Master Thesis

The effect of the education level of parents, students' expectations, attitudes, and language spoken at home on achievement for migrant students: in Australia and Canada

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Keywords: skilled migration, migrant students, occupational expectations, attitudes, achievement, PISA

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Thank you!

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Abstract

Migrant students are reported to have a lower achievement compared to the native students in the country they or their parents migrated to. This study, therefore, tried to investigate the achievement of migrant students, specifically those with highly skilled parents (India, China, and The Philippines), in Australia and Canada. This was done using a quantitative and cross-sectional design, as a secondary analysis of PISA 2018. The research question of this study concentrated on the relationship between achievement and migration background. To find out which factors influence achievement the most, linear regressions were conducted to study this relationship. The control variables were the educational background of parents, occupational expectations of students, their attitudes towards school, and test language spoken at home. The findings of this study showed that migrant students with highly-educated parents achieve similar or higher than natives. Specifically, the Chinese migrant students achieve significantly higher than native students in both Australia and Canada. The occupational expectations of a student had the strongest correlation to achievement among the control variables in this study. Further details of findings and implications were elaborated upon.

Keywords: skilled migration, migrant students, occupational expectations, attitudes, achievement, language, PISA

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1. Introduction

Migration has been a topic of importance in OECD (Organization for Economic Development) countries for many years, with some countries trying to decrease immigration since the 1970s (Helbling & Kalkum, 2018). For this purpose, policies have been initiated which have become more restrictive over time, specifically for low-skilled and/or non-Western migrants (Messina, 2007). Even though policies have become more restrictive, it does not stop migration from happening. In 2018, a total of 3.9 million people immigrated to one of the EU-27 countries, while 2.6 million people left an EU-27 country (Eurostat, 2020). Migration has been going on since the beginning of humankind, as people are in search of prosperity or trying to escape certain situations in their home country (Castelli, 2018; Zoomers & Nijenhuis, 2012).

There are different reasons to migrate, so-called push and pull factors. These push factors can be political or economic, such as war or ongoing violence (Mohamed & Abdul-Talib, 2020). Pull factors from destination countries may be a demand for labor, education, or family reunion (Parkins, 2010; Kofman, 2007). In this paper, the focus will be on highly skilled migrants. Highly skilled migrants are people with at least tertiary education and often a high income, while low-skilled migrants often have a lower education and income (Bulat, 2019). Sridhar et al. (2012) found that for low-skilled migrants the push factors play a bigger role of importance, while for highly skilled migrants pull factors were of bigger significance. Meaning that the education level of a person can influence the type of migration and the way they are perceived.

Bulat (2019) mentioned that highly skilled migrants are more welcomed in a country than low-skilled migrants. However, in the media migrants are often depicted as undocumented, low-skilled, and often with a "threat" narrative, meaning that they will pose some form of threat against the natives, while this is inconsistent with the actual immigrant demographics (Farris & Mohamed, 2018). This is also in line with what Castelli (2018) described, with the stereotype being of an illiterate poor migrant, while it is often the case that the poorest people do not have the means to leave their country, and therefore this stereotype is not completely valid.

Flisi et al. (2016) report that in general native students score higher on literacy and numeracy than migrant students. This is also in line with the PISA 2018 results (Programme of International Students Assessment), which show that migrant students

on average achieve significantly lower on reading, math, and science, compared to their native counterparts (Schleicher, 2019). These differences could be accounted for by the difference in expectations of academic results the students set, and attitudes that they have, or the fact that students need to study in a new language (Schleicher, 2019). Therefore, migrant students might achieve lower scores than native students, due to differences in the language spoken at home versus at school or even the different expectations the students have.

In previous years studies have focused on comparing student achievement of migrants and natives. This study will add to this by focusing on migrants who moved due to pull factors, the highly skilled immigrants, who seem to be less represented in the media and research. The level of education is often used in studies as a control variable as shown in the meta-analysis of Kim et al. (2020), for example, to make a fair comparison between low-skilled natives and low-skilled migrants.

In this study, however, the aim is to see whether or not students with highly skilled parents score similar or possibly better compared to native students with highly skilled parents. Appendix A shows an overview of studies where a comparison was conducted on the achievement of migrant students with highly skilled parents compared to native students with highly skilled parents. To get to this overview the following keywords were used in the search engines, “immigrants", "natives", and "student achievement". The search engines that were used to check this were Web of Science, Scopus, University of Twente Library, OECD iLibrary, and Eric, these platforms did provide results about the comparison between immigrants and natives and their student achievement, but when reading the summaries, it showed that most of them did not include "setting occupational expectations" and/or “attitudes towards school”, which is one control variable in the present study, language spoken at home was, however, used in most studies. One of the studies that did mention setting expectations was the study of Islam, Sarkar, and Smyth (2018), who found that Asian migrant students show higher academic achievement than Australian students. Within this study, it was mentioned that expectations and the education level of parents could play a role in this, but the expectations were not part of the variables in that specific study. However, most studies show an achievement disadvantage for immigrants (Andon et al., 2014; Flisi et al., 2016; Schleicher, 2019).

Hence, this study aims to investigate which aspect influences achievement most, the education level of the parents, expectations set by the student, attitudes towards

school, language spoken at home, or descent (native/migrant). More specifically whether students with highly skilled migrant parents perform better than native students or if their achievement levels are on average lower than that of native students. Assessing the achievement of students with highly skilled migrant parents will give a new perspective on how (student) migrants are to be perceived. This may result in more balanced interpretations of the label "immigrant" (i.e. a less one-sided and less negative connotation).

1.1. Theoretical framework

Highly skilled migration. This study focuses specifically on highly skilled international migration since this has been a rapidly growing field of research in economics since the 1990s (Fossland, 2012), however, studies in the field of education focused on highly skilled migrants are rare. According to the OECD (2020), a highly skilled migrant is someone who has completed tertiary education, where tertiary education refers to education at a college or university level ("tertiary education", n.d.).

According to Zaletel (2006), the world has changed a lot due to the increase in the knowledge economy over the last few decades, and in this highly skilled people play an essential role. The migration of highly skilled people, who are moved by pull factors, goes hand in hand with the process of globalization. Highly skilled people mainly migrate due to the labor demand in another country where they will get better wages and employment conditions (Lowell & Findlay, 2001). In Australia for example it seems that these economic migrants have stronger chances of integrating into the work field (Hawthorne, 2006), and thus staying long-term. These factors cause migration streams.

Migration streams can be seen clearly in the G20 countries, which are 20 countries that bring together the world's major advanced and emerging economies (Eurostat, 2020), where OECD (2017) stated that about 27% (42.390.000) of all the migrants had tertiary education. Most of these highly skilled migrants, about two-thirds, are hosted in the United States, Canada, Australia, and the United Kingdom. Of all these highly skilled migrants about one in five come from either India, China, or the Philippines (8.478.000). India is together with China one of the leading countries of origin for skilled migration to the US, Canada, Australia, New Zealand, and the UK (Weinar & Klekowski van Koppenfels, 2020). With India having the biggest group of highly skilled emigrants in

these G20 countries (2.2 million, or 25.9%). Therefore, this study will focus on highly skilled migrants from India, China, and the Philippines, with the destination countries being Canada and Australia, as for these countries information is available on the country of birth of parents in de PISA 2018 dataset.

Migrant students. Migrant students can be categorized into two different groups, the first-generation migrant student and the second-generation migrant student (Dronkers, et al., 2012). The difference between these two is that the first-generation migrant students are born abroad themselves, while the second-generation migrant students are born in the destination country, but at least one of their parents is born abroad (Dronkers et al., 2012). This distinction is also shown by OECD (2019a).

In the current study, the focus will be on three different groups of migrant students, these groups entail Indian migrant students, Chinese migrant students, and Philippine migrant students. The thing that these groups have in common is that their parents are often highly skilled migrants, as mentioned before. These three countries are also in the top source countries for immigration to both Canada and Australia (O'Dohorty, 2020; Migration Policy Institute [MPI], n.d.). The number of migrants from these countries that migrated to Australia and Canada are shown in Appendix B. Since the parents of these students are often highly skilled and from Asian countries, their parenting style is sometimes called 'tiger parenting', meaning that they set high expectations for their children (Guo, 2014; Watkins et al., 2017). And it seems that this type of parenting leaves Asian migrant students with higher achievement in schools (Ho, 2017), this will be described in a later paragraph.

