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Differences in Immigrant Education by Destination Country: An Analysis of Turkish Immigrants' Perception of and Performance in Math and Science

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DIFFERENCES IN IMMIGRANT EDUCATION BY DESTINATION COUNTRY:

AN ANALYSIS OF TURKISH IMMIGRANTS' PERCEPTION OF AND

PERFORMANCE IN MATH AND SCIENCE

by
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Submitted to Brigham Young University in partial fulfillment
of graduation requirements for University Honors

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Brigham Young University
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ABSTRACT

DIFFERENCES IN IMMIGRANT EDUCATION BY DESTINATION COUNTRY:
AN ANALYSIS OF TURKISH IMMIGRANTS' PERCEPTION OF AND
PERFORMANCE IN MATH AND SCIENCE

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Economics Department

Bachelor of Science

This thesis examines how the country to which Turkish immigrant students immigrate affects their educational outcomes – specifically, math and science test scores and four constructed variables that measure how much students enjoy math and science and their self-rated confidence in the subjects. I use data from the 2003, 2006, 2012, and 2015 Programme for International Student Assessment (PISA) exams. I examine Turkish immigrant students living in Austria, Belgium, Switzerland, Germany and Denmark.

My findings are consistent with prior research showing that immigrant student test scores vary by destination country. I also find that Turkish immigrant students' perceptions of math and science are lower than I expected in comparison to performance in these same subjects. In general, immigrant students performed better or similarly to their peers in Turkey in math and performed worse in science. However, reported enjoyment and confidence in both subjects were much lower than their peers in Turkey.

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I.   Introduction

Immigration is currently a pressing issue in countries all over the world. According to UN's estimates reported in the International Migrant Stock, the number of international migrants reached approximately 272 million in 2019, which comprises 3.5 percent of the world population. As governments grapple with the effects of an increasing number of immigrants, the integration of immigrant children into the education system is one of the most challenging components. Immigrant students perform worse than their native born peers in almost every industrialized country (Marks 2005, Schnepf 2007, Azzolini 2012). This is especially concerning considering the high returns of education that can be measured throughout an individual's lifetime (Harmon et al. 2003, Psacharopoulos 1981, Ferrer and Riddell 2008).

As researchers have examined the causes of education disparities among immigrant populations, we have learned that other factors, outside migration, play a role. Socio-economic status and language barriers contribute (Janta and Harte 2016), but these factors cannot explain all the difference (Levels et al. 2008). Origin effects, how the culture/country migrants come from affects individuals, and destination effects, how the culture/country migrants settle in affects individuals, both play a significant role in determining how well an immigrant student will perform (Levels et al. 2008). For example, Asian Americans are often labeled the "model minority" for their success in education and other areas (Wong and Halgin 2011). Much of this is attributed to cultural characteristics, such as the idea that "tiger mothers" push their children to succeed by being especially strict and involved (Chua 2011), yet others point out the influence of the

US context in setting certain expectations for this group of immigrants (Lee and Zhou 2014).

Other researchers have also concluded that both origin and destination effects play a role in academic success at varying levels depending on the countries and background characteristics of the individual (Levels et a. 2008, Levels and Dronkers 2008, Dronkers et al. 2012). However, these studies have focused mainly on measuring success from results of standardized test scores. Other outcomes of education include how students perceive education. Schulz (2005) finds that students' stated self-confidence levels in their ability to do math has a significant positive effect on expectations to complete a post-graduate level degree, even after literacy and interest in mathematics is controlled for. This follows a logical train of thought that, even if students may not be performing well, they are more likely to continue to higher education or STEM-related careers if they enjoy and are confident in subjects such as math and science. Analyzing these outcomes can give additional insight into what policy makers can do to better integrate immigrants into the country (Nusche 2008, Paolo and Brunello 2016, Schleicher 2006).

This study focuses on the performance and perceptions of first- and second-generation immigrant students from Turkey who reside in Austria, Belgium, Switzerland, Germany, and Denmark. Turkey has high levels of emigration in recent history, with most immigrating to Western Europe (Crul and Vermeulen 2006). I compare the difference in outcomes of the immigrant groups in these five destination countries to their peers in Turkey using four separate testing periods of the Programme of International Student Assessment (PISA).

My findings are consistent with the previous research showing that immigrants fare worse in both math and science than native students in the destination country, but I also find that immigrant students in some destination countries perform better in mathematics than their Turkish counterparts when controlling for general background characteristics. However, in all cases where the result was statistically significant, immigrant students perform between 0.2 and 0.7 standard deviations below students in Turkey in science. Unsurprisingly, on average, immigrant students generally report to have much lower enjoyment and confidence scores in these subjects as well compared to the average in Turkey.

II. Background

Turkish Emigration

This paper examines Turkish immigrants in Austria, Belgium, Switzerland, Germany, and Denmark. The high number of Turkish immigrants in these countries is primarily due to labor agreements, family reunification, asylum seekers, and increased opportunities for highly qualified professionals and university graduates (Kirisci 2003). Austria, Belgium, and Germany all signed labor agreements with Turkey in the 1960s to allow laborers from Turkey to work in these countries. Switzerland and Denmark allowed Turkish labor without signing a formal agreement (Akgunduz 2016). The hope was that it would simultaneously help underemployment in the Western European countries and high unemployment in Turkey. The expectation was that these "guest workers" would return to Turkey, however, many stayed in their new countries and later bring their families to join them (Kirisci 2003).

Because of political and civil unrest combined with increased military interventions in Turkey during the 1980s and 90s, many fled Turkey to seek asylum in Western Europe (Kirsci 2003). Much of this displaced population has been Kurdish. While asylum applications have mostly decreased in recent years, many people, especially those who are highly educated, still leave Turkey for Western Europe to find better jobs and opportunities for advancement (Kirsci 2003).

Turkish migrants make up a diverse group of skilled and unskilled laborers and asylum seekers, at all levels of education (see Appendix, Table A56-Table A59). Because of the high volume of migration that occurred because of the formal and informal labor agreements, it is likely that the Turkish immigrants in the five analyzed destination countries immigrated for similar reasons and came from similar backgrounds. However, there may be some unobservable factors that influence to where a family immigrates that also affect educational outcomes and attitudes of immigrant students.

Turkish Education System

The education system in Turkey has been significantly impacted by political crises and military coups over the years. The "Justice and Development Party" (AKP) began significant education reforms when they rose to power in 2002 (Kamal 2017). In 2005, secondary schools added grade 12, whereas previously secondary schools ended at grade 11. In 2012, children were required to attend school until grade 12, whereas previously it was only until grade 8. Primary school was also split into primary and middle school, each lasting four years. The AKP also significantly increased public spending on education (Kamal 2017).

Prior to the change in 2012, students were tracked into academic, vocational (mostly religious) schools. Entrance exams are currently required for academic schools and enrollment in religious schools has increased significantly since the change (Kamal 2017). Another entrance exam is required to transition from middle school to upper-secondary school. Again, students who do not score high enough must attend whatever vocational school is closest to where they live – often a religious school (Kamal 2017).

In the years that this analysis studies, Turkey ranked in the bottom 3 of all OECD countries in both math and science (2003, 2006, 2012, 2015 PISA Results). Turkey had an average 96% net enrollment rate for primary school from 2000-2016, 88% for lower secondary school and 77% for upper secondary school (World Bank 2020).

Austrian Immigration Policy

Table 1.

Austria has historically been a country with high levels of immigration, although since the mid 2000's, policy has shifted to make it increasingly more difficult for migrants to work and settle

Countries Ordered from Most to Least Accepting
Based on Gallup's 2017 Migrant Acceptance Index

Country	Acceptance Score
Iceland	8.26
Ireland	7.74
Switzerland	**7.21**
Germany	**7.09**
Denmark	**7.09**
United Kingdom	6.61
Belgium	**6.16**
Austria	**6.06**
Macedonia	1.47

there (Jandl and Kraler 2003). There were high levels of immigration during the Cold War era, and although many moved on to other Western countries, many stayed and integrated into society (Jandl and Kraler 2003).

Austria relied on Eastern Europeans to supply labor during labor shortages in the 1960's and 1970's. Legislative reforms in the 1990's restricted immigration, but after becoming a member of the European Economic Area (EEA), immigrants from the EU and EEA were exempt from the majority of immigration restrictions (Jandl and Kraler

2003). On a scale from 0 to 9, Austria scored 6.06 on Gallup's 2017 Migrant Acceptance Index.

Austrian Education System

Austria offers free public schooling for both primary and secondary school. The first nine years of school are mandatory. After the first four years of primary school, students may

Figure 1.

PISA Rankings Over Time

The trend of Ranking for Year broken down by Subject. Color shows details about Country.

attend a lower secondary school or a lower secondary academic school. Students are tracked into a vocational school or a general academic secondary high school in grade nine. Depending on the program, schools offer 1-3 years of additional schooling before students enter the workforce or enter the university (Austrian Embassy 2017).

In the years that this analysis studies, Austria ranked between 12 and 20 of an average of 32 participating OECD countries in science and ranked between 11 and 15 in math (2003, 2006, 2012, 2015 PISA Results). Austria had an average 88% net enrollment rate for primary school from 2000-2016, 86% for lower secondary school and 77% for upper secondary school (World Bank 2020). Among upper secondary school students, there is a 32% achievement gap in math and a 34% achievement gap in science between those who speak a foreign language at home and those who speak the national language at home (UNESCO 2015).
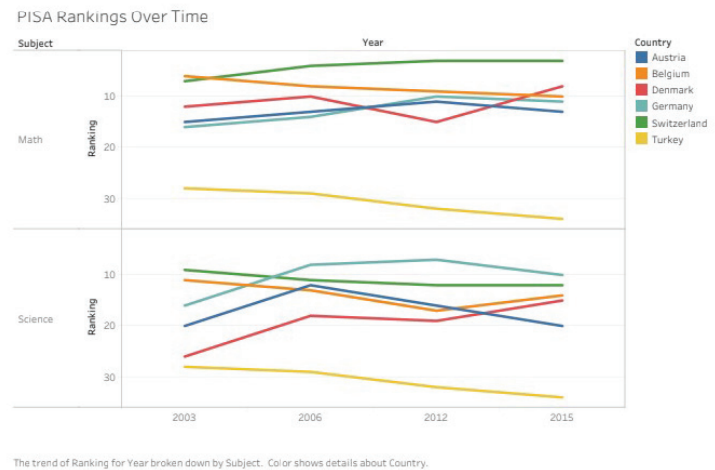
Belgian Immigration Policy

Belgium has traditionally had high levels of both immigration and naturalization. Labor agreements caused an influx of immigrants and immigration continued through family reunification after formal caps were introduced on labor migration in the 1970's (Petrovic 2012). High numbers of migrants have also applied for asylum in recent years. In 2010, immigrants made up almost 18 percent of the population (Petrovic 2012). On a scale from 0 to 9, Belgium scored 6.16 on Gallup's 2017 Migrant Acceptance Index.

Belgian Education System

School is compulsory from age 6 to age 18. After six years of primary school, students choose a focus area in one of the following: general academic education, technical education, art education, and vocational education (Flemish Ministry of Education 2020). General education prepares students for university. Technical and art education prepare students for a profession or further studies in relevant subjects. Vocational schools are meant to prepare students to work after secondary school. From the age of 16, students may attend vocational school part-time and work part-time (Flemish Ministry of Education 2020).

In the years that this analysis studies, Belgium ranked between 11 and 17 of an average of 32 participating OECD countries in science and ranked between 6 and 10 in math (2003, 2006, 2012, 2015 PISA Results). Belgium had an average of 98% net enrollment rate for primary school from 2000-2016, 86% for lower secondary school and 86% for upper secondary school (World Bank 2020). Among upper secondary school students, there is a 27% achievement gap in math and a 29% achievement gap in science

between those who speak a foreign language at home and those who speak the national language at home (UNESCO 2015).

Swiss Immigration Policy

Switzerland has one of the highest immigration rates on the planet. In 2005, over 20% of the population were immigrants. Switzerland relies on immigration to continue economic growth as many in the working population age out of the workforce. Because of this, Switzerland has a generally open immigration policy; but, as in many European countries, this policy faces opposition from those who express anti-foreigner sentiments (Efionayi et al. 2005). On a scale from 0 to 9, Switzerland scored 7.21 on Gallup's 2017 Migrant Acceptance Index.

Swiss Education System

Swiss schools are directed by cantons, or states. Primary school begins at age seven and lasts six years. Lower secondary school lasts three years. Students are tracked into one of three levels for each subject beginning at lower secondary school. Students may choose to attend a secondary school which includes lower and upper secondary years. The nine years of primary and lower secondary school are compulsory (Swiss Cantonal Ministers of Education 2017).

After the nine years of compulsory education, students can begin a two- to four-year apprenticeship or attend secondary school focused on certain areas such as science or music. At the completion of some apprenticeships and all secondary schools, students receive a diploma which allows them to study at a university. The type of diploma earned determines the university students are eligible to enter (Swiss Cantonal Ministers of Education 2017).

