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The effect of parents' education and income on the educational attainment of childhood immigrants

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Abstract

This paper asks to what extent parents' education and income are associated with the educational attainment of childhood immigrants who arrived in Canada at age 17 or younger. Childhood immigrants aged 25 to 44 in the 2016 Census were linked to the Longitudinal Immigration Database to determine their parents' education level and income. The results show that both fathers' and mothers' education had a substantial and positive effect on the likelihood of childhood immigrants completing a bachelor's degree or higher. If both parents had a bachelor's degree or higher, the effect was almost doubled, controlling for other background variables. There was some variation by source region. The effect of parents' education was weaker for families from East Asia and Southeast Asia than for those from Europe and English-speaking developed countries, indicating that parental education mattered more for the latter groups. When educational attainment was broadened to include graduation with a trades or college credential as well as a bachelor's degree or higher, the effect of parents' education was much weaker, and the group difference in educational attainment became small. Childhood immigrants are more likely to pursue a bachelor's degree or higher than a trades or college certification, while the opposite is true for children with Canadian-born parents. This tendency among immigrant families to prefer a bachelor's degree or higher also varied substantially by source region. After parental education and other variables were controlled for, family income during the first five years after entry to Canada had only a small effect on the child's educational attainment. The conclusion includes a discussion of the implications of the results and the mechanisms through which these effects occur.

Keywords: childhood immigrants, generational status, parents' education, family income

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Introduction

Educational attainment has a significant positive impact on the outcomes of individuals, groups and society as a whole. It is correlated with higher earnings, higher levels of productivity and greater economic growth (Ferrer & Riddell, 2002; Sweetman, 2002; Wilson & Briscoe, 2004; Boothby & Drewes, 2006). As a result, many societies strive for higher educational attainment for their population, including among immigrant families and their children.

Many immigrants move to countries such as Canada in part to provide better educational and economic opportunities for their children (Picot, 2008). For its part, Canada also looks to immigrants and their children to provide higher-level skills to the labour market.

This paper examines the effect of the mother's and father's education on the likelihood of a childhood immigrant completing postsecondary education. The paper further determines whether there is significant variation in these relationships among immigrants from different source regions.

Parental education and the educational outcomes of the children may be positively correlated for many reasons. Parents with higher levels of education likely pass on their positive view of education to their children. The educational expectations and aspirations of children in more highly educated families may also be higher (Childs et al., 2017; Picot & Hou, 2013). Moreover, the level of preparation and academic support received may be superior, given the typically higher levels of income in the family. The cultural perspective of the high value placed on higher education may reinforce family-level effects for some ethnic groups. It may be that the effect of parental education on educational outcomes works through other effects, such as parental aspirations regarding the child's education, the child's performance in high school, and educational resources made available to the child.

The findings of this research can help inform immigrant selection, as well as shed light on the effect of immigrants' education and earnings outcomes on future generations. If the objective is to maintain and advance a high level of educational attainment in the Canadian population, it is imperative to understand how the education and income profile of immigrant parents may impact their children's education outcomes.

This paper builds on existing research and provides several new contributions. First, unlike most previous studies, educational attainment is defined not only by finishing a bachelor's degree or higher, but also by earning a trades or college certification.¹ Focusing only on graduation with a bachelor's degree or higher provides a truncated perspective of higher levels of educational attainment. Second, earlier research tended to examine the effect of father's or mother's education, independently (Thaning & Hallsten, 2020). This paper expands on this by also addressing the effect of both parents' education level on their child's education outcomes.

Literature review

It has been well documented that the children of immigrants achieve higher educational attainment levels than their counterparts with Canadian-born parents (e.g., Abada et al., 2009; Boyd, 2009; Chen & Hou, 2019; Childs et al., 2017; Finnie & Mueller, 2010; Hou & Bonikowska, 2016; Picot & Hou, 2011, 2013; Turcotte, 2019). Most studies focus on the educational outcomes of the second generation, that is,

1. Including university certificates or diplomas below the bachelor's level.

children born in Canada with immigrant parents (see review by Picot & Hou, 2013). This paper focuses on the outcomes of childhood immigrants (or the 1.5 generation), those who came to Canada as immigrants at age 17 or younger. The literature review is largely restricted to studies of this population, which are fewer.

