Educational performance of children of interethnic relationships in Denmark

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Abstract

As partnerships and marriages between Natives and foreign-born are becoming increasingly common in Denmark; this study closely examines the long term effect of these partnerships in terms of children's human capital formation studying grades from final examinations in the core subjects Danish and Mathematics. This paper uses rich register data, where families are linked across generations and contributes to Scandinavian migration literature by providing new insights into human capital formation in immigrant families. Results show a clear gradient of educational performance across immigrant generations. Having one native -and one foreign-born parent is more beneficial as compared to having two foreign-born parents. Yet, children of interethnic relationships have slightly lower school results than children with two native born parents. Results are less clear when it comes to the importance of the gender of the non-native parent; however parental country of origin seems to be of importance for the educational performance of children from interethnic relationships in Denmark.

1. Introduction

Danish migration policy is often described as assimilationist where foreign-born are expected to become acculturated to Danish norms and way of life (Hedetoft, Petersson and Sturfelt 2006) and resemble the mainstream population (Alba 1990; Alba and Nee 2003). However, as in many other immigrant receiving countries, the foreign-born in Denmark are not fully integrated into the Danish labor market and there are large immigrant-native wage- and employment gaps (Wanner, Jean, Jimenez and Causa 2011). Children of immigrant decent are furthermore falling behind in Danish schools; their educational performance is lower (Rangvid 2010) and they have higher dropout rates compared to their native Danish peers (Colding, Husted and Hummelgaard 2009).

Intermarriage has long been regarded an important indicator of immigrant integration as it has the potential to weaken ethnic group boundaries (Gordon 1964). It leads to more interethnic contacts between majority and minority groups which, in turn, result in more cultural, social and economic integration (Rodriguez-Garcia 2015). In addition to this, there are well documented individual level effects of intermarriage as foreign-born with native partners receive higher incomes and have a higher educational attainment than foreign-born in endogamous relationships[1] (Meng and Gregory 2005; Nystedt and Dribe 2015; Dougherty 2006; Nielsen, Smith and Çelikaksoy 2009).

As intermarriage and interethnic partnerships are becoming increasingly common in immigrant receiving countries, there are a growing number of children growing up in interethnic families. Studying the integration of children from intermarriage is of certain significance as it tells something about the log-term outcomes of these marriages (Kalmijn 2015). Previous studies have found that children of interethnic marriages have better educational outcomes compared to foreign-born children and children belonging to the second generation immigrants (Chiswick and DebBurman 2004; Karthick Ramakrishnan 2004; van Ours, Jan C. and Veenman 2010). However, at the same time, they perform slightly worse than native born children with native born parents (Kalmijn 2015).

This study has two main objectives. First, by studying final exam grades in the core subjects Danish and Mathematics, of children with intermarried parents in Denmark, this paper adds to the knowledge of human capital formation within interethnic families. Second, by studying the

[1] Both partners have the same ethnic background

long-term outcomes of intermarriage, this study furthermore adds to a broader discussion on immigrant integration in a Scandinavian context.

Moreover, as it is well established that parental ethnic background is of importance for child outcomes, this study furthermore explore the heterogeneity of the foreign-born in Denmark considering the importance of country of origin of the parents.

2. The Danish context

In a western European setting, Denmark has a relatively modest foreign-born population of 8.5 percent of the total population along with a rather short history of immigration (Statistics Denmark 2014). It was not until the end of the 1960's when immigration outnumbered emigration. Rising labor market demand led to increasing inflow of guest workers mainly from Turkey, Yugoslavia, and Pakistan (Liebig 2007). The oil crisis of the 70s put an end to further labor immigration and migration to Denmark has since then consisted mainly of refugees and family reunification migrants. The increasing inflow of refugees in the 1990s led to the introduction of an overall stricter migration policy with reduced social benefits to migrants and limitations to family reunification. In a European context Denmark is now known for having one of the strictest migration policy regimes in Europe (Green-Pedersen and Odmalm 2008).

Today, 58 percent of the foreign-born in Denmark originate from non-western countries with dominating groups from Iran, Iraq, Turkey, Pakistan and the Balkans. The foreign-born in Denmark are not fully integrated into the Danish labor market as there are large immigrant-native wage- and employment gaps (Wanner, Jean, Jimenez and Causa 2011). This can, at least partially be explained by the shift in composition of foreign-born, with an increasing share of refugees from the 1990s onwards, but it could also be explained by a changing labor market structure which increased the importance of country specific skills (such as language proficiency) resulting in a decreasing demand for immigrant employees (Rosholm et al. 2006)[2].