In the years that this analysis studies, Switzerland ranked between 9 and 12 of an average of 32 participating OECD countries in science and ranked between 3 and 7 in math (2003, 2006, 2012, 2015 PISA Results). Switzerland had an average of 99% net enrollment rate for primary school from 2000-2016, 95% for lower secondary school and 77% for upper secondary school (World Bank 2020). Among upper secondary school students, there is a 30% achievement gap in math and a 34% achievement gap in science between those who speak a foreign language at home and those who speak the national language at home (UNESCO 2015).

German Immigration Policy

Germany has been an immigrant destination for many years. 20% of the population are either first- or second-generation immigrants. Policy shifts to focus on integration of immigrants and recruitment of skilled labor migrants began in the 2000s (Rietig and Müller 2016). These reforms made it easier for foreign-born individuals to become citizens and the federal government became more invested in better integrating immigrants. Germany has welcomed over one million migrants and asylum seekers since 2012 (Rietig and Müller 2016). On a scale from 0 to 9, Germany scored 7.09 on Gallup's 2017 Migrant Acceptance Index.

German Education System

Compulsory education begins at age six and lasts nine years. Students are tracked at grade 5 into vocational schools or university preparatory schools based on parents' preference or school recommendation. Students may change which track they are in during grade 5 and 6. Lower secondary vocational schools last one to two years and upon completion, students enter upper secondary vocational school or, in some cases,

university preparatory secondary school. University preparatory school ends with a final examination that is used to determine university admissions (Trines 2016).

In the years that this analysis studies, Germany ranked between 7 and 16 of an average of 32 participating OECD countries in science and ranked between 11 and 16 in math (2003, 2006, 2012, 2015 PISA Results). Germany had an average of 88% net enrollment rate for primary school from 2000-2016, 89% for lower secondary school and 66% for upper secondary school (World Bank 2020). Among upper secondary school students, there is a 33% achievement gap in math and a 35% achievement gap in science between those who speak a foreign language at home and those who speak the national language at home (UNESCO 2015).

Danish Immigration Policy

During the 1960s and 70s Denmark adapted a "guest worker" program to allow immigrants from various countries, including Turkey to immigrate to fill necessary gaps in employment. While this program has stopped, much of the immigration since then has been due to family reunification. Turkish immigrants form the largest immigrant population; they comprise just over 1% of Denmark's total population (Hedetoft 2006).

Danish immigration policy has become much stricter in recent years. Denmark is known as a welfare state and many are concerned that immigrants' will increase unemployment and deplete the resources meant to take care of its citizens (Hedetoft 2006). On a scale from 0 to 9, Denmark scored 7.09 on Gallup's 2017 Migrant Acceptance Index.

Danish Education System

All public schools are free for all students and paid for entirely by taxes. Formal schooling begins at age 6 and there is a strong emphasis on collaborative work (Denmark Ministry of Foreign Affairs 2020). Testing and class ranking are minimalized. At the end of nine years of primary schooling, students take a nation-wide test (Denmark Ministry of Foreign Affairs 2020). Students then attend either a technical school or a university preparatory school, depending on their performance in school and personal preference (Denmark Ministry of Foreign Affairs 2020).

In the years that this analysis studies, Denmark ranked between 15 and 26 of an average of 32 participating OECD countries in science and ranked between 8 and 15 in math (2003, 2006, 2012, 2015 PISA Results). Denmark had an average of 98% net enrollment rate for primary school from 2000-2016, 93% for lower secondary school and 65% for upper secondary school (World Bank 2020). Among upper secondary school students, there is a 32% achievement gap in math and a 33% achievement gap in science between those who speak a foreign language at home and those who speak the national language at home (UNESCO 2015).

III. Data

General Overview

The data used in this analysis come from the Programme for International Student Assesments (PISA) exams administered in 2003, 2006, 2012, and 2015. The OECD launched PISA in 1997 and the first round of exams were taken in 2000. The test has been administered every three years since then and is consistent throughout the years. Because many questions are used from year to year, they are not available to the public.

This exam was meant to measure how well students are able to apply skills learned in school that are crucial to success in the labor market and their adult lives in general, rather than reproducing what they have learned in the classroom (PISA Report 2018). PISA tests a nationally-representative sample of fifteen-year-old students in mathematics, science and reading. Participation in PISA is not limited to OECD countries. In 2003, 41 countries participated, 31 of which were OECD countries. In 2015, 72 countries participated, 38 of which were OECD countries.

In addition to the exam portion, students also can respond to a survey that contains questions about them, their families, and their experience at school. Each year one subject is emphasized, meaning it is tested more extensively and questions appear on the survey portion regarding their experiences, habits, and attitudes about the specific subject.

The test is given in the national language of the country. Countries also may customize certain questions on the survey portion to fit a country's needs. For example, each country chooses which countries or regions to list for the country of birth for students and their parents.

Data Cleaning

The dataset was limited to native born students currently in Turkey, first- and second-generation immigrants from Turkey, and native-born students in countries that indicated having Turkish immigrants (referred to in this paper as destination countries) in all years studied. The destination countries were Austria, Belgium, Switzerland, Germany and Denmark. These countries reported immigrant students from Turkey in all four years of the analysis and as discussed above, all countries had migrant labor agreements with

Turkey which was a major cause of immigration both during the agreement and afterward through family reunification.

A first-generation immigrant was coded as someone who was born in Turkey. A second-generation immigrant was coded as someone born in a destination country but both parents were born in Turkey. This relies on the assumption that if both parents were Turkish, the home would be most similar to a family who more recently emigrated from Turkey.

Students who had migrated very recently, after the age of eleven, were also excluded from this analysis for two main reasons: first, these students would have had significantly less time to become proficient in their new country's national language, and second, these students would have been in the destination country's school system for such a short time that these students would not be comparable to other students in the group. This cutoff was chosen because according to the 2018-2019 European Commission's Report on Europe's Education System, most students begin lower secondary school at age 12. This ensures that all students in the data set had at least their secondary education in the country in which they took the PISA Exam. A robustness check, detailed in the results section, show that adjusting this cutoff two years before and two years after does not significantly impact the reported results.

Outcome Variables

I report four outcome variables for each year: math score, science score, enjoyment of math or science, and confidence in math or science.

PISA reports the scores on the tested portion of the exam with plausible value scoring, which are obtained through item response theory (IRT) scaling procedures (2015

PISA Technical Report). This is because students are given a random subset of the PISA questions for that year to accommodate time restraints. For example, not all students would answer the same number of science questions, but scores are imputed based on their performance on other sections of the test as well as their similarity to other students who did answer these questions. As Jerrim et al. (2017) explain in their paper about analyzing PISA data, the scores reported are basically multiple imputations based on the pupils' recorded responses to the test. Based on Jerrim et al.'s findings that using one plausible value score or a combination of the five scores provided does not impact results, I use only the first plausible value score given for math and science.

In order to create one variable that measured enjoyment or confidence, I compared the two surveys from the years focusing on the same subject – 2003 and 2012 for math, 2006 and 2015 for science – and kept only the questions that matched exactly about their perceptions of the subject between the years. Sixteen questions matched in the surveys about math and seventeen questions matched in the surveys about science. To calculate the outcome variables, I ran an exploratory factor analysis with the matched variables.

The factor analysis in both math years showed a clear grouping of questions about enjoyment of math and about confidence in using math in day to day situations, with factor loadings above 0.5 (Hair et al 2010). Students were asked to give a value from one to four on a scale of *strongly agree* to *strongly disagree* for a variety of statements regarding their perception of mathematics. Statements such as, "I enjoy reading about mathematics," and "I look forward to my mathematics lessons," were grouped together and weighted to give a value to the *enjoyment of math* variable. Statements such as "I feel

confident calculating how many square metres of tiles you need to cover a floor," or "I feel confident calculating the petrol consumption rate of a car," were the primary factors in the *confidence in math* variable. The factors were rotated using Varimax rotation (a type of orthogonal rotation). Each of the identified constructs produced Chronbach's Alpha scores near or above 0.80, suggesting a high degree of internal consistency within these measures:

Enjoyment of Math (2003): 0.893
Enjoyment of Math (2012): 0.887
Confidence in Math (2003): 0.790
Confidence in Math (2012): 0.805

Similarly, the factor analysis for the science years also grouped neatly into enjoyment of science and confidence in understanding science in day to day situations. The *enjoyment of science* factor drew from questions such as "I am happy doing <broad science> problems," and "I generally have fun when I am learning <broad science> topics." The *confidence in science* factor incorporated statements such as, "I am confident I can interpret the scientific information provided on the labeling of food items," and "I am confident I can predict how changes to an environment will affect the survival of a certain species." The factors were rotated using Varimax rotation (a type of orthogonal rotation). Chronbach's Alpha scores for the four science variables are as follows:

Enjoyment of Science (2006): 0.917
Enjoyment of Science (2015): 0.975
Confidence in Science (2006): 0.812
Confidence in Science (2015): 0.975

All outcome variables, math score, science score, enjoyment of math or science, and confidence in math or science, were then standardized to have a mean of zero and standard deviation of one for interpretability.

Summary Statistics

The average scores reported can be understood as standard deviations above the mean of the entire dataset – all native born students in the six reported countries and all Turkish immigrants in the five destination countries.

Looking at the averages for native born students in the destination countries across the four years, Switzerland and Belgium had the highest average test scores for math, around 0.27 standard deviations above the average, and Denmark scored the lowest, around only 0.03912 standard deviations above the average. Turkey's average math scores were approximately 0.826 standard deviations below this average.

In science, Germany had the highest scores with approximately 0.315 standard deviations higher than the average. Denmark again had the lowest, scoring 0.053 standard deviations below the average. Turkey's average science scores were about 0.722 standard deviations below the average.

Interestingly, in terms of enjoyment of math, Denmark reported the highest scores, averaging 0.28 above standard deviations above the mean, and Austria reported the lowest scores, averaging -0.30 standard deviations below the mean. Turkey had the highest enjoyment score of all at approximately 0.46 standard deviations above the mean.

When asked about enjoyment of science, Belgian students reported the highest enjoyment of destination countries, just a little above the mean over the two years. Swiss students reported the lowest scores, at 0.08 standard deviations below the mean. Turkish students again reported the highest enjoyment scores, at 0.13 standard deviations above the mean.

Summary Statistics -- *Mean scores should be understood as difference from the overall mean of the six countries.*
Complete Summary Statistics are found in the Appendix.

Table 2. 2003 (Math) Summary Statistics

Country	Observations	Mean Math Score	Mean Science Score	Mean Enjoyment Score	Mean Confidence Score
Turkey	4727	-0.8603	-0.6537	0.4902	-0.4344
All Immigrants	443	-0.8665	-1.0303	0.3150	-0.3061
Austria	3898	0.0563	0.0673	-0.2935	0.1928
T. Immigrants	102	-0.7634	-1.0355	0.1860	-0.4269
Belgium	7172	0.3571	0.2682	-0.2043	-0.0735
T. Immigrants	80	-0.7944	-0.9642	0.1870	-0.3803
Switzerland	6323	0.1927	0.1956	-0.0309	0.2425
T. Immigrants	103	-0.7744	-0.9194	0.4052	-0.0311
Germany	3495	0.1409	0.31	-0.1040	0.1136
T. Immigrants	138	-1.0359	-1.1114	0.4068	-0.3462
Denmark	3740	0.0452	-0.2033	0.2729	-0.0427
T. Immigrants	20	-0.9868	-1.2792	0.4646	-0.4764

Table 3. (Science) Summary Statistics

Country	Observations	Mean Math Score	Mean Science Score	Mean Enjoyment Score	Mean Confidence Score
Turkey	4688	-0.8877	-0.8409	0.3630	-0.0288
All Immigrants	552	-0.8993	-1.0594	-0.1040	-0.3491
Austria	4241	0.0123	0.1621	-0.1816	0.0507
T. Immigrants	112	-1.2061	-1.3150	-0.1216	-0.3842
Belgium	7374	0.2613	0.2205	-0.0018	0.0664
T. Immigrants	70	-0.7379	-0.8594	0.3652	0.0648
Switzerland	9156	0.2906	0.1846	-0.0032	-0.1080
T. Immigrants	200	-0.6720	-0.9184	-0.1336	-0.4848
Germany	3788	0.0449	0.2712	-0.1159	0.1982
T. Immigrants	131	-1.0646	-1.0541	-0.3295	-0.3152
Denmark	4046	0.0224	-0.0618	-0.1206	-0.0289
T. Immigrants	39	-0.9182	-1.4257	0.1144	-0.3676

Table 4. 2012 (Math) Summary Statistics

Country	Observations	Mean Math Score	Mean Science Score	Mean Enjoyment Score	Mean Confidence Score
Turkey	4678	-0.6842	-0.5225	0.4357	-0.1743
All Immigrants	638	-0.8505	-1.0389	0.2189	-0.2471
Austria	3820	0.0408	0.0981	-0.3157	0.0653
T. Immigrants	123	-0.9567	-1.1269	-0.0906	-0.4912
Belgium	6704	0.2353	0.1734	-0.2099	-0.1827
T. Immigrants	66	-0.8591	-1.0978	0.0628	-0.3434
Switzerland	7833	0.2578	0.1198	-0.0613	0.1787
T. Immigrants	117	-0.5614	-0.8330	0.3103	-0.1514
Germany	3385	0.1679	0.3354	-0.1947	0.3423
T. Immigrants	100	-0.7335	-0.7473	-0.2315	0.0912
Denmark	5230	-0.0717	-0.0459	0.3022	-0.1154
T. Immigrants	232	-0.9881	-1.2049	0.6098	-0.2916

Table 5. Science) Summary Statistics

Country	Observations	Mean Math Score	Mean Science Score	Mean Enjoyment Score	Mean Confidence Score
Turkey	5724	-0.8725	-0.7686	-0.0977	0.2108
All Immigrants	694	-0.7259	-0.8924	-0.0121	-0.3817
Austria	5416	0.1190	0.1279	0.1652	-0.0227
T. Immigrants	233	-0.9360	-0.9060	0.1568	-0.3919
Belgium	7478	0.2387	0.2081	0.0179	-0.0121
T. Immigrants	61	-0.6950	-0.8263	0.0539	-0.4221
Switzerland	3764	0.3673	0.2486	-0.1608	-0.1675
T. Immigrants	51	-0.3264	-0.6773	0.0936	-0.1667
Germany	4482	0.2384	0.3451	0.0828	-0.1765
T. Immigrants	106	-0.6402	-0.7394	0.0018	-0.4153
Denmark	5070	0.1606	0.0989	0.0104	0.1072
T. Immigrants	243	-0.6536	-1.0078	-0.2227	-0.3982

Switzerland and Germany reported the highest confidence in math, about 0.22 standard deviations above the mean, and Belgium, despite being one of the top performers in math, reported the lowest confidence in math, averaging 0.13 standard deviations below the mean in the two years. Turkish students reported confidence levels 0.3 standard deviations below the mean.

