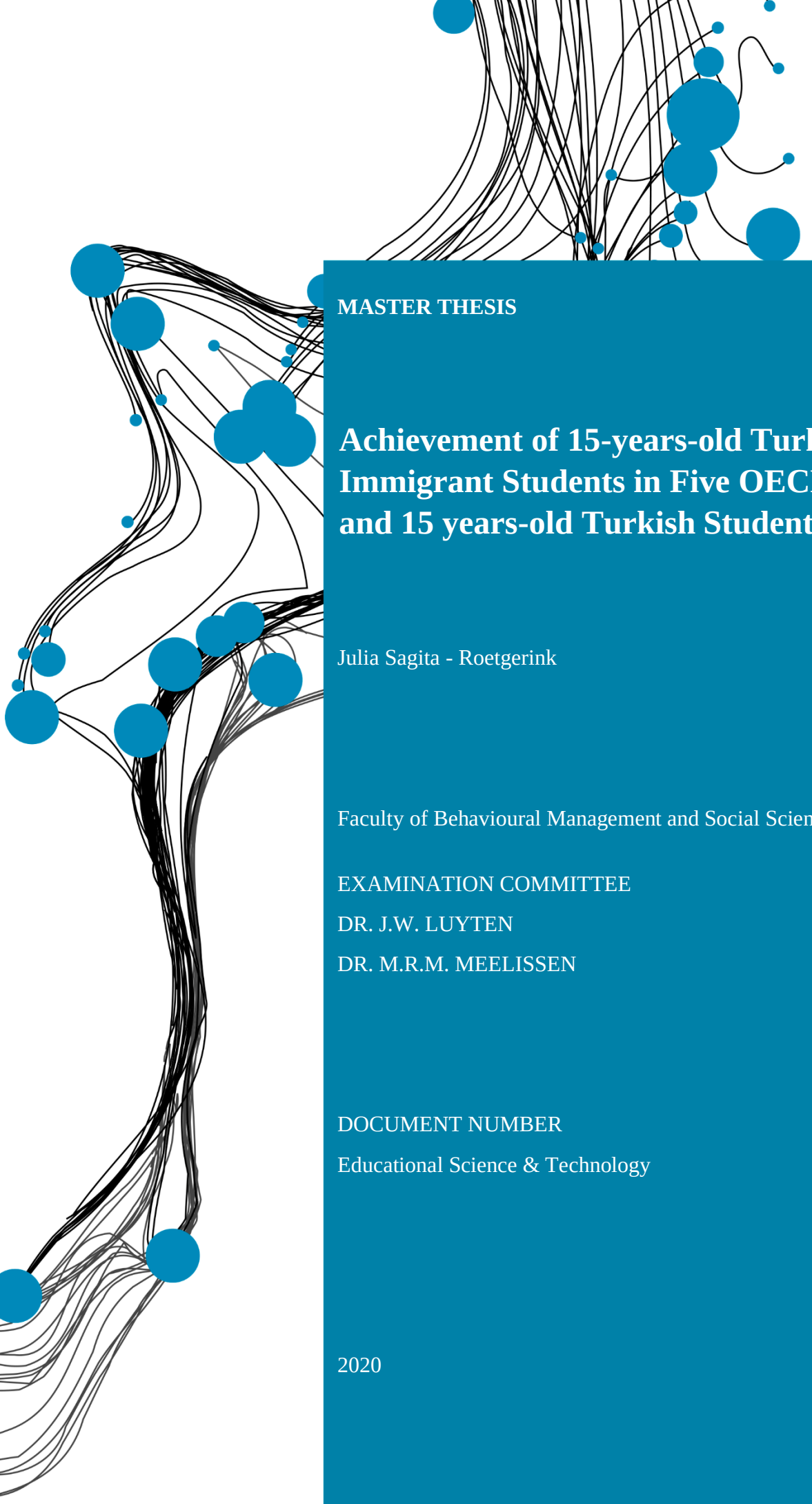

MASTER THESIS

Achievement of 15-years-old Turkish Immigrant Students in Five OECD Countries and 15 years-old Turkish Students

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Abstract

Migrant students are reported to have lower education outcomes than native students in the country where they (or their parents) migrated. This study, therefore, using a cross-sectional design tried to investigate the achievement of migrant students using the results of the Program for International Student Assessment (PISA). Migrant students were compared not only to the native students in the destination country but also with students in the country of the migrants' origin. The research question of this study focused on the relationship between migration backgrounds and achievement.

Turkey was selected to be the representation of migrant groups, and five western European countries with the highest numbers of Turkish immigrants were selected to be the destination countries. Linear regression analyses were conducted to study the relationship between migration and students' achievement. Parents' educational background and the language spoken at home were considered as confounding variables.

The findings contributed to the previous research that reports lower achievement levels of migrant students compared to native students. In contrast with the initial expectations, it was found that Turkish migrant students in more developed countries on average did not exceed the scores of students in Turkey.

Keywords: Turkish migrant students, Turkey, migrants, native students, PISA, parents' education backgrounds, language spoken at home

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1. Introduction

Migration has become a significantly important topic among OECD (Organization for Economic Development) countries due to the increase of migration flow since the 20th century (Zhitin et al., 2016). In 2017, a total of 4.4 million people immigrated to one of the European Union (EU) member states while at least 3.1 million people emigrated from an EU country (Eurostat, 2019). Migration is seen as global facilitation for mobility among countries that brings the chance of prosperity to potential migrants (Castles, 2007). The decision to migrate comes when individuals find a destination country that offers a potential advantage compared to their country of origin (Zoomers & Nijenhuis, 2012). In other words, they migrate to the more developed countries to improve their situation and gain a better life than their current situation in the home country.

Helbling and Leblang (2019) described in their study that before deciding to migrate, the potential immigrants have considered both their ability to enter and settle in the destination country. Once immigrants have settled in the destination country and have decided to become permanent residents, they may soon invite their family to migrate as well (Dedeoğlu & Genç, 2017). As a result, their children receive their education in local schools. In developed countries with a significant number of immigrants, numerous studies have been conducted to design education policies that focus on the needs and challenges of migrant students (Sugarman et al., 2016). Therefore, this study is expected to find that migrant students in the more developed countries are performing better than students in their country of origin.

However, various problems are faced by students with migrant backgrounds when they engage with the education system in the destination country. Entorf and Lauk (2008) point out that poor language skills, a disadvantaged socio-economic background, or other socio-cultural factors are often mentioned as an explanation for the poor performance at school for students with migrant backgrounds. Additionally, the age when they arrive in the destination country also affects future life chances for children who migrated with their parents (Hermansen, 2017). Lemmermann and Riphahn (2018) found that it is beneficial to migrate early in life, or before the age to enter school because children who migrate after the age of basic school entry suffer significantly in their educational attainment. Similarly, Nusche (2009) states that it is most important and effective to provide educational support for migrant students during early childhood.

Nusche (2009) argues that migrant students tend to have lower education outcomes than native students. This is supported by the results of PISA 2015 (Programme of International Student Assessment) that shows the average test scores of immigrant students on reading, math and science are substantially lower than the average scores of non-immigrant students (PISA, 2016). In most OECD countries, immigrant students often face many challenges in achieving high test scores because they have more restricted access to quality education (Entorf & Lauk, 2008; OECD, 2010; Sugarman et al., 2016). According to Martin et al., (2012), migrant background problems such as differences in the language spoken at home and socioeconomic status contribute to the performance gap between immigrant and native students. Therefore, migrant students need to speak and understand the language in the destination country to avoid social, cultural and linguistic problems (Andreevna, 2016).

Many studies have been conducted with a focus on comparing the performance of immigrant students with native students. On the contrary, discussion about the migrants' educational performance and schooling system at their (parents') country of origin is very limited. This can be seen from the search results that have been conducted on several platforms to obtain information on the performance of migrant students compared to students in their country of origin. A general overview of the search results is presented in appendix 1, which includes the keywords used in the search engines such as "migrant", "migrant student", "native". Several search platforms such as Scopus, Web of Science, University of Twente Library, OECD iLibrary and European Union (EU) Open Data Portal provide more results about the comparison between migrant students and native students in the destination country but no result related to migrants' achievement compared with students in their country of origin.

Even though there is a significant performance gap between children with migrant backgrounds and native students in the destination country, it does not allow for a conclusion about the performance of these children compared to children in their country of origin or from where their parent(s) emigrated. Therefore, to gain insight whether students with migrant backgrounds have a higher performance than students in their country of origin, a study to compare the achievement of migrant students and students who stay in their country of origin is needed. This study will focus on analysing the test scores of 15 years old students with migrant backgrounds in the destination country and compare it with students in the country of origin.

This study aims to investigate the gap between Turkish migrant students and Turkish students in their country of origin. To obtain this goal, an analysis of PISA test scores between

Turkish migrant students and Turkish students in their country of origin will be conducted. By understanding the performance of migrant students compared to their country of origin, it will give a new perspective in adjusting school programmes for students with migrant backgrounds.

Theoretical Framework

Migration. This study specifically addresses international migration. Castles (2007) defines international migration as a social phenomenon that goes beyond national borders and affects two or more nation-states. It plays an important role in the rapid and significant change of socio-cultural composition of populations in Europe (Zhitin et al., 2016).

According to Mayda (2010), migration is influenced by pull and push factors, geography, and demography. Push factors motivate people to leave their country of origin or emigrate, namely low living standards, demographic growth, lack of economic opportunities and political repression (Avci & Kirişci, 2006; Beniuc, 2018). Whereas in the destination countries, the demand of labour, family reunion, marriage, divorce, retirement, and education are pulling factors of a migration flow that lead to significant demographic and population changes (Dedeoğlu & Genç, 2017; Kofman, 2004).

Eurostat (2017) stated that one of the largest groups of new citizens in the EU Member States in 2017 were citizens of Turkey (29.9 thousand, or 3.6 %). Every year, thousands of Turkish citizens migrate to work in European countries where the population of Turkish immigrants is already significant (Dedeoğlu & Genç, 2017). Economic development in Western European countries provides an opportunity for immigrants to earn better wages in these countries, therefore it leads to a major migration stream (Cruceru & Sima, 2012). Moreover, migration is not only affected by better work opportunities but also family considerations play an important role in the decision to migrate (Güngör & Tansel, 2014). Furthermore, immigrants who leave their origin country due to economic reasons are more motivated to meet their economic expectations in the destination country. Therefore they support their children to perform well at school (Levels et al., 2008).

This study will take Turkey as the representation of one of the largest migrant groups in western Europe. The population of Turkish descent in Europe exceeds four million people which make this group the largest immigrant groups since 1960 (Crul et al., 2013; Dedeoğlu & Genç, 2017). According to the Republic of Turkey Ministry of Foreign Affairs (2020), it is estimated that 5,5 million Turkish people live in Western European countries. Furthermore, Austria, Belgium, Denmark, Germany, and The Netherlands are selected to be the comparison

with Turkey. The reason to select these countries is that according to OECD (2020) International Migration Statistics, these western European countries reported high numbers of Turkish immigrants for every cycle of PISA as presented in appendix 2. Moreover, the most favourite destinations for Turkish emigrants are OECD countries which offer a better economic condition than Turkey (Dedeoğlu & Genç, 2017; Karagöz, 2016). Therefore, this study will focus on analysing PISA results from these selected countries.

Migrant students. Migrants students are categorised into first-generation migrants and second-generation migrants (Nusche, 2009). Students with a migrant background include foreign-born students and native-born student with both parents foreign-born (OECD, 2016). In the PISA cycle, the index migration background was based on the students' country of birth, their mother's and father's country of birth (OECD, 2017). All students who were born abroad and whose parents were also born abroad are considered as first-generation migrants, while second-generation migrants refer to students who were born in the destination country but whose parents were born abroad (Nusche, 2009).

Based on the data from PISA 2015, the majority of migrant students in the testing countries are second-generation immigrant (Borgonovi, 2016). However, this study categorised the students differently than PISA. Students who were born in the testing country with at least one parent born abroad is categorised as immigrant students (Hanushek & Wößmann, 2006). Turkish migrant students belong to this category because most of them were born when their parents migrated from Turkey or after family reunification in the destination country (Avci & Kirişci, 2006).

In the present study, all students with parents born in Turkey are considered Turkish even though in some cases their ethnicity and language might differ (e.g. Kurdish). Turkish students are considered as the most homogeneous group since they share the same ethnicity, language, and religion (Schneeweis, 2015). Related to their culture, Turkish are strongly attached to traditional family values and much oriented to their parents that lead to language deficiencies in the destination country (Crul & Doomernik, 2003). Furthermore, Andreevna (2016) found that a lack of understanding of the local language may cause serious problems for migrants in their daily experience. Additionally, Dedeoğlu and Genç (2017) mentioned that the difficulties of many Turkish people in integration and acculturation have become a subject of debates in European society. However, Levels et al., (2008) state that immigrants who leave their origin country due to economic reasons are more likely to meet their expectation and motivate their children to perform well at school.

Native students. All children who are born in the receiving country with at least one parent who is born inside the country are considered native students (OECD, 2017). Native students often have more educational resources at home than migrant students, therefore they have better performances (Chiu et al., 2012). Moreover, many native parents in the districts of ethnic minority concentration tend to avoid schools with migrant students and search schools outside of the neighbourhood (Crul & Doomernik, 2003). Native students also receive more benefits such as recommendation for their educational success from the teachers (Lüdemann & Schwerdt, 2013).

Achievement. In most OECD countries, migrant students tend to have lower education outcomes than native students (Di Bartolomeo, 2011; Nusche, 2009). Martin et al. (2012) found that factors that are embedded within and associated with immigrant statuses, such as language spoken at home and age of arrival, are associated with lower achievements of migrant students. Schneeweis (2015) found that Turkish students are often repeating their grade at school due to their poor performance. She also explained that the increase of chance to repeat the grade in secondary school is influenced by the number of migrants from the same origin. Additionally, migrant students from large immigrant communities are confident with the employment opportunities, therefore they have a lack of motivation to perform well at school (Levels et al., 2008).

Moreover, the gap of achievement between native students and students with migrant backgrounds is also influenced by the parental education level. Bauer and Riphahn (2007) found that children with poorly educated parents are less likely to obtain sufficient education due to the limited opportunities available for them. This could lead to an inequality of education between native students and students with migrant backgrounds which results in poor performance of migrant students.

Research Question

Based on PISA results, migrant students tend to achieve lower scores than native students in destination countries. However, this study aims to look at migrant students' achievement from another perspective by comparing them with students in their country of origin. The variables related to the migrant background (country of birth of students and parents) in the PISA questionnaire will be used to categorise students into native and migrant students. The following research questions are proposed:

1. What is the relationship between migration and achievement based on the results of PISA 2015 for Turkish migrant students in western European countries?
    a. To what extent do Turkish migrant students achieve lower scores than native students in the selected destination countries?
    b. To what extent do Turkish migrant students achieve higher scores than non-migrant students in their country of origin?

Scientific and practical relevance

This study is expected to give another perspective on migrant students in western Europe. It might show that their skills in reading, math and science in PISA exceed the average of students in the country of origin regardless of their educational problems in the destination country. Therefore, the finding of this study can be useful to present the benefit of migration by using another perspective to investigate the migrant students' achievement.

However, most of the previous studies only focus on comparing migrant students with native students. This perspective tends to frame the migrant students as a disadvantaged group because they tend to be outperformed by native students. Therefore, this study will provide a different perspective to look at migrant students' achievement based on their achievement in the PISA cycle. By comparing their performance with their country of origin using PISA 2015 data, this study will analyse the difference of the test scores between the migrant students and the students in their country of origin. This discrepancy can indicate whether migration is having a positive impact on students' achievement.

Access for migrant students to a high-quality education is restricted by a range of factors, including residential segregation, selection mechanisms and resource inequality (Nusche, 2009). Therefore, the result of this study could provide an insight into the migrant students' potential in the destination country. Additionally, for the country of origin, this could encourage their students to improve their performance so they might at least perform equally with students who migrate. One of the possible ways is by knowledge exchange with migrant students. Migrant students could transfer their knowledge and skill that can be utilized by family members or friends living in the country of origin (Naudé et al., 2017).

2. Methods

Research design

The design of this study is quantitative research and categorised as a cross-sectional study because the data have been collected only at a single point in time (Cohen et al., 2013). A quantitative secondary analysis from a large-scale assessment result, PISA 2015, was selected to answer the research question. PISA offers deep information from various perspectives, based on collected data from all participants across countries, that can be used to investigate the gap of academic achievement (Hopfenbeck et al., 2018). The strength of PISA is that it provides the opportunity to analyse the relationship between a student, a school or educational system characteristics and its respective performance across domain within data collection or across data collection for one particular domain (OECD, 2009). The results of PISA have a high degree of validity and reliability due to the accurate quality-assurance mechanism that is applied in translation, sampling and data collection (OECD, 2009). The reason to choose PISA 2015 is due to the attention this cycle gave to multicultural education practice aspects, which is particularly relevant for this study and which was not implemented in PISA 2018 (OECD, 2019). In PISA 2015, there is information on parents' country of birth from the selected countries to categorise the students as migrant or native.

Furthermore, linear regressions were conducted to investigate the relation between migration background and achievement of the participating students in the five selected countries. First, the data on student background/ demographic characteristics from the PISA questionnaire was used to categorise students as migrants or natives. In this stage, the selected variables were the country of birth of their parents. Initial observations showed that many of the migrant students are secondary immigrants who were born in the country of destination. Therefore, only the country where parents were born was used to categorise students as natives or migrants. The migrant/native categorization represents the independent variable in this study. Second, achievement, which is derived from test scores on mathematics, reading, and science, represents the dependent variable. This study also considered confounding variables that possibly affect both independent and dependent variables, such as language at home and the education of parents.

Respondents

PISA 2015 assessment which was conducted in 72 participating countries is the source of data for this study (PISA, 2016). PISA assesses 15-year-old students who attend 7th grade or

higher. PISA provided questionnaires and an achievement test which has been completed by the students. The minimum sample size for a country to participate in computer-based PISA is 5,250 students, and paper-based is 4,500 students (OECD, 2017).

The sampling design used by PISA is a two-stage stratified sample design (OECD, 2017). The first stage consists of individual schools with 15-year-old students to ensure the participation of the target students, and the second stage is the selection of students within schools (OECD, 2009). Schools are sampled from a comprehensive national list of selected schools that are eligible to participate in PISA (OECD, 2017).

Countries selected. For this study, 15-year-old students who participated in 5 western European countries: Austria, Belgium, Denmark, Germany, and The Netherlands were selected as respondents in the host countries and Turkey as a source country of migrants. In total, 39,647 students were selected for this study. Table 2.1 provides an overview of the number of students included in this study. The data were obtained from the OECD website which provided public access to the data of PISA 2015. This study excluded the students with missing information on their parents' country of birth from the sample. The students with missing information in their achievement are also removed from the sample of this study.

Table 2.1 Number of Participants in Selected Countries

Country	Frequency	Percent
Austria	7,007	16.8
Belgium	9,651	23.2
Germany	6,504	15.6
Denmark	7,161	17.2
Netherlands	5,385	12.9
Turkey	5,895	14.2
Total	41,603	100.0

Instrumentation

The development of the PISA assessment and questionnaire were guided by the Questionnaire Expert Group (QEG) and Subject Matter Expert Groups (SMEGs) with the involvement of the OECD secretariat and international contractors (OECD, 2017).

Assessment. PISA is a collaborative effort among OECD member countries to measure the ability of 15-year-old students at the end of compulsory schooling to use their knowledge and skills to face the challenges in today's societies which takes place every

three years (OECD, 2009). The first PISA took place in 2000 and PISA 2015 is the sixth PISA survey that covered reading, mathematics, science, collaborative problem solving and financial literacy with a primary focus on science, and was conducted in 35 OECD countries and 37 partner countries (OECD, 2017). The duration of the test is 2 hours, and each student is required to complete questions in multiple-choice and essay format regarding reading, science, mathematics and collaborative problem solving (OECD, 2009). The content of the questions is based on real-life situations.

Student questionnaire. In PISA, students also completed a 30-minute background questionnaire (OECD, 2017). The information sought in this questionnaire is related to students' self-information, their homes, their schools, and their learning experience. The information about the migration background is available in this questionnaire where students need to provide an answer based on their situation. This study will focus on the following variables with nominal measures from the PISA questionnaire:

- *Country of Birth – Mother:* Students were asked whether their mother was born in the country of the test or another country.
- *Country of Birth – Father:* Students were asked whether their father was born in the country of the test or another country.
- *Highest Education of parents (ISCED):* Index of Level of Education of the parents
- *Language of Assessment*
- *Language of the Questionnaire*
- *Language at home*

Furthermore, to analyse the achievement, these variables were selected:

- *1st to 10th Plausible Value in Mathematics*
- *1st to 10th Plausible Value in Reading*
- *1st to 10th Plausible Value in Science*

Procedure

Before the start of this study, ethical approval was requested from the Behavioural, Management and Social sciences Ethics Committee (BMS EC) the University of Twente. The permission of the Ethical Committee was granted on 2nd February 2020. Thus, the documentation about analysing PISA data began to be studied. It provided information on how to use the data in the PISA website. Then, the database available in the OECD website related to PISA 2015 was downloaded in SPSS format. Furthermore, the data were filtered based on

the selected countries to minimize the data loading process and saved as a new file for further analysis.