Children of immigrants are falling behind in Danish schools, with higher dropout rates and lower academic achievements, compared to their native peers (Jacobsen and Liversage 2010). Denmark is commonly known as a Scandinavian welfare state with a high level of income redistribution, a well pronounced equality goal and universalistic tax financed welfare state arrangements (Esping-

[2] The changing composition of migrants in another Scandinavian country, namely Sweden, is discussed by Hammarstedt & Palme (2012). Their results are different from previous studies of North America, where a strong convergence is found for immigrants on the labor market. Results for Sweden instead rather show further deterioration.

Andersen 1990). The Danish educational system is publicly funded and among the most comprehensive in the world with subsidized daycare and free tuition at all levels (Colding et al. 2009). There is nine year mandatory schooling with a possibility to stay an extra tenth year in basic education, in order to increase the chances of getting accepted into secondary education. Education is until class ten track free, and the education offered is the same for all students regardless of municipality or school district. All students make mandatory school leaving examinations in class nine that are marked by the class teacher as well as an external teacher that has the dominating opinion, which makes these grades comparable across schools (Danish ministry of Education 2015).

3. Theoretical background and previous literature

The ultimate aim of Danish migration policy is to, in a general sense; reduce differences between the foreign-born and the native population over time (Hedetoft et al. 2006). The educational gap as well as the aforementioned wage -and employment gaps between natives and the foreign-born however indicates a complexity of the assimilation process and that different immigrant groups have different courses of assimilation which leads to a variety of outcomes (Portes and Rumbaut 2001, Rodriguez-Garcia 2015). The speed and direction of the assimilation process is dependent on various factors such as country of origin, year of arrival in the host country, family background, as well as immigrant generation (Nielsen and Rangvid 2012; Rosholm et al. 2006; Hammarstedt and Palme 2012).

The gap between the foreign-born and natives is expected to decrease with immigrant generations, according to assimilation theory (Borjas 1993 Rodriguez-Garcia 2015). The foreign-born that have fewer host country specific skills such as language proficiency, fare worse compared to natives. However this gap is expected to decrease with time spent in the country and subsequent generations of immigrants. Previous studies of traditional immigrant receiving countries, such as USA or Australia, find very small differences in performance between natives and the second generation immigrants (see Card 2005 for the US, Maani 1994 for Australia, Boyd and Grieco 1998 for Canada[3]). However, larger gaps between the second generation immigrants and natives appear to be the case in a European context (see Colding et al. 2009 for Denmark, Hammarstedt and Palme 2012 for Sweden and Algan, Dustmann, Glitz and Manning 2010 for a comparison between Germany, France and the UK).

[3] Boyd (1998) found that the path of assimilation still differ according to county of origin.

A number of studies on Denmark have found a gap between natives and the second generation immigrants when studying educational outcomes. Colding et al. (2009) found that dropout rates from vocational education are much higher among children of the foreign-born and that weaker family backgrounds increase the risk of dropping out. Jacobsen and Liversage (2010) performed register data analysis and showed that second generation immigrants fare worse in school compared to ethnic Danes, even after controlling for socio-economic background. Datta Gupta & Kroneman (2014) studied layoffs and found a higher risk of being fired for the second generation compared to native Danes, mostly dependent educational background. Less is however known about the outcomes of children from inter-ethnic partnerships in Denmark, commonly referred to as the 2.5 generation immigrants.

Studying the economic and social position of children of the 2.5 generation is important when evaluating log-term outcomes of intermarriage. In the sense that intermarriage is regarded as a final outcome of an integration process, it has the potential to "weaken up" group boundaries and promote further immigrant integration (Kalmijn 2015). Economic and sociological theory provides a number of reasons to why intermarriage could affect a child's educational outcomes positively and, in the long run, enhance immigrant integration:

It is well established that children's outcomes are highly dependent on the socioeconomic position of their parents. We also know that foreign-born with native partners receive higher incomes than immigrants in endogamous relationships (Meng and Gregory 2005; Nystedt and Dribe 2015; Dougherty 2006), and that they are more likely to have higher educational attainment (Nielsen et al. 2009). Thus immigrants that are married to natives are closer to the majority population in terms of income and education. This can indeed be explained by assortative mating; that individuals with higher potential are more likely to intermarry, but can also be a causal effects of human capital spillover or more rapid host country language acquisition. Parents forsake part of their income for the skill formation of their children and as foreign-born individuals with native partners have higher incomes and education than other foreign-born, it is expected that part of these resources are invested in their children's human capital formation ((Becker and Tomes 1986; Emonds and van Tubergen 2015).