Native students. The native students in this study are those born in the receiving country, Canada or Australia, with at least one parent who is also born in this country (OECD, 2017). Voltmer and Von Salisch (2019) mention that native students have more access to resources and encounter fewer challenges than migrant students, and they, therefore, have better chances at social-emotional development. Not only do they have better chances in their development of emotion, their performances differ significantly from migrant students according to Dronkers and Kornder (2014), meaning that natives have better scores on achievement than immigrants in immigrant-receiving nations.

Achievement. When looking at achievement in education in OECD countries, migrant students tend to score lower than native students, which is often due to a lower

socioeconomic status (Dronkers et al., 2012), although in Canada and Australia this trend was not seen (OECD, 2019a). However, even when this is considered, there seems to be a significant difference between natives and migrants, and even between migrants, there is substantial variation (Dronkers et al., 2012). Chiswick and Miller (2002) link this variation to several different components such as language spoken at home versus in school, age of migration, and whether or not one or both of their parents is non-native. Belzil and Hansen (2003) describe that approximately 85% of the variation in achievement is explained by the family background.

Another factor that plays a role in achievement is the education level of the parents, which is a part of the family background. Pong and Landale (2013) found that the education level of the parents' pre-migration had the most significant effect on the academic achievement of migrant students. When students have low-educated parents it can mean that they do not have the same opportunities available to them as students with high-educated parents (Bauer & Riphahn, 2007). This can be a reason why native students tend to score higher than migrant students since in studies the focus has been on lower-educated migrants.

Setting expectations. In the past, research has been conducted on the stereotype called 'tiger-mom', where often Chinese parents set high expectations for their children, and because of this Chinese children might set higher expectations for themselves (Guo, 2014). That migrant parents set higher expectations for their children compared to natives is also acknowledged by Raleigh and Kao (2010) and Wicht (2016). Another aspect that can influence the expectations children set for themselves is the education level of their parents, where students who have parents with a higher education level also expect themselves to earn a higher or more advanced degree (Guo, 2014). Although Wicht (2016) and Raleigh and Kao (2010) mention that migrants tend to set higher expectations, this was not completely confirmed by the general results of PISA 2018 which showed that 67% of the immigrant students (first and second generation) expect to finish a tertiary degree, compared to natives of which 69% expected this (OECD, 2019a). Regarding occupational expectations, these will often be based on what students observe in their close circle of family and friends (OECD, 2019a). For these expectations, the migration status of the student and/or their ethnicity plays a role as well, as suggested by Musset and Kurekova (2018). It is often seen that migrant students do have higher career aspirations, even when this is not in line with how they succeed in school (McElvany et al., 2018). For

the migrant students, these higher expectations are also shaped by their family, who set higher expectations for them (Raleigh & Kao, 2010). The effect of setting these expectations on achievement has been well discussed and established in the social sciences (Portes, et al., 2010). This is also mentioned by Gutierrez and Lopez-Agudo (2016), who found that the students' expectations can predict achievement in educational contexts. It should, however, be taken into account that setting expectations can be a self-fulfilling prophecy, where students will put more effort into their learning if they want to work towards a certain goal (OECD, 2015).

Attitudes. Studies reveal that having positive attitudes towards school, often aids towards higher achievement in different subjects (Dan'inna, 2017; Cain & Hattie, 2020; Miyamoto et al., 2020). These positive attitudes are often referred to as motivation, specifically academic motivation. Academic motivation entails the goals, values, expectations, and emotions that lead to perseverance in study activities (Ferriz-Valero et al., 2020). This is in line with what Miyamoto et al. (2020) describe, that when a student has higher levels of academic motivation, they will gravitate more towards selecting activities that will contribute to their achievement. The research of Burgess and Heller-Sahlgren (2018) shows that immigrant students tend to have significantly more positives attitudes towards education than native students. These positive attitudes towards school and an increased motivation might have developed because parents who have immigrated have more qualities such as risk-taking and aspiration, which they will pass on to their children (Burgess, Heller-Sahlgren, 2018). Although the incentive is that students with higher attitudes towards school achieve higher, this does not seem to be the case for immigrant students (OECD, 2006).

Language spoken at home. When looking at the achievement of migrant students, the language they speak at home is often taken into account (Prevoo et al., 2016). Where it is regularly found that the students' achievement largely depends on their proficiency in the instruction language (OECD, 2015; Hoff, 2013). This is in line with what Thomson et al. (2019) described, that students who do speak English at home, in Australia, perform significantly higher in reading and science than students who do not speak English at home, they did not find a significant difference for mathematics, however. This is contradictory to what Chiu and Xihua (2008) found, where the students who spoke a different language at home than school, achieved approximately 11 points

lower on mathematics than the students who did speak the same language in school and at home.

In Canada, a difference in achievement is also shown, where the students who spoke a language other than English or French at home achieved significantly lower than students who did speak one of the two official languages (O'Grady et al., 2019).

1.2. Research questions

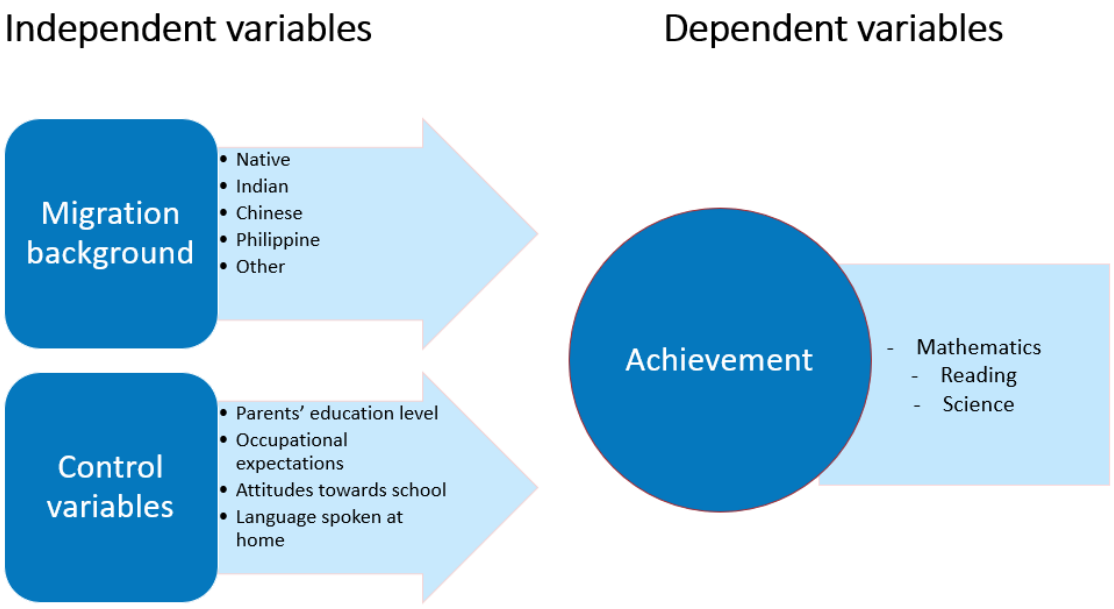
Hence, the following research question will be addressed in this paper: "To what extent does the student achievement (reading, math, science) differ between native students and different immigrant groups (Indian, Chinese, Filipino, Others) in Canada and Australia?

It is expected that the control variables explain the differences in achievement of Indian, Chinese, and Philippine migrant students.

Sub-question 1.1. *"To what extent does attitude towards school, occupational expectation, test language spoken at home, and parents' education account for these differences"*

Figure 1

Overview of Variables in the Current Study



1.3. Scientific & practical relevance

This research expects to create a more balanced view of migrant students since they are often portrayed as undocumented and low-skilled. By comparing the achievement results of students with highly skilled parents to natives, it might show that they score at a similar level or possibly higher on achievement. Therefore, this research could add to the perspective on migrant students and their achievement in schools. By conducting this study, more will be known about the influence of language spoken at home, the education level of parents, the occupational expectations students set for themselves, and the attitudes they have towards school on achievement. The empirical evidence in this study can contribute to literature on migrant students and what influences their achievement and/or as a base for research analysis.