Data Analysis

The data from PISA was analysed using SPSS version 26 and the International Database (IDB) analyzer. The data was downloaded in SPSS format from the OECD website. The downloaded data then filtered by countries to only choose the selected countries to analyse. Based on this filter, a new dataset was made for each selected country. In the new dataset, except for Turkey, the country where the parents born were recorded into three categories, (1) native, if both of their parents were born in the selected country, (2) Turkish migrant, if both of their parents were born in Turkey, (0) others, if they are excluded from the previous category. The frequency of this variable is presented in Table 2.2.

Table 2.2 Numbers of Students' Migration Status Based on Country of Born Parents

Country	Native		Turkish Migrant		Others		Total
	N	%	N	%	N	%	
Austria	4,897	69.9	270	3.9	1,840	26.3	7,007
Belgium	6,365	66.0	134	1.4	3,152	32.7	9,651
Denmark	4,480	62.6	276	3.9	2,405	33.6	7,161
Germany	4,052	62.3	209	3.2	2,243	34.5	6,504
Netherlands	4,205	78.1	107	2.0	1,073	19.9	5,385
Turkey	5,698	99.2	-	0	46	0.8	5,698
Total	29,697		996		10,713		41,406

Note. N refers to number of responses and Symbol percentage (%) refers to the percentage of frequency

Moreover, from this point, the analysis was conducted for only native and Turkish migrant students since they are the targeted participants of this study. A new dichotomous variable based on the education of the parents was also created. For this variable, standardized education of parents with HISCED (Index of the highest educational level of parents) 0-4 were categorised as (1) low education, and 5-6 as (2) high education. The descriptive statistic of this variable is presented in Table 2.3.

Table 2.3 Numbers of Students based on their Parents' Level of Education

Country	Native				Turkish Migrant				*M*	*SD*
	low		high		low		high			
	N	%	N	%	N	%	N	%		
Austria	2,213	45.9	2,612	54.1	195	73.0	72	27.0	1.53	0.50
Belgium	1,819	29.2	4,405	70.8	93	72.1	36	27.9	1.70	0.46
Denmark	1,049	23.6	3,398	76.4	177	67.0	87	33.0	1.74	0.44
Germany	1,726	44.2	2,176	55.8	125	67.2	61	32.8	1.55	0.50
Netherlands	1,436	34.4	2,737	65.6	69	66.3	35	33.7	1.65	0.48
Turkey	4,133	70.6	1,723	29.4	-	0	-	0	1.29	0.46
Total	12,376		17,051		659		291			

Note. N = Number of responses; %= percentage of the frequency; M = Mean; SD = Standard Deviation

Additionally, a new variable was recorded, except for Turkey data file, to show whether the students speak at home the language of the assessment and questionnaire (it is categorised as the local language) or foreign language. The overview is presented in Table 2.4.

Table 2.4 Numbers of Students based Language spoken at home

Migrant Background	Country	Parents' Education							
		Low				High			
		Language							
		Local		Foreign		Local		Foreign	
		N	%	N	%	N	%	N	%
Native	Austria	2,181	98.6	32	1.4	2,564	98.2	48	1.8
	Belgium	1,757	96.6	62	3.4	4,294	97.5	111	2.5
	Denmark	1,024	97.6	25	2.4	3,336	98.2	62	1.8
	Germany	1,704	98.7	22	1.3	2,162	99.4	14	0.6
	Netherlands	1,420	98.9	16	1.1	2,708	98.9	29	1.1
Turkish	Austria	31	15.9	164	84.1	18	25.0	54	75.0
	Belgium	21	22.6	72	77.4	15	41.7	21	58.3
	Denmark	102	57.6	75	42.4	53	60.9	34	39.1
	Germany	60	48.0	65	52.0	16	26.2	45	73.8
	Netherlands	21	30.4	48	69.6	16	45.7	19	54.3
Total		8,321		581		15,182		437	

Note. N refers to number of responses and Symbol percentage (%) refers to the percentage of frequency

Furthermore, the SPSS data was processed using the IDB analyzer. In this process, a regression analysis was conducted to study the relationship between migration background and students' achievement while controlling for the (possibly) confounding variables (i.e. parents' education, and language spoken at home). The migration background is the independent variable which based on the country of birth of students' parents in the selected countries, it

was coded as native and Turkish migrant. This variable from 5 selected countries was recorded as a dummy variable to be able to be compared with Turkey. The dependent variable was an achievement in mathematics, reading and science. The IDB analyzer then created a syntax file from the analysis that should be run in the SPSS to obtain the result.

3. Results

This study aims to investigate the gap between 15-year-old migrant students with students in their country of origin or from where their parent(s) emigrated. The independent variable was the migrant background, while achievements on mathematics, reading and science were the dependent variable. First, to give an overview of the numbers of students in each selected country, descriptive statistics were computed. The frequencies, means and standard deviations were analysed. Furthermore, linear regressions were conducted. Figure 3.1 gives a snapshot of the overall performance of the selected countries and Turkey compared to the OECD average scores.

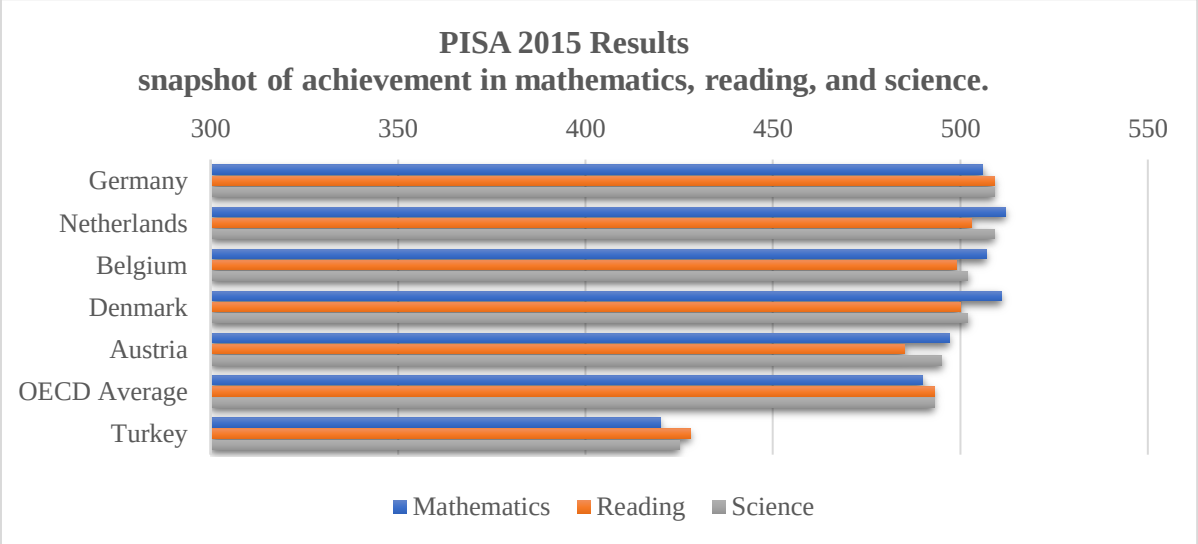


Figure 3.1 PISA 2015 Results (OECD, 2016)

Austria

In Austria, it is recorded that 7,007 students participated in PISA 2015. After categorising these students based on their parent(s) country of birth into (1) native students, (2) Turkish migrant students, 5,167 students were selected for this study. On average, the achievements of the native and Turkish migrant students in Austria are relatively higher than the OECD average. The achievement in mathematics had a mean of 508.55 (*SD* = 92.72), reading had a mean of 494.81 (*SD* = 98.96), and science had a mean of 506.46 (*SD* = 95.35). It is slightly different than achievements Austria as a country which includes all participants (native, Turkish migrants and other non-native students) as shown in Figure 3.1.

To answer the research question: "To what extent do Turkish migrant students achieve lower scores than native students in the selected destination countries?", a linear regression was conducted to compare the achievement between native and migrant students. The analysis

showed that the overall differences in achievement between native and students with Turkish migrant background were significant. In mathematics, the regression coefficient showed that Turkish students achieved 102.99 points below native students. In reading, Turkish migrant students achieved 97 points below the native students. Meanwhile, the highest difference can be seen in science achievement where Turkish migrant students achieved 105.63 points below native students. The table and figure of comparison between natives and students with Turkish migrant backgrounds in Austria are presented in Appendix C1.

Parents' education background. Based on the standardized education level in PISA dataset, parents' education backgrounds were recoded into low and high education. The results showed that Turkish students with both low and high educated parents achieved significantly lower scores in mathematics, reading and science compared to native students with parents from the same level of education. The differences in achievement between Turkish migrant students and native students with low educated parents are 96.90 points in mathematics, 85.30 points in reading, and 97.25 points in science.

Meanwhile, for students with highly educated parents, the differences are even slightly higher for all three subjects. The results showed that Turkish students with highly educated parents achieved 98.63 points below native students with highly educated parents in mathematics. They also performed significantly lower in reading and science with differences of 102.19 and 109.48 points below the native students with highly educated parents. From this result, it can be concluded that students with Turkish migrant backgrounds in Austria perform significantly lower than the native students in all three subjects of PISA 2015 regardless of the level of education of their parents. For table and figures of these results, see Appendix C2.

Language. In Austria, the language of the assessment and questionnaire was German. The initial analysis presented in Table 2.4 showed that in Austria, most students with a Turkish migrant background do not speak German at home. Therefore, a linear regression was conducted to analyse the relationship between the language spoken at home and the achievement of Turkish migrant students.

The results show that in Austria, the overall differences in achievement between Turkish migrant students who speak a foreign language or German at home were significant. In mathematics, the regression coefficient showed that Turkish migrant students who speak a foreign language at home achieve 36.69 points below the Turkish migrant students who speak German at home. In reading, students who speak a foreign language achieve 33.69 points below

students who speak the local language. In science achievement, Turkish migrant students who speak a foreign language at home achieve 36.01 points below students who speak German at home. In conclusion, students who speak a foreign language at home perform significantly lower than students who speak the language of the test at home. Appendix C3 contains table and figure of these results.

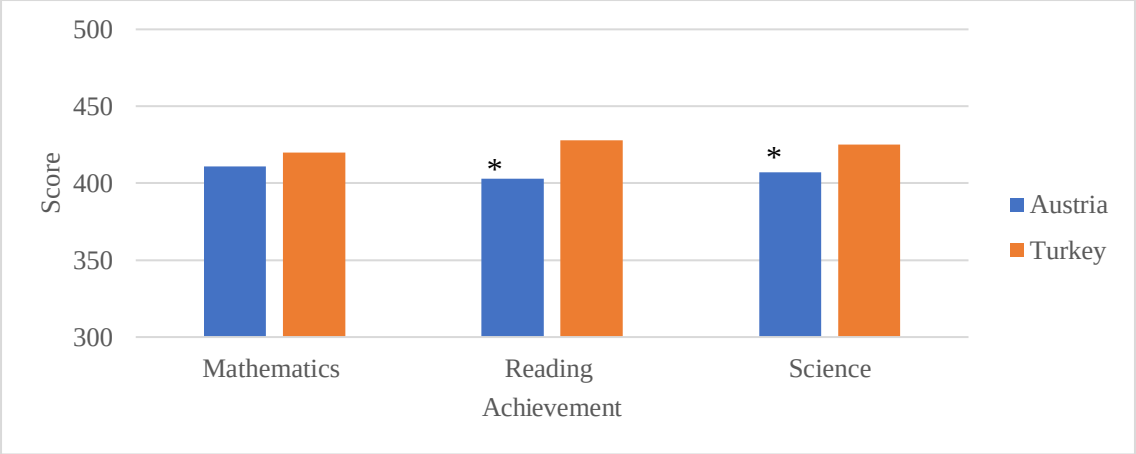
Table 3.1 Summary of Linear Regression Analysis Results on Achievement of Turkish Migrant Students in the Five Selected Western European Countries Compared to Students in Turkey

Country	Subject	Migration Background		*B*	*t*	*p*
		Turkish migrant	Native in Turkey			
Austria	Mathematics	411	420	-8.99	-.91	.18
	Reading	403	428	-24.96	-2.37	.01*
	Science	407	425	-18.59	-2.28	.01*
Belgium	Mathematics	426	420	5.20	.48	.31
	Reading	410	428	-18.29	-1.53	.06
	Science	415	425	-10.46	-1.00	.16
Denmark	Mathematics	420	420	-0.77	-.07	.47
	Reading	419	428	-9.34	-.61	.27
	Science	405	425	-20.68	-2.40	.01*
Germany	Mathematics	430	420	9.54	.96	.17
	Reading	437	428	8.90	.75	.23
	Science	416	425	-9.00	-.95	.17
The Netherlands	Mathematics	462	420	41.94	2.96	.00*
	Reading	452	428	24.08	1.66	.05*
	Science	440	425	15.54	1.04	.15

Note. $p < .05$ are flagged*

Comparison with students in Turkey. To answer the research question: "To what extent do Turkish migrant students achieve higher scores than non-migrant students in their country of origin?", a linear regression analysis was conducted. The results showed as presented in Table 3.1 that in Austria, students with Turkish migrant backgrounds achieved 8.99 points below students in Turkey for the achievement in mathematics. This difference is not statistically significant. Their achievements in reading and science were significantly lower than students in Turkey as presented in Figure 3.2. The reading score of Turkish students in Austria was 24.96 points lower and the science score was 18.59 points lower. From this result, it can be concluded

that students with Turkish migrant backgrounds in Austria perform lower than Students in Turkey in reading and science. The table for these results is presented in Appendix C4.



Note. Significantly lower achievements are flagged*

Figure 3.2 Overview Achievement Turkish Migrants Students in Austria Compared to Students in Turkey

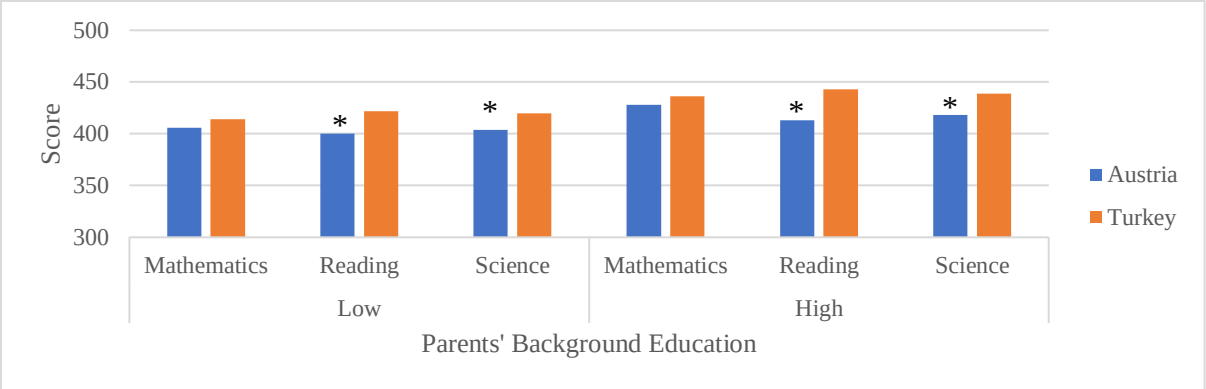
Moreover, when parents' level of educations was considered, the analysis shows consistent results. The results show as presented in Table 3.2 that the education background of the parents does not influence the difference in achievement between Turkish Migrant Students in Austria and students in Turkey. Turkish migrant students with low and high educated parents achieved lower scores compared to students in Turkey with the same level of parents' education. However, the differences are not significant for mathematics. Turkish migrants in Austria with low educated parents achieved 8.13 points lower and the ones with highly educated parents achieved 8.39 points lower than students in Turkey. The table of this result is presented in Appendix C5.

Meanwhile, in reading and science, the differences are significant. Turkish students in Austria with low educated parents achieved 21.92 points lower in reading and 16.58 points lower in science than students in Turkey with low educated parents. Similarly, Turkish migrant students with highly educated parents in Austria achieved 30.01 points lower in reading and 21.26 points lower in science than students in Turkey with highly educated parents. Figure 3.3 shows an overview of these results.

Table 3.2 Summary of Linear Regression Analysis Results from Turkish Migrant Students Compared to Students in Turkey Based on Parents' Education Background

Country	Parents' Education Background	Subject	Migration Background		*B*	*t*	*p*
			Turkish migrant	Native in Turkey			
Austria	Low	Mathematics	406	414	-8.39	-.83	.20
	Low	Reading	400	422	-21.92	-2.00	.02*
	Low	Science	404	420	-16.58	-1.85	.03*
	High	Mathematics	428	436	-8.13	-.60	.27
	High	Reading	413	443	-30.01	-2.00	.02*
	High	Science	418	439	-21.26	-1.82	.03*
Belgium	Low	Mathematics	426	414	11.24	.98	.16
	Low	Reading	405	422	-17.41	-1.39	.08
	Low	Science	412	420	-7.96	-.72	.24
	High	Mathematics	433	436	-2.99	-.16	.44
	High	Reading	427	443	-16.54	-.84	.20
	High	Science	428	439	-10.86	-.58	.28
Denmark	Low	Mathematics	413	414	-1.43	-.10	.46
	Low	Reading	408	422	-13.88	-1.29	.10
	Low	Science	395	420	-25.14	-2.40	.01*
	High	Mathematics	428	436	-7.64	-.44	.33
	High	Reading	437	443	-6.70	-.21	.42
	High	Science	420	439	-19.20	-1.31	.10
Germany	Low	Mathematics	436	414	21.64	1.97	.02*
	Low	Reading	452	422	30.09	2.34	.01*
	Low	Science	423	420	3.37	.31	.37
	High	Mathematics	428	436	-7.78	-.49	.31
	High	Reading	430	443	-13.69	-.74	.23
	High	Science	417	439	-21.99	-1.36	.09
The Netherlands	Low	Mathematics	454	414	39.15	2.24	.01*
	Low	Reading	445	422	22.68	1.26	.10
	Low	Science	431	420	11.32	.67	.25
	High	Mathematics	480	436	43.80	2.86	.00*
	High	Reading	470	443	27.12	1.53	.06
	High	Science	458	439	19.19	1.04	.15

Note. $p < .05$ are flagged*



Note. Significantly lower achievements are flagged*

Figure 3.3 Overview Achievement Turkish Migrant Students in Austria Compared to Students in Turkey Based on Parents' Education Background

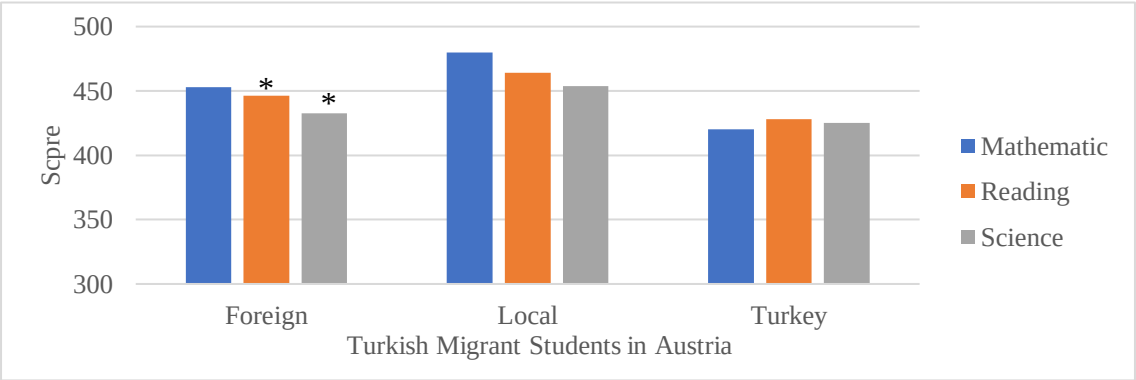
Moreover, to compare the achievements of Turkish migrant students in Austria who speak the local or foreign language with students in Turkey, linear regressions were conducted. The results of linear regression as presented in Table 3.31 show that in Austria, students with Turkish migrant backgrounds who speak another language than the local language at home achieved lower scores in mathematics, reading, and science compared to students in Turkey. For mathematics, Turkish migrant students in Austria achieved 15.43 points below the achievement of students in Turkey. Significant differences are found for reading with 30.83 points lower and in science 24.95 points lower than students in Turkey.

Meanwhile, for Turkish migrant students in Austria who speaks the local language at home, the scores in mathematics, reading, and science exceed the achievement of students in Turkey. However, the results are not statistically significant. In mathematics, Turkish migrant students in Turkey achieved 21.23 higher, in reading 2.42 points higher, and in science 11.06 higher than students in Turkey. Appendix C6 contains the individual table that visualised in Figure 3.4.