Children of interethnic marriages are furthermore more likely than children with two foreign born parents to live in a household with the host country language spoken on a daily basis, which is valuable in terms of educational achievement. A native parent may also, due to language proficiency, be better equipped when helping out with school work. Studies have shown that children's educational performance is highly influenced by parental involvement and help with

schoolwork (Jeynes 2005). Having two foreign-born parents may also result in less native connections for the family, which means less information shared about better schools etc. Since the 1990s a greater freedom of school choice has gradually been allowed in Denmark. Danish school children may now apply to other schools than the one closest to their home and even across municipal boundaries, which have led to increased ethnic school segregation (Rangvid, 2010). School segregation generally has a negative effect on the foreign-born's educational achievements (Jensen and Rasmussen, 2011; Nordin, 2013).[4]

However, intermarriage can also lead to other less positive outcomes for children. Children of inter-ethnic relationships are often regarded as belonging to the minority group by the majority population which could lead to the same stigma as experienced by the foreign-born, and reduce the positive outcomes of intermarriage (Edwards 2012, Kalmijn 2015). Other aspects that might affect child outcomes negatively are family conflict and parental separation. Inter-ethnic relationships are on average less stable than other marriages (Zhang and van Hook 2009; Heaton 2002) and family instability is shown to have negative effects on children's educational performance (Bernardi and Radl 2014). Thus belonging to the 2.5 generation might not always be beneficial in terms of school achievements compared to children with parents that share the same ethnic background.

Still, previous studies comparing children of interethnic relationships to children with two foreign-born parents have generally found that intermarriage has a positive effect on the child's educational performance (Karthick Ramakrishnan 2004; van Ours, Jan C. and Veenman 2010) and that they perform better than both foreign-born and second generation immigrants. Kalmijn (2015) however finds that children from mixed marriages fall behind their native peers.

Many studies have considered the effect of having a foreign born mother and a native father versus the effect of a foreign mother and native father for the 2.5 generation. Results have been mixed. Chiswick and DebBurman (2004) studied educational attainment by immigrant generation and found that having a native mother leads to higher educational attainment compared to those with a native father. Ramakrishnan (2004) studied the educational attainment of the 2.5 generation in the U.S and found the opposite relationship; a native father has a more positive effect on educational attainment for the child than a native mother.

[4] Not only school segregation, but also general school quality such as class size, number of educated teachers and proportion of native Danes in the class might influence school results of children of foreign-born.

Very few previous studies have attempted to study these effects in causal terms. A study of the Netherlands by van ours and Veenman (2010) presented results from a natural experiment and found that children with native mothers have higher educational attainment than children with native fathers. Furtado (2009) used an instrumental variable approach focusing on dropout rates and found that second generation immigrants with one native parent have lower dropout rates than children with two immigrant parents, however, when controlling for observed and unobserved characteristics she found the opposite; that children of interethnic relationships have a higher likelihood of dropping out of school.

Many previous studies of immigrant integration have found that the country of origin matters for the path and speed of assimilation (van Tubergen, Maas and Flap 2004; Borjas 1999). Foreign-born that originates from countries that resemble the host country is found to experience more successful integration. As the immigrant population in Denmark is very heterogeneous, there are considerable differences in labor market attachment depending on country of origin. Hence it is likely to expect that the country of origin of the non-native parent also have an effect on the school results of the 2.5 generation.

4. Data and methods

The analysis is based on Danish administrative registers. The main outcome variables are final grades from nationally centralized final examinations in Mathematics and Danish language in class nine. This study looks at outcomes of both subjects since they are indications of different skills, more specifically, for Mathematics, less language proficiency is typically needed. The exams are identical for all schools in Denmark and thus considered comparable (Danish ministry of Education, 2015: Skyt Nielsen and Schindler Rangvid 2011). They are furthermore marked both by the class teacher as well as an external examiner who has the dominating opinion of the final grade. The current Danish grading system is based on a 7 point scale which was changed the academic year of 2005-2006 from a 13 point scale[5]. In order to ease the comparison grades are standardize to have a mean of zero a standard deviation of one within each school year. In both subjects, several exams are taken (such as spelling and reading comprehension in Danish), and the outcome variable is the grade average of several exams.

[5] The 13-point scale and the 7- point scale are the official Danish names of the two grading systems. The first name is based on the highest grade points achieved and the second is based on the number of different grades given.