Denmark reported the highest confidence in science, 0.04 standard deviations above the mean, and Switzerland reported the lowest, 0.27 standard deviations below the mean. In Turkey, students reported relatively high confidence levels at 0.09 standard deviations above the mean.

IV.   Methodology

Levels, Dronkers and Kraaykamp (2003) look at macrolevel characteristics to examine destination, origin and community effects. To do this, they use a double comparative design and multilevel techniques. Other research has used linear models to estimate the effects across countries (Azzolini et al. 2012, Marks 2005). This study implements a revised matching design to compare the differences between group averages. I also analyze these differences over four years, whereas the research I'm familiar with generally limits the scope of the analysis to one year.

Ideally, researchers would like to compare the results and attitudes of the immigrants in each country with an identical group of their peers in Turkey. While PISA reports contain many demographic characteristics, these variables represent a snapshot in time when the students are taking the test. Most of the reported characteristics, such as wealth indicators, are likely to change when a person immigrates. Due to the high likelihood of change in these characteristics, a typical propensity score matching approach was not

feasible. The method employed in this paper instead matches group averages across countries.

Parent education levels are unlikely to change after immigration. Because our study is limited to first-generation immigrants from Turkey and second-generation immigrants whose parents are both from Turkey, it's reasonable to assume that parent education levels would be the same, or very similar, before migration as after. Because education is highly indicative of other variables that are predictive of immigration and involvement in schooling (Ortega and Peri 2009, Lovenheim and Turner 2018), the Turkish immigrant students with a given parent-education combination are likely very comparable to native-born students in Turkey with the same parent-education combination.

The method employed in this paper groups the students in each country by their parent-education combination as well as gender and averages the outcome variables for each group. The difference of means is taken between the immigrants in a given country and the native-born students in Turkey. For example, we would compare the average of all female students in Belgium with a mother who completed secondary school and a father who completed a four-year degree with the average all of female students in Turkey whose parents' had the same levels of education. A weighted average between all parent-education groups is calculated based on the number of students in each group in our sample.

Mathematically this is represented by:

$$w_{c,g} = \frac{1}{\frac{1}{N_{T,g}} + \frac{1}{N_{c,g}}}$$

$$Difference\ of\ Means_c = \frac{\sum_g w_g (\hat{\mu}_{c,g} - \hat{\mu}_{T,g)}}{\sum_g w_g}$$

c being the destination countries with reported Turkish immigrants,
T being students in Turkey
g being one of the 126 possible parent-education-gender groupings,
w being the weights used for the weighted average
N being the total number of students in a given group
$\hat{\mu}$ being the predicted mean of a given group

The differences at the country level were found by regressing the outcome

variable on indicator variables for all the parent education combinations for all students

and indicator variables for each parent education combination in each destination country

without a constant. This is equivalent to taking the difference of the mean outcome of a

certain education grouping in a given destination country and the mean outcome of the

same education grouping in Turkey. The weighted average of these differences is then

found for each destination country and outcome variable.

Robust standard errors are used because variance is unknown (Chou et al. 1991,

Arellano 1987). Because robust standard errors rely on estimates of the variance of the

error term for each individual, and these are found using the residuals of the regression,

single observations in a group in a country must be dropped. The residual will always be

zero for these observations making the estimated variance also zero. Since the variance of

the error must be positive, including these individuals would bias the standard errors

toward zero.

To correct for multiple hypothesis testing, p-values are adjusted with the

Bonferroni correction (Maxwell 1980, Myers 2010). This correction essentially

multiplies the p-value by the number of hypotheses in each analysis. In this case, because four outcome variables are being examined in five different countries, every p-value is multiplied by 20. For example, a result will only be reported significant at the 5% level if it is significant at the 0.25% level before the Bonferroni correction.

This method makes the following assumption: If students, or their parents, had not immigrated, immigrant students in the same parent education grouping would have performed similarly to their peers in the same grouping who remained in Turkey. The weighted mean differences between countries can be compared to measure the effects a certain destination country would have on the Turkish immigrant students. These differences in performance can be contributed to a combination of differences in culture, education systems, and immigration policy, among other things.

It is possible that immigrant students are systematically different from Turkish students who remained in Turkey and there is not a feasible way to rule out this type of selection bias. However, because this analysis focuses on comparing the differences of immigrants between countries rather than comparing all immigrant students to Turkish students, this should not be too concerning.

V.   Results

Analysis by Country

Austria

Turkish immigrant students in Austria performed better than their peers in Turkey in 2003 by 0.24 standard deviations, but in 2006 and 2012, their performance was more than 0.2 standard deviations below the average of comparable Turkish students. In all

four years, Turkish students performed poorly in science compared to the Turkish students, between 0.19 and 0.59 standard deviations worse.

Immigrant students reported to enjoy math and science much less than their peers in Turkey. This follows the logic that as students perform worse, they will enjoy a subject less and as students enjoy a subject less, the worse they will perform. In both science years, there was a statistically significant negative difference in confidence level. Turkish immigrants in Austria reported levels 0.4 and 0.6 standard deviations lower than the students in Turkey. In 2012 the reported confidence in math was 0.36 standard deviations lower for immigrants in Austria than students in Turkey.

Belgium

Regarding performance in math or science, the only years with a statistically significant result were 2006 and 2012. In 2006, immigrant students in Belgium performed above Turkish students in math by 0.26 standard deviations. Immigrant students performed worse than their peers in science by 0.52 standard deviations. Immigrant students reported lower enjoyment of math in 2003 by over 0.3 standard deviations and reported lower confidence in science than their peers in Turkey by over 0.5 standard deviations.

Switzerland

In all three years with statistically significant results – 2003, 2006 and 2015 – immigrant students in Switzerland performed better in math than students in Turkey by 0.3 to 0.5 standard deviations. The only statistically significant difference in science scores was in 2012; the immigrant students performed worse than the students in Turkey by 0.25 standard deviations. The only statistically significant result for enjoyment of a

subject was in 2006. Students reported to enjoy science 0.47 standard deviations less than Turkish students. In terms of confidence, students reported to be more confident in math in 2003 by 0.63 standard deviations, but less confident in science in 2006 by 0.4 standard deviations.

Germany

Students in Germany performed better than students in Turkey in math in 2003 and 2015 by about 0.2 standard deviations. Both in 2006 and in 2012, students reported enjoying the focal subject less than students in Turkey by over 0.7 standard deviations. In 2015 students also reported being less confident in science than their peers by over 0.5 standard deviations.

Denmark

In Denmark, for performance in math, the data is mixed. In 2003 and 2015, immigrant students outperformed their peers in Turkey by 0.39 standard deviations and 0.24 standard deviations respectively. However, in 2012, immigrant students performed 0.26 standard deviations worse than their peers in Turkey. The 2006, 2012, and 2015 science score results all show immigrant students performing significantly worse than their peers in Turkey of different magnitudes.

In 2012, immigrant students reported to enjoy math more than students in Turkey by 0.24 standard deviations. In 2015, immigrant students reported to have less confidence in science by 0.64 standard deviations

Results are reported as weighted mean differences of Turkish immigrants in a given country and native-born Turkish students in Turkey

Table 6.

	2003 Results			
Country	Math Score	Science Score	Enjoyment of Math	Confidence in Practical Math
Austria	0.2417*** (0.0687)	-0.2694*** (0.0709)	-0.2911* (0.1)	0.1084 (0.1157)
Belgium	0.2215 (0.0908)	-0.185 (0.0915)	-0.3062** (0.0958)	0.1603 (0.1195)
Switzerland	0.4218*** (0.0805)	-0.0004 (0.0863)	-0.0172 (0.0997)	0.6347*** (0.086)
Germany	0.2198** (0.0579)	-0.1842 (0.0597)	-0.0534 (0.0843)	0.1828 (0.0975)
Denmark	0.3915** (0.1204)	-0.2368 (0.151)	0.0346 (0.1547)	0.2273 (0.1476)

Robust standard errors reported in parentheses
Bonferroni corrected p-values: *** p<0.01, ** p<0.05, * p<0.1

Table 7.

	2006 Results			
Country	Math Score	Science Score	Enjoyment of Science	Confidence in Practical Science
Austria	-0.2552** (0.0762)	-0.4417*** (0.0767)	-0.4598*** (0.1097)	-0.3972*** (0.0867)
Belgium	0.2659** (0.0836)	0.0455 (0.0938)	-0.0052 (0.1085)	0.0604 (0.1098)
Switzerland	0.34*** (0.0598)	0.0462 (0.0626)	-0.4516*** (0.0714)	-0.41*** (0.0702)
Germany	-0.0616 (0.0724)	-0.1269 (0.0729)	-0.7207*** (0.1043)	-0.2254 (0.0825)
Denmark	0.1460 (0.1244)	-0.4174** (0.1236)	-0.2240 (0.1136)	-0.1971 (0.1483)

Robust standard errors reported in parentheses
Bonferroni corrected p-values: *** p<0.01, ** p<0.05, * p<0.1

Table 8.

	2012 Results			
Country	Math Score	Science Score	Enjoyment of Math	Confidence in Practical Math
Austria	-0.283*** (0.0708)	-0.6211*** (0.0708)	-0.4775*** (0.0966)	-0.3624** (0.1105)
Belgium	-0.11 (0.0999)	-0.5443*** (0.1285)	-0.2458 (0.1246)	-0.0342 (0.1442)
Switzerland	0.1178 (0.0783)	-0.3104*** (0.0759)	-0.071 (0.0963)	-0.0619 (0.0926)
Germany	0.2172 (0.1054)	0.0219 (0.1055)	-0.7832*** (0.1388)	0.2987 (0.1646)
Denmark	-0.2648*** (0.0495)	-0.664*** (0.0583)	0.2358** (0.0679)	-0.0802 (0.0639)

Robust standard errors reported in parentheses
Bonferroni corrected p-values: *** p<0.01, ** p<0.05, * p<0.1

Table 9.

	2015 Results			
Country	Math Score	Science Score	Enjoyment of Science	Confidence in Practical Science
Austria	-0.1127 (0.0507)	-0.2009*** (0.0512)	-0.2167* (0.0747)	-0.5587*** (0.0746)
Belgium	0.2407 (0.0898)	-0.0021 (0.0840)	-0.185 (0.1109)	-0.5352*** (0.1204)
Switzerland	0.574*** (0.1191)	0.1063 (0.1026)	-0.0542 (0.1529)	-0.3322 (0.1393)
Germany	0.2675* (0.134)	0.1071 (0.1353)	-0.0885 (0.2051)	-0.5224*** (0.1972)
Denmark	0.2424*** (0.0419)	-0.2306*** (0.0488)	0.1057 (0.0833)	-0.6432*** (0.0826)

Robust standard errors reported in parentheses
Bonferroni corrected p-values: *** p<0.01, ** p<0.05, * p<0.1

Figure 2.

Math Score

Figure 3.

Science Score

Figure 4.

Math Enjoyment

Figure 5.

Math Confidence

Figure 6.

Science Enjoyment

Figure 7.