2. Methods

2.1. Research design

To examine the relationship between student achievement, occupational expectations, the level of education of parents, attitudes towards school, and test language spoken at home, quantitative research, specifically a cross-sectional design is used in this study. It specifically entails a secondary analysis of large-scale assessment data, PISA 2018. One of the main strengths of the PISA studies is that it provides an opportunity to study the relationship between contextual factors, such as characteristics of the student, and their performance (OECD, 2009). The reason the 2018 PISA results are chosen because it is the most recent, to date, and it has the information available which is needed for this study. The country of birth of parents is provided, so a distinction between migrant and native students can be made, and the expectations students set for themselves are also present. The students also filled in whether or not they spoke the test language at home and their attitudes towards school are also reported.

To investigate the effect of parents' education, the students' occupational expectations, attitudes towards school, and test language spoken at home, linear regressions are conducted. First, it is important to distinguish between natives and migrants. For this, the country of birth of the students' parents was used, since there were both first and second-generation migrant students among the participants. Therefore, the independent variable, in this case, is the categorization of migrant/native. In this design, the dependent variable is achievement, which is derived from the test scores on reading, science, and mathematics. The education level of parents, the occupational expectations set by students, attitudes towards school, and test language spoken at home are the control variables, since they may be correlated with both the independent and dependent variables.

2.2. Respondents

In 2018 the PISA assessment was conducted in 79 different countries (OECD, 2019b). The students who participate in the PISA studies are 15 years old at the time of assessment, and they need to have completed a minimum of six years of formal schooling (OECD, 2019b). In 2018 approximately 600 000 students completed the assessment. These students represent 32 million 15-year-olds in the 79 participating countries (OECD, 2019b). PISA uses a two-stage sampling procedure. First, at least 150 representative

schools are selected in a country. In the second stage 42 students were selected per school (OECD, 2019b), or less if the school included less than 42 15-year-olds.

In this research, the 15-year-old students who participated in the OECD countries Canada and Australia, the host countries, were selected as respondents. A total of 14,273 Australian students participated (49.6% female) and 22,653 Canadian students (49.9% female), as shown in Table 1.

Table 1

Number of Participants in Selected Countries

Country	Frequency
Australia	14,273
Canada	22,653
Total	36,926

2.3. Instrumentation

As mentioned before this research entails a secondary data analysis of the PISA 2018 assessment. This assessment, including the questionnaire, is developed by subject Matter Expert Groups (SMEGs) and the Questionnaire Expert Group (QEG) (OECD, n.d.).

Assessment. The assessment can be conducted in two different ways, the computer-based format or the paper-based format. The duration of the computer-based test is two hours in total where each student has to complete questions, which are either in a multiple-choice or essay format, about topics such as reading, science, mathematics, and problem-solving (OECD, 2019b). The paper-based form consists of 30 paper-and-pencil forms with questions regarding the three main topics (reading, science, and mathematics) (OECD, 2019b). In both Australia and Canada, the computer-based format was used for this assessment.

Student questionnaire. When participating in PISA, the students are asked to complete a 35-minute questionnaire as well, to gather contextual information (OECD, 2019b). This questionnaire focuses on elements like their home situation, learning experience, and their schools. This study focused specifically on the following variables from the PISA questionnaire:

Country of Birth – Mother: The students were asked in what country their mother was born

Country of Birth – Father: The students were asked in what country their father was born

Highest Education of parents (HISCED): Index of Level of Education of the parents

Occupational expectations of the student (BSMJ): Students were asked what they thought their occupation would be in 30 years.

Students' attitudes towards school (ATTLNACT): Students were asked whether they value school or not.

Language spoken at home: Students were asked if they spoke the language of the test at home or not.

To analyze the achievement, the following variables were used:

1st to 10th Plausible Value in Mathematics

1st to 10th Plausible Value in Reading

1st to 10th Plausible Value in Science

These plausible values are a representation of the range of abilities that a student might have, a plausible can thus not be used on its own (OECD, 2009). Hence why the 1st to 10th plausible values are used, to create a mean score for each student on each topic.

2.4. Procedure

The first thing to be done for this study was to request ethical approval from the Behavioural Management and Social sciences Committee (BMS EC) of the University of Twente. The permission was granted by the Ethical Committee on February 8th, 2021. Next, the SPSS format of the results of PISA 2018 was downloaded from the OECD website. This was then followed by filtering the data based on the variables and countries that were needed and saving it into a new file. The newly created file was then used for the analysis of the data.

2.5. Data analysis

For the data analysis, the 25th version of SPSS and the IDB analyzer were used. The IDB analyzer is designed especially for large-scale assessment data (IEA, 2019), hence it is used in this study. The IDB analyzer takes into account the sampling design and deals with the plausible values (IEA, 2019). The data were downloaded from the OECD website. Separate datasets were created for Canada and Australia. For each dataset students were grouped into five categories, (1) native, if at least one of their parents were born in the country of residence (Australia or Canada), (2) Indian migrant, if both of their parents were born in India, (3) Chinese migrant, if both parents were born in China, (4) Philippine migrant, if both parents were born in the Philippines, (5) other immigrants, if they do not fall in any previous category. The group of other migrant students comprises the students who had both parents coming from other countries than India, China, the Philippines, or the destination country. Table 2 shows the distribution of migrants and natives across the destination countries.

Table 2

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

Country	Native		Indian migrant		Chinese migrant		Philippine migrant		Others		Total
	N	%	N	%	N	%	N	%	N	%	
Australia	9,372	65.3	252	1.8	242	1.7	215	1.5	4,192	29.4	14,273
Canada	15,625	69.0	442	2.0	467	2.1	745	3.3	5,374	23.7	22,653

After this distinction was made, the analysis focused mainly on natives, Indian migrants, Chinese migrants, and Philippine migrants, the group "others" was also taken into account. Next, a distinction between high-skilled and low-skilled is made in the cross-tabulations. In the PISA studies, the level of education is measured using the ISCED (International Standard Classification of Education), which has been applied in all data collection for PISA (Eurostat, 2020). Highly skilled migrants would have an ISCED of 5 to 8, while low skilled migrants have an ISCED score of 0 to 4. This distinction was chosen since ISCED level 5 and up is considered tertiary education. In the SPSS dataset from 2018, the highest ISCED score that students would be able to fill in is 6. For this research, an ISCED of 5 or 6 would be considered a high education, while everything below 5 would be considered low education. The high/low-skilled distinction is only applied in the cross-tabulations. In the regression analyses, information on the entire range of education levels (1-6) is taken into account.

Another variable that was used, was BSMJ, the career expectations of the student. For this, the students were asked to fill in their expected occupation at the age of 30. These results were then coded in four-digit ISCO codes and then recorded in the ISEI index (OECD, 2020). This resulted in scores from 10-90 in the index, in which a higher score indicates higher expectations (OECD, 2018).

Further, the independent variable ATTLNACT was used, which indicated how much the students value school. Students were asked to answer questions such as "trying hard at school will help me get a good job", with the answer options of "strongly disagree", "disagree", "agree", and "strongly agree" (OECD, 2019d). Positive values on the ATTLNACT scale mean that the students value school more than the average student across OECD countries (OECD, 2019d).

The final independent variable that was used was test language spoken at home, this entailed whether the students spoke the language of the test at home or not. This question was a dichotomy, the students could answer whether or not they spoke the language of the test at home. In Canada, this was either French or English, so if the students made the test in French, then the question test language spoken at home would refer to French. In Australia the test language was English.

Lastly, the IDB analyzer was used to process the SPSS data. A regression analysis was conducted to study the relationship between the different migration backgrounds and the students' achievement in mathematics, reading, and science while controlling for the (possibly) confounding variables (i.e. education of parents, career expectations, attitude towards school, and test language spoken at home). The dependent variables were the achievement in mathematics, reading, and science, while the independent variable was the migration background of the students. The IDB analyzer was also used to examine the correlations between the variables. The correlations will be considered strong when they are above .50, medium around .30, and small around .10 (Cohen, 1988). The IDB analyzer would then run the analysis and create a syntax file, which could be run in SPSS 25 to show the results.