Table 3.3 Summary of Linear Regression Analysis Results from Turkish Migrant Students Compared to Students in Turkey Based on Language Spoken at Home

Country	Achievement	Turkish Score	Foreign language				Local language			
			Score	*B*	*t*	*p*	Score	*B*	*t*	*p*
Austria	Mathematic	420	405	-15.43	-1.51	.07	442	21.23	1.24	.11
	Reading	428	398	-30.83	-2.83	.00*	431	2.42	.14	.44
	Science	425	401	-24.95	-2.96	.00*	437	11.06	.74	.24
Belgium	Mathematic	420	415	-5.70	-.46	.32	453	32.64	2.19	.01*
	Reading	428	396	-32.81	-2.59	.00*	447	18.29	1.16	.12
	Science	425	401	-24.05	-2.21	.01*	449	23.79	1.56	.06
Denmark	Mathematic	420	401	-19.71	-1.20	.12	432	11.69	.93	.18
	Reading	428	401	-27.59	-1.00	.16	431	2.66	.20	.42
	Science	425	390	-35.61	-2.49	.01*	415	-10.87	-1.06	.15
Germany	Mathematic	420	422	1.56	.13	.45	442	21.60	1.82	.34
	Reading	428	423	-5.27	-.37	.36	459	30.30	2.26	.01*
	Science	425	407	-18.44	-1.62	.05*	431	5.26	.46	.32
Netherlands	Mathematic	420	453	32.67	1.99	.02*	480	59.36	3.22	.00*
	Reading	428	446	17.87	1.12	.13	464	35.72	1.83	.03*
	Science	425	433	7.26	.49	.31	454	28.20	1.39	.08

Note. p < .05 are flagged*



Note. Significantly lower achievements are flagged*

Figure 3.4 Overview Achievement Turkish migrant students in Austria based on the language spoken at home compared to students in Turkey

Belgium

Belgium recorded 9.561 students participating in PISA 2015. For this study, only 6,499 students were selected based on the migrant backgrounds of their parents, native and Turkish migrant. As a country, Belgium performs higher than the OECD average with the highest achievement in Mathematics. Moreover, when the further analysis was conducted, the results show that the achievement of native students and students with Turkish migrant backgrounds has a mean of 524.07 (*SD*=93.96) for mathematics, 514.86 (*SD*=95.79) for reading, and 519.59 (*SD*=95.98) for science.

Furthermore, to answer the first research question, a linear regression was conducted. The results show that the differences between native students and students with Turkish migrant background in Belgium were statistically significant. In mathematics achievement, the score of Turkish migrant students is 100.73 points lower than the native students. In reading and science, the score differences were almost similar, which is around 107 points lower than the achievement of the native students. The table and figure of comparison between natives and students with Turkish migrant backgrounds in Belgium are presented in Appendix D1.

Parents' education background. Similar to Austria, in Belgium, students with Turkish migrant backgrounds performed significantly lower than native students regardless of their parents' educational level. The descriptive statistics show that more than half of the students with Turkish migrant background in Belgium came from the low educated parents. Moreover, the results of linear regression as presented in Appendix D2 show that Turkish migrant students with low educated parents achieved 67.50 points lower than native students with the same level of parents' education in mathematics achievement. For reading and science, the differences between Turkish migrant students and native students with low educated parents are higher with a gap of 80.74 points in reading and 75.86 points in science.

Students with highly educated parents show larger differences in mathematics, reading and science achievement with the difference above 100 points. In mathematics, Turkish migrant students with highly educated parents achieve 108.87 points below the achievement of native students with highly educated parents. Similarly, in reading, Turkish migrant students scored 105.63 lower than the native students. In science, Turkish migrant students with highly educated parents achieved 109.81 points lower than native students with highly educated parents.

Language. Language of the test in Belgium was divided into three languages: Dutch, German, and France. However, for this study, the Flemish dialect was also selected to be

included in the category of the local language. The initial analysis shows that Flemish dialect is one of the most spoken languages by native people in Belgium even though the test did not use this language. Therefore, from the variable of Language spoken at home (LANGN) in the PISA 2015 dataset, Dutch, German, France, and Flemish dialect were categorised as the local language. The other languages spoken in Belgium were categorised as a foreign language.

As presented in Table 2.4, it shows that most students with Turkish migrant backgrounds speak a foreign language at home. Therefore, using linear regression the differences between Turkish migrant students who speak a native or foreign language can be analysed. The results as presented in Appendix D3 show that Turkish migrant students who speak a local language achieve significantly higher scores than Turkish migrant students who speak a foreign language at home. In mathematics, Turkish migrant students in Belgium who speak a local language at home achieved 38.34 points higher than Turkish migrant students who speak a foreign language. The highest difference appeared in reading achievement where the score of students who speak the local language at home is 51.10 points higher than students who speak the foreign language at home. In science, Turkish migrant students who speak the local language achieved 47.84 points higher than Turkish migrant students who speak a foreign language at home.

Comparison with students in Turkey. Linear regression was conducted to analyse the difference between students with Turkish migrant background in Belgium compared to students in Turkey. The results, as presented in Table 3.1, reveal that only in mathematics achievement where Turkish migrant students in Belgium achieve 5.20 points higher than students in Turkey. For reading achievement, Turkish migrant students in Belgium achieved 18.29 points lower than students in Turkey. Similarly, achievement in science is 10.46 points lower than the achievement of students in Turkey. However, these results are not statistically significant. Figure 3.5 visualizes these results. For the individual table of these results, see Appendix D4.

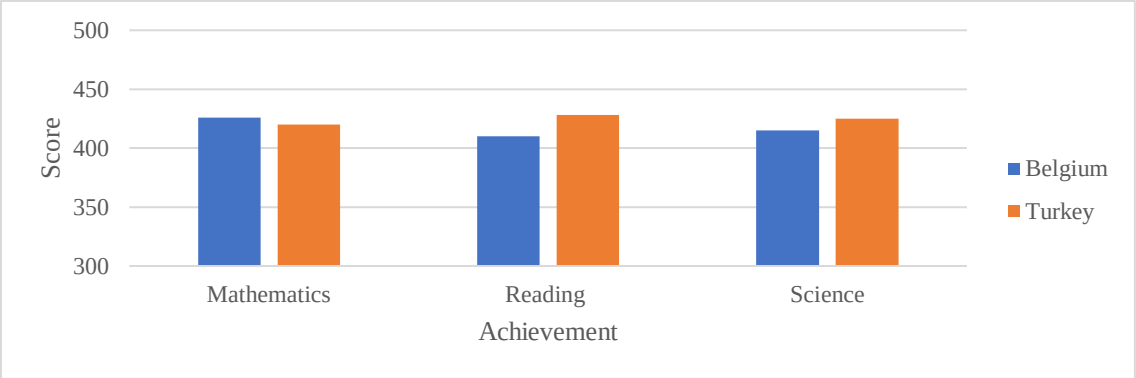


Figure 3.5 Overview Achievement Turkish Migrant Students in Belgium Compared to Students in Turkey

Furthermore, the results of the linear regression show almost similar results when the level of parents' education background was considered. Table 3.2 presents the result of this linear regression. Generally, Turkish migrant students in Belgium achieved lower scores than students in Turkey for their mathematics, reading, and science achievements. However, these differences are not statistically significant. The only result where Turkish migrant students in Belgium achieved higher results is in mathematic achievement for students with low educated parents. Their score is 11.24 points higher than students in Turkey with low educated parents. The results also show Turkish migrant students in Belgium from both low and high educated parents have the highest gap in reading achievement. From the category of low educated parents, students with Turkish migrant background in Belgium achieved 17.41 points lower than students in Turkey. While in science, the difference is 7.96 points lower than students in Turkey with low educated parents.

For students with highly educated parents, students with Turkish migrant background in Belgium achieved lower scores in mathematics, reading, and science. In mathematics, Turkish migrant students in Belgium achieved 2.99 points lower than students in Turkey. In reading, they scored 16.54 points below students in Turkey and for science, they scored 10.86 points below students in Turkey with low educated parents. Figure 3.6 shows the visualization of these results. For the individual table of these results, see Appendix D5.

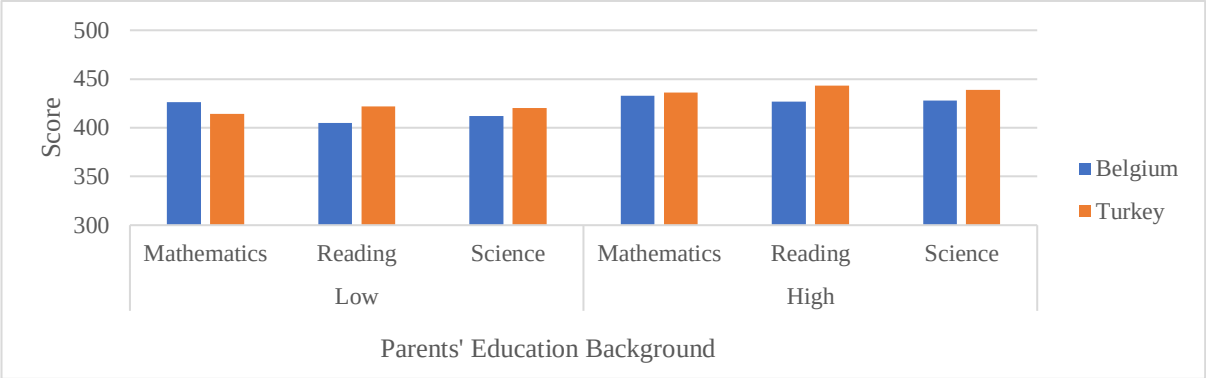
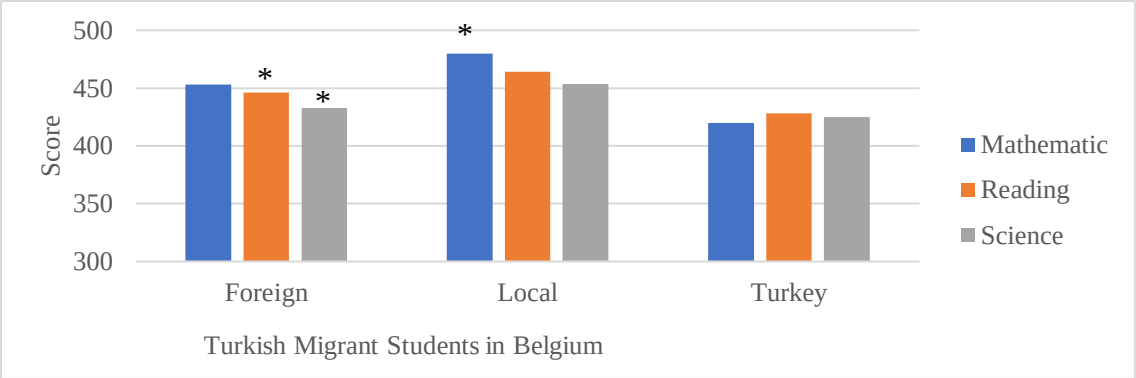


Figure 3.6 Overview Achievement Turkish Migrant Students in Belgium Compared to Students in Turkey Based on Parents' Education Background

Moreover, when the language spoken at home is considered, the results of the linear regressions revealed a slightly different result. As presented in Table 3.3, students with Turkish migrant backgrounds in Belgium who speak a foreign language at home achieved lower scores than students in Turkey in mathematics, reading, and science. However, similar to the results in Austria for the same category, the significant differences only appear for reading and science. In mathematics, Turkish migrant students in Belgium who speak another language than the local language at home scored 5.70 points lower than the students in Turkey. In reading the difference is 32.81 points and in science, 24.05 points.

However, for students with Turkish migrant backgrounds in Belgium who speak the local language, the achievements for mathematics, reading, and science are higher compared to students in Turkey. In mathematics, Turkish migrant students in Austria scored significantly higher than students in Turkey with 32.64 points higher. Meanwhile, in reading, they achieved 18.29 points higher, and in science 23.79 points higher compared to students in Turkey even though these differences are not statistically significant. The results of these analyses are visualized in Figure 3.7. For the individual table of these results, see Appendix D6.



Note. Significantly differences achievement with Turkey are flagged*

Figure 3.7 Overview Achievement Turkish migrant students in Belgium based on the language spoken at home compared to students in Turkey

Denmark

Based on the PISA 2015 dataset, 6,504 students participated in Denmark. From this number, 4,756 students were categorised as native students and Turkish migrant students. The achievements of Denmark as a country in PISA 2015 exceed the OECD average. This result is consistent with the analysis of achievement for only native and Turkish migrant students. In mathematics, achievement has a mean of 517.22 (*SD*=78.46). In reading, the mean is 505.71 (*SD*=84.88), and in science, the mean is 519.59 (*SD*=95.98).

Related to the first research questions, the linear regression shows similar results with Austria and Belgium. It reveals that students with Turkish migrant background perform significantly lower than native students in Denmark. The regression coefficient shows that Turkish migrants students achieve 99.35 points lower in mathematics, 5.94 points lower in reading and 13.04 points lower in science achievement compared to native students. The table and figure of comparison between natives and students with Turkish migrant backgrounds in Denmark are presented in Appendix E1.

Parents' education background. When the parents' education backgrounds were specified, the results consistently show that native students perform significantly higher than Turkish migrant students in Denmark regardless of their parents' education background. However, the score differences appear to be higher in the category of students with highly educated parents. The descriptive statistics show that in Denmark, the frequency of native students with highly educated parents is higher than the low educated parents. Meanwhile, for the Turkish migrant category, there are more students with low educated parents.

Furthermore, related to their achievement, in mathematics, students with Turkish migrant background from low educated parents in Denmark achieved 78.78 points lower than

the native students from the same category of parents' education background. While in reading, they achieved 74.29 points lower than native students. Moreover, the achievement in science shows the highest gap between native and Turkish migrant students from low educated parents where native students achieved 91.07 points higher than the Turkish migrant students.

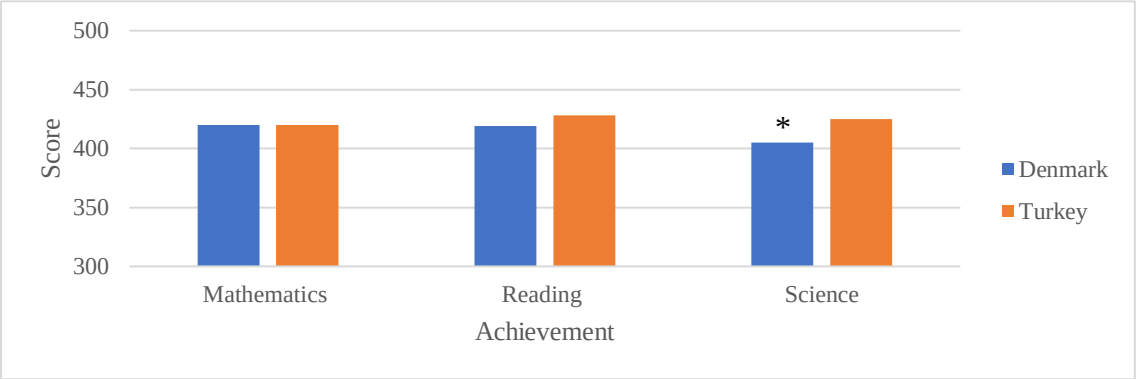
Similarly, for Turkish migrant students with highly educated parents, the achievements in mathematics, reading, and science are significantly lower. The discrepancies are higher compared to the gap between students with low educated parents. In mathematics, Turkish migrant students with highly educated parents scored 99.51 points lower than the native students with highly educated parents. In reading, the difference between native and Turkish migrant students with highly educated parents is 78.87 points. While in science, Turkish migrant students with highly educated parents achieved 99.15 points lower than the native students. For table and figure of these results, see Appendix E2.

Language. The language of assessment and questionnaire for PISA in Denmark is Danish. In contrast with the other selected countries for this study, the initial analysis of the language spoken at home shows that more Turkish migrant students in Denmark speak Danish at home. However, the results of the linear regression only show the effects of the language spoken at home in mathematics achievement. Meanwhile, in reading and science, they exceed the scores of students who speak a foreign language at home even though the results are not statistically significant.

The regression coefficient of mathematics achievement in Denmark shows that Turkish migrant students who speak the local language at home scored 31.41 points higher than students who speak a foreign language at home. While in reading, the difference is 30.24 points and in science, 24.74 points. For table and figure of these results, see Appendix E3.

Comparison with students in Turkey. Linear regressions were conducted to compare achievement between students with Turkish migrant backgrounds in Denmark and students in Turkey. The regression coefficients of achievement in mathematics, reading, and science show that Turkish migrant students in Denmark achieve lower scores than students in Turkey. However, for mathematics and reading achievements, the result is not statistically significant. The achievement in mathematic of Turkish migrant students in Denmark is about .77 points lower than students in Turkey. While in reading, they achieved 9.34 points lower than students in Turkey. In science achievement, Turkish migrant students in Denmark scored 20.68 points below students in Turkey. This result is statistically significant as presented in Table 3.1. Figure

3.8 presents the visualization of these results. For the individual table of these results, see Appendix E4.



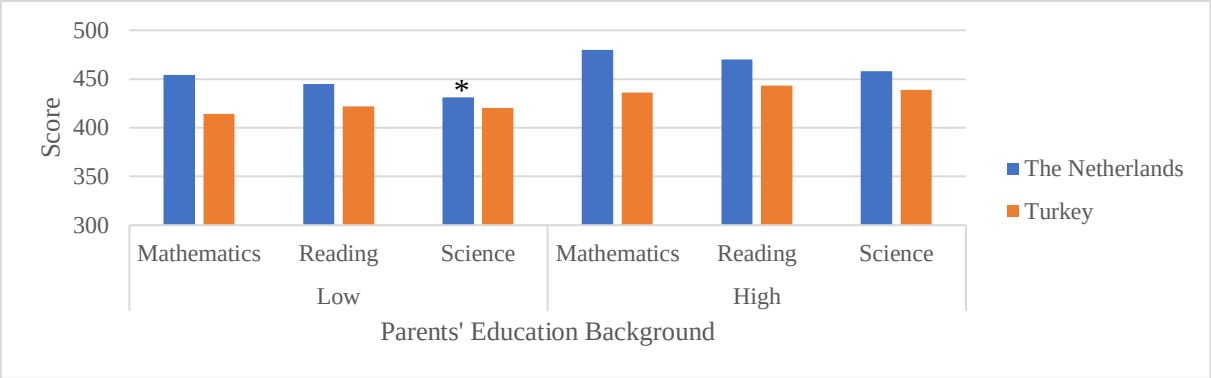
Note. Significantly lower achievement is flagged*

Figure 3.8 Overview Achievement Turkish Migrant Students in Denmark Compared to Students in Turkey

Generally, Turkish migrant students in Denmark scored lower than students in Turkey regardless of their parents' education background. The previous analysis as presented in Figure 3.8 shows that only the difference in science achievement was statistically significant. However, the linear regression when the parents' education backgrounds were considered, show a slightly different result as presented in Table 3.2. Only in the category of students with low educated parents where the difference of science is significant. The rest of the results of linear regression based on parents' education level shows that the differences between Turkish migrant students in Denmark and students in Turkey are not statistically significant.

In mathematics, Turkish migrant students with low educated parents scored 1.43 points lower than students in Turkey with low educated parents. Meanwhile, in reading, the difference is higher with 13.88 points where students in Turkey achieved higher than Turkish migrant students in Denmark from the category of low educated parents. Moreover, the highest difference in achievement between Turkish migrant students and students in Turkey appeared in science score. Turkish migrant students with low educated parents achieved 25.14 points lower than students in Turkey.

Furthermore, for students with highly educated parents, mathematics achievement is 7.69 points lower than students in Turkey with the same category of parents' education background. While in reading, they scored 6.70 points lower than students in Turkey. Similarly, even though the results are not significant, the achievement in science shows the highest gap between Turkish migrant students with highly educated parents and students in Turkey. Turkish migrant students achieved 19.20 points lower than students in Turkey. The overview of these results is presented in Figure 3.9. For the individual table of these results, see Appendix E5.



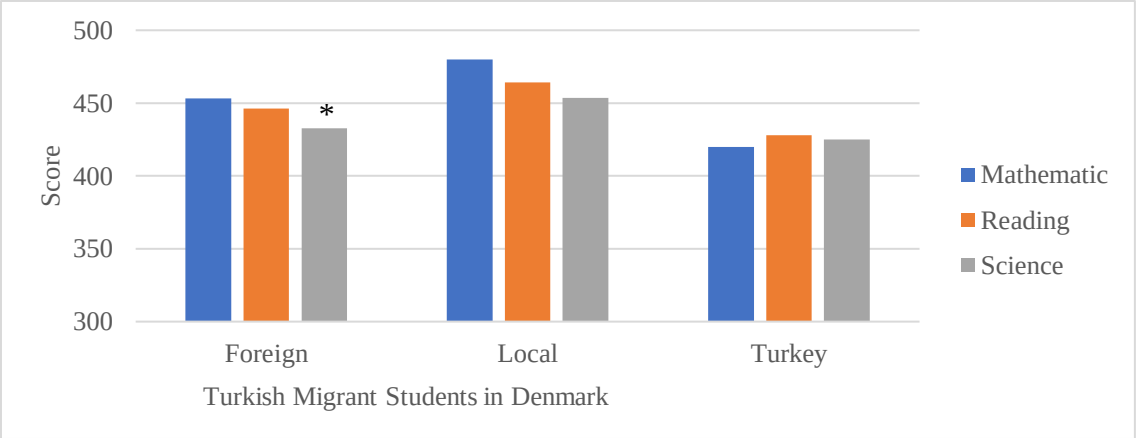
Note. Significantly lower achievement is flagged*

Figure 3.9 Overview Achievement Turkish Migrant Students in Denmark Compared to Students in Turkey Based on Parents' Education Background

Moreover, linear regressions were also conducted to analyse whether the language spoken at home influenced the achievement of Turkish migrant students in Denmark when it is compared with students in Turkey. The results as presented in Table 3.3 show that even though in Denmark the number of Turkish migrant students who speak Danish at home is higher, the achievements are not significantly higher than students in Turkey.