The main explanatory variable of interest denotes the ethnic background of students (see table 1 for definitions). The educational outcomes of children from inter-ethnic relationships (the 2.5 generation immigrants) are in the analysis compared to children with two native born parents (native Danes), children born in Denmark with two immigrant parents (second generation immigrants) as well as immigrant children[6].

-Table 1 here-

In order to account for the socio-economic position of the family, parental education is denoted as the highest education obtained for parents at the time of the child's exam. The variable has four categories: 1) primary education, 2) secondary education, 3) university education, and 4) unknown education[7]. The analysis is furthermore stratified according to parental country of origin. Countries are aggregated into larger geographical regions: 1) Nordic countries, 2) Western Countries, 3) Eastern Europe, 4) Latin America, 5) Africa and 6) Asia.

The main analysis is conducted by analyzing test scores of Danish and Mathematics using a pooled sample of approximately 380 000 students born between 1987 and 1996, in class nine between the years 2002 and 2011. Roughly 75 percent of the students of the main sample are native Danes, and 14 percent belong to the 2.5 generation. About 7 percent are second generation immigrants and 4 percent are immigrants.

Table 2 below presents variable means of the main samples used. Non-native parents of the 2.5 generation are often born in Nordic or Western countries or in Asia. Parents of the 2.5 generation are also the parents with the highest obtained level of education, indicating that individuals are positively selected into intermarriage according to educational attainment. About 75 percent of second generation immigrants have an Asian background[8] and about 55 percent of the foreign-born. Eastern Europeans comprise about 20 percent of the foreign-born students. Native Danes are much less likely to live in Copenhagen than other children.

[6] Children with one native born and one foreign-born parent, but where the native born parent belongs to the second generation immigrant are dropped from the analysis due to few observations. However, initial analysis show that these children's' educational achievement are somewhere between the second and 2.5 generation immigrants.

[7] Due to the somewhat dubious registration of education in Denmark there are a number of parents in the dataset with unknown education. For example: education of the foreign-born is registered either by the individual reporting his/her obtained education from the country of origin, or by a survey that was made by Statistics Denmark every other year between 1999 and 2006. Certain values were even imputed, and in order to check the stability of the data: a sensitivity analysis was conducted excluding all individuals with imputed or missing parental education. Results did not change.

[8] Dominating countries of origin in this group is Turkey and Pakistan

-Table 2 here-

In order to measure the effect of parental ethnic background on educational outcomes of children, an OLS regression method is applied. The specification below expresses grade average, $Y_{i,}$ as a function of parental ethnic background. G denotes the immigrant generation the individual belongs to. X is a vector of individual characteristics such as sex or region of residence and school, whereas S^m denotes level of education of the mother and S^f the level of education of the father. The ε_i is the error term capturing unobservables.

$$Y_i = \alpha + \beta G_i + \beta X_i + \beta S_i^m + \beta S_i^f + \varepsilon_i \qquad (1)$$

The cross sectional analysis is associated with a number of shortcomings. Most importantly; as individuals are not completely randomly selected into intermarriage, there is a large possibility that unobservable characteristics are biasing the parameters. Marriage formation cannot be treated as exogenous to educational achievements of the children from these marriages. It is likely that both foreign-born and natives in interethnic relationships possess certain characteristics such as values, upbringing practices and involvement; characteristics that may affect school achievements of their children. Sisters and brothers are more likely to share these features than two random individuals and thus cousin fixed effects are applied in the analysis comparing grades of two cousins where one cousin have one foreign-born and one native parent, whereas the other has two native, or two foreign-born parents. Two cousins are expected to share certain characteristics on the family level as their mothers and fathers shared family and neighborhood characteristics while growing up, and by applying cousin fixed effects bias from unobserved parental family background cancel out (Geronimus, Korenman and Hillemeier 1994; Lee 2014).

The cousin sample for Danish consist of 110,501 cousins belonging to 51,323 families, whereas the cousin sample for Mathematics consist of 109,527 cousins belonging to 50,878 families. The sample is furthermore restricted to the firstborn of each family since birth order is expected to have an effect on educational outcomes (Black, Devereux and Salvanes 2005)[9]. In the analysis both fraternal and maternal cousins are included. Families are identified with a family id which makes it possible to link children to their siblings, parents and grandparents and makes the data ideal for studying intergenerational transfers of human capital as well as applying chosen methods to control for unobserved heterogeneity.