3. Results

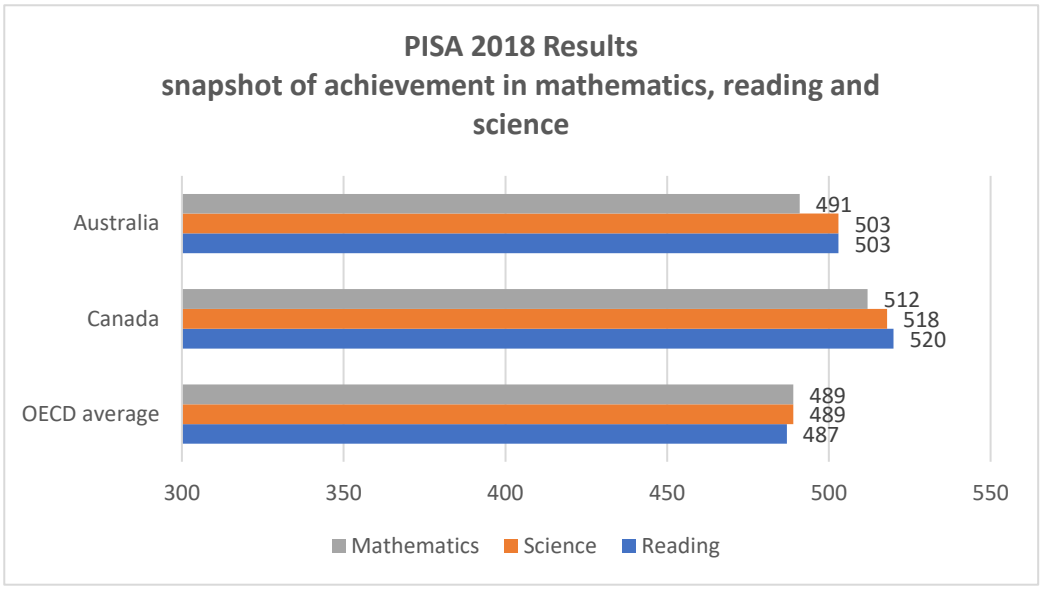
This research aims to investigate the gap between 15-year-old migrant students with natives in Canada and Australia, to see if the education level of parents, students' occupational expectations, their attitudes towards school and/or if they spoke the test language at home influenced performance. Hence, the independent variable is the migration background of the students' parents, and the dependent variable being achievement in mathematics, science, and reading. First off, descriptive statistics were computed to create an overview of the number of students in Australia and Canada, the selected countries. From this, the frequencies, means, and standard deviations were analyzed. After this linear regression analyses were conducted.

3.1. Description of studied variables

In this study, the achievements in mathematics, reading, and science were studied for several migrant groups (Indian migrants, Chinese migrants, Philippine migrants, and other immigrants) and natives in Australia and Canada. In PISA 2018, the following means for the countries were achieved for mathematics, reading, and science. The overall means are shown in Figure 2 and compared to the OECD average. It can be seen that both Canada and Australia perform above the OECD average. The mathematics achievement in Australia is, however, only slightly higher than the OECD average.

Figure 2

PISA 2018 Results (OECD, 2019b)



The means per migrant group and native group in Australia and Canada for these subjects are shown in Figure 3. Here it is shown that the Chinese migrant students achieve higher on all courses compared to the native students in Australia and Canada. While the group of other migrant students achieved lower or similar to the native students. Interestingly, the Indian migrant students do achieve higher than the native students in Australia, however, in Canada this trend is not clearly depicted.

Figure 3

Means on Achievement per Migrant Group in Canada and Australia

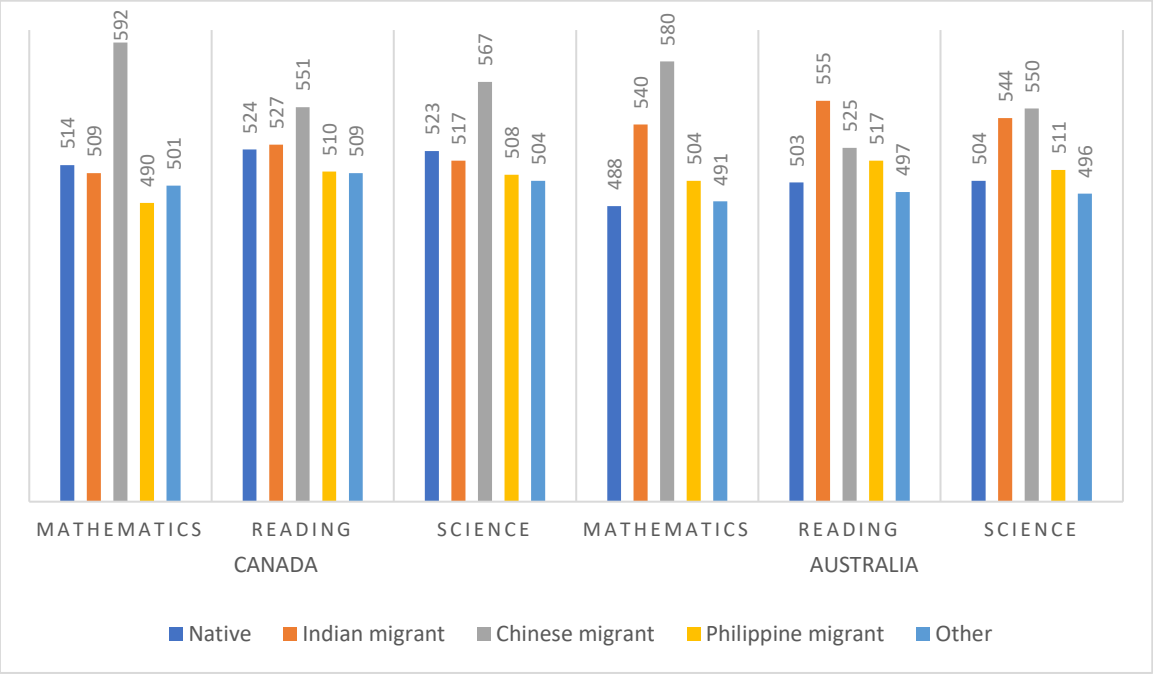


Table 3 shows the background information of students in Australia, such as means, of the independent variables: parents' educational background, occupational expectations, the students' attitude towards school, and the language they speak at home. The description of the variables can be found in paragraph 2.5. The mean for the parents' educational background, occupational expectations, and their attitudes towards school are higher for all groups when compared to the native Australian students. The mean for the test language spoken at home was also higher, which means that a lower number of students spoke the test language at home compared to the native students.

Table 3

Summary of Control Variables for Students in Australia[1]

Migrant background	Parents' education background			Occupational expectations		Attitude towards school		Test language spoken at home		
	M	*SD*	%High (ISCED 5-6)	*M*	*SD*	*M*	*SD*	*M*	*SD*	% testlanguage
Australian native	4.95	1.23	61.6	62.19	20.79	.09	1.03	1.12	.32	88.3
India	5.78	.66	92.0	77.00	10.62	.36	.94	1.18	.38	82.1
China	5.27	1.35	75.7	75.61	10.99	.23	.97	1.24	.43	75.9
Philippine	5.40	1.07	76.0	72.13	15.17	.14	1.05	1.17	.38	82.9
Others	5.06	1.38	69.1	68.61	18.61	.15	1.05	1.14	.35	85.8

In Table 4 the means of the control variables for students in Canada are displayed. The migrant students have on average higher means for their parents' educational background and their occupational expectations than the native Canadian students. However, only the Philippine migrant students have a better attitude towards school compared to the native students. The Canadian natives show that only 78.7% speak the test language at home, this could be because the students might speak French at home but made the test in English and vice versa. Which could have resulted in a seemingly lower percentage for this test variable.