The results show that students with Turkish migrant backgrounds in Denmark who speak another language than Danish at home, in general, received lower scores in mathematics, reading, and science compared to students in Turkey. However, the result is statistically significant only in science where the difference is 35.61 points. In mathematics, Turkish migrant students in Denmark achieved 19.71 points lower than students in Turkey. Meanwhile, in reading, they scored 27.59 points lower than students in Turkey.

In contrast, students with Turkish migrant backgrounds in Denmark who speak Danish at home achieved higher scores in mathematics and reading, but lower scores in science compared to students in Turkey. In mathematics, Turkish migrant students in Denmark scored 11.69 points, and in reading 2.66 points higher than students in Turkey. In science, the difference is 10.87 where Turkish migrant students in Denmark who speak the local language achieved lower scores than students in Turkey. These results are visualized in Figure 3.10. For the individual table of these results, see Appendix E6.



Note. Significantly lower achievements are flagged*

Figure 3.10 Overview Achievement Turkish migrant students in Denmark based on the language spoken at home compared to students in Turkey

Germany

In Germany, it is recorded that 7,161 students participated in PISA 2015. For this study, only students with both parents native and Turkish were selected. Therefore, after recoding the students based on their parents' country of birth, 4,161 students were categorised as native and Turkish migrant students and selected for this study. The achievements in mathematics, reading, and science of students in Germany are generally higher than the OECD average. As a country, the achievements of students in Germany are the highest, among the five selected Western European countries in this study, for reading. But for mathematics, the achievement is still below the Netherlands.

Furthermore, when the achievements of only native and Turkish migrant students were analysed, the results are slightly different. In mathematics, the achievement of native and Turkish migrant students has a mean of 519.18 (*SD*=88,42). In reading, it has a mean 525.03 (*SD*=97.59), and 526.50 (*SD*=97.35) for science achievement.

To answer the research question related to the achievement of native students compared to students with Turkish migrant background in Germany, linear regressions were conducted. First, the general achievements in mathematics, reading, and science were analysed. The results of linear regression show that overall achievements of native students are significantly higher than students with Turkish migrant backgrounds. In mathematics, the regression coefficient shows that Turkish migrant students achieved 93.76 points lower than the native students. Similar to achievement in mathematics, the achievement of reading of Turkish migrant students is 92.30 points below the achievement of the native students. The highest difference appears in

science achievements where Turkish migrant students scored 115.65 points lower than the score of native students. The table and figure of comparison between natives and students with Turkish migrant backgrounds in Germany are presented in Appendix F1.

Parents' education background. In Germany, most of the students with Turkish migrant backgrounds have parents with low educational background. It is in contrast with the native students who generally have highly educated parents. The result of linear regression reveals the relationship between parents' education background and the achievement of the students. In general, students with Turkish migrant background in Germany achieved significantly lower scores than native students regardless of their parents' education background. However, the highest differences appear to be in the category of highly educated parents.

In the category of students with low educated parents, Turkish migrant students achieved 71.97 points lower than the native students in their mathematics achievement. In reading achievement, the regression coefficient shows that Turkish migrant students scored 63.09 points lower than the native students. Likewise, in science achievement, which shows the highest difference for this category. Turkish migrant students achieved 89.54 points lower than the native students in Germany.

Furthermore, in the category of highly educated parents, the achievements of mathematics, reading, and science for Turkish migrant students are significantly lower than the native students. In mathematics, Turkish migrant students with highly educated parents achieved 112.58 points lower than the native students. While in reading, the difference is 117.41 points where Turkish migrant students achieve lower than the native students. Similar to science achievement in the category of low educated parents, the highest gap for students with highly educated parents are in science achievement. The results show that Turkish migrant students achieved 135.70 points lower than the native students. For table and figure of these results, see Appendix F2.

Language. In Germany, the language of the assessments and questionnaires is in German. However, similar to the other selected countries, most of the students with Turkish migrant backgrounds are not speaking the local language at home. The initial analysis as presented in Table 2.4 shows that students with Turkish migrant backgrounds tend to speak a foreign language at home. Therefore, the linear regressions then were conducted to assess the

relationship between the language spoken at home and the achievement of the Turkish migrant students in Germany.

The results of the linear regressions show that Turkish migrant students in Germany who speak a foreign language at home achieved lower scores in mathematics, reading, and science achievements than Turkish migrant students who speak the local language. In mathematics, Turkish migrant students who speak the local language achieved 20.03 points higher than students who speak a foreign language. However, only the results in reading and science achievements are statistically significant. In reading, students with Turkish migrant backgrounds who speak the local language at home scored 35.57 points above the score of Turkish migrant students who speak a foreign language at home. This is also the highest discrepancy among Turkish migrant students who speak the native or foreign language at home in Germany. Additionally, the highest difference appears in science achievements where students who speak the local language achieved 23.70 points higher than students who speak a foreign language at home in Germany. For table and figure of these results, see Appendix F3.

Comparison with students in Turkey. In Germany, the results of the linear regressions show slightly different results with the other selected countries. Based on the results, mathematics and reading achievements of Turkish migrant students in Germany are slightly higher than students in Turkey as presented in Table 3.1. In contrast with science achievement where students in Turkey scored a higher score than students with Turkish migrant background in Germany. However, these results are not statistically significant.

In mathematics, Turkish migrant students in Germany achieved 9.54 points higher than the score of students in Turkey. While in reading achievement, Turkish migrant students scored 8.90 points higher than students in Turkey. However, in science achievements, Turkish migrant students in Germany appeared to achieve 9.00 points lower than students in Turkey, in contrast with their mathematics and reading achievement. The results of these linear regressions are presented visualised in Figure 3.11. For the individual table of these results, see Appendix F4.

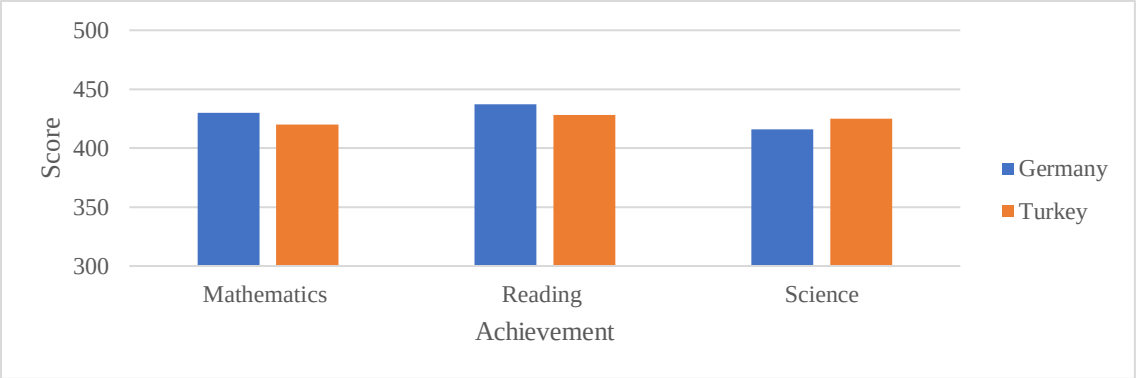
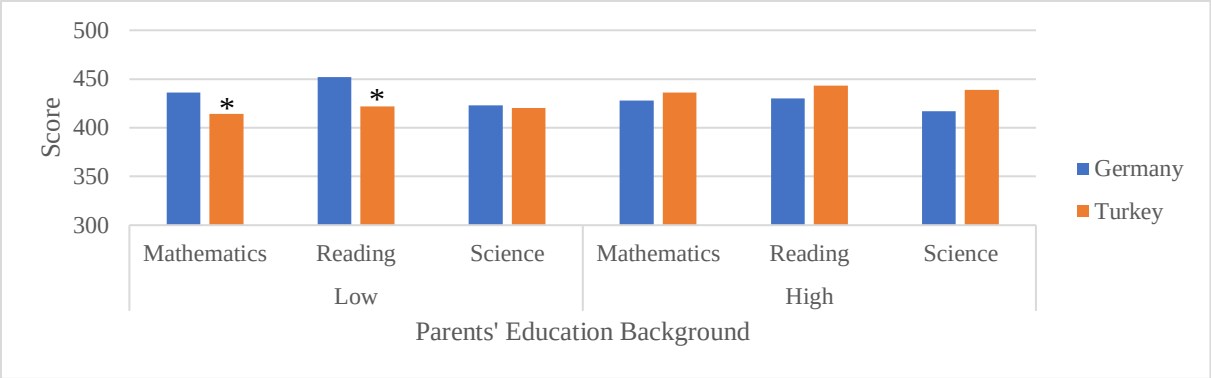


Figure 3.11 Overview Achievement Turkish Migrant Students in Germany Compared to Students in Turkey

Furthermore, linear regressions were conducted to analyse the difference in the achievement of Turkish migrant students in Germany with students in Turkey based on their parents' education background. The results show that there is a different result between students with low and high educated parents. Table 3.2 presents the result of these linear regressions.

In the category of low educated parents, Turkish migrant students in Germany achieved significantly higher than students in Turkey for their mathematics and reading achievement. In contrast with the achievement in science where Turkish migrant students in Germany achieved non-significantly higher than students in Turkey with a difference of 3.37 points. In mathematics, Turkish migrant students in Germany scored 21.64 points higher than students in Turkey. While in reading achievement, the difference is higher with 30.09 points where Turkish migrant students with low educated parents achieve higher scores.

Moreover, in the category of highly educated parents, Turkish migrant students appeared to achieve lower scores than students in Turkey. However, these results are not statistically significant. The regression coefficient in the mathematic achievement shows that Turkish migrant students in Germany with high educated parents scored 7.78 points lower than students in Turkey with highly educated parents. In reading, Turkish migrant students in Germany achieved 13.69 points below students in Turkey. The highest difference is found in the science achievement where Turkish migrant students in Germany achieved 21.99 points lower than students in Turkey. The overview of this result can be seen in Figure 3.12. For the individual table of these results, see Appendix F5.



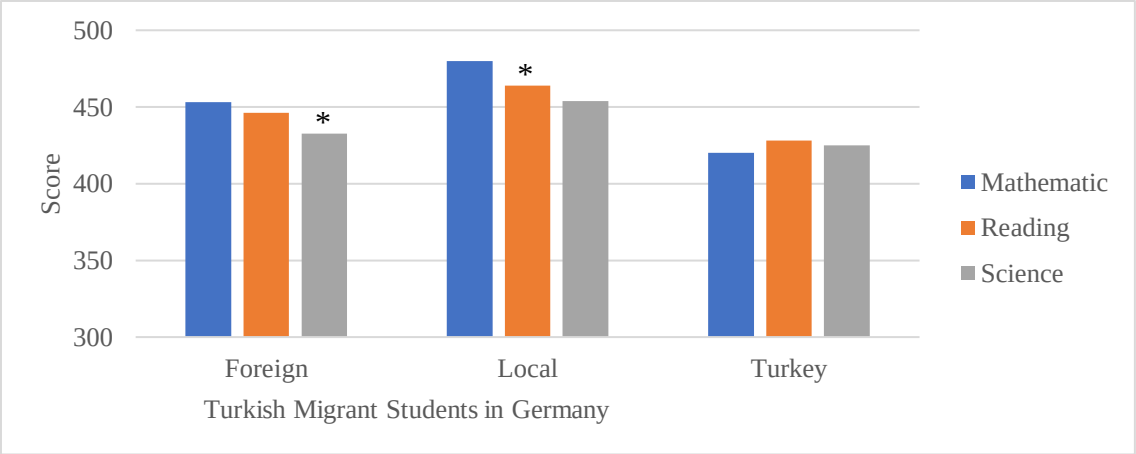
Note. Significantly lower achievements are flagged*

Figure 3.12 Overview Achievement Turkish Migrant Students in Germany Compared to Students in Turkey Based on Parents' Education Background

Another linear regression was conducted to analyse the achievements of Turkish migrant students in Germany compared to students in Turkey when the language spoken at home is considered. The results as presented in Table 3.3 show that Turkish migrant students who speak German at home achieve higher scores than students in Turkey in mathematics, reading, and science. Only for reading is the difference statistically significant.

Based on the results of linear regressions, students with Turkish migrant backgrounds in Germany who speak another language than German at home achieved lower scores in reading and science, while slightly higher in mathematics compared to students in Turkey. In mathematics, the score of Turkish migrant students is 1.56 points higher than students in Turkey. In reading, they scored 5.27 points lower than students in Turkey. Meanwhile, a significant difference is found for in science achievement with 18.44 points lower than students in Turkey.

Furthermore, students with Turkish migrant backgrounds in Germany who speak German at home are scored 21.60 points higher than students in Turkey. In reading, where the difference is statistically significant, Turkish migrant students in Germany achieved 30.30 points higher than students in Turkey. In science, they achieved 5.26 points higher than students in Turkey. The overview of these results is available in Figure 3.13. For the individual table of these results, see Appendix F6.



Note. Significant difference achievements with Turkey are flagged*

Figure 3.13 Achievement Turkish migrant students in Germany based on the language spoken at home compared to students in Turkey

The Netherlands

Based on the PISA 2015 dataset, 5,385 students were participating in the Netherlands. After categorising the students based on their parents' country of birth, 4,312 students were categorised as native and Turkish migrant students. Moreover, the achievements of native and Turkish migrant students in the Netherlands are not extremely different from the overall achievements of all participating students in the Netherlands. In mathematics, the achievement of native and Turkish migrant students has a mean of 518.97 (*SD*=89.00), in reading 509.40 (*SD*=98.69), and in science 515.83 (*SD*=98.37).

Furthermore, to answer the first research question, linear regressions were conducted. The results of these linear regressions show that in general, Turkish migrant students in the Netherlands achieved significantly lower than the native students. In mathematics, Turkish migrant students in the Netherlands achieved 58.04 points below the score of the native students. Similarly, the result of reading achievement is 58.46 points difference. While the highest difference appeared in the science achievement where students with Turkish migrant background scored 77.76 points lower than the native students in the Netherlands. The tables and figures of comparison between natives and students with Turkish migrant backgrounds in the Netherlands are presented in Appendix G.

Parents' education background. Based on the descriptive statistics, it shows that among students with Turkish migrant backgrounds the number of low educated parents are higher than the ones with highly educated parents. It is in contrast with the native students where most of them came from a family with highly educated parents. In general, Turkish

migrant students in the Netherlands achieved significantly lower scores compared to the native students regardless of the level of education of their parents.

In the category of students with low educated parents, in mathematics, students with Turkish migrant background scored 48.26 points below the score of native students. In reading, the difference is 44.03 points and in science, Turkish migrant students have the highest gap with native students where they scored 62.71 points lower than the native students with the low educated parents in the Netherlands.

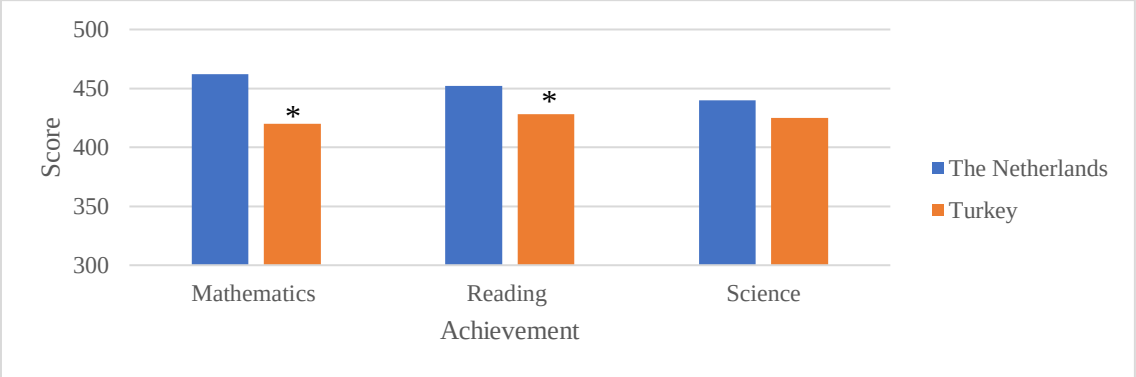
Similarly, in the category of students with highly educated parents, Turkish migrant students achieved 50.94 points lower than the native students for mathematics achievement. While in reading they scored 52.50 points lower than the native. Likewise, students in the category of low educated parents, the highest gap appeared in science achievement. Students with Turkish migrant background from high educated parents achieved 72.74 points lower than the native students from the same category. For table and figure of these results, see Appendix G2.

Language. Based on PISA 2015 dataset, the Netherlands categorised the language spoken at home into three categories (1) Dutch, (2) another language, and (3) other European languages. However, the official language of the test which is also the local language in the Netherlands is Dutch. The initial analysis as presented in Table 2.4 shows that in the Netherlands, the majority of students with Turkish migrant backgrounds speak another language than Dutch at home.

The results of the linear regression show that Turkish migrant students who speak Dutch at home exceed the scores than students who speak a foreign language at home. However, the results are not statistically significant. In mathematics, Turkish migrant students who speak the local language at home achieve 26.69 points higher than students who speak a foreign language. While in reading, the difference is 17.85 points with students who speak Dutch at home achieved higher. Similarly, in science, Turkish migrant students who speak the local language at home are also achieved higher scores with the difference of 20.94 points based on the value of the regression coefficient. For table and figure of these results, see Appendix G3.

Comparison with students in Turkey. To answer the second research question, linear regressions were conducted. In contrast with the previous countries, in the Netherlands, Turkish migrant students exceed the scores of students in Turkey. However, the results are only significant for achievements in mathematics and reading. The regression coefficients show that

in mathematics, students with Turkish migrant backgrounds achieved 41.94 points higher than the score of students in Turkey. Similarly, for reading, Turkish migrant students in the Netherlands scored 24.08 points above the achievement of students in Turkey. While for science achievement, even though it is insignificant, Turkish migrant students achieved 15.54 points higher than students in Turkey. The results are presented in Table 3.1 and visualized in Figure 3.14. For the individual table of these results, see Appendix G4.



Note. Significantly lower achievements are flagged*

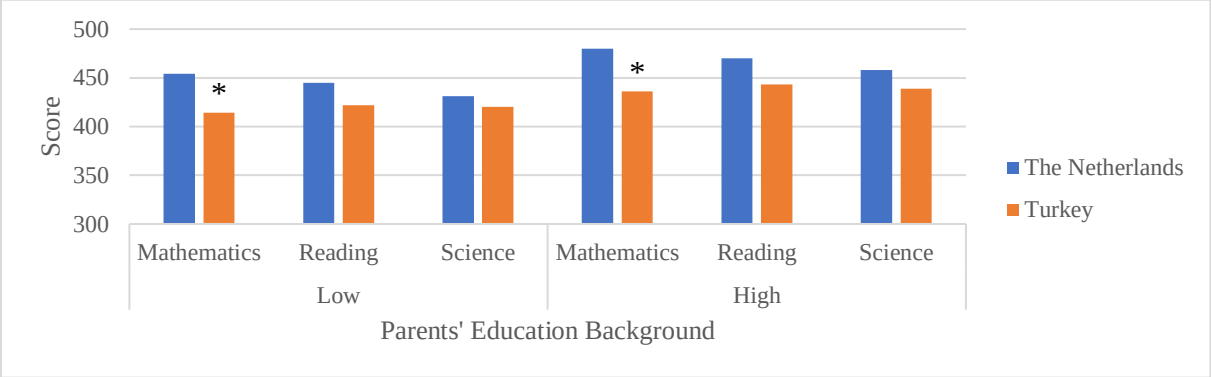
Figure 3.14 Overview Achievement Turkish Migrant Students in The Netherlands Compared to Students in Turkey

Furthermore, when the education background of the parents was considered, the results are slightly different. The result of the linear regressions as presented in Table 3.2 shows that only in mathematics the differences are significant regardless of the educational background of their parents. The achievements in mathematics are also showing the highest gap in both low and high education parents' categories. However, it is consistent with the previous analysis where Turkish migrant students in the Netherlands appeared to exceed the achievements of students in Turkey.

In the category where the parents reported that their level of education categorised as low education, Turkish migrant students achieved 39.15 points higher than students in Turkey in their mathematics achievement. While in reading, Turkish migrant students with low educated parents in the Netherlands scored 22.68 points higher than students in Turkey with the same level of parents' education background. In science achievement, Turkish migrant students in Turkey with low educated parents achieved 11.32 points higher than students in Turkey.