In a comparison of Canada and Switzerland, Picot and Hou (2013) found that, in Canada, childhood immigrants were more likely to attend university than the population born in the country, whereas in Switzerland, the opposite was true. Hou and Bonikowska (2017) found that 37% of childhood immigrants aged 25 to 44 in 2011 had a bachelor's degree or higher, compared with 41% for the second generation (Canadian-born children of immigrants), and 25% for the third generation or more (Canadian-born children of Canadian-born parents). They also found that immigrant class mattered. Childhood immigrants whose parents were admitted through the skilled worker and business classes had the highest rate of graduation with a bachelor's degree or higher. Less than half of the differences among immigrant classes could be accounted for by differences in background characteristics, notably source region and the educational attainment of the parents, implying that other unknown factors possibly associated with the classes played a large role.

Studies have also found significant variation in educational attainment by source region of the childhood immigrants (Childs et al., 2017; Hou & Bonikowska, 2017). Childs et al. (2017) found that childhood immigrants from China, "other Asian" countries (mostly Southern and Western Asia) and Africa had the highest level of university attendance. Bonikowska and Hou (2010) demonstrated that the rising share of immigrants from Asia partly explained why childhood immigrants had increasingly higher rates with at least a bachelor's degree than the third generation or more over the past few decades. Heath et al. (2008) found similar results in Europe: immigrant children with Asian backgrounds had a higher probability of university attendance than other groups.

Some studies have attempted to account for the positive gap in completing a bachelor's degree or higher between the children of immigrants and the third generation or more. Picot and Hou (2013) showed that parental educational attainment and aspirations regarding university education were higher among immigrant families than among their Canadian-born counterparts. They found that a very rich set of socioeconomic background variables and high school achievement scores could account for about 60% of the difference in university attendance between childhood immigrants and Canadian-born children. Of this 60%, two-thirds were associated with differences in parental education and student aspirations regarding university. Parental and student aspirations also played a significant role in accounting for the difference among immigrant groups (Picot & Hou, 2013; Childs et al., 2017). Foley et al. (2010) concluded that parental aspirations were the major determinants of the tendency to drop out of high school, beyond any effect of reading, math and science scores; family background; or other variables.

Childs et al. (2017) found much higher levels of university attendance among the children of immigrants from families with very low parental education, particularly those from China, Africa and "other Asian" countries, than among their non-immigrant counterparts. This difference accounted for much of the difference in university attendance between immigrant and Canadian-born children. Bonikowska (2008) and Picot and Hou (2013) noted the same phenomenon. In a similar vein, many immigrant children with low high school grades or low literacy levels at age 15 attended university, something not typically observed among Canadian-born children (Childs et al., 2017). For example, poor-performing secondary school students with Chinese backgrounds² were seven times more likely to attend university than their poor-performing counterparts with Canadian-born parents (Picot & Hou, 2013). All these factors, as well as others, contributed to the difference in university attendance between immigrant and Canadian-born children. Interestingly, it was observed that immigrant children's university attendance was not correlated with family income (Childs et al., 2017; Hou & Bonikowska, 2017).

2. Including childhood immigrants and the children born in Canada with immigrant parents.

Previous studies generally found that the mother's education is as important as or even more important than the father's education in affecting children's educational outcomes, and the effects of the mother's and father's education are mostly independent of each other (e.g., Kalmijn, 1994; Marks, 2008). Furthermore, as Thaning and Hallsten (2020) demonstrate, the combination of the father's and mother's education captures more of the effect of family socioeconomic resources than considering only one parent's education or each parent's education independently. However, it is not clear whether these findings apply to the immigrant population. A better understanding of the independent and joint effect of both parents' education has significant policy relevance. The selection of economic immigrants in Canada is predominately based on the human capital factors of the principal applicant (mostly men) in the family. If both parents' education is similarly important and their combined effect is substantial, from the perspective of having better economic outcomes for the children of immigrants, the human capital of the spouse of the principal applicant would deserve more consideration in the immigration selection process.