Table 4

Summary of Control Variables for Students in Canada[2]

Migrant background	Parents' education background			Occupational expectations		Attitude towards school		Test language spoken at home		
	M	*SD*	%High (ISCED 5-6)	*M*	*SD*	*M*	*SD*	*M*	*SD*	% testlanguage
Canadian native	5.35	.85	78.4	66.91	19.33	.22	1.03	1.21	.41	78.7
India	5.42	.86	82.6	75.64	12.95	.18	1.09	1.28	.45	72.1
China	5.55	.85	83.5	75.41	11.10	.19	.97	1.26	.44	74.3
Philippine	5.51	.74	87.2	71.99	14.44	.26	1.00	1.24	.43	75.6
Others	5.37	.97	79.9	73.91	15.30	.18	1.03	1.21	.41	78.7

The means for each migration background on the three subjects, when controlling for parents' educational background are shown in Appendix C and D.

To assess the relationship between the previously mentioned dependent and independent variables the IDB analyzer was used to compute Pearson's r. The results for Canada are shown in Table 5 and Australia in Table 6. Based on these outcomes a positive relationship was observed between the dependent variables and the independent variables in Canada. The occupational expectations appear to hold the strongest relationship with the dependent variables compared to the other control variables.

[1] Scale: Parents' education background reaches from 1-6; Occupational expectations from 0-99; Attitude towards school > 0 is a positive attitude; Language spoken at home, 1= language of test, 2= other language.

[2] Scale: Parents' education background reaches from 1-6; Occupational expectations from 0-99; Attitude towards school > 0 is a positive attitude; Language spoken at home, 1= language of test, 2= other language.

Furthermore, it is displayed that the parents' educational background and the students' occupational expectations have a small positive relationship. The correlations of the migrant backgrounds on achievement are shown in Tables 7, 8, and 9, and the correlations between the control variables and the different migrant backgrounds are displayed in Appendix E.

Table 5

Pearson Correlation and Descriptive Statistics of Study Variables – Canada

	1.	2.	3.	4.	X.	X1.	X2.
1. Parents' education							
2. Occupational expectations	.16						
3. Attitude towards school	.06	.13					
4. Test language spoken at home	.01	.10	.02				
X. Mathematics	.21	.23	.07	.03			
X1. Reading	.18	.28	.09	.03	.75		
X2. Science	.18	.23	.08	.03	.76	.84	
Mean	5.37	69.48	.21	1.21	512.02	520.09	518.00
SD	.88	18.10	1.03	.41	92.29	100.30	95.72

Based on these outcomes shown in Table 6 a positive relationship was observed between the dependent variables and the independent variables in Australia. It appeared that the occupational expectations of students yield the strongest relationship with the dependent variables compared to the other control variables. Among the control variables there seemed to be a small positive relationship between the occupational expectations of a student and their parents' educational background, this relationship was also observed in Canada as mentioned previously.

Table 6

Pearson Correlation and Descriptive Statistics of Study Variables – Australia

	1.	2.	3.	4.	X.	X1.	X2.
1. Parents' education							
2. Occupational expectations	.20						
3. Attitude towards school	.06	.17					
4. Test language spoken at home	.02	.10	.02				
X. Mathematics	.25	.35	.14	.04			
X1. Reading	.22	.39	.13	.03	.79		
X2. Science	.23	.35	.12	.03	.85	.85	
Mean	5.01	64.43	.11	1.13	491.36	502.63	502.96
SD	1.27	20.26	1.03	.34	92.20	108.66	100.68

3.2. Linear regression migrant background predicting achievement

To answer the research question "To what extent does the student achievement (reading, math, science) differ between native students and different immigrant groups (Indian, Chinese, Filipino, Others) in Canada and Australia?" a regression analysis was conducted to test the relationship between the students' migration backgrounds and their performance in mathematics, reading, and science, using the IDB analyzer. After this the control variables will be added, to see if and how much these explain the differences in achievement of the migrant students.

3.2.1. Linear regression on migrant background predicting achievement

The results reported in Table 7 showed that 3% of the mathematics performance of students in Canada could be explained by the migration background. The Indian migrant students, Philippine migrant students, and other immigrants showed a negative relationship, while the Chinese migrant students showed a positive relationship. For the Indian migrant students, however, a t-value of -.69 ($p > .49$) displayed that the result was not significant for this group.

The 15-year-old students from Australia however, had a 2% explanation of the migration background on mathematics performance. The difference with Canada was that all the groups with migration backgrounds showed a positive relationship. This positive relationship was however not significant for the Philippine migrant students with a t-value of 1.37 (p = .17) and the other immigrant students, t-value of .90 (p = .37).

Table 7

Regression on Students' Migrant Background Predicting Mathematics Compared to Native Students

Country	Variable	*b*	SE b	β	t	*p*
Canada	(Constant)	514.47	2.32			
R^2 = .03	Indian migrant	-5.84	8.43	-.01	-.69	.49
	Chinese migrant	77.57	8.51	.15	9.12	.00
	Philippine migrant	-24.81	8.07	-.05	-3.08	.00
	Other immigrants	-13.53	3.32	-.07	-4.08	.00
Australia	(Constant)	487.53	2.15			
R^2 = .02	Indian migrant	52.42	8.53	.08	6.14	.00
	Chinese migrant	92.75	12.68	.14	7.31	.00
	Philippine migrant	16.12	11.80	.02	1.37	.17
	Other immigrants	3.03	3.35	.02	.90	.37

The results reported in Table 8 showed that 1% of the reading performance from students in Canada could be explained by the migration background. The Philippine migrant students and other immigrants showed significant negative relationships, while the Chinese and Indian migrant students showed a positive relationship. For the Indian migrant students, however, a t-value of .47 (p = .64) displayed that the result was not significant for this group.

In comparison, there was a 1% explanation of the migration background on reading performance for the 15-year-old students from Australia. The main difference with Canada is that the Indian migrant students did show a positive relationship, which was significant. The Chinese migrant students did portray a positive relationship, this was however not significant with a t-value of 1.68 (p = .09), just like the Philippine migrant students, t-value of 1.31 (p = .19). The other immigrant students did show a significant negative relationship.

Table 8

Regression on Students' Migration Background Predicting Reading Achievement Compared to Native Students

Country	Variable	*b*	SE b	β	t	*p*
Canada	(Constant)	524.11	1.63			
R^2 = .01	Indian migrant	2.91	6.13	.01	.47	.64
	Chinese migrant	27.18	8.73	.05	3.11	.00
	Philippine migrant	-14.50	6.29	-.03	-2.31	.02
	Other immigrants	-15.28	2.77	-.07	-5.51	.00
Australia	(Constant)	502.89	1.95			
R^2 = .01	Indian migrant	51.96	7.88	.06	6.59	.00
	Chinese migrant	22.08	13.17	.03	1.68	.09
	Philippine migrant	14.41	10.97	.02	1.31	.19
	Other immigrants	-6.15	2.94	-.03	-2.09	.04

Lastly, the results reported in Table 9 showed that 2% of the science performance from students in Canada could be explained by the migration background. Only the Chinese migrant students showed a positive relationship. The other three groups displayed a negative, which was not significant for the Indian migrant students with a t-value of -.76 (p = .45) and the Philippine migrant students with a t-value of -1.91 (p = 0.06).

In Australia, there was a 1% explanation of the migration background on science performance for the 15-year-old students. The main difference with Canada is that the Indian migrant students did show a positive relationship, which was significant, just like the Chinese migrant students. The Philippine migrant students also showed a positive relationship on their science achievement, this was however not significant with a t-value of .64 (p = .52). The other immigrants did show a significant negative relationship.