Lastly, in the category of highly educated parents, students with migrant backgrounds in the Netherlands show the same pattern as students in the category of low educated parents. The results of linear regressions show that Turkish migrant students in the Netherlands achieved 43.80 points higher than students in Turkey for their mathematics achievement. In reading,

Turkish migrant students in the Netherlands scored 27.12 points higher than students in Turkey. While for science achievement, Turkish migrant students with highly educated parents in the Netherlands achieved 19.19 points higher than students in Turkey. Figure 3.15 provides visualization for these results. For the individual table of these results, see Appendix G5.



Note. Significantly lower achievements are flagged*

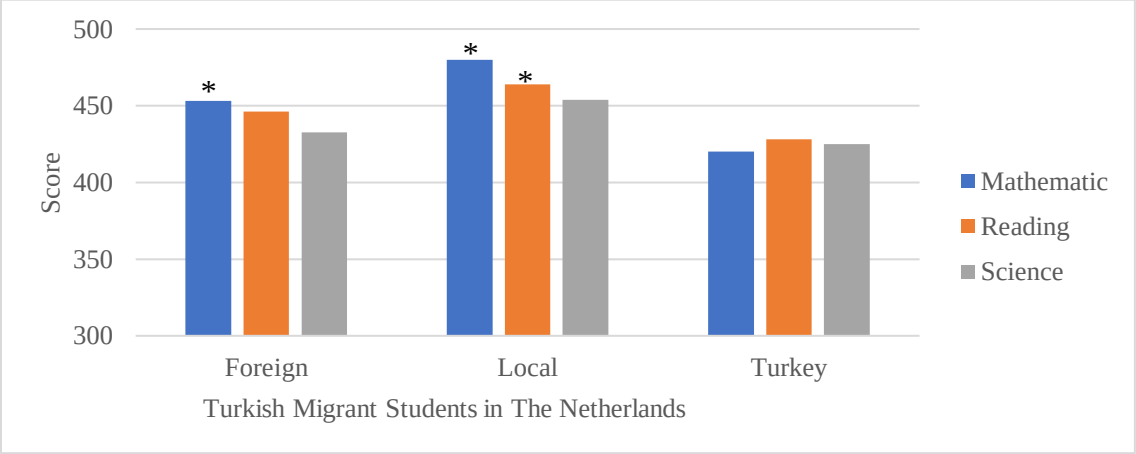
Figure 3.15 Overview Achievement Turkish Migrant Students in The Netherlands Compared to Students in Turkey Based on Parents' Education Background

Furthermore, when the language spoken at home is considered, the results of linear regression is slightly different compared to the previous analysis. As presented in table 3.3, the results show that in general, Turkish migrant students in the Netherlands achieved higher scores than students in Turkey regardless of the language they use at home. However, the results are statistically significant only in mathematics for both Dutch and non-Dutch speakers and in reading for Turkish migrant students who speak Dutch at home.

Students with Turkish migrant backgrounds in the Netherlands who speak non-Dutch at home achieved higher scores in mathematics, reading, and science compared to students in Turkey. In mathematics, the difference is 32.67 points where the result is statistically significant. In reading, Turkish migrant students in the Netherlands who speak non-Dutch at home achieved 17.87 points higher than students in Turkey. While in science, the difference is 7.26 points.

Similarly, Turkish migrant students in the Netherlands who speak Dutch at home achieved a higher score in mathematics, reading, and science compared to students in Turkey. In mathematics, Turkish migrant students who speak Dutch at home achieved 59.36 points higher and reading 35.72 points higher than students in Turkey. These differences are statistically significant. Meanwhile, in science, the result is not statistically significant. However, students with Turkish migrant backgrounds in the Netherlands who speak Dutch at

home achieved 28.20 points higher than students in Turkey. These results are visualized in Figure 3.16. For the individual table of these results, see Appendix G6.



Note. Significant differences with Turkey are flagged*

Figure 3.16 Overview Achievement Turkish migrant students in the Netherlands based on the language spoken at home compared to students in Turkey

Turkey

In Turkey, it is recorded that 5,586 students participated in PISA 2015. All participants in Turkey are categorised as Turkish students in this present study. On average the achievements of students in Turkey is relatively lower than the OECD average in mathematics, reading, and science. As shown in Figure 3.1, the average achievements of Turkey are also lower than the five selected European countries. The achievement of mathematics has a mean of 420.45 (*SD*=81.92), reading has a mean of 428.34 (*SD*=82.40), and science has a mean of 425.49 (*SD*=79.26).

Furthermore, to compare the achievement of Turkish migrant students in the five selected countries with students in Turkey, the participated students in Turkey are also categorised based on their parents' education background. From this category, it is recorded that the majority of students in Turkey have parents with a low education background. Moreover, a linear regression analysis was conducted to compare the achievements of students in Turkey based on their parents' education background.

The results as presented in Table 3.4 show that students in Turkey with highly educated parents perform significantly higher in mathematics, reading, and science compared to students with low educated parents. In mathematics, students with highly educated parents scored 21.64 points higher than students with low educated parents. In reading they achieved 20.97 points

higher than students with low educated parents, and in science 18.92 points higher. Figure 3.17 visualizes the results of this linear regression.

Table 3.4 Achievement Students in Turkey Based on Parents' Education Background

Achievement	Parents' Education Background		*M*	*SD*	*R*	*t*
	Low	High				
Mathematics	414	436	420.91	81.84	21.64	4.09*
Reading	422	443	428.66	82.40	20.97	4.03*
Science	420	439	425.79	79.27	18.92	3.84*
N	4,133	1,723				

Note. p < .05 are flagged*

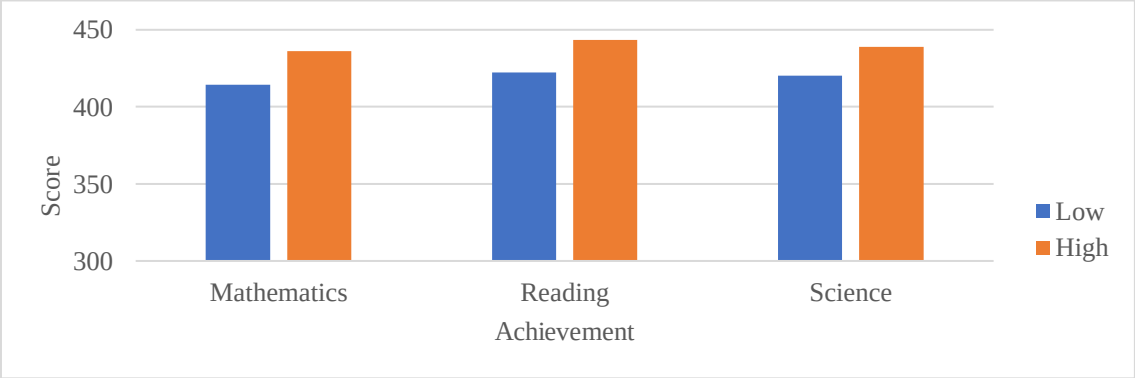


Figure 3.17 Overview Achievement Students in Turkey Based on Parents' Education Background

Summary Analyses Five Selected Countries

Based on the results of the linear regressions, this section provides a summary of the results to address the research question, without addressing the detail which will be discussed in the next chapter.

Native compared to Turkish migrant students. The research question of this study is related to the relationship between migration and PISA 2015 achievement of students with Turkish migrant backgrounds in the five selected Western European countries. First, it is expected that Turkish migrant students achieve lower scores compared to the native students in the destination countries where they and/or their parents immigrated. The results of linear regression show that students with Turkish migrant backgrounds achieved significantly lower scores compared to the native students. Table 3.5 provides the summary of achievements Turkish migrants students in the five selected countries compared to the natives. Figure 3.18 provides a visualization of these results.

Table 3.5 Summary of Linear Regression Analysis Results on Achievement of Native Compared to Turkish Migrant Students in the Five Selected Western European Countries

Country	Achievement	Migration Status		*B*	*t*	*p*
		Native	Turkish Migrant			
Austria	Mathematics	514	411	-102.99	-10.67	.00*
	Reading	500	403	-97.00	-9.20	.00*
	Science	513	407	-105.63	-13.30	.00*
Belgium	Mathematics	526	426	-100.73	-10.08	.00*
	Reading	517	410	-107.28	-9.47	.00*
	Science	522	415	-107.01	-10.83	.00*
Denmark	Mathematics	519	420	-99.35	-9.00	.00*
	Reading	507	419	-88.33	-5.94	.00*
	Science	511	405	-105.94	-13.04	.00*
Germany	Mathematics	524	430	-93.76	-9.55	.00*
	Reading	530	437	-92.30	-7.59	.00*
	Science	532	416	-115.65	-12.05	.00*
The Netherlands	Mathematics	520	462	-58.04	-4.16	.00*
	Reading	511	452	-58.46	-4.05	.00*
	Science	518	440	-77.76	-5.55	.00*

Note. p < .05 are flagged*

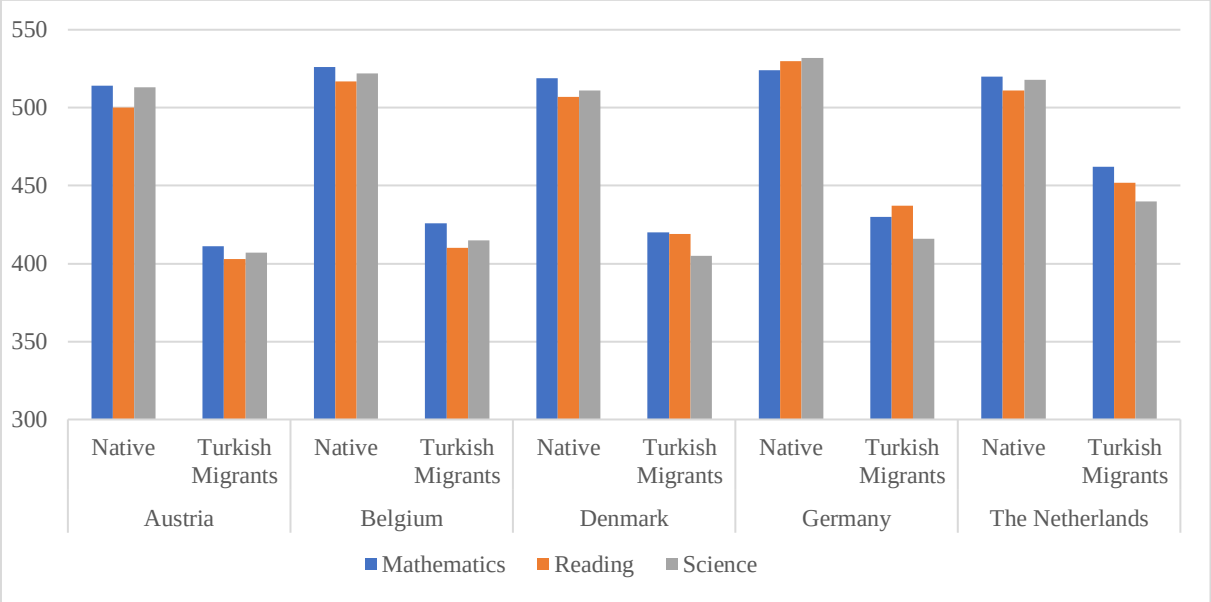


Figure 3.18 Summary Achievement of Native Compared to Turkish Migrant Students in the Five Selected Countries

Parents Education Background. In this study, two main confounding variables are considered as well, namely the education background of the parents and the language spoken at home. After categorising students based on the level of education of their parents, linear regressions were conducted to analyse the achievement between students with low and highly educated parents for both native and Turkish migrant students.

The linear regressions show consistent results. Regardless of the background education of their parents, the native student scores exceed the achievements of Turkish migrant students significantly. Table 3.6 present the summary of the results which visualizes in Figure 3.19.

Table 3.6 Summary of Linear Regression Analysis Results Native Compared to Turkish Migrant Students Based on Parents' Education Background

Country	Parents' Education	Achievement	Migration Status		*B*	*t*	*p*
			Native	Turkish Migrant			
Austria	Low	Mathematics	503	406	-96.90	-9.38	.00*
		Reading	486	400	-85.30	-7.36	.00*
		Science	498	404	-94.25	-10.54	.00*
	High	Mathematics	527	428	-98.63	-7.55	.00*
		Reading	516	413	-102.19	-6.81	.00*
		Science	527	418	-109.48	-9.91	.00*
Belgium	Low	Mathematics	493	426	-67.50	-6.12	.00*
		Reading	486	405	-80.74	-6.39	.00*
		Science	488	412	-75.86	-6.65	.00*
	High	Mathematics	542	433	-108.87	-6.07	.00*
		Reading	532	427	-105.63	-5.64	.00*
		Science	538	428	-109.81	-6.25	.00*
Denmark	Low	Mathematics	492	413	-78.78	-6.01	.00*
		Reading	483	408	-74.29	-7.22	.00*
		Science	486	395	-91.07	-8.83	.00*
	High	Mathematics	528	428	-99.51	-6.04	.00*
		Reading	515	437	-78.87	-2.50	.01*
		Science	519	420	-99.15	-7.07	.00*
Germany	Low	Mathematics	508	436	-71.97	-6.86	.00*
		Reading	516	452	-63.09	-4.87	.00*
		Science	513	423	-89.54	-8.38	.00*
	High	Mathematics	541	428	-112.58	-7.11	.00*
		Reading	547	430	-117.41	-6.28	.00*
		Science	553	417	-135.70	-8.55	.00*
The Netherlands	Low	Mathematics	502	454	-48.26	-2.82	.00*
		Reading	489	445	-44.03	-2.53	.01*
		Science	494	431	-62.71	-3.84	.00*
	High	Mathematics	531	480	-50.94	-3.51	.00*
		Reading	523	470	-52.50	-3.05	.00*
		Science	531	458	-72.74	-4.18	.00*

Note. $p < .05$ are flagged*

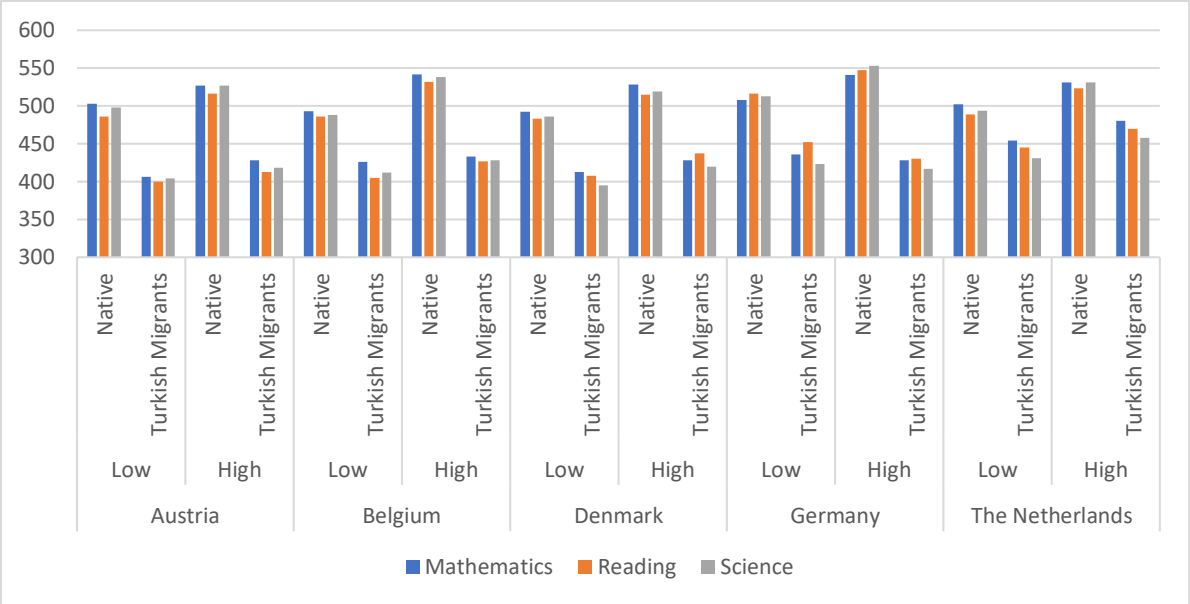


Figure 3.19 Summary Achievement of Native Compared to Turkish Migrant Students in the Five Selected Countries Based on Parents' Education Background

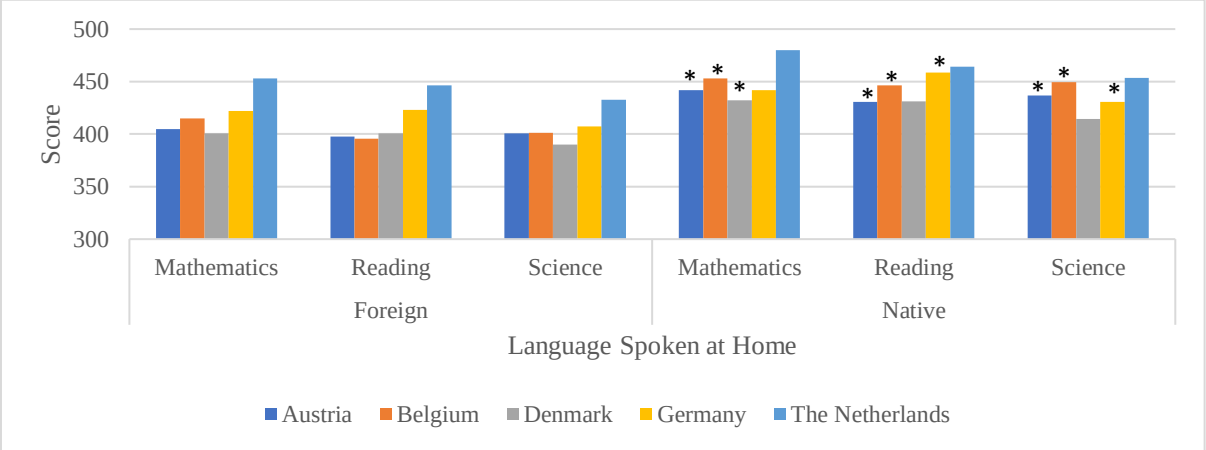
Language. The second confounding variable is the language spoken at home. Turkish migrant students were categorised into two categories based on the language they speak at home. The initial analysis shows that most of the students with Turkish migrant backgrounds are speaking a non-local language at home. Therefore, the linear regressions were conducted to compare the achievements of Turkish migrant students who speak the local language in the destination country, and the ones who speak a foreign language.

This analysis is intended to investigate the relationship between the achievements in PISA 2015 and the language that Turkish migrant students speak with their family at home. The results show that students who speak the local language exceed the performance of students who speak a foreign language at home. However, the results differ for each selected country. A further discussion will be presented in the next chapter. Table 3.7 provides a summary of the achievements of Turkish migrant students in the five selected countries based on the language spoken at home. A graphic display of these results can be seen in Figure 3.20.

Table 3.7 Summary of Linear Regression Analysis Results Based on Language Spoken at Home

Country	Achievement	Language Spoken at Home		*B*	*t*	*p*
		Foreign	Local			
Austria	Mathematics	405	442	36.69	2.12	.02*
	Reading	398	431	33.26	1.98	.02*
	Science	401	437	36.01	2.39	.01*
Belgium	Mathematics	415	453	38.34	2.32	.01*
	Reading	396	447	51.10	3.21	.00*
	Science	401	449	47.84	3.16	.00*
Denmark	Mathematics	401	432	31.41	1.79	.04*
	Reading	401	431	30.24	1.13	.10
	Science	390	415	24.74	1.44	.10
Germany	Mathematics	422	442	20.03	1.44	.10
	Reading	423	459	35.57	2.37	.01*
	Science	407	431	23.70	1.83	.03*
The Netherlands	Mathematics	453	480	26.69	1.34	.10
	Reading	446	464	17.85	.92	.18
	Science	433	454	20.94	1.08	.14

Note. p < .05 are flagged*

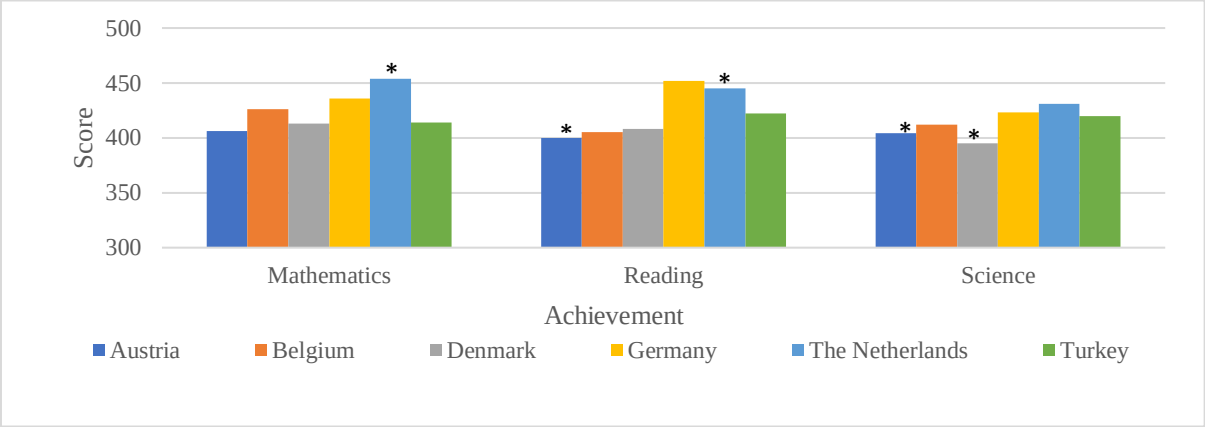


Note. Significantly higher achievements are flagged*

Figure 3.20 Summary Achievement of Native Compared to Turkish Migrant Students in the Five Selected Countries Based on Language Spoken at Home

Comparison with students in Turkey. The second sub-question of this study is related to the achievements of students with Turkish migrant backgrounds compared to students in Turkey. Therefore, to answer this sub-question, linear regressions were conducted for the dataset of each country which merged with the dataset of achievements students in Turkey. It is expected that Turkish migrant students in the five selected European countries achieve higher scores than students in Turkey.