[9] Children of single parents are not included in the analysis

$$Y_i = \alpha + \beta G_{i,f} + \beta X_{i,f} + \beta S_{if}^{m} + \beta S_{i,f}^{f} + \mu_f + \varepsilon_{i,f} \qquad (2)$$

Above the model specification for the analysis with cousin fixed effects is outlined. The i, f subscript means that an individual i belongs to a certain family f. Two error terms are included; with u_f capturing shared characteristics on the family level (between cousins) such as upbringing practices and values, whereas the $\varepsilon_{i,f}$ captures unobservable. Covariates are only estimated if there is any variation within the cousin pairs, meaning that covariates that are invariant between cousins cancel out.

Exploring within cousin pair variation is well suited to solve the problem of unobserved heterogeneity at the parental family level. However, it imposes some data limitations. In order for an individual (student) to appear in the cousin sample, both grandparents and at least one cousin born to an aunt or uncle, must be found in the data. This is more frequent in the case of native Danes, but it is more uncommon for the foreign-born in the data since it is less likely to find grandparents in these cases. This data restriction leads to a large number of foreign-born students being dropped from the sample, and in the cousin sample less than 1% of students are foreign-born. About 10 percent of students belong to the 2.5 generation and 3% are second generation immigrants. Due to these data restrictions the group of for foreign-born is very small in the cousin sample and therefore the educational performance of the 2.5 generation is only compared to foreign-born and second generation immigrants in the initial analysis of the paper. The following analyses compare their outcomes with native Danes only.

5. Results

This section of the paper presents the results from the empirical analysis. We study the effects of parental ethnic background on children's educational outcomes studying test scores of final examinations in Danish and Mathematics. First an OLS analysis is conducted showing the overall association between parental background and test scores. The initial analysis is supplemented with estimating cousin fixed effects models. The main analysis is followed by an analysis where the effects of gender of the non-native parent of the 2.5 generation are estimated. This is followed by an analysis taking parental region of origin into account.

Comparing standardized mean grades of different immigrant generations with those of native Danes gives a first descriptive hint. Figure 1 presents standardized average grade of the two subjects by immigrant generation and year (2002-2011). There is a clear gradient of grade

averages visible with native Danes having the highest grades in both Danish and Mathematics, followed closely by students belonging to the 2.5 generation immigrants. The grades of foreign-born and second generation immigrants are noticeably lower than the other groups.

-Figure 1 here-

An OLS analysis is conducted in the first part of the multivariate analysis. Table 3, model 1-3 presents results comparing grades in Danish of different immigrant generations of the full sample in a stepwise manner. The first model is without controls, presenting the effects of immigrant generation on grade outcomes. The outcomes of native Danes, the second generation and the foreign-born are compared to the outcomes of the 2.5 generation (reference category). A clear gradient between the groups is visible with native Danes having the highest grades. Danes furthermore have the highest grades also after controlling for parental educational background, as in model (2). In in model (3) a full set of control variables are added, however results remain basically the same as in model (2). It is obvious that having *two* foreign-born parents has a negative effect on grades in Danish, as both second generation immigrants and the foreign-born students fare worse compared to the 2.5 generation in all model specifications. Controlling for parental educational background the size of the coefficients decrease as part of the difference can be explained by differences in parental educational attainment.

-Table 3 here-

Comparing the results of Danish and Mathematics the same general picture emerges. Native Danes are the highest preforming and there are small differences between them and the 2.5 generation, although the difference for Mathematics is slightly larger than for Danish. Controlling for parental education once again decreases the differences between the groups. Adding a full set of control variables in model (7) does not change the results and differences between the gorps remains largely the same. Children that live in Copenhagen have higher grade average in Mathematics compared to children that live outside, but the relationship is the opposite for Danish language. Moreover, there are gender differences in grade averages, with girls having higher grades in both and Danish and Mathematics. This is true for all model specifications[10]

[10] An OLS analysis was furthermore estimated on the sample consisting of maternal and fraternal cousins in order to see if results are stable in the restricted cousin sample since this sample imposes some data restrictions. The coefficients in general display the same signs and no larger changes of effects takes place, thus the sample can be used for the fixed effects analysis below.

Model 4 and 8 of table 3 display the coefficient from the cousin fixed effects analysis. Here the grade outcomes of an individual are compared within the family; that is, compared to the outcomes of a fraternal or maternal cousin. In general estimates are reduced. The difference between native Danes and the 2.5 generation immigrants is reduced is both subjects. For grades in the Danish language, no significant difference remains and for Mathematics there is a reduction of almost 0.5 standard deviation. These results indicate that a lot of the difference in performance between native Danes and the 2.5 generation be explained by unobserved heterogeneity that is reduced in the fixed effect models. For both Mathematics and Danish there is a reduction in the size of the coefficients for the Second generation. Most noticeable is the changing coefficient value of the second generation immigrants for grades in Danish that have a 0.30 standard deviation lower grade average compared to the reference group in the specification without cousin fixed effects. This is reduced to 0.12 in model (4).