Data and methods

This analysis is based on data from the 2016 Census, the Longitudinal Immigration Database (IMDB) and the T1 Family File (T1FF). The 2016 Census long-form questionnaire provides educational outcomes of childhood immigrants, as well as sociodemographic characteristics, such as population group and mother tongue, and information related to immigration, such as immigration admission category, source region, age at immigration and years since landing.

In addition, data from the IMDB were merged with 2016 Census data to measure parental information of childhood immigrants. The IMDB is an administrative database covering all immigrants admitted to Canada since 1980. In particular, the IMDB children data module allows immigrant children to be linked with information on their immigrant parents from the landing file, such as parents' education level at the time of immigration.

Lastly, the T1FF data were used to derive family income information. The T1FF is a family-level dataset, including all individuals who filed an individual tax return (the T1 form) or who received the Canada Child Benefit, as well as their filing and non-filing spouses, partners and children who report the same address as their parent. Family income of immigrant parents in the tax data was used to measure family income during the first five years after immigrant children landed.

The multivariate analysis uses two different probit regression models with two different outcome variables: the likelihood of graduating with a bachelor's degree or higher, and the likelihood of having some form of postsecondary credential (a bachelor's degree or higher, a university certificate or diploma below the bachelor's level, and a trades or college certification).³ In both cases, the sample consists of childhood immigrants who arrived in Canada at age 17 or younger (the 1.5 generation) and were aged 25 to 44 in the 2016 Census. The sample size is 102,000. All results employ weighted data using the census sample weights.

This analysis focuses on the relationship between parental background and immigrant children's educational outcomes. Hence, the coefficients of primary interest are those on the mothers' education, fathers' education and family income variables. The mothers' and fathers' education variables consist of four levels: (1) high school or less, (2) some postsecondary credential, (3) bachelor's degree or higher,

3. Postsecondary credentials below the bachelor's level encompass apprenticeship or trades certificates or diplomas (trades certificates or diplomas other than a Certificate of Apprenticeship or Certificate of Qualification, Certificate of Apprenticeship or Certificate of Qualification) and college, CEGEP and other non-university certificates or diplomas with any length of programs (program of three months to less than one year, program of one to two years, program of more than two years).

and (4) not linked to one parent but linked to the other parent.⁴ The last category is included so that these observations are not dropped from the analysis.

The family income is observed during the childhood immigrant's first five years in Canada. It is adult-equivalent adjusted to account for differences in family size and the economies of scale associated with larger families. To derive adult-equivalent adjusted family income, the after-tax and after-transfer family income is divided by the square root of the family size. Family income is presented relative to the national median family income at the time. The five levels are (1) less than 0.4 times the national median, (2) 0.4 to 0.7 times the national median, (3) 0.7 to 1.0 times the median, (4) greater than or equal to the median, and (5) "no income information available."

The distribution of the sample across mothers' education, fathers' education and family income is shown in Appendix Table A.1. In addition, there are variables that control for source region, immigration admission category, sex, age at immigration, years since landing, mother tongue and geographical location of residence in Canada.⁵

This paper is also concerned with the variation in the results across immigrant source regions. To assess this, the two separate regressions outlined above are run for each of the nine source regions included in the analysis.

To determine the parents' background, it was necessary to link the childhood immigrants found in the 2016 Census to their parents in the IMDB. Through this linkage, 78% of the "adult" childhood immigrants were linked to at least one of their parents, 74% were linked to their mother and 62% to their father. Parents' education and family income were unknown for the unlinked sample.