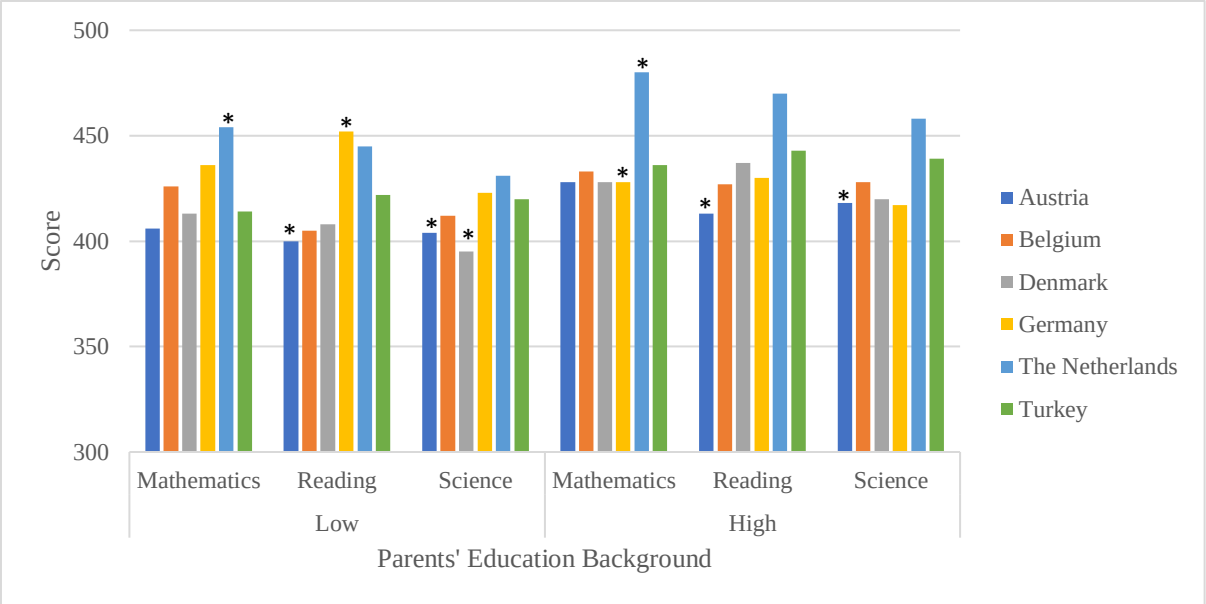
However, the results of linear regression reveal unexpected findings. It shows that Turkish migrant students do not always exceed the achievements of students in Turkey. These results will be further discussed in the next chapter. The summary of linear regression results of the comparison between the achievement of Turkish migrant students in the five selected countries and students in Turkey is presented in Table 3.1. The overview of these results is presented in Figure 3.21.



Note. Significant differences with Turkey are flagged*

Figure 3.21 Summary Achievement of Turkish Migrant Students in the Five Selected Countries Compared to Students in Turkey

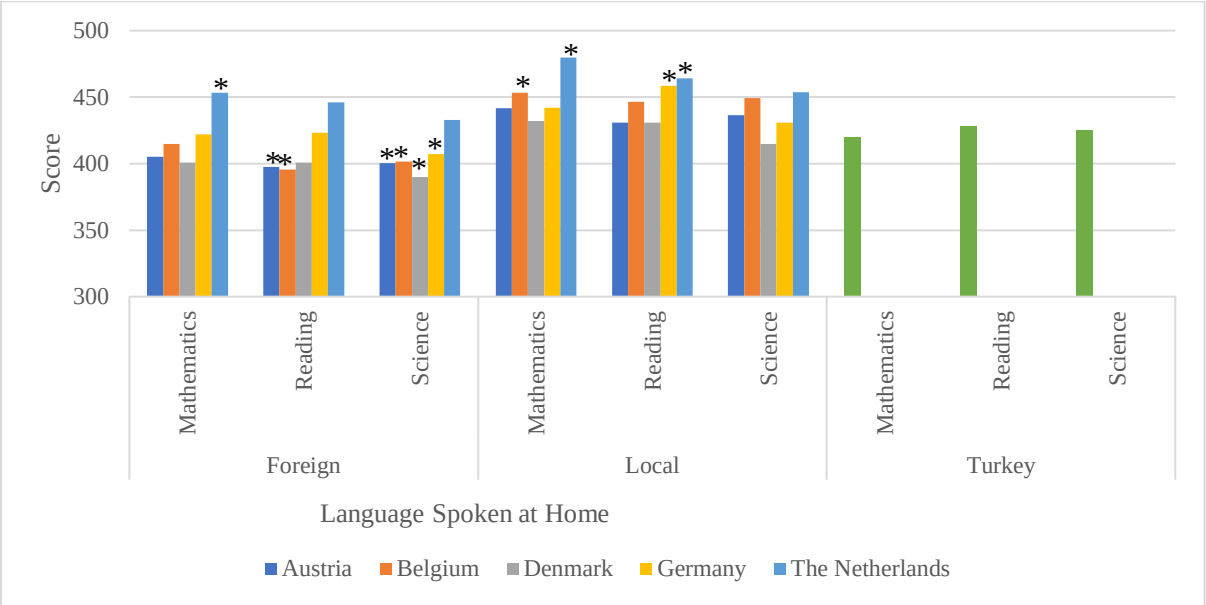
Furthermore, when the parents' education backgrounds were considered, linear regression analyses generate slightly different results as presented in Table 3.2. It shows that only in Germany and the Netherlands, students with Turkish migrant backgrounds exceed the scores of students in Turkey regardless of their parents' education background. These results are visualized in figure 3.22.



Note. Significant differences are flagged*

Figure 3.22 Summary Achievement of Turkish Migrant Students in the Five Selected Countries Compared to Students in Turkey Based on Parents' Education Background

Additionally, linear regressions were also conducted to compare the achievements of Turkish migrant students in the selected countries based on the language spoken at home compared to students in Turkey. The results show that students with Turkish migrant backgrounds who speak the local language exceed the scores of students in Turkey. The only exception was found for science achievement in Denmark where students who speak the local language achieved a lower score than students in Turkey. Meanwhile, for Turkish migrant students who speak another language than the local language, the scores were found to be higher than students in Turkey for science achievement in Denmark, mathematics achievement in Germany, and mathematics, reading, and science achievement in the Netherlands. The results are presented in Table 3.3 and visualized in Figure 3.23.



Note. Significant differences with Turkey are flagged*

Figure 3.23 Overview Summary Achievement of Turkish Migrant Students in the Five Selected Countries Compared to Students in Turkey Based on Language Spoken at Home

4. Discussion and Conclusions

Discussion

The following part of this master thesis moves on to discuss in greater detail the achievement of students with Turkish migrant backgrounds in the five selected destination countries (Austria, Belgium, Denmark, Germany, and the Netherlands). This study investigated the relationship of migration with the achievement of Turkish migrant students based on PISA 2015 results. It was expected that by migrating with their parents, migrant children would receive a better education in the destination country. As a result, Turkish migrant students are predicted to have higher achievements than students in Turkey.

Normally, students with migrant backgrounds are compared to native students, which puts them in the disadvantaged group (Nusche, 2009). Therefore, this study offers a new point of view on acknowledging the performance of Turkish migrant students in the five selected destination countries by comparing their achievements in PISA 2015 with students in Turkey. From this perspective, it was expected that the performance of Turkish migrant students would be significantly higher than performance students in Turkey even though their performance is still below the native students in the destination country. The study confirmed the relationship between migration and achievement for Turkish migrant students. However, the findings are partly contradictive with the expectations, as students with Turkish migrant backgrounds often did not exceed the achievement of students in Turkey. Furthermore, based on the results of the analyses; four major points will be elaborated in this section.

Achievement of Turkish migrant students

Firstly, it was expected that Turkish migrant students achieve lower scores than native students in the country to which they / their parents immigrated since the native students are more likely to have better educational resources at home (Chiu et al., 2012). Furthermore, Di Bartolomeo (2011) found that low educational achievement is often associated with immigrant children when they are compared to their native peers. The result of this current study showed that in the five selected Western European countries, there are significant differences in achievement in PISA 2015 between native students and students with Turkish migrant backgrounds. The findings confirm that Turkish migrant students perform significantly lower than native students in mathematics, reading, and science. The highest achievement gaps between native and Turkish migrant students appeared in Belgium, meanwhile the lowest gaps appeared in The Netherlands. This result is in contrast with a study by Levels et al., (2008),

which revealed that immigrant children from a lower level of economic development perform relatively better at school due to the restrictive immigration policies in the destination country. Destination countries with restrictive migrant policies are highly selective in allowing immigrants to receive citizenships. These countries are more in favour of high-skilled migration than other migration reasons such as low-skilled labour or family reunification (Joppke, 2008).

A possible explanation for this difference is that the performance of Turkish migrants in the western European countries, in general, is influenced by the migration biography, socio-economic status, and language (Söhn & Özcan, 2006). The study by Levels et al., (2008) refers to Australia and New-Zealand as receiving countries where only immigrants with high educational and occupational status are eligible for admission in these countries. Meanwhile, in Western Europe, most of the immigrants have a low socio-economic status and come to work as guest workers in the labour market of the destination countries (Avci & Kirişci, 2006). Furthermore, immigrant children are more likely to perform at a low level in school. This often leads them to feel frustrated, which may result in rejecting education in the destination country (Arayici, 2003). Therefore, the performance at school of students with migrant backgrounds is far below the native students.

There are, however, other possible explanations for the gap of performance between native students in the destination country and students with Turkish migrant backgrounds. The change in economic status, a problem in receiving education, lack of language ability, and skill requirements have made it difficult for Turkish migrants to compete with the natives (Avci & Kirişci, 2006). Moreover, several studies have shown that Turkish immigrants have strong cultural ties among each other in the countries where they migrated to. Crul and Doomernik (2003) found that Turkish migrants are more likely to comply with the norms and values of their ethnic community than migrants from other ethnic groups, for example, Moroccan migrants. Additionally, according to Schans (2009), the perception of Turkish culture and religion in western Europe has deteriorated in the last decade. As a result, Turkish who migrate have stronger family ties and deeper identification with Turkey. Therefore, it becomes more difficult for them to fully assimilate and integrate with the country where they migrate.

Moreover, as discussed earlier, the majority of Turkish migrants have lower education backgrounds and limited access to high-level jobs. The socio-economic backgrounds combined with financial issues, language skills, and cultural capital may form a certain mindset of their children's education in the destination country (Keskiner, 2017). Turkish parents tend to believe that their children should work at a very young age so they can contribute to the financing of

their family (Arayici, 2003). This contribution is not only to support the family who lives in the destination country but also for the family who remain in the country of origin. A study from Schans (2009) found that to obtain a certain status and prestige, the immigrants are more likely to contribute in the financial matters of their family members in the country of origin by sending regular remittances. Additionally, Garcés-Mascareñas and Peeninx (2016) mentioned that access to good education, better health facilities, and an increase in the quality of life in the destination country are contributing factors for migrants to feel the necessity in supporting their family in their country of origin.

Confounding variables

Parents Education Background. Secondly, in the comparison between native and Turkish migrant students' achievement, this study categorised the students based on the education of their parents. The level of parents' education, however, did not show a contrast result with the general achievement of Turkish migrant students in the destination country. Moreover, the observed difference between native students and Turkish migrant students with low- or high-level parents in this study was statistically significant. In general, therefore, it seems that students with Turkish migrant backgrounds achieved significantly lower scores than the native students regardless of their parents' educational level. This finding is aligned with the study from Avci and Kirişci (2006). They pointed out that the education of the second generation of Turkish migrants has not been successful. Furthermore, OECD found that immigrant students with two foreign-born parents are more likely to fail in achieving academic success than students without immigrant backgrounds (OECD, 2018).

The lowest gaps between natives and Turkish migrant students with highly educated parents appeared in The Netherlands while the highest gaps appeared in Germany. Meanwhile, for the category of students with low educated parents, the lowest gap similarly appeared in The Netherlands, and the highest gap appeared in Austria. It seems that natives and Turkish migrant students in The Netherlands show the lowest gap in their achievement regardless of their parents' background education. This could be due to the Dutch education system that is more vocationally oriented and encouraging internship (Keskiner, 2017) which motivate Turkish migrant students to perform better in their education.

Language. Thirdly, the lack of ability to engage in the destination country is also contributed to the language proficiency of the Turkish migrant students. The language spoken at home has contributed to the lower score of Turkish migrant students. This present study

found that there is a relation between the language spoken at home and the test score of Turkish migrant students. Turkish migrant students who speak a foreign language at home achieved lower scores in mathematics, reading, and science compared to Turkish migrant students who speak the language of the test at home. These findings are in line with results reported by Ruhose and Schwerdt (2016). They confirmed that migrant students who speak the language of the test at home perform better than migrant students who barely or never speak the language of the test at home. Additionally, this result is aligned with a study by Entorf and Lauk (2008). They found that the most important factor for the educational success of migrant students is the language spoken at home.

Surprisingly, the differences are not always statistically significant in Denmark, Germany, and The Netherlands. In Denmark, it shows that even though more Turkish migrant students are speaking Danish at home, the differences in achievement in reading and science are not statistically significant. In contrast, for Turkish migrant students in Germany, the language spoken at home only showed a statistically significant difference for the achievement in mathematic. Meanwhile in The Netherlands, even though Turkish migrant students who speak the local language at home exceed the score of Turkish migrant students who speak a foreign language, the differences are not statistically significant.

Unexpected results

Lastly, it was expected that Turkish migrant students would achieve higher scores than students in Turkey, as the nature of migration is to move to a country that offers potential advantages (Zoomers & Nijenhuis, 2012). However, the results contradict this expectation. The current study revealed that students with Turkish migrant backgrounds do not always perform significantly better than students in Turkey.

In general, Turkish migrant students in The Netherlands, partly in Belgium and Germany exceed the achievement of students in Turkey even though the differences are not always statistically significant. The significant differences only appeared in mathematics and reading of Turkish migrant students in The Netherlands. In contrast, Turkish migrant students in Austria, Denmark, and partly in Belgium and Germany achieved lower scores than students in Turkey. The significantly lower differences for this category only appeared in reading and science achievement in Austria, and science in Denmark.

Furthermore, when the educational background of parents is considered, the results reveal slightly different findings. In Austria, Turkish migrant students with low and highly

educated parents achieved lower scores than students in Turkey with similar parents' educational background. However, the results are statistically significant only for reading and science. In Denmark, only Turkish migrant students with low educated parents show significantly lower scores than students in Turkey. This statistically significant difference only appeared in science.

In contrast, as discussed earlier, Turkish migrant students in Germany and The Netherlands exceed the scores of students in Turkey. In Germany, only Turkish migrant students with low educated parents exceed the scores of students in Turkey. However, significant differences appeared only in the achievement of mathematics and reading. Meanwhile, in the Netherlands, both students with low and high educated parents exceed the scores of students in Turkey. Thus, this study contributes to previous research that found there is an increase of well-equipped Turkish migrant students who are successful in education regardless of the background of the parents (Crul & Doomernik, 2003). Although the statistically significant differences only appear in mathematics achievement.

Moreover, another important finding was that language spoken at home was found to influence the achievement gap between Turkish migrant students and students in Turkey. It is interesting to note that in all 5 selected countries of this study, Turkish migrant students who speak the local language at home almost always exceed the scores of students in Turkey. The exception only appeared in science achievement in Denmark. However, these results are not always statistically significant. The significant differences relate to mathematics achievement in Belgium, reading achievement in Germany, and lastly in mathematics and reading achievement in The Netherlands.

Meanwhile, in the category of Turkish migrant students who speak a foreign language at home, it was found that their scores are almost always lower than students in Turkey. The exception appeared in mathematics achievement in Germany and in all three subjects (mathematics, reading, and science) in the Netherlands where Turkish migrant students exceed the scores of students in Turkey. It is somewhat surprising that Turkish migrant students in The Netherlands exceed the scores of students in Turkey in all three subjects regardless of the language spoken at home. However, significant differences could be found only in the achievement of reading and science in Austria and Belgium, in science achievement in Denmark and Germany, and mathematics achievement in The Netherlands.

These results are in contrast with the finding from Chiu (2007). He found that the availability of educational resources and learning opportunities in the wealthier countries increase the chance of students to attain higher achievement levels. However, Bauer and Riphahn (2007) indicated that children who are disadvantaged by parental backgrounds (such as education and earning) have limited opportunities to reach educational success.

The achievement gap between Turkish migrant students and students in Turkey may be interpreted as an indication of an unsuccessful migration. One may question to what extent and in what respects their migration can be considered as successful. Migration does not always work out as expected for all migrants. They are bound to face a lot of challenges in the destination country which sometimes leads to failed or unsuccessful migration. Unsuccessful migration means that immigrants do not succeed in improving their living conditions as much as expected (Bürgin & Erzene-Bürgin, 2013). With regards to migrants in western Europe, their living conditions appear to be acceptable. Otherwise, one would expect to see a massive remigration. As stated by Zoomers and Nijenhuis (2012), return migrants are more likely to be old, sick and unsuccessful. However, after several decades living in western Europe, the living conditions and income levels of Turkish migrants on average are still less favourable than those of the native inhabitants (Güngör & Tansel, 2014). The modest achievement levels can be conceived as another indication of the limited success of their migration.

The uncertain living conditions in the destination country could be another reason for the achievement gap between Turkish migrant students and students in Turkey. As stated in a study by Şenyürekli and Menjívar (2012), uncertainty in the destination country might affect the quality of migrants' lives, which may lead to mental health issues. This condition could also contribute to the ability of migrants to integrate into the destination country. It is believed that migrants are receiving access to a better education when they move from a poor country to a richer one (Castles, 2011). However, if migrants are not able to successfully integrate in the destination country, these facilities could be difficult to access. By way of illustration, Veikou (2016) points to the condition of refugees in Greece. She showed the physical and social environment where migrants live, and especially the fear of migrants. This is evidently for a case of unsuccessful migration where migrants hardly get access to adequate housing and education.

Conclusions

This study aimed to investigate the performance of 15-year-old students with Turkish migrant backgrounds compared to students in Turkey based on their achievements in PISA 2015. Five countries were selected to compare the native students and students in Turkish migrant backgrounds, Austria, Belgium, Denmark, Germany, and The Netherlands. This study has found that generally, students with Turkish migrant backgrounds achieved lower scores than the native students regardless of the parental education background. Moreover, between Turkish migrant students who speak a local and foreign language at home, Turkish migrant students who speak the local language were found to exceed the score of students who speak a foreign language at home.

Furthermore, one of the more significant findings to emerge from this study is that migration does not necessarily increase educational attainment. As this study has shown that in almost every selected country, students with Turkish migrant backgrounds did not exceed the achievements of students in Turkey regardless of their parental education backgrounds. However, the language spoken at home consistently shows its influence of Turkish migrant students' achievement. Therefore, it is suggested that students who migrate to develop their language skills. As poor language skills lead to poor communication skills which not only affect the educational achievement but also motivation and interest (Gür et al., 2012).

5. Limitation and recommendations

One of the limitations of this study is that it was a cross-sectional quantitative from a single source of secondary data, PISA 2015. Therefore, there is no evidence to conclude whether Turkish migrant students in the destination country have improved or deteriorated over a longer period. Especially when they are compared to students who stay in the country of origin (achievement of students in Turkey). It could be that there was an underlying cause of lower achievement which reflected in the achievement of PISA 2015. With this limitation, this study suggests that additional data collection procedures or resources, including the information about the psychological condition of the migrants and additional data from another large-scale assessment results, would be required to reveal the underlying cause of Turkish migrant performance in the destination country.

The findings of this study have important implications in developing adequate education for students with migrant backgrounds. Therefore, for further research, it might be beneficial to compare students with Turkish migrant backgrounds to other migrant backgrounds. It could provide a perspective of whether an education system is suitable for migrants in general or only migrants from specific backgrounds. Therefore, additional attention could be given only to migrants who experience difficulties in receiving education in the destination country.