Science Confidence
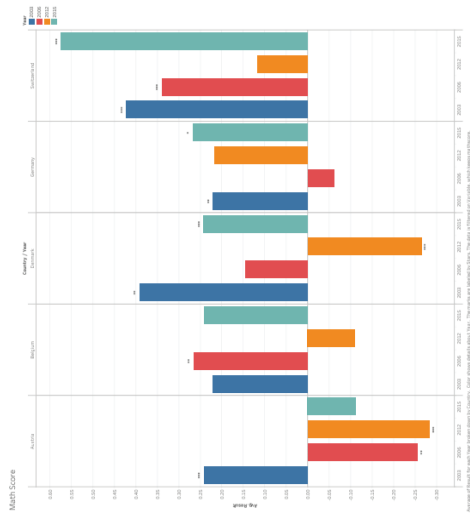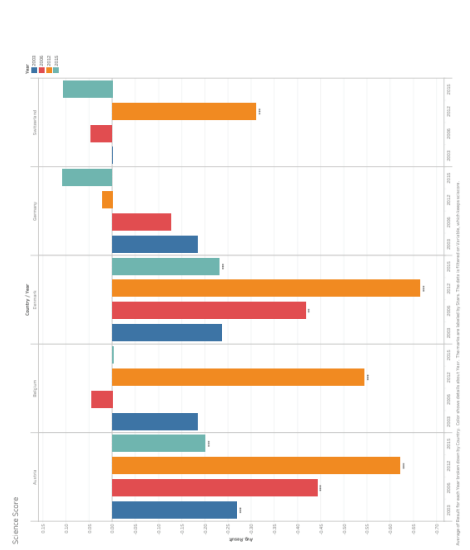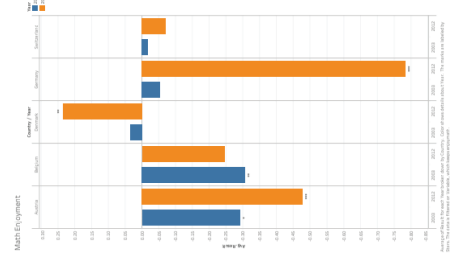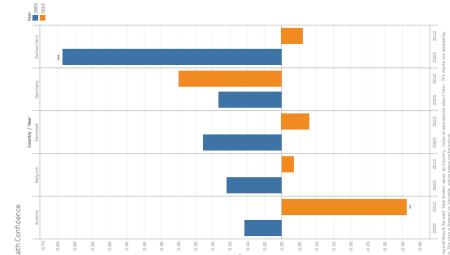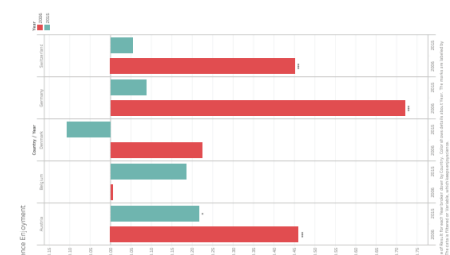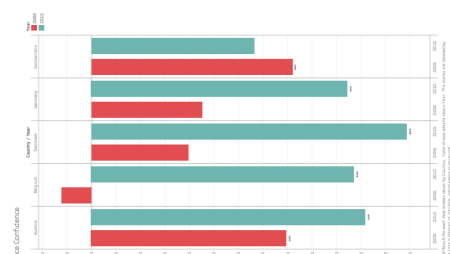
Overall Results

While math scores vary by year and by country, Switzerland was notable in that immigrant students performed significantly better than their peers in Turkey. Switzerland also had the highest migrant acceptance score according to Gallup's 2017 Migrant Acceptance Index and it may be that these two trends are related.

Science scores on the other hand were consistently worse. Science relies more on language than math; so this barrier may explain much of the difference. It is concerning that even in Denmark, where only 30-40% of the immigrants speak a foreign language at home, immigrant students still did much worse on this section. In fact, immigrant students in Denmark performed worse in science than the immigrants in other countries. This is likely indicative that a country's education system or culture can affect first- and second-generation immigrants' performance beyond issues that would resolve as students grasped the language and culture.

Apart from two outliers in math – Denmark 2012 and Switzerland in 2003 – immigrant students reported lower enjoyment and confidence levels in both math and science in all countries across all years. The results varied by country, but these differences are generally greater in magnitude than the performance results. Across all countries it appears Turkish immigrants are less likely than the students in Turkey to enjoy and have confidence in math and science. This may be because attitudes toward math and science are influenced more by the peers close to a student. Even though students are likely doing better than they would have otherwise had they not immigrated, they may like it less because their performance is worse than their classmates.

Confidence scores may be affected a little less because the questions measuring confidence are about specific tasks.

Denmark appears to be the exception. The Turkish immigrant students in Denmark seem to have higher enjoyment and confidence levels than any other destination country. This may be due to the fact that there is a much lower share of first-generation immigrants in Denmark (around 5%) and a lower share of students who speak a foreign language at home (around 50%). This is a possible indication that the immigrant students in Denmark are more fully integrated into Danish society.

Differences Between Countries

For every outcome variable for each year, the results from each country were statistically significantly different from each other at the 5% level. I also compared each country to each other country. Austria and Belgium have consistent differences at a statistically significant level across the years. Belgium and Switzerland had very few outcomes that were found to be different at a statistically significant level.

Limitations

It is possible that there is some unknown factor of first- and second-generation immigrant families that impacts how well they perform on the PISA exam in each country. Because I had no information on the reason why an individual or family chose to immigrate, it is also impossible to know whether a certain type of individual was more or less likely to immigrate to a certain country, and so the differences in scores may be due to these unknown characteristics, rather than the impact of a given destination country.

While the levels of education are highly correlated with other characteristics, this analysis only controls for the father and mother education levels and gender of the

student. Individuals within these groupings may be more dissimilar from one another than assumed. Without more information, it is impossible to know whether my assumption of similarity between the groupings holds. For example, it may be that those who immigrated had consistently lower levels of motivation uncorrelated with the act of immigration, or that the families that did not immigrate stayed because they had some other advantage in the country, which could also affect the performance in and the perception of math and science.

This analysis only looks at Turkish immigrants and cannot be generalized for immigrants from other countries. While I believe it is likely that the overall result that immigrant performance in math and science and self-perception in these subjects are dependent on the destination country, more research and data are necessary to test this finding. It may be that other countries with stronger cultural norms around education would be more similar to their peers who did not immigrate.

Finally, because the education systems in each country is constantly changing, it is hard to determine how these changes have affected student outcomes. During the time frame of this analysis, Turkey's education system changed extensively. It is possible that this accounts for some of the differences in performance between Turkish students and their immigrant counterparts.

Age at Immigration Robustness Check

I checked to see if there would a statistically significant difference if the age at immigration cut-off for first-generation immigrants was adjusted. The cut-off used in this paper is at age eleven for reasons previously stated. I changed the cut-off to be two years lower, at age nine, and two years higher, at age thirteen. For both cut-offs, in all countries

and for all outcome variables, I could not reject the null hypothesis that the results were the same. The p-values from these tests were between 0.532 and 1.

VI.   Conclusion

Despite the limitations outlined, the results present a compelling case that the country to which a Turkish student immigrates not only affects performance in math and science, as measured by the PISA exam, but also affects how much he or she will enjoy these subjects and how confident he or she will be in these subjects. It makes sense that there appears to be a strong relationship between performance in a subject and students' perceptions of that subject. However, it seems that perceptions of a subject are affected more drastically than performance. Looking at Austria in 2015, immigrant students performed below Turkish students by 0.2 standard deviations, but they reported confidence levels 0.56 standard deviations below. If it is the case that enjoyment and confidence in school subjects is impacted more from immigrating, it may be that educators and administrators may be able to significantly improve the outcomes of these students by finding the cause of this.

Future research should study immigrants coming from various countries to other countries. This would help understand how different immigrant populations may be integrated differently into a given country. Future research should also include the causes and effects of changing self-perception outcomes. By understanding these causes, immigration education policy can be adapted to help students have a better experience at school as well as be able to perform well in these subjects.

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Appendix

Questions Used to Construct Enjoyment and Confidence Variables

Table A1.

Science			
Question	Variable	2006 Factor Loading	2015 Factor Loading
I generally have fun when I am learning <broad science> topics	*Enjoyment*	0.756	0.902
I like reading about <broad science>	*Enjoyment*	0.728	0.829
I am happy doing <broad science> problems	*Enjoyment*	0.652	0.829
I enjoy acquiring new knowledge in <broad science>	*Enjoyment*	0.798	0.907
I am interested in learning about <broad science>	*Enjoyment*	0.784	0.817
Confidence: Recognize the science question that underlies a newspaper report on a health issue	*Confidence*	0.543	0.812
Confidence: Explain why earthquakes occur more frequently in some areas than in others	*Confidence*	0.531	0.822
Confidence: Describe the role of antibiotics in the treatment of disease	*Confidence*	0.557	0.824
Confidence: Identify the science question associated with the disposal of garbage	*Confidence*	0.593	0.836
Confidence: Predict how changes to an environment will affect the survival of certain species	*Confidence*	0.579	0.845
Confidence: Interpret the scientific information provided on the labelling of food items	*Confidence*	0.543	0.832
Confidence: Discuss how new evidence can lead you to change your understanding about the possibility of life on Mars	*Confidence*	0.555	0.837
Confidence: Identify the better of two explanations for the formation of acid rain	*Confidence*	0.574	0.823

Table A2.

Mathematics			
Question	Variable	2003 Factor Loading	2012 Factor Loading
I enjoy reading about Mathematics	*Enjoyment*	0.6454	0.6154
I look forward to my Mathematics lessons	*Enjoyment*	0.7620	0.7499
I do Mathematics because I enjoy it	*Enjoyment*	0.7919	0.7748
I am interested in the things I learn in Mathematics	*Enjoyment*	0.6403	0.6351
Confidence: Using a train timetable to work out how long it would take to get from one place to another	*Confidence*	0.5697	0.5578
Confidence: Calculating how much cheaper a TV would be after a 30% discount	*Confidence*	0.6205	0.6433
Confidence: Calculating how many square metres of tiles you need to cover a floor	*Confidence*	0.6570	0.6773
Confidence: Understanding graphs presented in newspapers	*Confidence*	0.5461	0.5534
Confidence: Finding the actual distance between two places on a map with a 1:10,000 scale	*Confidence*	0.5524	0.5923
Confidence: Calculating the petrol consumption rate of a car	*Confidence*	0.5644	0.5702

Summary Statistics for All Years and All Countries

Table A3.

Turkey 2003

Variable	Observations	Mean	Std. Deviation	Min	Max
Math Score	4727	-0.8603	0.9999	-4.1531	3.0190
Science Score	4727	-0.6537	0.9187	-3.7226	2.7416
Enjoyment of Math	3994	0.4902	0.9744	-2.6703	3.1278
Confidence in Math	3994	-0.4344	1.0509	-3.7935	1.9729

Table A4.

All Turkish Immigrants 2003

Variable	Observations	Mean	Std. Deviation	Min	Max	Mean Difference from Turkey
Math Score	443	-0.8665	0.8655	-3.1779	1.8292	-0.0062
Science Score	443	-1.0303	0.8949	-3.4818	2.4661	-0.1700
Enjoyment of Math	387	0.3150	1.0247	-1.8517	2.4835	1.1753
Confidence in Math	387	-0.3061	1.0689	-3.5632	2.0409	0.5542

Table A5.

Austria Natives 2003

Variable	Observations	Mean	Std. Deviation	Min	Max	Mean Difference from Turkey
Math Score	3898	0.0563	0.8671	-3.1634	2.6902	0.9166
Science Score	3898	0.0673	0.8830	-2.7418	2.6435	0.7210
Enjoyment of Math	3688	-0.2935	0.9756	-2.5457	2.8524	-0.7837
Confidence in Math	3688	0.1928	0.9939	-3.5483	2.0441	0.6272

Table A6.

Austria Immigrants 2003

Variable	Observations	Mean	Std. Deviation	Min	Max	Difference from Natives	Difference from All Immigrants
Math Score	102	-0.7634	0.7581	-2.4166	1.0778	-0.8197	0.1031
Science Score	102	-1.0355	0.7609	-2.9281	0.7890	-1.1028	-0.1690
Enjoyment of Math	92	0.1860	1.0046	-1.7325	2.4835	0.4795	1.0525
Confidence in Math	92	-0.4269	1.1811	-3.5632	1.7105	-0.6197	0.4396

Table A7.

Belgium Natives 2003

Variable	Observations	Mean	Std. Deviation	Min	Max	Mean Difference from Turkey
Math Score	7172	0.3571	0.9479	-4.0868	3.3243	1.2174
Science Score	7172	0.2682	0.9473	-3.8652	3.0813	0.9219
Enjoyment of Math	6690	-0.2043	0.8877	-2.4931	3.5946	-0.6946
Confidence in Math	6690	-0.0735	0.9722	-3.4757	2.0474	0.3609

Table A8.

Belgium Immigrants 2003

Variable	Observations	Mean	Std. Deviation	Min	Max	Difference from Natives	Difference from All Immigrants
Math Score	80	-0.7944	0.8751	-2.7858	1.2902	-1.1514	0.0722
Science Score	80	-0.9642	0.8791	-2.5813	1.1795	-1.2324	-0.0977
Enjoyment of Math	72	0.1870	0.9354	-1.7971	2.3895	0.3913	1.0535
Confidence in Math	72	-0.3803	1.0897	-3.4144	1.7114	-0.3069	0.4862

Table A9.