The effect of parental gender

Previous studies have shown that the gender of the foreign-born parent have an influence on the children's performance (Chiswick and DebBurman 2004; Karthick Ramakrishnan 2004). However the conclusion is not completely clear, as results point in different directions. Table 4 show the standardized grades of the 2.5 generation compared to native Danes. In this specification children of the 2.5 generation with either a Danish mother or father are compared to the grades of native Danes.[11] First, grades in Danish reveal a negative effect of belonging to the 2.5 generation in general however having a foreign-born father and a Danish mother seems less negative for the child as compared to having a Danish father and a foreign-born mother. When applying cousin fixed effects, no significant results remain. The result for grades in Mathematics shows a similar picture and it seems that having a Danish father is less beneficial for the child in terms of school results, even though the difference is very small. However, in the fixed effects specification an opposite relationship is found, though the difference is still very small. In line with previous studies, the results of this study are inconclusive as results change when applying cousin fixed effects.

-Table 4 here-

[11] Immigrants and Second generation immigrants are not included in the analysis, due to aforementioned sample restrictions.

5.1. The effect of parental country of origin

It is well established that parental country of origin matter for child outcomes. Here outcomes of the 2.5 generation are once again compared to outcomes of native Danes. The analysis is stratified into groups according to the region of origin of the non-native parent of the 2.5 generation. Table 5 presents the analysis focusing on grades in Danish. Belonging to the 2.5 generation has in general a negative effect on grades in Danish however there are large differences between the different parental regions of origin. Having a parent that originates from Asia, Africa or Latin America is less beneficial than having a parent originating from Nordic, Western or Eastern European countries. The pattern is the same when studying grades in Mathematics. Applying cousin fixed effects the general patterns remain, however the effects are somewhat reduced. Having a parent of an African decent means a 0.22 standard deviation lower grade in Mathematics compared to a cousin with two native parents.

-Table 5 here-

-Table 6 here-

6. Conclusion

There is a growing literature focusing on individual outcomes of interethnic relationships. Foreign-born with a native partner generally perform better on the labor market and in education compared to foreign-born with foreign-born partners. Less is however known known about the outcomes of the children from these relationships. This paper adds to the literature by comparing grade outcomes in the core subjects of Danish and Mathematics of children of interethnic relationships to grades of native Danes, as well as foreign-born children and children belonging to the second generation immigrants.

Interpreting the results in theoretical terms, let us first consider the general patterns studying the educational performance of the 2.5 generation in Denmark. Results show that the 2.5 generation is preforming slightly worse in school compared to native Danes, also when controlling for observable factors, such as parental education. When applying fixed effects models the difference between native Danes and the 2.5 generation disappears for grades in the Danish language, however remains for mathematics. The 2.5 generation is however performing considerably better

than foreign-born and second generation immigrants. As the differences between natives and the 2.5 generations are very small it is possible to refute the stigmatization theory. Children of interethnic relationships in Denmark are much closer to their native peers in terms of school result than the

The results from comparing grade outcomes of different immigrant generations support the idea of immigrant assimilation. The clear gradient of educational results show that being born in Denmark matter for school results. Foreign-born students perform the worst in all model specifications. The second generation immigrant obtains better results in both subjects whereas children of interethnic relationships perform better than children with an immigrant background.

The results also point in the direction of segmented assimilation; different groups experience different paths of integration. In general, belonging to the 2.5 generation is just slightly less beneficial than having two Danish parents in terms of school outcomes. However there are large differences depending on the region of origin of the non- Danish parent. This study shows that a parent that originates from Asia, Africa or Latin America affects child outcomes negatively. Children that have non-native parents that originates from countries that resemble Denmark to a higher extent, such as western or Nordic countries, have grades in both Danish and Mathematics that are not significantly different from the grades of native Danish Students.