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Appendices

Appendix A

Table 1. General overview search for a related study

Platforms	Keywords	Total results	Relevant results
Web of Science	"migrant" and "migrant student" and "native"	17	0
Scopus	"migrant" and "migrant student" and "native"	22	0
University of Twente Library	"migrant" and "migrant student" and "native"	58	0
OECD iLibrary	"migrant" and "migrant student"	17	0
EU Open Data Portal	"migrant" or "migrant student"	123 (included data set)	0

Appendix B

Table 2. International Migration Database (OECD, 2018)

Country of birth/nationality: Turkey

Variable: Inflows of foreign population by nationality

Country	Year						Latest Update
	2000	2003	2006	2009	2012	2015	2017
Germany	50,026	49,774	29,589	27,212	26,15	23,698	33,655
France	6,613	8,614	9,273	6,717	5,753	4,948	4,929
Austria	7,096	10,411	4,867	4,735	4,088	3,653	3,347
Netherlands	4,517	6,193	2,768	3,468	3,387	2,843	4,444
Belgium	2,812	3,828	2,999	3,118	2,391	1,724	1,925

Note. Data extracted on 21 Jan 2020 15:44 from OECD.stat

Appendix C - AUSTRIA

Appendix C1. Native students compared to Turkish migrant students in Austria

Table 3. Achievement of Students Based on Migrant Backgrounds in Austria

Achievement	Migrant Background		*B*	*t*	*p*
	Native	Turkish Migrant			
Mathematics	514	411	-102.99	-10.67	.00*
Reading	500	403	-97.00	-9.20	.00*
Science	513	407	-105.63	-13.30	.00*
N	4,897	270			

Note. p < .05 are flagged*

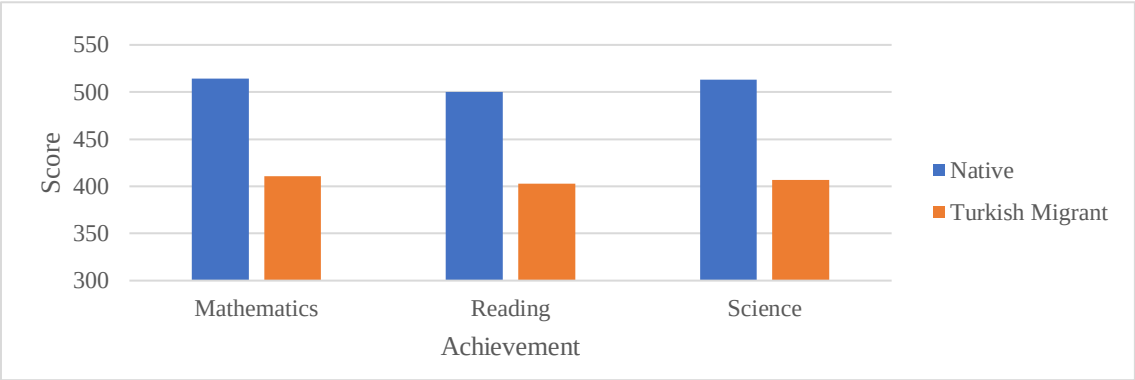


Figure 1. Overall Achievements Native Compared to Turkish Migrant Students in Austria

Appendix C2. Native students compared to Turkish migrant students in Austria based on Parents' Education Background

Table 4. Achievement Native compared to Turkish Migrant Students in Austria based on Parents' Level of Education

Parents' Education Level	Achievement	Migrant Background		*M*	*SD*	*B*	*t*
		Native	Turkish Migrant				
Low	Mathematics	503	406	494.28	91.03	-96.9	-9.38*
	Reading	486	400	478.14	96.06	-85.3	-7.36*
	Science	498	404	489.37	91.52	-94.25	-10.54*
	N	2,213	195				
High	Mathematics	527	428	523.61	91.14	-98.63	-7.55*
	Reading	516	413	512.46	97.63	-102.19	-6.81*
	Science	527	418	523.99	95.11	-109.48	-9.91*
	N	2,612	72				

Note. p < .05 are flagged*

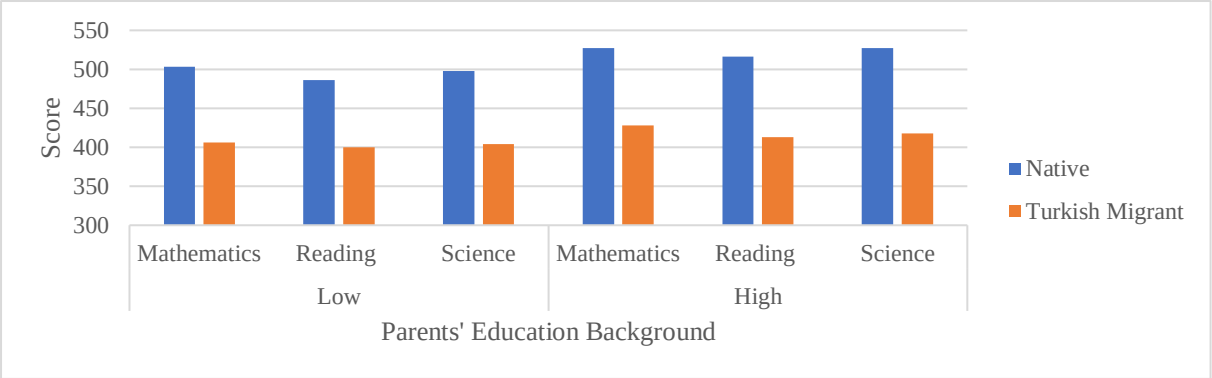


Figure 2. Overview of Achievement Native Compared to Turkish Migrant Students in Austria based on Parents' Education Backgrounds

Appendix C3. Turkish migrant students' achievement in Austria based on language spoken at home

Table 5. Achievement Turkish Migrant Students in Austria Based on Language Spoken at Home

Achievement	Language		*M*	*SD*	*B*	*t*
	Foreign	Local				
Mathematics	405	442	411.47	84.50	36.69	2.12*
Reading	398	431	403.37	89.66	33.26	1.98*
Science	401	437	406.90	81.55	36.01	2.39*
N	221	49				

Note. p < .05 are flagged*

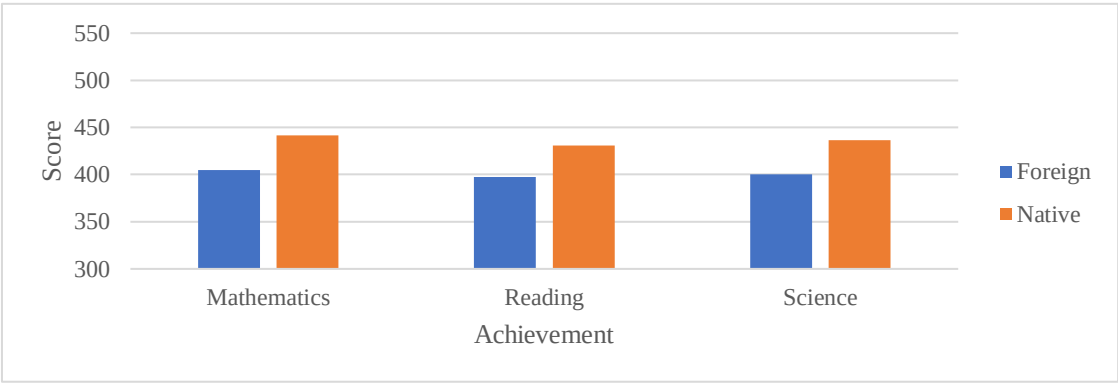


Figure 3. Overview of Turkish Migrant Students' Achievement Based on Language Spoken at Home in Austria

Appendix C4. Turkish migrant students' achievement in Austria compared to students in Turkey in general

Table 6. Achievement Turkish Migrant Students in Austria compared to Students in Turkey

Achievement	Turkish student in		*M*	*SD*	*B*	*t*
	Austria	Turkey				
Mathematics	411	420	420.42	81.93	-8.99	-.91
Reading	403	428	428.25	82.44	-24.96	-2.37*
Science	407	425	425.43	79.28	-18.59	-2.28*
N	270	5,895				

Note. p < .05 are flagged*

Appendix C5. Turkish migrant students' achievement in Austria compared to students in Turkey based on parents' education level

Table 7. Achievement Turkish Migrants Students in Austria Compared to Students in Turkey Based on Parents' Education level

Parents' Education Level	Achievement	Turkish Student in		*M*	*SD*	*B*	*t*
		Austria	Turkey				
Low	Mathematics	406	414	414.38	78.71	-8.13	-.60
	Reading	400	422	422.28	78.96	-21.92	-2.00*
	Science	404	420	420.04	75.99	-16.58	-1.85*
	N	195	4,133				
High	Mathematics	428	436	436.02	86.85	-8.39	-.83
	Reading	413	443	443.24	88.27	-30.01	-2.00*
	Science	418	439	438.96	84.99	-21.26	-1.82*
	N	72	1,723				

Note. p < .05 are flagged*

Appendix C6. Turkish migrant students' achievement in Austria compared to students in Turkey based on language spoken at home

Table 8. Achievement Turkish migrant students in Austria based on the language spoken at home compared to students in Turkey

Achievement	Turkish Score	Foreign language				Local language			
		Score	*B*	*t*	*p*	Score	*B*	*t*	*p*
Mathematic	420	405	-15.43	-1.51	.07	442	21.23	1.24	.11
Reading	428	398	-30.83	-2.83	.00*	431	2.42	.14	.44
Science	425	401	-24.95	-2.96	.00*	437	11.06	.74	.24

Note. p < .05 are flagged*

Appendix D - BELGIUM

Appendix D1. Native students compared to Turkish migrant students in Belgium

Table 9. Achievement of Students Based on Migrant Backgrounds in Belgium

Achievement	Migrant Background		*B*	*t*	*p*
	Native	Turkish Migrant			
Mathematics	526	426	-100.73	-10.08	.00*
Reading	517	410	-107.28	-9.47	.00*
Science	522	415	-107.01	-10.83	.00*
N	6,365	134			

Note. p < .05 are flagged*

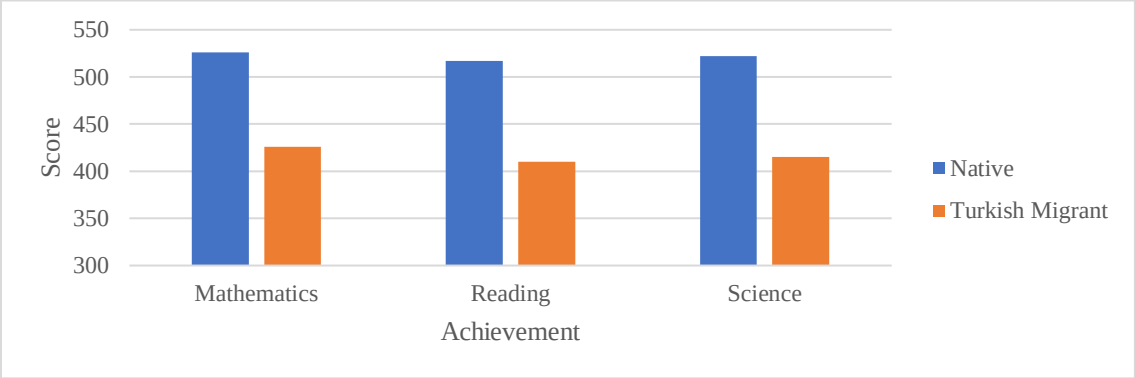


Figure 4. Overall Achievements Native Compared to Turkish Migrant Students in Belgium

Appendix D2. Native students compared to Turkish migrant students in Belgium based on Parents' Education Background

Table 10. Achievement Native Compared to Turkish Migrant Students in Belgium Based on Parents' Level of Education

Parents' Education Level	Achievement	Migrant Background		*M*	*SD*	*B*	*t*
		Native	Turkish Migrant				
Low	Mathematics	493	426	489.50	89.25	-67.50	-6.12*
	Reading	486	405	481.33	91.67	-80.74	-6.39*
	Science	488	412	483.90	90.98	-75.86	-6.65*
	N	1,819	93				
High	Mathematics	542	433	540.91	90.99	-108.87	-6.07*
	Reading	532	427	531.44	92.77	-105.63	-5.64*
	Science	538	428	536.95	92.97	-109.81	-6.25*
	N	4,405	36				

Note. p < .05 are flagged*

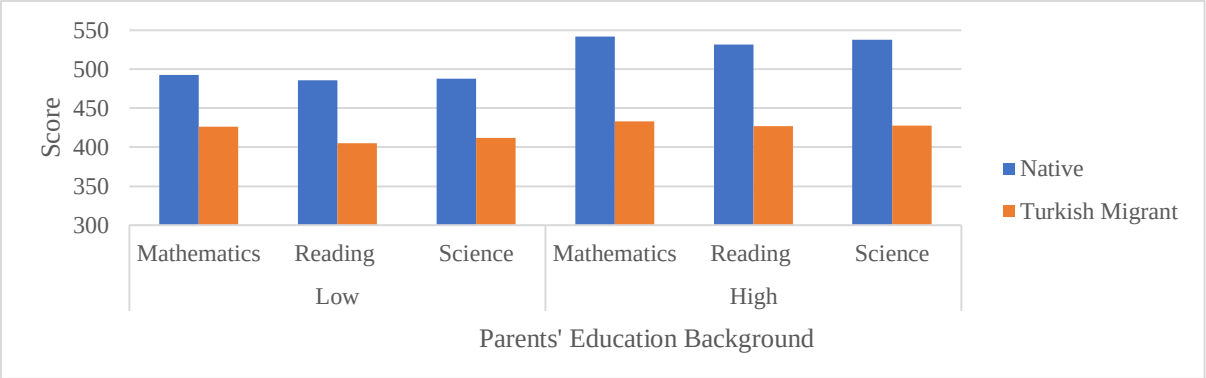


Figure 5. Overview of Achievements Native Compared to Turkish Migrant Students in Belgium Based on Parents' Education Background

Appendix D3. Turkish migrant students' achievement in Belgium based on language spoken at home

Table 11. Achievement Turkish Migrant Students in Belgium Based on Language Spoken at Home

Achievement	Language		*M*	*SD*	*B*	*t*
	Foreign	Local				
Mathematics	415	453	425.65	87.41	38.34	2.32*
Reading	396	447	410.04	93.37	51.10	3.21*
Science	401	449	415.03	89.39	47.84	3.16*
N	97	37				

Note. p < .05 are flagged*

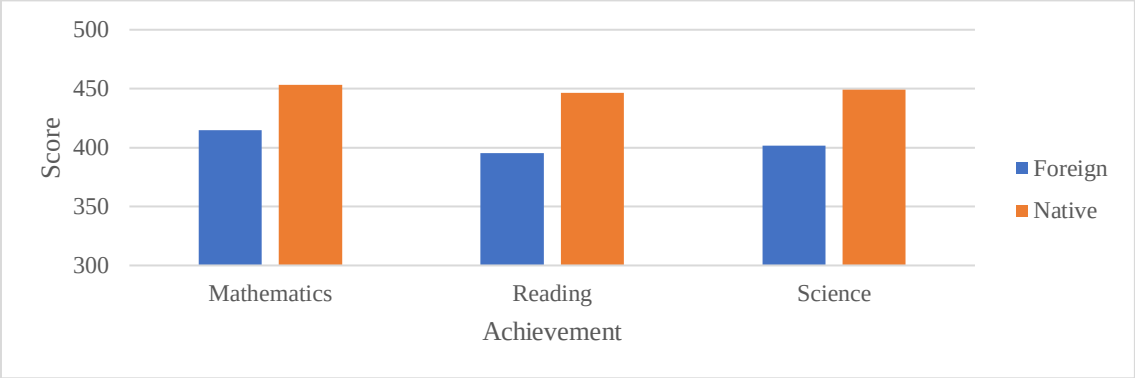


Figure 6. Overview of Turkish Migrant Students' Achievement Based on Language Spoken at Home in Belgium

Appendix D4. Turkish migrant students' achievement in Belgium compared to students in Turkey in general

Table 12. Achievement Turkish Migrant Students in Belgium Compared to Students in Turkey

Achievement	Turkish student in		*M*	*SD*	*B*	*t*
	Belgium	Turkey				
Mathematics	426	420	420.46	81.93	5.20	.48
Reading	410	428	428.30	82.42	-18.29	-1.53
Science	415	425	425.47	79.28	-10.46	-1.00
N	134	5,895				

Appendix D5. Turkish migrant students' achievement in Belgium compared to students in Turkey based on parents' education level

Table 13. Achievement Turkish Migrants in Belgium Compared to Students in Turkey Based on Parents' Education Level

Parents' Education Level	Achievement	Turkish Student in		*M*	*SD*	*B*	*t*
		Belgium	Turkey				
Low	Mathematics	426	414	414.43	78.70	11.24	.98
	Reading	405	422	422.33	78.94	-17.41	-1.39
	Science	412	420	420.08	75.98	-7.96	-.72
	N	93	4,133				
High	Mathematics	433	436	436.04	86.87	-2.99	-.16
	Reading	427	443	443.30	88.26	-16.54	-.84
	Science	428	439	439.00	85.02	-10.86	-.58
	N	36	1,723				

Appendix D6. Turkish migrant students' achievement in Belgium compared to students in Turkey based on language spoken at home

Table 14. Achievement Turkish migrant students in Belgium based on the language spoken at home compared to students in Turkey

Achievement	Turkish Score	Foreign language				Local language			
		Score	*B*	*t*	*p*	Score	*B*	*t*	*p*
Mathematic	420	415	-5.70	-.46	.32	453	32.64	2.19	.01*
Reading	428	396	-32.81	-2.59	.00*	447	18.29	1.16	.12
Science	425	401	-24.05	-2.21	.01*	449	23.79	1.56	.06

Note. $p < .05$ are flagged*

Appendix E - DENMARK

Appendix E1. Native students compared to Turkish migrant students in Denmark

Table 15. Achievement of Students based on Migrant Background in Denmark

Achievement	Migrant Background		*B*	*t*	*p*
	Native	Turkish Migrant			
Mathematics	519	420	-99.35	-9.00	.00*
Reading	507	419	-88.33	-5.94	.00*
Science	511	405	-105.94	-13.04	.00*
N	4,480	276			

Note. p < .05 are flagged*

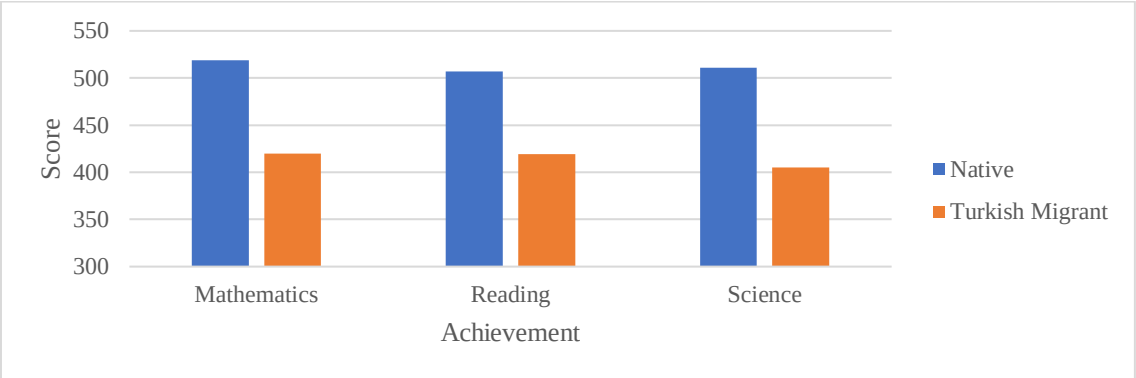


Figure 7. Overall Achievements Native Compared to Turkish Migrant Students in Denmark

Appendix E2. Native students compared to Turkish migrant students in Denmark based on Parents' Education Background

Table 16. Achievement Native Compared to Turkish Migrant Students in Denmark Based on Parents' Level of Education

Parents' Education Level	Achievement	Migrant Background		*M*	*SD*	*B*	*t*
		Native	Turkish Migrant				
Low	Mathematics	492	413	488.34	77.40	-78.78	-6.01*
	Reading	483	408	479.55	85.02	-74.29	-7.22*
	Science	486	395	482.07	84.87	-91.07	-8.83*
	N	1,049	177				
High	Mathematics	528	428	526.94	76.16	-99.51	-6.04*
	Reading	515	437	514.76	82.52	-78.87	-2.50*
	Science	519	420	518.06	85.46	-99.15	-7.07*
	N	3,398	87				

Note. p < .05 are flagged*

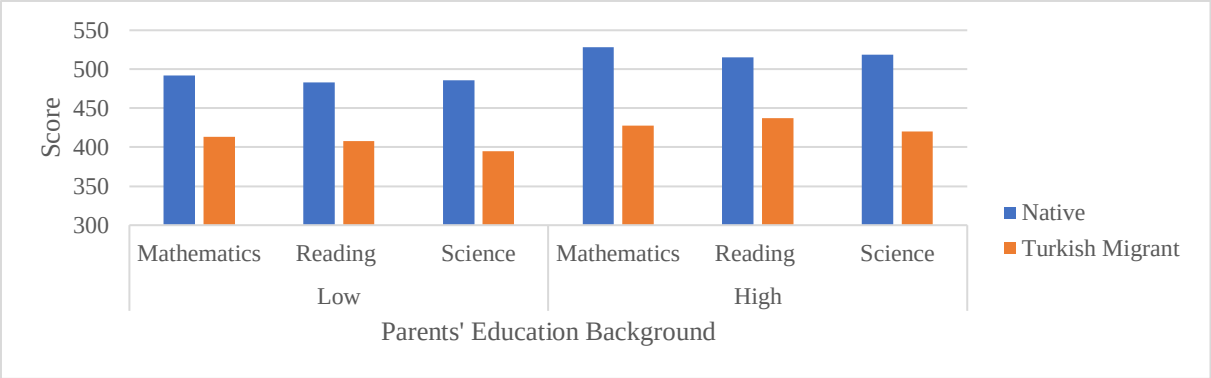


Figure 8. Overview of Achievement Native Compared to Turkish Migrant Students in Denmark Based on Parents' Education Background