Switzerland Natives 2003

Variable	Observations	Mean	Std. Deviation	Min	Max	Mean Difference from Turkey
Math Score	6323	0.1927	0.8606	-3.6468	3.2124	1.0530
Science Score	6323	0.1956	0.9346	-3.2054	3.2944	0.8493
Enjoyment of Math	5838	-0.0309	0.9715	-2.4902	2.7650	-0.5212
Confidence in Math	5838	0.2425	0.9425	-3.4990	2.0441	0.6769

Table A10.

Switzerland Immigrants 2003

Variable	Observations	Mean	Std. Deviation	Min	Max	Difference from Natives	Difference from All Immigrants
Math Score	103	-0.7744	0.9623	-2.6640	1.8292	-0.9671	0.0921
Science Score	103	-0.9194	0.9935	-3.4462	2.4661	-1.1150	-0.0529
Enjoyment of Math	86	0.4052	1.0332	-1.8517	2.3109	0.4361	1.2717
Confidence in Math	86	-0.0311	0.8913	-2.7374	2.0409	-0.2736	0.8355

Table A11.

German Natives 2003

Variable	Observations	Mean	Std. Deviation	Min	Max	Mean Difference from Turkey
Math Score	3495	0.1409	0.8759	-2.6929	2.8523	1.0012
Science Score	3495	0.3100	0.9312	-2.8577	3.1232	0.9637
Enjoyment of Math	3330	-0.1040	1.1057	-2.5504	3.0726	-0.5942
Confidence in Math	3330	0.1136	0.9509	-3.4220	2.0182	0.5480

Table A12.

Germany Immigrants 2003

Variable	Observations	Mean	Std. Deviation	Min	Max	Difference from Natives	Difference from All Immigrants
Math Score	138	-1.0359	0.8536	-3.1779	1.0245	-1.1768	-0.1693
Science Score	138	-1.1114	0.9061	-3.4818	1.2080	-1.4214	-0.2449
Enjoyment of Math	124	0.4068	1.0800	-1.7388	2.4271	0.5108	1.2733
Confidence in Math	124	-0.3462	1.0852	-3.1624	1.6682	-0.4599	0.5203

Table A13.

Denmark Natives 2003

Variable	Observations	Mean	Std. Deviation	Min	Max	Mean Difference from Turkey
Math Score	3740	0.0452	0.8658	-3.0629	2.5767	0.9055
Science Score	3740	-0.2033	0.9692	-4.3199	2.7594	0.4504
Enjoyment of Math	3324	0.2729	0.9089	-2.3749	2.5636	-0.2173
Confidence in Math	3324	-0.0427	0.9242	-3.3538	1.9784	0.3917

Table A14.

Denmark Immigrants 2003

Variable	Observations	Mean	Std. Deviation	Min	Max	Difference from Natives	Difference from All Immigrants
Math Score	20	-0.9868	0.7839	-2.4257	0.5669	-1.0320	-0.1203
Science Score	20	-1.2792	0.9596	-3.4462	0.2897	-1.0760	-0.4127
Enjoyment of Math	13	0.4646	1.0158	-1.5404	1.9457	0.1917	1.3312
Confidence in Math	13	-0.4764	0.8443	-1.7710	0.8061	-0.4337	0.3902

Table A15.

Turkey 2006

Variable	Observations	Mean	Std. Deviation	Min	Max
Math Score	4688	-0.8877	0.9439	-4.2562	2.6615
Science Score	4688	-0.8409	0.8652	-4.0073	2.3306
Enjoyment of Math	4393	0.3630	0.8774	-3.1364	2.5368
Confidence in Math	4393	-0.0288	1.0304	-3.4083	2.8097

Table A16.

All Turkish Immigrants 2006

Variable	Observations	Mean	Std. Deviation	Min	Max	Mean Difference from Turkey
Math Score	552	-0.8993	0.8944	-3.3556	1.6745	-0.0116
Science Score	552	-1.0594	0.9331	-3.6290	1.9796	-0.1718
Enjoyment of Math	461	-0.1040	1.0453	-2.9310	2.2072	0.7837
Confidence in Math	461	-0.3491	0.9132	-3.2750	2.8097	0.5386

Table A17.

Austria Natives 2006

Variable	Observations	Mean	Std. Deviation	Min	Max	Mean Difference from Turkey
Math Score	4241	0.0123	0.9269	-3.5855	2.9390	0.9000
Science Score	4241	0.1621	0.9316	-3.0410	3.2062	1.0030
Enjoyment of Math	3587	-0.1816	1.0943	-3.6116	2.8716	-0.5446
Confidence in Math	3587	0.0507	0.9855	-3.1403	2.5103	0.0795

Table A18.

Austria Immigrants 2006

Variable	Observations	Mean	Std. Deviation	Min	Max	Difference from Natives	Difference from All Immigrants
Math Score	112	-1.2061	0.9316	-2.8926	1.2908	-1.2183	-0.3068
Science Score	112	-1.3150	0.9395	-2.9932	1.8265	-1.4771	-0.4157
Enjoyment of Math	97	-0.1216	1.1671	-2.3861	2.0346	0.0600	0.7777
Confidence in Math	97	-0.3842	0.8780	-2.5052	2.0161	-0.4349	0.5151

Table A19.

Belgium Natives 2006

Variable	Observations	Mean	Std. Deviation	Min	Max	Mean Difference from Turkey
Math Score	7374	0.2613	0.9529	-3.3128	3.0381	1.1490
Science Score	7374	0.2205	0.9399	-3.8513	3.4607	1.0614
Enjoyment of Math	6127	-0.0018	0.9360	-3.6116	3.1639	-0.3648
Confidence in Math	6127	0.0664	0.9888	-3.2120	2.8416	0.0953

Table A20.

Belgium Immigrants 2006

Variable	Observations	Mean	Std. Deviation	Min	Max	Difference from Natives	Difference from All Immigrants
Math Score	70	-0.7379	0.8328	-2.6334	1.1243	-0.9992	0.1614
Science Score	70	-0.8594	0.8692	-2.8148	1.9796	-1.0799	0.0399
Enjoyment of Math	55	0.3652	0.8448	-1.1428	2.2072	0.3670	1.2645
Confidence in Math	55	0.0648	0.9355	-1.8601	1.5980	-0.0016	0.9641

Table A21.

Switzerland Natives 2006

Variable	Observations	Mean	Std. Deviation	Min	Max	Mean Difference from Turkey
Math Score	9156	0.2906	0.8853	-2.9117	4.1051	1.1783
Science Score	9156	0.1846	0.9060	-2.9825	3.3720	1.0255
Enjoyment of Math	7943	-0.0032	0.9987	-3.6116	3.0803	-0.3662
Confidence in Math	7943	-0.1080	0.9788	-3.2113	2.7099	-0.0791

Table A22.

Switzerland Immigrants 2006

Variable	Observations	Mean	Std. Deviation	Min	Max	Difference from Natives	Difference from All Immigrants
Math Score	200	-0.6720	0.8839	-2.6421	1.3257	-0.9626	0.2273
Science Score	200	-0.9184	0.9200	-3.2389	1.3195	-1.1030	-0.0191
Enjoyment of Math	167	-0.1336	1.0274	-2.9310	2.1939	-0.1304	0.7657
Confidence in Math	167	-0.4848	0.9369	-3.2750	2.8097	-0.3769	0.4145

Table A23.

German Natives 2006

Variable	Observations	Mean	Std. Deviation	Min	Max	Mean Difference from Turkey
Math Score	3788	0.0449	0.9419	-3.8234	3.0103	0.9325
Science Score	3788	0.2712	0.9581	-3.3920	3.3067	1.1121
Enjoyment of Math	3522	-0.1159	1.0719	-3.4031	2.4699	-0.4789
Confidence in Math	3522	0.1982	0.9394	-3.1086	2.8097	0.2270

Table A24.

Germany Immigrants 2006

Variable	Observations	Mean	Std. Deviation	Min	Max	Difference from Natives	Difference from All Immigrants
Math Score	131	-1.0646	0.8227	-3.3556	0.8651	-1.1094	-0.1653
Science Score	131	-1.0541	0.9290	-2.9435	1.1245	-1.3253	-0.1548
Enjoyment of Math	113	-0.3295	1.0259	-2.8373	2.0264	-0.2136	0.5698
Confidence in Math	113	-0.3152	0.8116	-2.0652	1.9612	-0.5133	0.5841

Table A25.

Denmark Natives 2006

Variable	Observations	Mean	Std. Deviation	Min	Max	Mean Difference from Turkey
Math Score	4046	0.0224	0.8270	-3.3794	2.7765	0.9101
Science Score	4046	-0.0618	0.9237	-3.5753	2.8601	0.7791
Enjoyment of Math	3492	-0.1206	0.9515	-3.4237	2.5884	-0.4836
Confidence in Math	3492	-0.0289	1.0560	-3.2024	2.5933	-0.0001

Table A26.

Denmark Immigrants 2006

Variable	Observations	Mean	Std. Deviation	Min	Max	Difference from Natives	Difference from All Immigrants
Math Score	39	-0.9182	0.8407	-3.1773	1.6745	-0.9407	-0.0189
Science Score	39	-1.4257	0.8842	-3.6290	0.7608	-1.3639	-0.5264
Enjoyment of Math	29	0.1144	0.8618	-1.6487	1.7714	0.2351	1.0137
Confidence in Math	29	-0.3676	1.0374	-2.2176	1.4268	-0.3386	0.5317

Table A27.

Turkey 2012

Variable	Observations	Mean	Std. Deviation	Min	Max
Math Score	4678	-0.6842	0.9707	-3.2974	2.5769
Science Score	4678	-0.5225	0.8865	-3.8608	2.4106
Enjoyment of Math	2982	0.4357	1.0064	-2.6009	2.9549
Confidence in Math	2982	-0.1743	0.9415	-3.6975	1.9284

Table A28.

All Turkish Immigrants 2012

Variable	Observations	Mean	Std. Deviation	Min	Max	Mean Difference from Turkey
Math Score	638	-0.8505	0.8536	-2.9779	1.7543	-0.1664
Science Score	638	-1.0389	0.9423	-3.8711	1.5683	-0.3547
Enjoyment of Math	381	0.2189	1.0727	-2.3768	2.5883	0.9030
Confidence in Math	381	-0.2471	0.9833	-3.5945	1.8974	0.4371

Table A29.

Austria Natives 2012

Variable	Observations	Mean	Std. Deviation	Min	Max	Mean Difference from Turkey
Math Score	3820	0.0408	0.9194	-2.9222	3.5977	0.7250
Science Score	3820	0.0981	0.9404	-3.2007	3.7029	0.6206
Enjoyment of Math	2398	-0.3157	0.9905	-2.4395	3.3639	-0.7514
Confidence in Math	2398	0.0653	1.0133	-3.8882	1.9418	0.2396

Table A30.

Austria Immigrants 2012

Variable	Observations	Mean	Std. Deviation	Min	Max	Difference from Natives	Difference from All Immigrants
Math Score	123	-0.9567	0.8777	-2.8476	0.9465	-0.9975	-0.1062
Science Score	123	-1.1269	0.8718	-3.1034	1.2941	-1.2250	-0.2763
Enjoyment of Math	76	-0.0906	1.0794	-2.3768	2.0122	0.2250	0.7599
Confidence in Math	76	-0.4912	0.9186	-2.5838	1.6367	-0.5566	0.3593

Table A31.

Belgium Natives 2012

Variable	Observations	Mean	Std. Deviation	Min	Max	Mean Difference from Turkey
Math Score	6704	0.2353	1.0058	-3.2499	3.3454	0.9195
Science Score	6704	0.1734	1.0134	-4.5923	3.4163	0.6958
Enjoyment of Math	4157	-0.2099	0.8793	-2.6710	2.9956	-0.6456
Confidence in Math	4157	-0.1827	1.0487	-3.8882	1.9902	-0.0084

Table A32.

Belgium Immigrants 2012

Variable	Observations	Mean	Std. Deviation	Min	Max	Difference from Natives	Difference from All Immigrants
Math Score	66	-0.8591	0.8750	-2.5404	1.2136	-1.0944	-0.0086
Science Score	66	-1.0978	1.1358	-3.8153	1.0748	-1.2712	-0.2472
Enjoyment of Math	39	0.0628	1.0671	-1.6128	2.5883	0.2727	0.9133
Confidence in Math	39	-0.3434	1.2392	-3.2185	1.6218	-0.1608	0.5071

Table A33.

Switzerland Natives 2012

Variable	Observations	Mean	Std. Deviation	Min	Max	Mean Difference from Turkey
Math Score	7833	0.2578	0.9184	-3.0459	3.5551	0.9420
Science Score	7833	0.1198	0.9083	-3.0672	3.1411	0.6423
Enjoyment of Math	4889	-0.0613	0.9580	-2.6314	3.0219	-0.4970
Confidence in Math	4889	0.1787	0.9679	-3.6572	1.9284	0.3530

Table A34.