Table 9

Regression on Students' Migration Background Predicting Science Achievement Compared to Native students

Country	Variable	*b*	SE b	β	t	*p*
Canada	(Constant)	522.63	2.01			
R^2 = .02	Indian migrant	-5.60	7.38	-.01	-.76	.45
	Chinese migrant	44.02	6.58	.08	6.69	.00
	Philippine migrant	-14.25	7.46	-.03	-1.91	.06
	Other immigrants	-18.40	3.04	-.09	-6.04	.00
Australia	(Constant)	503.69	2.06			
R^2 = .01	Indian migrant	40.12	9.16	.05	4.38	.00
	Chinese migrant	46.47	13.03	.06	3.57	.00
	Philippine migrant	7.11	11.06	.01	.64	.52
	Other immigrants	-8.18	3.31	-.04	-2.47	.01

3.2.2. Linear regression on achievement with control variables

After conducting the linear regressions of migrant background on achievement, the other four independent variables, parents' educational background (HISCED), students' career expectations (BSMJ), students' attitudes towards school (ATTLNACT), and test language spoken at home, were added into the multiple regression analysis. To answer the following question: To what extent does motivation, occupational expectation, test language spoken at home, and parents' education account for these differences?". The multiple regression analysis (see Table 10) showed a significant effect of these variables on the achievement in mathematics. The effects of migration background changed only a little when these extra control variables were added. The main difference can be seen for the Philippine migrant students and other immigrant students in Australia, who after introducing the new variables, did not have a positive relationship anymore. The negative relationship of the Indian migrant students in Canada became significant after introducing the new variables. In Canada, the parents' educational background and the students' occupational expectations displayed a significant positive relationship with mathematics, and in Australia, all but the language spoken at home portrayed a significant positive relationship.

Table 10

Regression on Students' Migrant Background and the Controlling Variables Predicting Mathematics Achievement Compared to Native Students

		Multiple regression analysis				Linear regression migrant background				
Country	Variable	*b*	SE b	β	t	*b*	SE b	β	t	*p*
Canada	(Constant)	348.33	9.50			514.47	2.32			
R^2 = .12	Indian migrant	-17.06	8.52	-.03	-2.04*	-5.84	8.43	-.01	-.69	.49
	Chinese migrant	64.17	8.83	.12	6.14*	77.57	8.51	.15	9.12	.00
	Philippine migrant	-33.75	7.65	-.07	-4.45*	-24.81	8.07	-.05	-3.08	.00
	Other immigrants	-20.32	3.10	-.10	-6.64*	-13.53	3.32	-.07	-4.08	.00
	Parents' education	17.50	1.40	.17	12.64*					
	Occupational expectations	1.08	.07	.21	16.62*					
	Attitude at school	2.76	1.45	.03	1.93					
	Test language spoken at home	.14	2.41	.00	.06					
Australia	(Constant)	339.26	5.66			487.53	2.15			
R^2 = .17	Indian migrant	15.83	7.95	.02	2.00*	52.42	8.53	.08	6.14	.00
	Chinese migrant	70.00	11.27	.10	5.76*	92.75	12.68	.14	7.31	.00
	Philippine migrant	-4.36	11.20	-.01	-.40	16.12	11.80	.02	1.37	.17
	Other immigrants	-7.43	3.28	-.04	-2.27*	3.03	3.35	.02	.90	.37
	Parents' education	12.85	.85	.18	16.16*					
	Occupational expectations	1.37	.06	.30	23.74*					
	Attitude at school	6.78	1.11	.08	6.20*					
	Test language spoken at home	-.47	2.62	.00	-.18					

Note. p < .05 are flagged*

After adding in the control variables, the results on reading achievement did not change for the other immigrant students (see Table 11). The Indian migrant students in Canada went, however, from a positive relationship to a significant negative relationship. And the positive relationship of the Chinese migrant student lost its significance after introducing the control variables. In Australia, the advantage of Chinese and Philippine migrant students changed into a disadvantage. For the other migrant students in Australia, the disadvantage became significant. All control variables, except for language spoken at home, which showed a negative relationship, displayed a significant positive relationship with the dependent reading variable.

Table 11

Regression on Students' Migrant Background and the Controlling Variables Predicting Reading Achievement Compared to Native Students

		Multiple regression analysis				Linear regression analysis migration background				
Country	Variable	*b*	SE b	β	t	*b*	SE b	β	t	*p*
Canada	(Constant)	339.81	8.61			524.11	1.63			
R^2 = .12	Indian migrant	-12.47	5.54	-.02	-2.24*	2.91	6.13	.01	.47	.64
	Chinese migrant	13.78	8.34	.02	1.59	27.18	8.73	.05	3.11	.00
	Philippine migrant	-24.91	5.43	-.05	-4.66*	-14.50	6.29	-.03	-2.31	.02
	Other immigrants	-24.18	2.62	-.11	-9.14*	-15.28	2.77	-.07	-5.51	.00
	Parents' education	15.52	1.36	.14	11.62*					
	Occupational expectations	1.51	.06	.27	25.67*					
	Attitude at school	3.97	1.17	.04	3.39*					
	Test language spoken at home	-.04	2.42	.00	-.02					
Australia	(Constant)	321.00	5.93			502.89	1.95			
R^2 = .19	Indian migrant	5.81	7.43	.01	.79	51.96	7.88	.06	6.59	.00
	Chinese migrant	-8.61	11.11	-.01	-.79	22.08	13.17	.03	1.68	.09
	Philippine migrant	-11.15	9.53	-.01	-1.21	14.41	10.97	.02	1.31	.19
	Other immigrants	-19.70	2.70	-.08	-7.23*	-6.15	2.94	-.03	-2.09	.04
	Parents' education	12.61	.96	.15	13.75*					
	Occupational expectations	1.94	.06	.36	32.04*					
	Attitude at school	7.15	1.14	.07	6.36*					
	Test language spoken at home	-3.51	2.89	-.01	-1.21					

Note. p < .05 are flagged*

Lastly, the regression on the control variables on science achievement, where the negative relationship of Indian migrant students and Philippine migrant students in Canada became significant after adding the control variables (See Table 12). In Australia, the positive relationships of Indian and Chinese migrant students on science were not significant anymore. The advantage of Philippine migrant students changed into a disadvantage after introducing the new variables. Regarding the control variables, it seemed as that speaking the test language at home did not yield a significant relationship with the dependent variable science achievement, in Australia, there was even a negative relationship.

Table 12

Regression on Students' Migrant Background and the Controlling Variables Predicting Science Achievement Compared to Native Students

		Multiple regression analysis				Linear regression migrant background				
Country	Variable	*b*	SE b	β	t	*b*	SE b	β	t	*p*
Canada	(Constant)	363.12	9.29			522.63	2.01			
R^2 = .10	Indian migrant	-17.67	6.97	-.03	-2.52*	-5.60	7.38	-.01	-.76	.45
	Chinese migrant	32.86	6.34	.06	4.58*	44.02	6.58	.08	6.69	.00
	Philippine migrant	-23.14	7.11	-.04	-3.25*	-14.25	7.46	-.03	-1.91	.06
	Other immigrants	-25.44	2.95	-.12	-8.43*	-18.40	3.04	-.09	-6.04	.00
	Parents' education	15.30	1.40	.14	11.32*					
	Occupational expectations	1.16	.07	.22	16.85*					
	Attitude at school	3.41	1.21	.04	2.78*					
	Test language spoken at home	.29	2.57	.00	.11					
Australia	(Constant)	343.09	6.13			503.69	2.06			
R^2 = .16	Indian migrant	1.39	8.99	.00	.15	40.12	9.16	.05	4.38	.00
	Chinese migrant	20.58	11.17	.03	1.81	46.47	13.03	.06	3.57	.00
	Philippine migrant	-16.20	10.51	-.02	-1.59	7.11	11.06	.01	.64	.52
	Other immigrants	-20.30	3.17	-.09	-6.35*	-8.18	3.31	-.04	-2.47	.01
	Parents' education	12.56	.85	.16	15.75*					
	Occupational expectations	1.59	.07	.32	25.42*					
	Attitude at school	6.11	1.20	.06	5.15*					
	Test language spoken at home	-.74	2.83	.00	-.26					

Note. p < .05 are flagged

4. Discussion

The following part of this master thesis will discuss the achievement between immigrant students (Indian, Chinese, Filipino, Others) and natives in Canada and Australia in greater detail. This research investigated the differences in achievement of immigrant students and natives in the two destination countries based on the PISA 2018 results. It was expected that the migrant students who had highly skilled parents would achieve similarly to or higher than the native students. The immigrant students from India, China, and The Philippines are known to have parents who are categorized as highly skilled, while the group others in this study on average had parents who had a slightly lower education. Research is often focused on comparing natives and migrant students, while there is also a substantial variation in achievement among migrant groups (Dronkers et al., 2012). Therefore, this study offers extra information on the achievement of immigrant students, by comparing four different migrant groups (Indian, Chinese, Filipino, and Others) with the natives in Australia and Canada. As mentioned previously it was expected that students with highly skilled parents would achieve higher than students with low-skilled parents, meaning that the Indian, Chinese, and Filipino migrant students were expected to achieve higher than the other migrant students. The study confirmed that there was a small relationship between migration background and achievement, however, this relationship did change slightly after adding the control variables. The results indicated that the immigrant students from India, China, and The Philippines did often achieve higher than the other migrant students. The achievement of the Indian, Chinese and Philippine migrant students did exceed the achievement of the natives in Australia, however, in Canada, only the Chinese migrant students achieved structurally higher than the natives. Based on these results, four aspects will be discussed in this chapter.