Appendix E3. Turkish migrant students' achievement in Denmark based on language spoken at home

Table 17. Achievement Turkish Migrant Students in Denmark Based on Language Spoken at Home

Achievement	Language		*M*	*SD*	*B*	*t*
	Foreign	Native				
Mathematics	401	432	419.69	74.22	31.41	1.79*
Reading	401	431	418.99	90.97	30.24	1.13
Science	390	415	404.81	82.67	24.74	1.44
N	117	159				

Note. p < .05 are flagged*

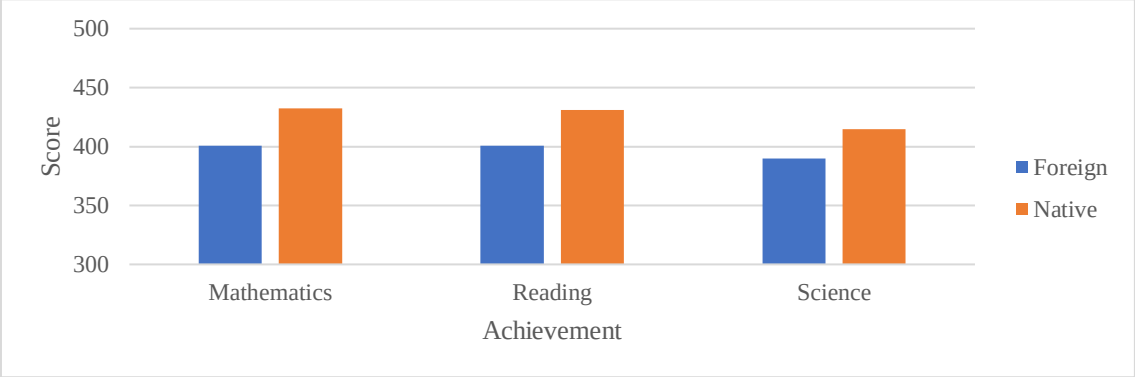


Figure 9. Overview of Turkish Migrant Students' Achievement Based on Language Spoken at Home in Denmark

Appendix E4. Turkish migrant students' achievement in Denmark compared to students in Turkey in general

Table 18. Achievement Turkish Migrant Students in Denmark Compared to Students in Turkey

Achievement	Turkish student in		*M*	*SD*	*B*	*t*
	Denmark	Turkey				
Mathematics	420	420	420.45	81.91	-.77	-.07
Reading	419	428	428.33	82.41	-9.34	-.61
Science	405	425	425.47	79.27	-20.68	-2.40*
N	276	5,895				

Note. p < .05 are flagged*

Appendix E5. Turkish migrant students' achievement in Denmark compared to students in Turkey based on parents' education level

Table 19. Achievement Turkish Migrants in Denmark Compared to Students in Turkey Based on Parents' Education Level

Parents' Education Level	Achievement	Turkish Student in		*M*	*SD*	*B*	*t*
		Denmark	Turkey				
Low	Mathematics	413	414	414.40	78.68	-1.43	-.10
	Reading	408	422	422.35	78.92	-13.88	-1.29
	Science	395	420	420.08	75.97	-25.14	-2.40*
	N	177	4,133				
High	Mathematics	428	436	436.04	86.86	-7.69	-.44
	Reading	437	443	443.32	88.26	-6.70	-.21
	Science	420	439	439.00	85.00	-19.20	-1.31
	N	87	1,723				

Note. p < .05 are flagged*

Appendix E6. Turkish migrant students' achievement in Denmark compared to students in Turkey based on language spoken at home

Table 20. Achievement Turkish migrant students in Denmark based on language spoken at home compared to students in Turkey

Achievement	Turkish Score	Foreign language				Local language			
		Score	*B*	*t*	*p*	Score	*B*	*t*	*p*
Mathematic	420	401	-19.71	-1.20	.12	432	11.69	.93	.18
Reading	428	401	-27.59	-1.00	.16	431	2.66	.20	.42
Science	425	390	-35.61	-2,.49	.01*	415	-10.87	-1.06	.15

Note. p < .05 are flagged*

Appendix F - GERMANY

Appendix F1. Native students compared to Turkish migrant students in Germany

Table 21. Achievement of Students Based on Migrant Background in Germany

Achievement	Migrant Background		*B*	*t*	*p*
	Native	Turkish Migrant			
Mathematics	524	430	-93.76	-9.55	.00*
Reading	530	437	-92.30	-7.59	.00*
Science	532	416	-115.65	-12.05	.00*
N	4,052	209			

Note. p < .05 are flagged*

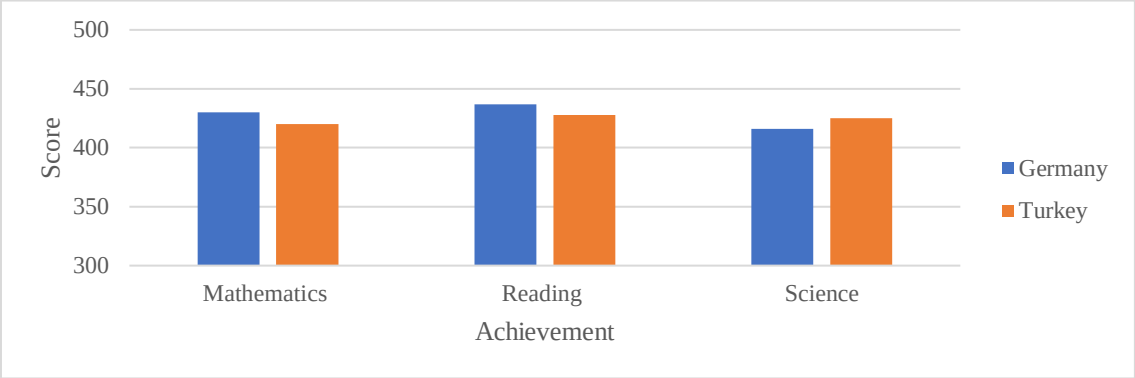


Figure 10. Overall Achievements Native Compared to Turkish Migrant Students in Germany

Appendix F2. Native students compared to Turkish migrant students in Germany based on Parents' Education Background

Table 22. Achievement Compared to Turkish Migrant Students in Germany Based on Parents' Education Background

Parents' Education Level	Achievement	Migrant Background		*M*	*SD*	*B*	*t*
		Native	Turkish Migrant				
Low	Mathematics	508	436	503.22	84.88	-71.97	-6.86*
	Reading	516	452	511.32	92.63	-63.09	-4.87*
	Science	513	523	507.04	92.21	-89.54	-8.38*
	N	1,726	125				
High	Mathematics	541	428	537.71	86.41	-112.58	-7.11*
	Reading	547	430	543.78	94.83	-117.41	-6.28*
	Science	553	417	548.96	94.58	-135.70	-8.55*
	N	2,176	61				

Note. p < .05 are flagged*

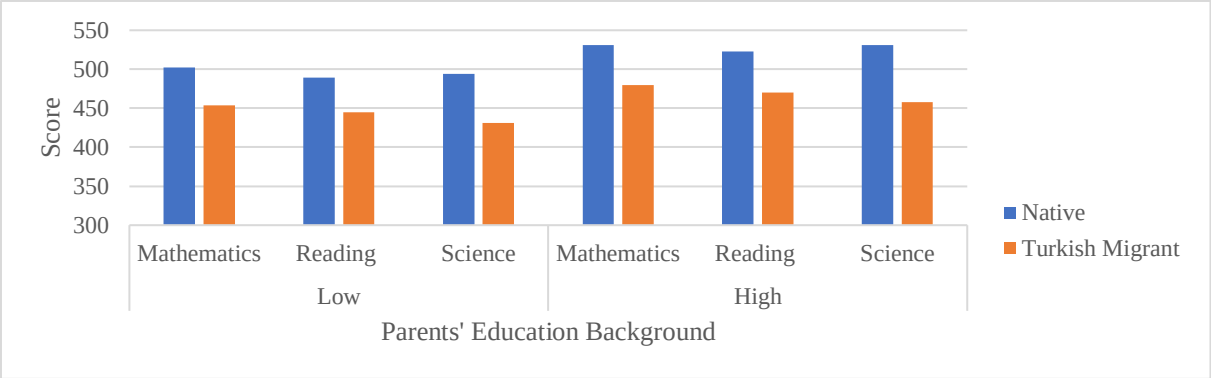


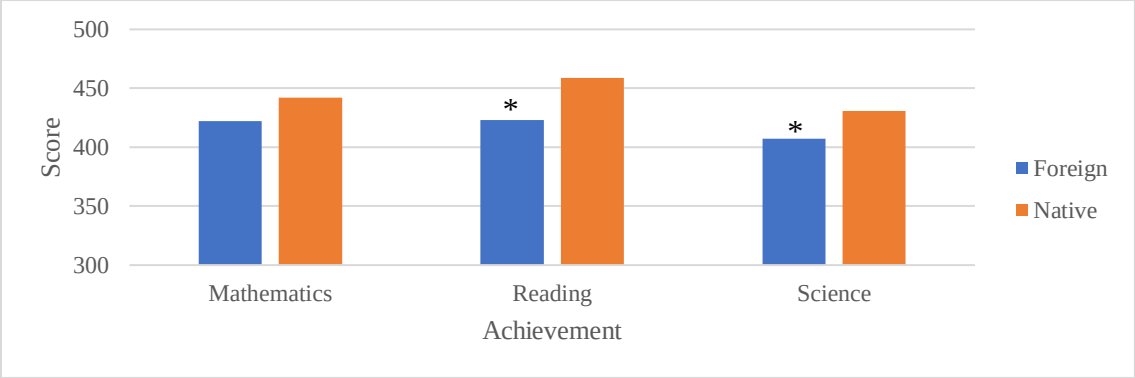
Figure 11. Overview of Achievements Native Compared to Turkish Migrant Students in Germany Based on Parents' Education Background

Appendix F3. Turkish migrant students' achievement in Germany based on language spoken at home

Table 23. Achievement Turkish Migrant Students in Germany Based on Language Spoken at Home

Achievement	Language		*M*	*SD*	*B*	*t*
	Foreign	Local				
Mathematics	422	442	430.00	79.69	20.03	1.44
Reading	423	459	437.23	102.71	35.57	2.37*
Science	407	431	416.49	85.25	23.70	1.83*
N	125	84				

Note. p < .05 are flagged*



Note. Significantly lower achievements are flagged*

Figure 12. Overview of Turkish Migrant Students' Achievement Based on Language Spoken at Home in Germany

Appendix F4. Turkish migrant students' achievement in Germany compared to students in Turkey in general

Table 24. Achievement Turkish Migrant Students in Germany Compared to Students in Turkey

Achievement	Turkish student in		*M*	*SD*	*B*	*t*
	Germany	Turkey				
Mathematics	430	420	420.69	81.88	9.54	.96
Reading	437	428	428.56	82.98	8.90	.75
Science	416	425	425.27	79.43	-9.00	-.95
N	209	5,895				

Appendix F5. Turkish migrant students' achievement in Germany compared to students in Turkey based on parents' education level

Table 25. Achievement Turkish Migrants in Germany Compared to Students in Turkey Based on Parents' Education Level

Parents' Education Level	Achievement	Turkish Student in		*M*	*SD*	*B*	*t*
		Germany	Turkey				
Low	Mathematics	436	414	414.87	78.70	21.64	1.97*
	Reading	452	422	423.01	79.40	30.09	2.34*
	Science	423	420	420.17	76.05	3.37	.31
	N	125	4,133				
High	Mathematics	428	436	435.85	86.87	-7.78	-.49
	Reading	430	443	442.99	88.83	-13.69	-.74
	Science	417	439	438.48	85.28	-21.99	-1.36
	N	61	1,723				

Note. $p < .05$ are flagged*

Appendix F6. Turkish migrant students' achievement in Germany compared to students in Turkey based on language spoken at home

Table 26. Achievement Turkish migrant students in Germany based on the language spoken at home compared to students in Turkey

Achievement	Turkish Score	Foreign language				Local language			
		Score	*B*	*t*	*p*	Score	*B*	*t*	*p*
Mathematic	420	422	1.56	.13	.45	442	21.60	1.82	.34
Reading	428	423	-5.27	-.37	.36	459	30.30	2.26	.01*
Science	425	407	-18.44	-1.62	.05*	431	5.26	.46	.32

Note. $p < .05$ are flagged*

Appendix G – THE NETHERLANDS

Appendix G1. Native students compared to Turkish migrant students in the Netherlands

Table 1. Achievement of Students Based on Migrant Background in the Netherlands

Achievement	Migrant Background		*B*	*t*	*p*
	Native	Turkish Migrant			
Mathematics	520	462	-58.04	-4.16	.00*
Reading	511	452	-58.46	-4.05	.00*
Science	518	440	-77.76	-5.55	.00*
N	4,205	107			

Note. p < .05 are flagged*

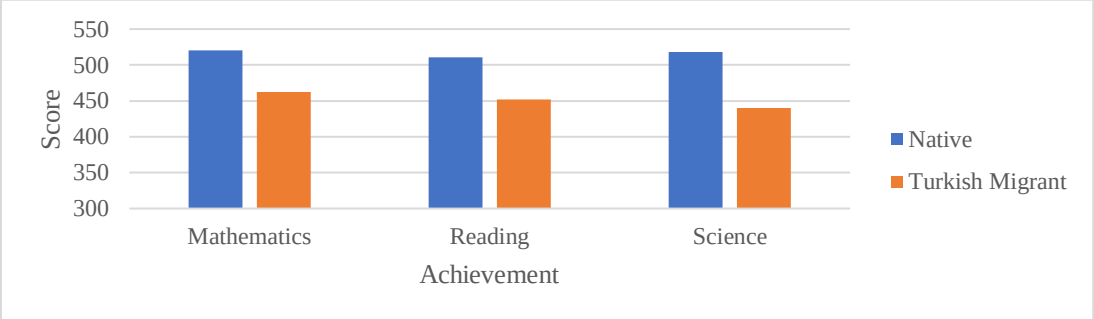


Figure 1. Overall Achievement Native Compared to Turkish Migrant Students in the Netherlands

Appendix G2. Native students compared to Turkish migrant students in the Netherlands based on Parents' Education Background

Table 2. Achievement Native Compared to Turkish Migrant Students in the Netherlands Based on Parents' Level of Education

Parents' Education Level	Achievement	Migrant Background		*M*	*SD*	*B*	*t*
		Native	Turkish Migrant				
Low	Mathematics	502	454	499.57	85.96	-48.26	-2.82*
	Reading	489	445	487.01	94.70	-44.03	-2.53*
	Science	494	431	491.21	93.96	-62.71	-3.84*
	N	1,436	69				
High	Mathematics	531	480	530.12	88.72	-50.94	-3.51*
	Reading	523	470	522.27	98.64	-52.50	-3.05*
	Science	531	458	530.01	98.56	-72.74	-4.18*
	N	2,737	35				

Note. p < .05 are flagged*

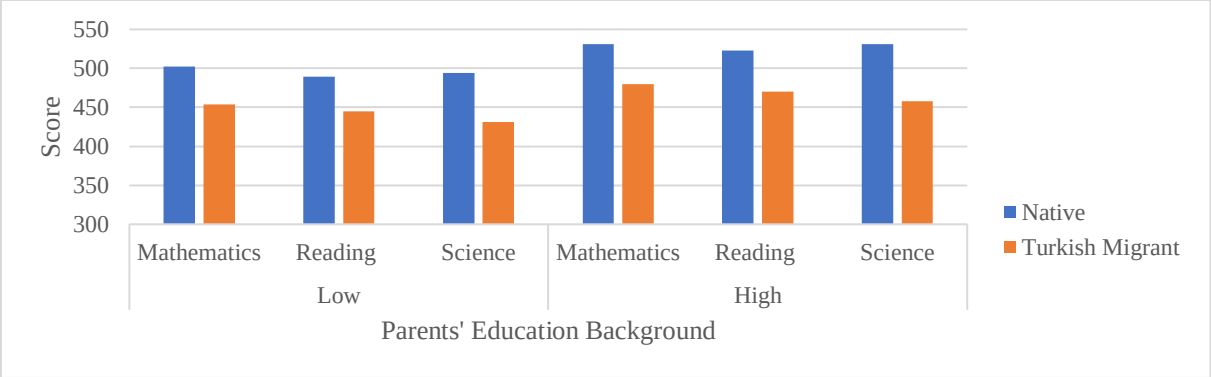


Figure 2. Overview of Achievement Native Compared to Turkish Migrant in The Netherlands Based on Parents' Education Background

Appendix G3. Turkish migrant students' achievement in the Netherlands based on language spoken at home

Table 3. Achievement Turkish Migrant Students in the Netherlands Based on Language Spoken at Home

Achievement	Language		*M*	*SD*	*B*	*t*
	Foreign	Local				
Mathematics	453	480	462.40	84.33	26.69	1.34
Reading	446	464	452.41	91.41	17.85	.92
Science	433	454	440.03	89.08	20.94	1.08
N	70	37				

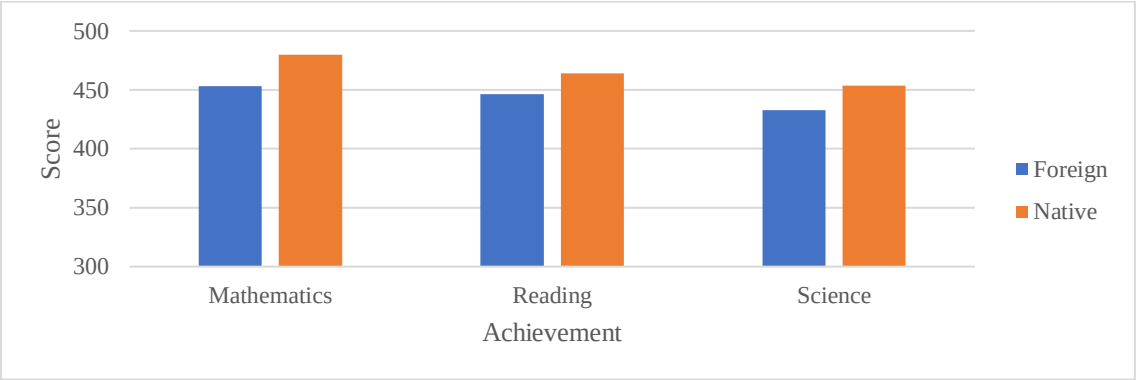


Figure 3. Overview of Turkish Migrant Students' Achievement Based on Language Spoken at Home in The Netherlands

Appendix G4. Turkish migrant students' achievement in the Netherlands compared to students in Turkey in general

Table 4. Achievement Turkish Migrant Students in The Netherlands Compared to Students in Turkey

Achievement	Turkish student in		*M*	*SD*	*B*	*t*
	The Netherlands	Turkey				
Mathematics	462	420	420.63	81.97	41.94	2.96*
Reading	452	428	428.44	82.45	24.08	1.66*
Science	440	425	425.55	79.31	15.54	1.04
N	107	5,895				

Note. p < .05 are flagged*

Appendix G5. Turkish migrant students' achievement in the Netherlands compared to students in Turkey based on parents' education level

Table 5. Achievement Turkish Migrant Students in The Netherlands Compared to Students in Turkey Based on Parents' Education Level

Parents' Education Level	Achievement	Turkish Student in		*M*	*SD*	*B*	*t*
		The Netherlands	Turkey				
Low	Mathematics	454	414	414.56	78.77	39.15	2.24*
	Reading	445	422	422.45	78.99	22.68	1.26
	Science	431	420	420.14	76.03	11.32	.67
	N	69	4,133				
High	Mathematics	480	436	436.25	86.86	43.80	2.86*
	Reading	470	443	443.45	88.23	27.12	1.53
	Science	458	439	439.11	85.01	19.19	1.04
	N	35	1,723				

Note. p < .05 are flagged*

Appendix G6. Turkish migrant students' achievement in the Netherlands compared to students in Turkey based on language spoken at home

Table 6. Achievement Turkish migrant students in the Netherlands based on the language spoken at home compared to students in Turkey

Achievement	Turkish Score	Foreign language				Local language			
		Score	*B*	*t*	*p*	Score	*B*	*t*	*p*
Mathematic	420	453	32.67	1.99	.02*	480	59.36	3.22	.00*
Reading	428	446	17.87	1.12	.13	464	35.72	1.83	.03*
Science	425	433	7.26	.49	.31	454	28.20	1.39	.08

Note. p < .05 are flagged*