Switzerland Immigrants 2012

Variable	Observations	Mean	Std. Deviation	Min	Max	Difference from Natives	Difference from All Immigrants
Math Score	117	-0.5614	0.9424	-2.6584	1.7543	-0.8192	0.2892
Science Score	117	-0.8330	0.9018	-3.1489	1.0934	-0.9529	0.0175
Enjoyment of Math	77	0.3103	1.0284	-2.1460	2.2115	0.3715	1.1608
Confidence in Math	77	-0.1514	1.0443	-3.0836	1.8974	-0.3301	0.6991

Table A35.

German Natives 2012

Variable	Observations	Mean	Std. Deviation	Min	Max	Mean Difference from Turkey
Math Score	3385	0.1679	0.9911	-3.2548	2.9677	0.8521
Science Score	3385	0.3354	1.0047	-3.9125	2.9993	0.8578
Enjoyment of Math	2120	-0.1947	1.0916	-2.6050	2.9728	-0.6304
Confidence in Math	2120	0.3423	0.9353	-3.2922	1.9284	0.5165

Table A36.

Germany Immigrants 2012

Variable	Observations	Mean	Std. Deviation	Min	Max	Difference from Natives	Difference from All Immigrants
Math Score	100	-0.7335	0.8421	-2.5093	0.9391	-0.9014	0.1170
Science Score	100	-0.7473	0.9443	-3.2193	1.5311	-1.0827	0.1032
Enjoyment of Math	61	-0.2315	1.0221	-2.2492	2.2612	-0.0368	0.6190
Confidence in Math	61	0.0912	0.8301	-2.0846	1.6859	-0.2511	0.9417

Table A37.

Denmark Natives 2012

Variable	Observations	Mean	Std. Deviation	Min	Max	Mean Difference from Turkey
Math Score	5230	-0.0717	0.8352	-3.6997	2.4843	0.6125
Science Score	5230	-0.0459	0.9674	-4.0264	3.0428	0.4765
Enjoyment of Math	3122	0.3022	0.9163	-2.2961	3.0427	-0.1335
Confidence in Math	3122	-0.1154	0.9531	-3.6772	1.8286	0.0588

Table A38.

Denmark Immigrants 2012

Variable	Observations	Mean	Std. Deviation	Min	Max	Difference from Natives	Difference from All Immigrants
Math Score	232	-0.9881	0.7509	-2.9779	1.1898	-0.9163	-0.1375
Science Score	232	-1.2049	0.8959	-3.8711	1.5683	-1.1590	-0.3544
Enjoyment of Math	128	0.6098	0.9832	-2.0399	2.4060	0.3076	1.4604
Confidence in Math	128	-0.2916	0.9252	-3.5945	1.5482	-0.1762	0.5589

Table A39.

Turkey 2015

Variable	Observations	Mean	Std. Deviation	Min	Max
Math Score	5724	-0.8725	0.8463	-3.8347	2.0860
Science Score	5724	-0.7686	0.7833	-3.0656	2.1315
Enjoyment of Math	5722	-0.0407	0.9065	-5.2991	3.0934
Confidence in Math	5722	0.2059	0.7349	-4.5265	3.3322

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Table A40.

All Immigrants 2015

Variable	Observations	Mean	Std. Deviation	Min	Max	Mean Difference from Turkey
Math Score	694	-0.7259	0.8294	-3.6152	2.0897	0.1466
Science Score	694	-0.8924	0.8505	-3.2560	1.5833	-0.0199
Enjoyment of Math	645	-0.1156	1.2881	-4.7823	3.0934	0.7568
Confidence in Math	645	-0.3633	1.2818	-4.4503	2.6849	0.5092

Table A41.

Austria Natives 2015

Variable	Observations	Mean	Std. Deviation	Min	Max	Mean Difference from Turkey
Math Score	5416	0.1190	0.9350	-3.2052	3.5584	0.9915
Science Score	5416	0.1279	0.9461	-3.0446	3.7980	0.8965
Enjoyment of Math	5267	-0.0683	0.9795	-5.0836	3.0934	-0.0276
Confidence in Math	5267	0.0169	0.9937	-4.5265	3.3322	-0.1889

Table A42.

Austria Immigrants 2015

Variable	Observations	Mean	Std. Deviation	Min	Max	Difference from Natives	Difference from All Immigrants
Math Score	233	-0.9360	0.8384	-3.6152	1.9480	-1.0550	-0.2101
Science Score	233	-0.9060	0.8317	-3.2560	1.5833	-1.0339	-0.1800
Enjoyment of Math	231	-0.2559	1.2130	-3.9060	2.3324	-0.1877	0.4700
Confidence in Math	231	-0.3186	1.2239	-4.1915	2.6849	-0.3355	0.4074

Table A43.

Belgium Natives 2015

Variable	Observations	Mean	Std. Deviation	Min	Max	Mean Difference from Turkey
Math Score	7478	0.2387	0.9615	-3.1669	3.6691	1.1112
Science Score	7478	0.2081	0.9730	-2.8826	3.6788	0.9767
Enjoyment of Math	7220	-0.0240	0.9789	-5.2991	3.0934	0.0167
Confidence in Math	7220	-0.0044	0.9816	-4.5265	3.3322	-0.2102

Table A44.

Belgium Immigrants 2015

Variable	Observations	Mean	Std. Deviation	Min	Max	Difference from Natives	Difference from All Immigrants
Math Score	61	-0.6950	0.9096	-2.4981	1.4268	-0.9337	0.0310
Science Score	61	-0.8263	0.9014	-2.6503	1.3905	-1.0343	-0.1003
Enjoyment of Math	59	-0.2377	1.1643	-2.9946	2.3324	-0.2137	0.4883
Confidence in Math	59	-0.3683	1.2476	-3.5925	1.1177	-0.3639	0.3577

Table A45.

Switzerland Natives 2015

Variable	Observations	Mean	Std. Deviation	Min	Max	Mean Difference from Turkey
Math Score	3764	0.3673	0.9206	-2.5735	3.4432	1.2398
Science Score	3764	0.2486	0.9269	-2.6121	2.8033	1.0171
Enjoyment of Math	3756	-0.0144	1.1969	-5.0110	3.0934	0.0262
Confidence in Math	3756	-0.1918	1.0983	-4.5265	2.9403	-0.3977

Table A46.

Switzerland Immigrants 2015

Variable	Observations	Mean	Std. Deviation	Min	Max	Difference from Natives	Difference from All Immigrants
Math Score	51	-0.3264	1.0119	-2.2263	2.0897	-0.6937	0.3995
Science Score	51	-0.6773	0.9189	-2.8423	1.3872	-0.9258	0.0487
Enjoyment of Math	51	-0.1426	1.4186	-4.7484	3.0934	-0.1282	0.5833
Confidence in Math	51	-0.1239	1.1769	-3.0876	2.2330	0.0680	0.6021

Table A47.

German Natives 2015

Variable	Observations	Mean	Std. Deviation	Min	Max	Mean Difference from Turkey
Math Score	4482	0.2384	0.8995	-3.5423	3.1596	1.1109
Science Score	4482	0.3451	0.9527	-2.7238	3.2194	1.1137
Enjoyment of Math	3181	0.0706	1.0298	-5.2991	3.0934	0.1113
Confidence in Math	3181	-0.1798	1.2879	-4.5265	2.7629	-0.3857

Table A48.

Germany Immigrants 2015

Variable	Observations	Mean	Std. Deviation	Min	Max	Difference from Natives	Difference from All Immigrants
Math Score	106	-0.6402	0.8788	-3.0144	0.9553	-0.8786	0.0857
Science Score	106	-0.7394	0.8949	-2.6787	1.4700	-1.0845	-0.0134
Enjoyment of Math	70	-0.0628	1.3019	-4.7823	2.1555	-0.1334	0.6632
Confidence in Math	70	-0.4062	1.4049	-4.2518	1.2680	-0.2264	0.3197

Table A49.

Denmark Natives 2015

Variable	Observations	Mean	Std. Deviation	Min	Max	Mean Difference from Turkey
Math Score	5070	0.1606	0.8112	-3.2168	2.8579	1.0331
Science Score	5070	0.0989	0.8927	-3.0131	3.3933	0.8675
Enjoyment of Math	4926	0.1629	0.8472	-5.2524	3.0934	0.2036
Confidence in Math	4926	0.0767	0.8820	-4.5265	2.5712	-0.1291

Table A50.

Denmark Immigrants 2015

Variable	Observations	Mean	Std. Deviation	Min	Max	Difference from Natives	Difference from All Immigrants
Math Score	243	-0.6536	0.6777	-2.4902	1.5570	-0.8142	0.0724
Science Score	243	-1.0078	0.8063	-2.8456	1.2585	-1.1067	-0.2818
Enjoyment of Math	234	0.0437	1.3463	-4.6899	3.0934	-0.1192	0.7696
Confidence in Math	234	-0.4455	1.3310	-4.4503	2.3542	-0.5222	0.2805

43

Share of Immigrant Population who is a First-Generation Immigrant and
Share of Immigrant Population who Speak a Foreign Language at Home

Table A51.

Country	2003	
	Foreign Language at Home	*First Generation Immigrants*
Austria	83%	50%
Belgium	78%	13%
Switzerland	65%	27%
Germany	58%	16%
Denmark	39%	5%

Table A52.

Country	2006	
	Foreign Language at Home	*First Generation Immigrants*
Austria	75%	27%
Belgium	61%	16%
Switzerland	59%	13%
Germany	49%	9%
Denmark	33%	5%

Table A53.

Country	2012	
	Foreign Language at Home	*First Generation Immigrants*
Austria	83%	25%
Belgium	81%	20%
Switzerland	64%	12%
Germany	57%	3%
Denmark	54%	6%

Table A55.

Country	2015	
	Foreign Language at Home	*First Generation Immigrants*
Austria	83%	21%
Belgium	77%	15%
Switzerland	71%	20%
Germany	60%	10%
Denmark	40%	6%

2003 Education Groupings

Table A56.

	Mother Education Level	Father Education Level	Turkey	Austria	Belgium	Switzerland	Germany	Denmark	All Immigrants
Female	Unreported	No Schooling	0.06%	0.00%	0.00%	0.00%	1.45%	0.00%	0.45%
	No Schooling	Unreported	0.08%	0.00%	0.00%	1.94%	0.00%	0.00%	0.45%
	No Schooling	No Schooling	0.93%	0.00%	8.75%	8.74%	13.04%	15.00%	8.35%
	No Schooling	Primary School	2.92%	0.00%	0.00%	4.85%	1.45%	0.00%	1.58%
	No Schooling	Lower Secondary School	0.89%	1.96%	0.00%	0.00%	6.52%	15.00%	3.16%
	No Schooling	Upper Secondary School	0.74%	0.00%	0.00%	0.00%	2.90%	0.00%	0.90%
	No Schooling	College Degree	0.08%	0.00%	0.00%	0.00%	2.17%	0.00%	0.68%
	No Schooling	Postgraduate Degree	0.11%	0.00%	0.00%	0.00%	1.45%	0.00%	0.45%
	Primary School	Unreported	0.13%	0.00%	3.75%	3.88%	0.00%	0.00%	1.58%
	Primary School	No Schooling	0.17%	0.00%	0.00%	0.00%	2.17%	0.00%	0.68%
	Primary School	Primary School	10.47%	7.84%	11.25%	13.59%	1.45%	0.00%	7.45%
	Primary School	Lower Secondary School	4.61%	6.86%	2.50%	9.71%	7.25%	0.00%	6.55%
	Primary School	Upper Secondary School	3.66%	0.00%	6.25%	0.00%	0.00%	0.00%	1.13%
	Primary School	College Degree	0.76%	0.00%	2.50%	1.94%	0.00%	0.00%	0.90%
	Primary School	Postgraduate Degree	0.87%	0.00%	0.00%	0.00%	0.00%	10.00%	0.45%
	Lower Secondary School	No Schooling	0.08%	2.94%	3.75%	1.94%	0.00%	0.00%	1.81%
	Lower Secondary School	Primary School	0.95%	8.82%	0.00%	9.71%	4.35%	10.00%	6.09%
	Lower Secondary School	Lower Secondary School	2.26%	0.00%	2.50%	0.00%	1.45%	0.00%	0.90%
	Lower Secondary School	Upper Secondary School	2.07%	4.90%	0.00%	1.94%	0.00%	0.00%	1.58%
	Lower Secondary School	College Degree	0.30%	0.00%	0.00%	0.00%	1.45%	0.00%	0.45%
	Upper Secondary School	Primary School	0.59%	1.96%	0.00%	0.00%	0.00%	0.00%	0.45%
	Upper Secondary School	Lower Secondary School	0.44%	2.94%	0.00%	0.00%	0.00%	0.00%	0.68%
	Upper Secondary School	Upper Secondary School	3.26%	1.96%	2.50%	0.00%	1.45%	0.00%	1.35%
	Upper Secondary School	College Degree	0.53%	0.00%	3.75%	0.00%	1.45%	0.00%	1.13%
	College Degree	Upper Secondary School	0.25%	0.00%	0.00%	0.00%	1.45%	0.00%	0.45%
	College Degree	College Degree	0.53%	0.00%	7.50%	0.00%	0.00%	0.00%	1.35%
Male	Unreported	Upper Secondary School	0.04%	0.00%	2.50%	0.00%	1.45%	0.00%	0.90%
	No Schooling	Unreported	0.23%	0.00%	0.00%	0.00%	2.17%	0.00%	0.68%
	No Schooling	No Schooling	2.64%	0.00%	7.50%	7.77%	23.19%	25.00%	11.51%
	No Schooling	Primary School	4.82%	2.94%	0.00%	1.94%	0.00%	0.00%	1.13%
	No Schooling	Lower Secondary School	1.48%	3.92%	0.00%	0.00%	4.35%	0.00%	2.26%
	No Schooling	Upper Secondary School	1.10%	0.00%	0.00%	0.00%	1.45%	0.00%	0.45%
	No Schooling	College Degree	0.38%	0.00%	0.00%	0.00%	1.45%	0.00%	0.45%
	Primary School	Primary School	11.76%	7.84%	12.50%	11.65%	1.45%	15.00%	7.90%
	Primary School	Lower Secondary School	4.84%	5.88%	0.00%	3.88%	0.00%	0.00%	2.26%
	Primary School	Upper Secondary School	5.27%	3.92%	6.25%	2.91%	0.00%	0.00%	2.71%
	Primary School	Technical Certification	0.04%	0.00%	3.75%	0.00%	0.00%	0.00%	0.68%
	Primary School	College Degree	0.87%	2.94%	0.00%	0.00%	0.00%	0.00%	0.68%
	Lower Secondary School	Unreported	0.11%	0.00%	0.00%	0.00%	4.35%	0.00%	1.35%
	Lower Secondary School	Lower Secondary School	3.32%	19.61%	3.75%	11.65%	5.80%	10.00%	10.16%
	Lower Secondary School	Upper Secondary School	2.33%	4.90%	2.50%	0.00%	0.00%	0.00%	1.58%
	Lower Secondary School	College Degree	0.68%	2.94%	0.00%	0.00%	0.00%	0.00%	0.68%
	Lower Secondary School	Postgraduate Degree	0.87%	0.00%	0.00%	1.94%	0.00%	0.00%	0.45%
	Upper Secondary School	Upper Secondary School	2.96%	2.94%	2.50%	0.00%	1.45%	0.00%	1.58%
	Upper Secondary School	College Degree	0.59%	1.96%	0.00%	0.00%	0.00%	0.00%	0.45%
	College Degree	College Degree	1.40%	0.00%	3.75%	0.00%	0.00%	0.00%	0.68%
	Postgraduate Degree	Postgraduate Degree	2.14%	0.00%	0.00%	0.00%	1.45%	0.00%	0.45%