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8. Figures and tables

Table 1: Groups of students in the study according to their ethnic background

Native Danes	Born in Denmark with both parents born in Denmark
2.5 generation	Born in Denmark with one parent born in Denmark and one parent born abroad
Second generation	Born in Denmark with both parents born abroad
Foreign-born	Born abroad with both parents born abroad

Table 2: Descriptive statistics, full sample, final grades in Danish and Mathematics (2002-2011)

	Final exam grades in Danish				**Final exam grades in Mathematics**			
	2.5 generation	*Native Danes*	*Second generation*	*Foreign-born*	*2.5 generation*	*Native Danes*	*Second generation*	*Foreign-born*
Mother's highest education								
Unknown	5.22	1.73	8.44	8.09	5.32	1.71	8.4	8.31
Primary	17.05	18.81	38.93	32.74	16.93	18.71	38.9	32.61
Secondary	36.09	44.87	34.09	35.67	36.07	44.91	34.11	35.59
University	41.64	34.59	18.54	23.5	41.68	34.67	18.59	23.49
Father's highest education								
Unknown	17.54	5.32	9.85	8.46	17.58	5.28	9.87	8.69
Primary	14.29	20.31	31.85	20.77	14.23	20.24	31.8	20.57
Secondary	35.36	48.64	35.92	37.82	35.35	48.68	35.94	37.7
University	32.81	25.73	22.38	32.96	32.84	25.8	22.39	33.04
Birth region of mother								
Denmark	57.88	100			57.91	100		
Nordic countries	9.79		1.68	3.72	9.76		1.69	3.72
Western Countries	11.76		8.18	13.06	11.75		8.17	13.03
Eastern Europe	4.56		6.53	18.11	4.58		6.54	18.11
Latin America	1.93		0.49	0.29	1.9		0.49	0.28
Africa	3.83		7.71	9.17	3.81		7.73	9.11
Asia	10.26		75.41	55.65	10.29		75.38	55.75
Birth region of father								
Denmark	66.51	100			66.49	100		
Nordic countries	6.75		1.3	3.85	6.75		1.3	3.85
Western Countries	14.55		7.71	12.78	14.57		7.72	12.74
Eastern Europe	0.79		5.79	17.45	0.79		5.79	17.45
Latin America	1.05		0.39	0.27	1.04		0.39	0.26
Africa	3.33		7.51	9.17	3.32		7.53	9.12
Asia	7.02		77.3	56.48	7.03		77.27	56.58
Lives in Copenhagen	30.47	19.37	51.16	32.90	30.45	19.36	51.19	32.75
Failed all tests	4.23	3.43	7.7	11.44	3.6	2.48	7.29	7.36
Females	50.24	50.89	50.95	49.11	50.03	50.7	50.84	48.8
Year	2007.05	2007.00	2007.35	2006.65	2007.05	2007.01	2007.36	2006.67
Observations	56 438	279 746	26 849	14 369	56 115	278 283	26 588	14 176

Table 3: Educational performance by immigrant generation in Denmark (2002-2011), standardized grades in Danish and Mathematics

	Final exam grades in Danish						Final exam grades in Mathematics					
	(1)	(2)		(3)			(4)		(5)	(6)	(7)	(8)	
Generation													
2,5 generation	ref.	ref.		ref.			ref.		ref.	ref.	ref.	ref.	
Native danes	0.044 ***	0.065	***	0.068	***		0.001		0.089 ***	0.107 ***	0.098 ***	0.053	***
Second generation	-0.490 ***	-0.300	***	-0.306	***		-0.118	*	-0.452 ***	-0.265 ***	-0.245 ***	-0.067	
Foreign-born	-0.678 ***	-0.579	***	-0.574	***		-0.481	***	-0.507 ***	-0.414 ***	-0.418 ***	-0.449	***
Mother's education													
Unknown		ref.		ref.			ref.			ref.	ref.	ref.	
Primary		0.041	***	0.042	***		0.055	*		-0.012	-0.014	0.089	***
Secondary		0.300	***	0.310	***		0.244	***		0.264 ***	-0.264 ***	0.283	***
University		0.623	***	0.634	***		0.427	***		0.541 ***	0.544 ***	0.430	***
Father's education													
Unknown		ref.		ref.			ref.			ref.	ref.	ref.	
Primary		0.035	***	0.039	***		-0.033			0.018 ***	0.013 **	0.014	
Secondary		0.245	***	0.256	***		0.113	***		0.263 ***	0.259 ***	0.165	***
University		0.559	***	0.570	***		0.327	***		0.559 ***	0.561 ***	0.378	***
Lives outside Copenhagen				ref.			ref.				ref.	ref.	
Lives in Copenhagen				0.021	***		0.023	**			-0.036 ***	-0.005	
Male				ref.			ref.				ref.	ref.	
Female				0.045	***		0.047	***			0.027 ***	0.004	
Cousin fixed effects	No	No		No			Yes		No	No	No	Yes	
Observations	377402	377402		377402			110 501		375 262	375 262	375 262	109 527	
Families							51 323					50 878	

*** p<0,01, ** p<0,05, *p<0,1 Models 1-3 and 5-7 are estimated on pooled sample, Models 4 and 8 are estimated on cousin sample. Models 3 and 7 control for year and school.