Achievement of migrant students

First off, it was expected that the Indian, Chinese, and Philippine migrant students would achieve similarly to or higher than the native students due to the way they are brought up (Ho, 2017), even though migrant students tend to perform significantly different (lower) than natives (Dronkers et al., 2012; Dronkers & Kornder, 2014; Voltmer & Von Salisch, 2019). The results of this research showed that in Canada and Australia, the other migrant students tend to achieve significantly lower on most

subjects. While the Chinese migrant students almost always performed significantly higher than the native students. The Indian students did achieve higher than the natives in Australia, but not in Canada. Lastly, the migrant students from The Philippines, who achieved lower scores than the natives in Canada, but higher scores in Australia. These results thus show that not all migrant groups achieve lower than native students, in contrast to what most studies found. A possible explanation for this is that both Australia and Canada have a relatively large stream of highly-educated migrants flowing into the country (Weinar & Klekowski van Koppenfels, 2020), and that could lead to their children having more socio-economic advantages, compared to other migrants (Dronkers et al., 2012). This is in line with what OECD (2019a) described, that in Canada and Australia, the differences between native students and migrant students are in general smaller, partially because the socio-economic status of migrant students is similar to that of native students. This could thus be a reason why the Indian, Chinese and Philippine migrant students do not achieve significantly lower than the native students. The differences for each group are described later.

There are however other aspects that could play a role in the (lack of) gap in achievement between the migrant groups and natives. For example, the differences in expectations regarding academic results or the language barrier (Schleicher, 2019). Another aspect that can influence achievement is motivation, where having positive attitudes towards school, often aids towards higher achievement (Dan'inna, 2017; Cain & Hattie, 2020; Miyamoto et al., 2020). These aspects will be described shortly.

Parents' educational background

In the current research, the educational background of parents did have a significant positive effect on the achievement of students in Canada and Australia and showed a small correlation. The level of education had a significant effect on the achievement of students, meaning that having parents who are highly educated does contribute to higher achievement. This is in line with what Pong and Landale (2013) found, where the parents' education level had a significant effect on the academic achievement of migrant students. Since students with highly skilled parents have more opportunities available to them than students with low-educated parents (Bauer & Riphahn, 2007).

Setting expectations

The expectations that students set for themselves at the age of 30 showed to have a significant and positive effect on the achievement of students. And it seemed to yield the biggest effect when compared to the other independent variables. In Australia, it showed to have a small to medium correlation, and in Canada a small correlation. This is in line with what the literature has described, where the relationship between expectations and achievement has been established in the social sciences (Portes et al., 2010; Gutierrez & Lopex-Agudo, 2016). Specifically, that setting (higher) expectations for either educational or occupational careers can be seen as a self-fulfilling prophecy, as long as the expectations are realistic (OECD, 2015). Students will put more work and effort into their learning if they have clear and realistic expectations for their future (OECD, 2015). However, this relationship can also work the other way around, where having higher achievements in subjects, will lead to having higher (occupational) expectations.

In line with what the literature has shown (Raleigh & Kao, 2010; McElvany et al., 2018), there seems to be a small positive correlation between migration background and occupational expectations in both Canada and Australia. Interestingly, the native students in Canada and Australia showed relatively low occupational expectations compared to the migrant students.

Attitude towards school

The attitudes of students towards school appeared to have a significant positive effect on the achievement across almost all subjects in both Canada and Australia. However, the correlation between achievement and the students' attitude towards school appeared to be small in Canada and Australia. Although, the linear regressions did show a positive and significant influence on almost all subjects in both Canada and Australia, the effect size on achievement appears to be smaller in comparison to the control variables; parents' educational background and setting occupational expectations. The fact that there is a positive effect of attitudes towards school and achievement is in line with what literature has described, where having a positive attitude towards school often aids to higher achievement (Dan'inna, 2017; Cain & Hattie, 2020; Miyamoto et al., 2020), although this does not always seem to be the case for migrant students (OECD, 2006). It can, however, also be the case that achieving high in school, will also create a better attitude towards school.

It was also expected from the literature that migrant students would have better attitudes towards school (Burgess & Heller-Sahlgren, 2018). However, the differences between native and immigrant students in attitudes towards school were found to be quite small.

Test language spoken at home

The language students spoke at home did not have a significant effect on the students' achievement, when looking at the linear regressions. This also came forward from the correlations where a small to non-existent effect was found. In this study between 70-85 percent of the migrant groups spoke either English or French, the test language, at home. This could be a reason why this control variable did not show to have a significant effect. This is in line with what literature showed that students who speak the test language (English) at home, will achieve higher than students who do not speak the test language at home (Thomson et al., 2019; OECD, 2015; Hoff, 2013).

Unexpected results

It was overall expected that the Indian, Chinese and Philippine migrant students would achieve similarly to or better than native students. This was based on the fact that these migrant students tend to have parents who are highly educated (Weinar & Klekowski van Koppenfels, 2020), that they set higher expectations (McElvany et al., 2018), and are more motivated (Burgess & Heller-Sahlgren, 2018). However, this seems not to be the case for some of the migrant groups, and this seems to be dependent on the host country (Australia or Canada).

The Chinese migrant students achieved significantly higher on almost all three subjects compared to the natives in Australia and Canada, only on reading in Australia the achievement was not significantly higher. The overall results from the Chinese migrant students could possibly be explained by the phenomenon called ‘tiger-mom’, where there is a lot of pressure on the children from parents to perform well in school (Raleigh & Kao, 2010; Guo, 2014; Wicht, 2016).

For the Indian migrant students, the results showed that they achieve significantly higher than the native students in Australia on all three subjects. However, in Canada, this trend is not shown. The Indian migrant students achieve lower on science and mathematics than the natives and slightly higher on reading, although these differences are not significant. An explanation for the differences between the two countries could

be that in Australia migrants find work more quickly and integrate faster because of this (Hawthorne, 2006). This means that the parents of the Indian migrant students might be more integrated, which could possibly aid in the achievement of students.

Furthermore, the Philippine migrant students achieved higher than the Australian native students, although the results proved not to be significant. In Canada, this group performed significantly lower in mathematics and reading than the native Canadian students. This was contradictory to the expectations since the Philippine migrants are classified as highly skilled migrants (O'Dohorty, 2020; Migration Policy Institute [MPI], n.d.). A possible explanation for this is that the migrant from the Philippines often come to Canada as temporary foreign workers, meaning that they possibly integrate less since they stay for a shorter while (Singer, 2017).

Limitations and recommendations

The current study involved several limitations. The first one being that this source also entails self-reported data. Meaning that questions could be interpreted wrong, or that they could contain bias. Since this study focused solely on three groups of highly skilled migrants in two countries (Australia and Canada) it might be difficult to say something about the achievement of highly skilled migrant students across a larger group. Due to this limitation, this study suggests that more research needs to be done on how migrant students with highly skilled parents achieve comparatively to native students and other migrant groups in different countries. Secondly, this study focused on four control variables, being the education level of parents, occupational expectations, test language spoken at home, and attitudes towards school. However, other variables could have been relevant to investigate concerning achievement in mathematics, reading, and science. This would entail variables such as home educational resources or the use of ICT, it is therefore recommended for future research to take control variables like these into account.