2006 Education Groupings

Table A57.

	Mother Education Level	Father Education Level	Turkey	Austria	Belgium	Switzerland	Germany	Denmark	All Immigrants
Female	Unreported	Lower Secondary School	0.26%	0.00%	0.00%	0.00%	7.00%	0.86%	1.41%
	Unreported	Upper Secondary School	0.26%	0.00%	0.00%	0.00%	2.00%	0.00%	0.31%
	No Schooling	Unreported	0.13%	0.00%	4.55%	0.00%	3.00%	0.86%	1.25%
	No Schooling	No Schooling	1.75%	3.25%	7.58%	0.00%	4.00%	1.29%	2.51%
	No Schooling	Primary School	2.50%	0.00%	3.03%	1.71%	0.00%	0.00%	0.63%
	No Schooling	Lower Secondary School	1.30%	0.00%	0.00%	0.00%	5.00%	1.72%	1.41%
	Primary School	Unreported	0.19%	1.63%	0.00%	0.00%	0.00%	2.16%	1.10%
	Primary School	Primary School	12.65%	6.50%	15.15%	5.13%	0.00%	8.19%	6.74%
	Primary School	Lower Secondary School	5.66%	8.13%	7.58%	1.71%	0.00%	7.76%	5.49%
	Primary School	Upper Secondary School	2.86%	3.25%	6.06%	3.42%	0.00%	2.16%	2.66%
	Primary School	College Degree	2.82%	1.63%	0.00%	0.00%	0.00%	0.86%	0.63%
	Lower Secondary School	Unreported	0.15%	0.00%	0.00%	0.00%	5.00%	2.59%	1.72%
	Lower Secondary School	No Schooling	0.17%	0.00%	0.00%	0.00%	3.00%	0.00%	0.47%
	Lower Secondary School	Primary School	0.98%	1.63%	0.00%	1.71%	0.00%	0.86%	0.94%
	Lower Secondary School	Lower Secondary School	3.33%	8.94%	9.09%	13.68%	10.00%	10.78%	10.66%
	Lower Secondary School	Upper Secondary School	1.52%	4.88%	3.03%	2.56%	2.00%	3.02%	3.13%
	Lower Secondary School	College Degree	1.33%	2.44%	0.00%	5.13%	3.00%	1.29%	2.35%
	Lower Secondary School	Postgraduate Degree	0.06%	0.00%	0.00%	1.71%	0.00%	0.00%	0.31%
	Upper Secondary School	Unreported	0.04%	0.00%	0.00%	0.00%	2.00%	0.86%	0.63%
	Upper Secondary School	Primary School	0.53%	2.44%	0.00%	0.00%	0.00%	1.29%	0.94%
	Upper Secondary School	Lower Secondary School	0.66%	3.25%	0.00%	3.42%	0.00%	1.29%	1.72%
	Upper Secondary School	Upper Secondary School	1.86%	4.88%	0.00%	4.27%	0.00%	2.59%	2.66%
	Upper Secondary School	College Degree	1.43%	1.63%	0.00%	0.00%	0.00%	2.16%	1.10%
	College Degree	Primary School	0.28%	0.00%	0.00%	0.00%	0.00%	1.29%	0.47%
	College Degree	Lower Secondary School	0.36%	0.00%	0.00%	1.71%	0.00%	2.16%	1.10%
	College Degree	Upper Secondary School	0.21%	0.00%	0.00%	0.00%	0.00%	1.72%	0.63%
	College Degree	College Degree	3.01%	3.25%	4.55%	5.13%	0.00%	2.16%	2.82%
Male	Unreported	No Schooling	0.26%	0.00%	0.00%	0.00%	0.00%	1.29%	0.47%
	Unreported	Lower Secondary School	0.26%	0.00%	0.00%	0.00%	9.00%	0.00%	1.41%
	Unreported	College Degree	0.26%	0.00%	3.03%	0.00%	5.00%	0.00%	1.10%
	No Schooling	Unreported	0.19%	0.00%	0.00%	0.00%	3.00%	0.86%	0.78%
	No Schooling	No Schooling	2.12%	0.00%	0.00%	2.56%	3.00%	0.86%	1.25%
	No Schooling	Primary School	3.25%	0.00%	0.00%	2.56%	0.00%	0.00%	0.47%
	No Schooling	Lower Secondary School	1.26%	0.00%	0.00%	1.71%	7.00%	0.86%	1.72%
	No Schooling	Upper Secondary School	0.34%	0.00%	3.03%	0.00%	0.00%	0.00%	0.31%
	Primary School	No Schooling	0.71%	0.00%	3.03%	0.00%	0.00%	0.00%	0.31%
	Primary School	Primary School	10.84%	5.69%	7.58%	7.69%	0.00%	5.60%	5.33%
	Primary School	Lower Secondary School	5.32%	6.50%	9.09%	3.42%	0.00%	3.88%	4.23%
	Primary School	Upper Secondary School	2.48%	0.00%	6.06%	1.71%	0.00%	0.86%	1.25%
	Primary School	College Degree	2.22%	0.00%	0.00%	3.42%	0.00%	2.16%	1.41%
	Lower Secondary School	Unreported	0.15%	0.00%	0.00%	0.00%	4.00%	0.00%	0.63%
	Lower Secondary School	No Schooling	0.06%	2.44%	0.00%	0.00%	0.00%	0.00%	0.47%
	Lower Secondary School	Primary School	1.15%	0.00%	0.00%	2.56%	0.00%	0.00%	0.47%
	Lower Secondary School	Lower Secondary School	3.66%	8.94%	0.00%	11.11%	10.00%	5.60%	7.37%
	Lower Secondary School	Upper Secondary School	1.92%	2.44%	0.00%	0.00%	0.00%	3.02%	1.57%
	Lower Secondary School	College Degree	2.07%	4.88%	0.00%	1.71%	5.00%	1.29%	2.51%
	Upper Secondary School	Lower Secondary School	0.66%	1.63%	0.00%	3.42%	0.00%	0.86%	1.25%
	Upper Secondary School	Upper Secondary School	1.99%	8.13%	4.55%	3.42%	0.00%	2.59%	3.61%
	Upper Secondary School	College Degree	1.67%	0.00%	0.00%	0.00%	2.00%	1.72%	0.94%
	College Degree	Unreported	0.06%	0.00%	0.00%	0.00%	0.00%	0.86%	0.31%
	College Degree	Primary School	0.15%	0.00%	0.00%	0.00%	0.00%	0.86%	0.31%
	College Degree	Lower Secondary School	0.43%	0.00%	0.00%	0.00%	0.00%	1.29%	0.47%
	College Degree	Upper Secondary School	0.38%	0.00%	0.00%	0.00%	4.00%	1.29%	1.10%
	College Degree	College Degree	3.98%	1.63%	3.03%	3.42%	2.00%	3.02%	2.66%
	Postgraduate Degree	College Degree	0.13%	0.00%	0.00%	0.00%	0.00%	1.29%	0.47%

2012 Education Groupings

Table A58.

Mother Education Level	Father Education Level	Turkey	Austria	Belgium	Switzerland	Germany	Denmark	All Immigrants
Unreported	Primary School	0.13%	0.00%	2.86%	0.00%	0.00%	5.13%	0.72%
No Schooling	Unreported	0.06%	0.00%	2.86%	1.00%	4.58%	0.00%	1.81%
No Schooling	No Schooling	1.02%	3.57%	5.71%	1.50%	6.87%	0.00%	3.62%
No Schooling	Primary School	2.65%	1.79%	10.00%	1.00%	0.00%	7.69%	2.54%
No Schooling	Lower Secondary School	0.87%	0.00%	0.00%	2.00%	3.82%	5.13%	1.99%
No Schooling	Upper Secondary School	0.60%	1.79%	2.86%	0.00%	3.05%	5.13%	1.81%
No Schooling	Postgraduate Degree	0.11%	0.00%	0.00%	0.00%	3.05%	0.00%	0.72%
Primary School	Unreported	0.23%	0.00%	0.00%	1.00%	0.00%	0.00%	0.36%
Primary School	No Schooling	0.41%	0.00%	2.86%	0.00%	0.00%	0.00%	0.36%
Primary School	Primary School	10.92%	7.14%	11.43%	7.00%	0.00%	0.00%	5.43%
Primary School	Lower Secondary School	4.39%	6.25%	7.14%	6.50%	0.00%	12.82%	5.43%
Primary School	Upper Secondary School	4.95%	4.46%	5.71%	1.00%	0.00%	7.69%	2.54%
Primary School	College Degree	0.73%	2.68%	0.00%	2.00%	0.00%	0.00%	1.27%
Lower Secondary School	Unreported	0.15%	0.00%	0.00%	1.00%	3.82%	0.00%	1.27%
Lower Secondary School	Primary School	0.94%	0.00%	0.00%	2.00%	0.00%	0.00%	0.72%
Lower Secondary School	Lower Secondary School	2.67%	12.50%	0.00%	12.00%	9.16%	0.00%	9.06%
Lower Secondary School	Upper Secondary School	2.24%	5.36%	0.00%	1.50%	3.82%	0.00%	2.54%
Lower Secondary School	College Degree	0.23%	2.68%	0.00%	2.50%	0.00%	0.00%	1.45%
Lower Secondary School	Postgraduate Degree	0.43%	0.00%	0.00%	1.00%	1.53%	0.00%	0.72%
Upper Secondary School	Unreported	0.15%	0.00%	2.86%	0.00%	0.00%	0.00%	0.36%
Upper Secondary School	No Schooling	0.06%	0.00%	4.29%	0.00%	0.00%	0.00%	0.54%
Upper Secondary School	Primary School	0.77%	0.00%	0.00%	1.00%	0.00%	0.00%	0.36%
Upper Secondary School	Lower Secondary School	1.24%	6.25%	0.00%	1.50%	1.53%	0.00%	2.17%
Upper Secondary School	Upper Secondary School	3.35%	5.36%	4.29%	0.00%	3.82%	0.00%	2.54%
Upper Secondary School	College Degree	0.68%	1.79%	0.00%	0.00%	0.00%	0.00%	0.36%
College Degree	College Degree	0.38%	0.00%	4.29%	1.00%	0.00%	0.00%	0.91%
Postgraduate Degree	College Degree	0.04%	0.00%	0.00%	1.00%	0.00%	0.00%	0.36%
Postgraduate Degree	Postgraduate Degree	1.34%	0.00%	0.00%	1.00%	3.05%	0.00%	1.09%
Unreported	Lower Secondary School	0.13%	0.00%	0.00%	1.00%	3.82%	0.00%	1.27%
No Schooling	No Schooling	1.94%	0.00%	2.86%	3.00%	10.69%	0.00%	3.99%
No Schooling	Primary School	3.67%	0.00%	0.00%	1.00%	0.00%	5.13%	0.72%
No Schooling	Lower Secondary School	1.28%	0.00%	2.86%	2.00%	5.34%	0.00%	2.36%
No Schooling	Upper Secondary School	0.83%	1.79%	0.00%	0.00%	1.53%	0.00%	0.72%
No Schooling	College Degree	0.13%	0.00%	0.00%	0.00%	2.29%	0.00%	0.54%
Primary School	No Schooling	0.60%	0.00%	0.00%	1.00%	0.00%	0.00%	0.36%
Primary School	Primary School	12.73%	0.00%	5.71%	7.00%	0.00%	15.38%	4.35%
Primary School	Lower Secondary School	5.18%	6.25%	0.00%	3.50%	0.00%	7.69%	3.08%
Primary School	Upper Secondary School	4.91%	0.00%	4.29%	1.50%	0.00%	0.00%	1.09%
Primary School	College Degree	0.73%	2.68%	0.00%	1.00%	0.00%	0.00%	0.91%
Primary School	Postgraduate Degree	0.90%	0.00%	2.86%	0.00%	0.00%	0.00%	0.36%
Lower Secondary School	Unreported	0.15%	0.00%	0.00%	1.50%	0.00%	0.00%	0.54%
Lower Secondary School	Primary School	1.09%	0.00%	0.00%	1.50%	0.00%	5.13%	0.91%
Lower Secondary School	Lower Secondary School	3.28%	6.25%	0.00%	13.50%	10.69%	7.69%	9.24%
Lower Secondary School	Upper Secondary School	2.35%	3.57%	0.00%	1.50%	0.00%	5.13%	1.63%
Lower Secondary School	College Degree	0.53%	6.25%	2.86%	1.50%	2.29%	5.13%	3.08%
Lower Secondary School	Postgraduate Degree	0.47%	0.00%	0.00%	3.00%	0.00%	0.00%	1.09%
Upper Secondary School	Lower Secondary School	0.58%	0.00%	0.00%	0.00%	1.53%	0.00%	0.36%
Upper Secondary School	Upper Secondary School	3.35%	4.46%	8.57%	2.00%	3.05%	0.00%	3.44%
Upper Secondary School	College Degree	0.75%	3.57%	0.00%	0.00%	0.00%	0.00%	0.72%
Upper Secondary School	Postgraduate Degree	1.79%	0.00%	2.86%	0.00%	0.00%	0.00%	0.36%
College Degree	Primary School	0.04%	0.00%	0.00%	1.00%	0.00%	0.00%	0.36%
College Degree	Lower Secondary School	0.11%	1.79%	0.00%	1.50%	0.00%	0.00%	0.91%
College Degree	College Degree	0.32%	0.00%	0.00%	1.50%	2.29%	5.13%	1.45%
College Degree	Postgraduate Degree	0.45%	1.79%	0.00%	0.00%	0.00%	0.00%	0.36%
Postgraduate Degree	Lower Secondary School	0.13%	0.00%	0.00%	0.00%	2.29%	0.00%	0.54%
Postgraduate Degree	College Degree	0.11%	0.00%	0.00%	0.00%	1.53%	0.00%	0.36%
Postgraduate Degree	Postgraduate Degree	1.60%	0.00%	0.00%	2.00%	4.58%	0.00%	1.81%