Table 4: Effect of gender of the non-native parent on the educational performance of the 2.5 immigrant generation in Denmark (2002-2011), standardized grades in Danish and Mathematics

	Final exam grades in Danish						Final exam grades in Mathematics					
	Immigrant father	Immigrant mother		Immigrant father	Immigrant mother		Immigrant father	Immigrant mother		Immigrant father	Immigrant mother	
Native Danes	ref.	ref.		ref.	ref.		ref.	ref.		ref.	ref.	
2.5 generation	-0.031 ***	-0.078 ***		-0.008	0.01		-0.105 ***	-0.123 ***		-0.06 **	-0.058 **	
Cousin fixed effects	NO	NO		YES	YES		NO	NO		YES	YES	
Observations	305 189	310 741		102 323	101 795		309 086	303 595		100 883	101 447	
Families				49 163	49 151		n/a	n/a		48719	48741	

*** p<0.01. ** p<0.05. *p<0.1. Models control for parental education, residence, sex, year and school

Table 5: Parental origin, 2.5 generation immigrants, standardized grades, (2002-2011) Danish

OLS	Nordic	Western	Eastern Europe	Latin America	Africa	Asia
Native Danes	ref.	ref.	ref.	ref.	ref.	ref.
2.5 generation	-0.007	-0.015 **	-0.112 ***	-0.204 ***	-0.340 ***	-0.198 ***
Observations	289 079	294 598	282 762	281 427	283 789	289 495
FE						
Native Danes	ref.	ref.	ref.	ref.	ref.	ref.
2.5 generation	-0.008	-0.026	0.089	-0.079	-0.122 **	-0.036
Observations	98 408	99 000	96 639	96688	96880	97651
Families	48 319	48 428	47 949	47 968	48 011	48 266

*** p<0.01. ** p<0.05. *p<0.1. Models control for parental education, residence, sex, year and school

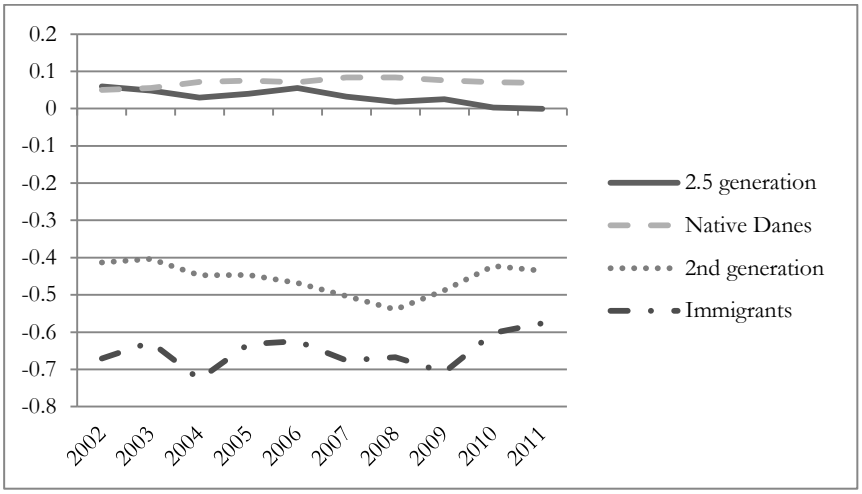
Table 6: Parental origin, 2.5 generation immigrants, standardized grades, (2002-2011) Mathematics

OLS	Nordic	Western	Eastern Europe	Latin America	Africa	Asia
Native Danes	ref.	ref.	ref.	ref.	ref.	ref.
2.5 generation	-0.006 ***	-0.079 ***	-0.047 **	-0.316 ***	-0.513 ***	-0.195 ***
Observations	287 547	293 053	281 294	279 935	282 286	288 005
FE						
Native Danes	ref.	ref.	ref.	ref.	ref.	ref.
2.5 generation	-0.005 *	-0.003 ***	-0.058	-0.272 ***	-0.222 ***	-0.102 **
Observations	97 546	98 139	95 800	95 846	96 040	96 794
Families	47 899	48 007	47 534	47 551	47 598	47 843

*** p<0.01. ** p<0.05. *p<0.1. Models control for parental education, residence, sex, year and school

Figure 1, Standardized grade averages in Danish and Mathematics of different immigrant generations and native Danes, pooled samples (2002-2011)

a) Grades in Danish



b) Grades in Mathematics