00 (.01)	.02*** (.00)	.01 (.01)	-.00 (.01)	.01 (.00)
Vietnam * PYSM	.04*** (.01)	.03 (.05)	.02 (.03)	.03*** (.01)	.05 (.04)	.03 (.02)
Chile * PYSM	.01*** (.00)	.02*** (.00)	.01** (.00)	.00 (.00)	.02*** (.00)	.01** (.00)
South America * PYSM	.00 (.00)	-.00 (.00)	.01*** (.00)	.01* (.00)	-.00 (.00)	.01* (.00)
non-EU 27/Czech/Slovakia * PYSM	.01* (.00)	.01* (.00)	.01*** (.00)	.01** (.00)	.00 (.00)	.01*** (.00)
Former Yugoslavia * PYSM	.01*** (.00)	.01*** (.00)	.02*** (.00)	.00*** (.00)	.01*** (.00)	.01** (.00)
Soviet Union/Poland * PYSM	.00 (.00)	.01*** (.00)	.02*** (.00)	.00* (.00)	.01*** (.00)	.01*** (.00)
North America * PYSM	.01* (.00)	-.00 (.00)	.01** (.00)	.00 (.00)	-.00 (.00)	.01** (.00)
EU 27; non-Nordic * PYSM	-.00 (.00)	-.00 (.00)	.00 (.00)	-.00* (.00)	.00 (.00)	.00* (.00)
Nordic * PYSM	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Constant	-.44*** (.01)	-.47*** (.01)	-.15*** (.01)	-.19*** (.01)	-.27*** (.01)	-.07*** (.01)
Observations	2,042,306	2,019,494	2,004,556	2,042,306	2,019,494	2,004,556
R-squared	.039	.036	.035	.156	.158	.157

Table 5 shows the results from sibling fixed-effect models on standardized performance including a one way interaction term between country of origin and sex (note: will add sex interaction to previous models). The models have been rearranged to make comparisons between the genders more explicit. The most striking result is found within the 2.0 generation, and specifically the female advantage. While males have a negative or null relationship between parent years in Sweden and educational performance, the majority of females have a significantly positive slope. Indeed, among females, only those whose parents are Thai, non-EU 27 Europeans and North Americans have a slope that is either negative or null. The 2.5 generations, in contrast, display a more heterogeneous mix in the relationship between parent's years in Sweden and their child's educational attainment. Where there are significant findings, either males have a negative slope or females having a positive slope, but these are not as widespread and consistent as is found among the 2.0 generation.

Controlling for the individual heterogeneity as well as unobservable difference between families, daughters in the 2.0 generation follow an incorporation pattern while parent's additional time in Sweden seems to have no or a slightly negative effect on sons. The 2.5 generation, perhaps unsurprisingly given their advantage in linguistic fluency and institutional familiarity, does not benefit greatly by having a parent spend a number of years in Sweden.

Table 5: Regression on Standardized Performance by detailed 2nd generation status separately, controlling for an interaction term of parent's country of origin, parent's years in Sweden and Sex (models rearranged for comparison purposes) and oldest sibling status, using sibling-fixed effects

	2.0 Gen		2.5 F FB		2.5 M FB	
	Male	Female	Male	Female	Male	Female
Sweden	0	0	0	0	0	0
Africa	-.00 (.00)	.02*** (.00)	-.02*** (.00)	.01 (.00)	.02 (.01)	.04*** (.01)
East Africa	-.02* (.01)	.03*** (.01)	-.04* (.02)	-.01 (.02)	.05 (.03)	.06* (.03)
Iraq	-.01 (.01)	.03*** (.01)	-.07*** (.02)	-.03 (.02)	-.06 (.04)	-.02 (.04)
Iran	-.00 (.01)	.02** (.01)	-.01 (.01)	.01 (.01)	.01 (.03)	.02 (.03)
Lebanon	-.02*** (.01)	.01** (.01)	.00 (.01)	.03* (.01)	-.04 (.04)	-.01 (.03)
Turkey	-.00 (.00)	.02*** (.00)	.01 (.01)	.03*** (.01)	-.00 (.02)	.02 (.02)
Asia/Oceania	.00 (.00)	.03*** (.00)	-.02** (.00)	.01 (.00)	-.01 (.01)	.02** (.01)
Thailand	.01 (.03)	.01 (.03)	-.04 (.03)	-.01 (.03)	-.03** (.01)	.00 (.01)

	2.0 Gen		2.5 F FB		2.5 M FB	
	Male	Female	Male	Female	Male	Female
Vietnam	-.01	.03*	.09	.03	-.07	-.00
	(.01)	(.01)	(.10)	(.10)	(.07)	(.06)
Chile	.00	.02**	-.02	.01	-.02	-.01
	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)
South America	.00	.03***	-.02*	-.01	.00	.02*
	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)
Non-EU 27	-.02**	-.01	.02	.03***	-.01	.01
	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)
former Yugoslavia	-.01***	.01***	-.01*	.01*	-.03***	-.01
	(.00)	(.00)	(.00)	(.00)	(.01)	(.01)
Soviet Union/Poland	.00	.02***	-.01	.01	-.01**	.02***
	(.00)	(.00)	(.01)	(.01)	(.00)	(.00)
North America	-.03*	-.02	-.01	.01*	.00	-.01*
	(.02)	(.02)	(.01)	(.01)	(.01)	(.01)
EU 27, Non-Nordic	.00	.02***	-.01***	.01***	-.01***	.01*
	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
Nordic	-.01***	.01***	-.01***	.00*	-.01***	.01***
	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
Younger Sibling	Ref.		Ref.		Ref.	
Oldest Sibling/Only Child	.12***		.12***		.12***	
	(.00)		(.00)		(.00)	
Constant	-.05***		-.04***		-.03***	
	(.00)		(.00)		(.00)	
Observations	2,034,328		2,011,516		1,996,578	
R-squared	.014		.014		.014	

Source: SIP, 1989-2011
Standard errors in parentheses
* p<0.05 ** p<0.01 *** p<0.001

Conclusions:

This goal of this paper is to assess the effect of incorporation, here measured as being the child of an intermarried union as well as parent's year in Sweden prior to the child's birth, on educational performance. Broadly, 2.5 generation children whose mothers are foreign-born outperform the 2.0 and 2.5 generation children whose fathers are foreign-born and, frequently, the Swedish born majority. In the models that include an interaction term between parent's country of origin and years since migration, the majority of these had positive associations. However, the sibling-fixed effect models reveal that some of this is due to unobserved

individual and family heterogeneity. Instead, among the both the 2.5 generation groups, this positive association disappears for a number of the country of origin groups. However, among 2.0 generation females, this relationship actually intensifies, while among the males, it was neutral or negative in nature. The implication is that, among nearly every group, for a hypothetical set of twins in which one is male and one is female, if their parent had been in Sweden for five years, they would have at a minimum a .20 difference in standardized performance, or roughly the equivalent of having a parent go from receiving a high school education to a university education. These findings, the advantage of the 2.5 generation with foreign-born mothers and the daughters of the 2.0 generation, point to a gendered nature in which incorporation is occurring. Also, it is notable that these relationships tend to be strongest among those most culturally "distant" from Sweden.

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