Rows 1–28 are grouped under "Female"; rows 29–57 are grouped under "Male".

2015 Education Groupings

Table A59.

Sex	Mother Education Level	Father Education Level	Turkey	Austria	Belgium	Switzerland	Germany	Denmark	All Immigrants
Female	Unreported	Lower Secondary School	0.03%	0.00%	0.00%	0.00%	2.83%	0.82%	0.72%
	No Schooling	No Schooling	1.55%	0.86%	3.28%	0.00%	0.00%	1.23%	1.01%
	No Schooling	Primary School	2.53%	1.29%	4.92%	0.00%	0.00%	1.65%	1.44%
	No Schooling	Lower Secondary School	1.43%	0.86%	3.28%	0.00%	4.72%	0.00%	1.30%
	No Schooling	Upper Secondary School	0.54%	0.00%	3.28%	0.00%	0.00%	0.00%	0.29%
	No Schooling	College Degree	0.07%	1.72%	0.00%	0.00%	0.00%	0.00%	0.58%
	Primary School	No Schooling	0.54%	1.29%	0.00%	0.00%	0.00%	0.00%	0.43%
	Primary School	Primary School	0.03%	6.44%	9.84%	5.88%	0.00%	5.35%	5.33%
	Primary School	Lower Secondary School	0.03%	4.29%	3.28%	9.80%	0.00%	4.53%	4.03%
	Primary School	Upper Secondary School	0.03%	1.72%	3.28%	0.00%	0.00%	2.06%	1.59%
	Primary School	College Degree	0.03%	2.15%	3.28%	0.00%	0.00%	2.47%	1.87%
	Lower Secondary School	Primary School	1.21%	0.86%	0.00%	3.92%	0.00%	2.47%	1.44%
	Lower Secondary School	Lower Secondary School	4.21%	7.30%	3.28%	13.73%	16.04%	8.23%	9.08%
	Lower Secondary School	Upper Secondary School	1.94%	4.72%	0.00%	0.00%	0.00%	1.65%	2.16%
	Lower Secondary School	College Degree	1.15%	4.29%	0.00%	0.00%	8.49%	3.29%	3.89%
	Upper Secondary School	Unreported	0.07%	1.29%	0.00%	0.00%	0.00%	0.00%	0.43%
	Upper Secondary School	Primary School	1.83%	0.86%	4.92%	0.00%	0.00%	1.23%	1.15%
	Upper Secondary School	Lower Secondary School	1.55%	1.72%	0.00%	0.00%	0.00%	2.06%	1.30%
	Upper Secondary School	Upper Secondary School	2.08%	10.73%	9.84%	0.00%	1.89%	2.88%	5.76%
	Upper Secondary School	College Degree	1.55%	2.15%	0.00%	0.00%	1.89%	0.00%	1.01%
	College Degree	Unreported	0.03%	0.00%	0.00%	0.00%	0.00%	0.82%	0.29%
	College Degree	No Schooling	0.05%	0.00%	0.00%	0.00%	1.89%	0.00%	0.29%
	College Degree	Lower Secondary School	0.75%	0.00%	3.28%	0.00%	0.00%	5.35%	2.16%
	College Degree	Upper Secondary School	0.37%	0.00%	0.00%	0.00%	0.00%	2.88%	1.01%
	College Degree	College Degree	4.89%	3.00%	0.00%	5.88%	1.89%	2.06%	2.45%
	College Degree	Postgraduate Degree	0.54%	0.00%	0.00%	0.00%	0.00%	1.23%	0.43%
	Postgraduate Degree	Postgraduate Degree	0.40%	0.00%	0.00%	3.92%	0.00%	0.00%	0.29%
Male	Unreported	Lower Secondary School	0.03%	0.00%	0.00%	0.00%	10.38%	0.82%	1.87%
	Unreported	College Degree	0.03%	0.00%	0.00%	0.00%	5.66%	0.00%	0.86%
	No Schooling	No Schooling	1.75%	0.86%	4.92%	0.00%	1.89%	1.65%	1.59%
	No Schooling	Primary School	2.45%	0.86%	0.00%	5.88%	0.00%	0.00%	0.72%
	No Schooling	Lower Secondary School	1.38%	0.00%	3.28%	0.00%	3.77%	2.06%	1.59%
	No Schooling	Upper Secondary School	0.44%	0.86%	3.28%	0.00%	0.00%	0.00%	0.58%
	No Schooling	College Degree	0.07%	0.00%	0.00%	0.00%	2.83%	0.00%	0.43%
	Primary School	Primary School	9.14%	3.43%	3.28%	5.88%	0.00%	5.76%	3.89%
	Primary School	Lower Secondary School	0.03%	2.15%	0.00%	3.92%	0.00%	5.35%	2.88%
	Primary School	Upper Secondary School	0.03%	1.29%	3.28%	0.00%	0.00%	0.82%	1.01%
	Primary School	College Degree	0.03%	1.29%	0.00%	0.00%	0.00%	2.06%	1.15%
	Lower Secondary School	Unreported	0.03%	0.00%	0.00%	0.00%	5.66%	0.00%	0.86%
	Lower Secondary School	No Schooling	0.17%	0.00%	3.28%	0.00%	4.72%	0.00%	1.01%
	Lower Secondary School	Primary School	1.21%	0.00%	0.00%	3.92%	0.00%	1.23%	0.72%
	Lower Secondary School	Lower Secondary School	4.11%	6.44%	9.84%	9.80%	7.55%	9.47%	8.21%
	Lower Secondary School	Upper Secondary School	1.19%	4.72%	0.00%	9.80%	4.72%	1.23%	3.46%
	Lower Secondary School	College Degree	1.75%	4.29%	0.00%	0.00%	4.72%	4.94%	3.89%
	Upper Secondary School	Unreported	0.10%	0.86%	3.28%	0.00%	0.00%	0.82%	0.86%
	Upper Secondary School	No Schooling	0.26%	0.00%	0.00%	3.92%	0.00%	0.00%	0.29%
	Upper Secondary School	Lower Secondary School	1.48%	1.72%	0.00%	0.00%	0.00%	1.23%	1.01%
	Upper Secondary School	Upper Secondary School	2.57%	6.87%	0.00%	3.92%	0.00%	1.23%	3.03%
	Upper Secondary School	College Degree	1.57%	2.15%	0.00%	0.00%	1.89%	0.00%	1.01%
	College Degree	Lower Secondary School	0.72%	0.86%	0.00%	0.00%	0.00%	1.65%	0.86%
	College Degree	Upper Secondary School	0.68%	0.00%	0.00%	0.00%	0.00%	1.23%	0.43%
	College Degree	College Degree	5.43%	3.86%	6.56%	9.80%	3.77%	2.88%	4.18%
	College Degree	Postgraduate Degree	0.40%	0.00%	0.00%	0.00%	0.00%	0.82%	0.29%
	Postgraduate Degree	Lower Secondary School	0.14%	0.00%	0.00%	0.00%	0.00%	0.82%	0.29%
	Postgraduate Degree	College Degree	0.40%	0.00%	0.00%	0.00%	2.83%	0.82%	0.72%
	Postgraduate Degree	Postgraduate Degree	0.40%	0.00%	3.28%	0.00%	0.00%	0.82%	0.58%

Table A60.

Bonferroni Corrected P-Values < 0.1 of Test with Null Hypothesis of No Difference Between Countries

2003

Variable	All Countries	Austria-Belgium	Austria-Switzerland	Austria-Germany	Austria-Denmark	Belgium-Switzerland	Belgium-Germany	Belgium-Denmark	Switzerland-Germany	Switzerland-Denmark	Germany-Denmark
mathscore	0.00	---	---	---	---	---	---	---	---	0.00	---
sciscore	0.01	---	---	---	---	---	---	---	---	---	---
enjoymath	0.00	---	---	---	---	---	---	0.08	---	---	---
confpractical	0.00	---	0.01	---	---	0.00	---	---	0.052	0.00	---

2006

Variable	All Countries	Austria-Belgium	Austria-Switzerland	Austria-Germany	Austria-Denmark	Belgium-Switzerland	Belgium-Germany	Belgium-Denmark	Switzerland-Germany	Switzerland-Denmark	Germany-Denmark
mathscore	0.00	0.00	0.00	---	0.02	0.01	---	---	0.00	0.00	---
sciscore	0.00	0.00	0.00	---	0.04	---	---	---	---	1.772	---
enjoyscience	0.00	0.02	---	---	0.05	0.00	0.00	---	---	0.00	0.00
scienceconf	0.00	0.00	---	---	0.05	0.00	---	---	0.052	0.00	---

2012

Variable	All Countries	Austria-Belgium	Austria-Switzerland	Austria-Germany	Austria-Denmark	Belgium-Switzerland	Belgium-Germany	Belgium-Denmark	Switzerland-Germany	Switzerland-Denmark	Germany-Denmark
mathscore	0.00	---	0.00	0.00	---	---	---	0.00	---	0.00	0.00
sciscore	0.00	0.04	0.04	0.00	0.00	---	0.02	0.00	0.03	0.00	0.00
enjoymath	0.00	---	0.05	---	0.00	---	0.01	0.00	0.01	0.04	0.00
confpractical	0.00	---	---	0.00	---	---	---	---	---	---	---

2015

Variable	All Countries	Austria-Belgium	Austria-Switzerland	Austria-Germany	Austria-Denmark	Belgium-Switzerland	Belgium-Germany	Belgium-Denmark	Switzerland-Germany	Switzerland-Denmark	Germany-Denmark
mathscore	0.00	0.00	0.00	0.00	0.00	0.07	---	0.00	---	0.02	0.01
sciscore	0.00	0.00	0.00	0.00	---	---	---	0.00	---	0.00	0.00
enjoyscience	0.05	0.04	0.01	0.04	0.00	---	---	0.08	---	---	---
scienceconf	0.00	0.00	0.00	0.00	---	---	---	0.00	0.04	0.00	0.00

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