Lastly, the control variable occupational expectations is most likely influenced by different aspects, such as the expectations of parents, overall results of a student, and a students' interests. Hence, it would be necessary for future research to focus on what contributes to students' (occupational) expectations.

Empirical evidence was shown to portray the positive effect of setting occupational expectations, which could be seen as a contribution to theory. This current study tested the effects of these variables on achievement together, in contrast to

previous studies. Therefore, it could possibly enhance the current perspective of migrant students. This study showed that certain groups of migrant students achieve at least as well as native students. The findings of this study, thus, have important implications for the view on migrant students. This study found that migrant students with parents who are considered highly skilled, do, in general, not achieve significantly lower than natives, and in some cases, they even achieve significantly higher. It enhances the current view of migrant students by showing which aspects influence achievement of students with highly skilled parents since this did not have the most significant effect on the students' achievement.

For further research, it might be beneficial to dive deeper into the group of other migrant students, since the average education level of parents of the other immigrants in Australia and Canada was rather high, however, they still had a lower achievement than those who were considered highly skilled migrants. It could then create a clearer perspective on which other aspects influence achievement for this migrant group. This information could then help to give additional attention to migrants who experience difficulties in education in the destination country.

5. Conclusion

In conclusion, this study aimed to investigate the achievement of 15-year-old migrant students (Indian, Chinese, Philippine, Others) compared to that of native students in Australia and Canada based on the PISA 2018 results. This study found that migrant students with parents who are considered highly skilled, do, in general, not achieve significantly lower than natives, and in some cases, they even achieve significantly higher. Having a migration background does, thus, not equal to having a lower achievement. Many different variables play a significant role in the achievement of (migrant) students, specifically setting expectations and the educational background of parents played a role in this study. All this helps to create a more comprehensive view of the achievement of migrant students.

Moreover, the occupational expectations of students yield the biggest positive effect based on the results in this study. Therefore, researchers should focus on which different aspects contribute to having these higher expectations.

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Appendix A Overview of search related studies

Table A1

General Overview of Search Related Studies

Platforms	Keywords	Total results	Relevant results
Web of Science	"immigrants" AND "natives" AND "student achievement"	9	0
Scopus	"immigrants" AND "natives" AND "student achievement"	21	3
University of Twente Library	"immigrants" AND "natives" AND "student achievement"	61	1
OECD iLibrary	"immigrants" AND "natives" AND "student achievement"	0	0
Eric	"immigrants" AND "natives" AND "student achievement"	40	2

Appendix B Migration inflow Australia and Canada

Table B1

International Migration Database (OECD, 2019)

Country of birth/nationality: India

Variable: Inflows of foreign population by nationality

Country	Year						Latest Update
	2000	2004	2007	2010	2013	2016	2018
Australia	4,582	22,278	19,823	23,477	38,123	38,552	33,065
Canada	26,123	28,197	28,729	34,224	33,078	39,795	69,980

Note. Data extracted on 11 Nov 2020 08:56 from OECD.stat

Table B2

International Migration Database (OECD, 2019)

Country of birth/nationality: China

Variable: Inflows of foreign population by nationality

Country	Year						Latest Update
	2000	2004	2007	2010	2013	2016	2018
Australia	8,055	12,523	21,085	24,525	27,898	29,077	25,712
Canada	36,750	36,567	33,493	30,378	34,115	26,855	29,710

Note. Data extracted on 11 Nov 2020 09:04 from OECD.stat

Table B3

International Migration Database (OECD, 2019)

Country of birth/nationality: Philippines

Variable: Inflows of foreign population by nationality

Country	Year						Latest Update
	2000	2004	2007	2010	2013	2016	2018
Australia	3,604	4,444	6,112	10,248	11,032	11,968	10,916
Canada	10,119	14,003	19,833	38,614	29,532	41,815	35,050

Note. Data extracted on 11 Nov 2020 09:04 from OECD.stat

Appendix C Education levels Canada

Table C1

Achievement of Migrant Students in Canada compared to native Canadian students based on Parents' Level of Education

Achievement	ISCED level	Migrant background				
		Native	Indian Migrant	Chinese migrant	Philippine migrant	Other
Mathematics	ISCED 1	383.60*	417.81*	551.69*	-	488.22
	ISCED 2	428.80	467.51*	446.55*	392.12*	424.61
	ISCED 3B, C	444.48	463.69	594.66*	428.37	452.89
	ISCED 3A, 4	487.10	472.73	569.93	468.51	483.44
	ISCED 5B	508.23	494.76	576.80	468.96	491.10
	ISCED 5A, 6	528.26	523.38	598.54	502.28	523.36
Reading	ISCED 1	385.04*	386.83*	403.45*	-	503.59
	ISCED 2	396.83	432.05*	420.00*	314.54*	428.02
	ISCED 3B, C	448.23	460.80	547.73*	434.58	461.43
	ISCED 3A, 4	497.34	485.83	525.31	484.98	495.35
	ISCED 5B	519.12	505.88	536.27	490.40	507.85
	ISCED 5A, 6	535.10	546.94	558.50	523.28	532.72
Science	ISCED 1	350.88*	389.69*	440.89*	-	446.58
	ISCED 2	411.48	496.46*	443.56*	397.23*	456.51
	ISCED 3B, C	455.92	464.03	568.16*	461.83	465.33
	ISCED 3A, 4	497.33	480.14	547.75	490.21	490.76
	ISCED 5B	516.95	496.13	544.95	491.67	500.30
	ISCED 5A, 6	534.21	534.94	572.94	518.74	525.19

*Note. N < 10 are flagged**

Appendix D Education levels Australia

Table D1

Achievement of Migrant Students in Canada compared to native Canadian students based on Parents' Level of Education

Achievement	ISCED level	Migrant background				
		Native	Indian Migrant	Chinese migrant	Philippine migrant	Other
Mathematics	None	384.46*	-	429.37*	-	426.22
	ISCED 1	430.22	422.76*	497.93*	451.75*	455.27
	ISCED 2	443.77	390.86*	577.85*	433.24*	449.99
	ISCED 3B, C	431.55	596.59*	554.99*	473.77*	434.56
	ISCED 3A, 4	471.31	511.38	555.64	474.24	470.67
	ISCED 5B	474.61	510.08*	573.34	509.26*	473.40
	ISCED 5A, 6	509.58	544.85	598.64	515.10	510.86
Reading	None	411.91*	-	367.39*	-	427.39
	ISCED 1	417.68*	408.79*	444.58*	453.35	449.26
	ISCED 2	460.55	353.39*	518.81*	416.43*	467.06
	ISCED 3B, C	443.04	518.33	536.01*	465.15	428.16
	ISCED 3A, 4	483.89	536.92	496.09	492.84	476.98
	ISCED 5B	489.23	524.22	474.56	527.19	482.29
	ISCED 5A, 6	527.46	506.01	548.03	529.12	520.68
Science	None	425.47	-	441.20	-	424.43
	ISCED 1	428.11*	482.70*	471.72*	475.16	438.80
	ISCED 2	459.72	358.08*	563.92*	442.82*	459.55
	ISCED 3B, C	435.84	542.74	524.63*	453.13	438.07
	ISCED 3A, 4	487.81	529.44	520.59	490.03	473.97
	ISCED 5B	593.16	501.36	533.37	517.21	479.89
	ISCED 5A, 6	525.64	548.43	568.66	519.96	515.84

Note. N < 10 are flagged

Appendix E Correlations between migrant background and control variables

Table E1

Pearson Correlation of Migrant Background and Control Variables - Australia

Migrant background	Parents' Education Background	Career expectations	Attitude towards school	Language spoken at home
Australian native	-.07	-.17	-.03	-.05
India	.09	.09	.04	.02
China	.03	.08	.00	.05
Philippine	.04	.05	.00	.02
Others	.03	.11	.02	.03

Table E2

Pearson Correlation of Migrant Background and Control Variables - Canada

Migrant background	Parents' Education Background	Career expectations	Attitude towards school	Language spoken at home
Canadian native	-.03	-.19	.01	-.02
India	.01	.07	.00	.02
China	.04	.06	.00	.02
Philippine	.03	.03	.01	.02
Others	.00	.14	-.01	.00