It is possible that differences between the linked and unlinked sample could result in the regression coefficients being biased because of sample selection. The linked and unlinked sample differed in some ways. Relative to the unlinked sample, the linked sample was more highly educated (47% had a bachelor's degree or higher compared with 36% in the unlinked sample), more likely to be in the economic class (57% compared with 40%), and less likely to come from South and Central America (14% compared with 26%). The educational attainment of the linked sample was clearly superior. To correct for a possible selection bias, the Heckman sample selection correction procedure was employed (the first-stage regression results are not presented here). Interestingly, there was not a large difference in the coefficients between the regression results with no correction and those with the Heckman sample selection correction incorporated in the model. In no case was there a sign change, and the differences in the magnitude of the coefficients were not large. The "corrected" results are used throughout the section on multivariate analysis.

4. For parents' education level, which comes from IMDB data, in the "education_derived variable," completing a formal trades certificate or apprenticeship was grouped into high school or less. "Some postsecondary credential" includes university certificates or diplomas below the bachelor's level and college certificates or diplomas.

5. See Table 6 for the levels of these variables. The variable "region of residence" has the following levels: Toronto, Montréal, Vancouver, Atlantic, Quebec excluding Montréal, Ontario excluding Toronto, Manitoba and Saskatchewan, Alberta, and British Columbia excluding Vancouver.

The unadjusted results

The education of the 1.5 and second generations and third generation or more

In general, the educational outcomes of the children of immigrants are superior to those of children with Canadian-born parents (Picot & Hou, 2011). The reported results substantiate this observation. Among childhood immigrants (the 1.5 generation) aged 25 to 44 in 2016, 42% completed a bachelor's degree or higher, compared with 39% of the second generation (born in Canada with at least one immigrant parent) and 26% of the third generation or more (born in Canada with Canadian-born parents). The rates of completing a bachelor's degree or higher for women surpassed those for men in all three groups (Table 1). However, the difference by generation is substantially reduced when the outcome is completion of any form of postsecondary education. In this case, 73% of both the 1.5 and the second generations completed some form of postsecondary education, compared with 67% of the third generation or more.

Immigrant families tend to place more emphasis on university education than on vocational training when compared with families with Canadian-born parents. For example, 42% of childhood immigrants completed a bachelor's degree or higher and 31% completed some other form of postsecondary education. Among children with Canadian-born parents, 26% completed a bachelor's degree or higher and 41% completed some other form of postsecondary education (Table 1).

Table 1
Educational outcomes of 25- to 44-year-olds in 2016, by immigrant status

	Completion of a bachelor's degree or higher	Completion of postsecondary education
	percent	
Childhood immigrants¹		
Both sexes	41.7	73.1
Male	36.9	67.9
Female	46.7	78.4
Second generation²		
Both sexes	39.3	73.7
Male	33.1	68.3
Female	45.5	79.1
Third generation or more³		
Both sexes	26.0	67.0
Male	20.2	61.9
Female	31.7	72.2

1. All childhood immigrants aged 25 to 44 in the 2016 Census, regardless whether they are linked to their parents.

2. Second generation: born in Canada with at least one immigrant parent.

3. Third generation or more: born in Canada with two Canadian-born parents.

Note: All results were weighted with census sample weights.

Source: Statistics Canada, 2016 Census of Population.

Differences by source region

The educational outcomes of childhood immigrants were very positive, but there was substantial variation by source region. In 2016, 44%⁶ of childhood immigrants aged 25 to 44 had a bachelor's degree or higher, varying from 22% among those from South and Central America to 69% among East Asians (Table 2). As well, 76% of childhood immigrants had some form of postsecondary education, and the variation among source regions was considerably less, ranging from 66% among those from South and Central America to 86% among East Asians (Table 3).

Differences by parents' education

The results from the unadjusted data illustrate a positive correlation between parents' education and immigrant children's educational outcomes. Note that these reported relationships do not necessarily reflect the actual "effect" of parents' education on childhood immigrants' educational outcomes. The multivariate analysis that follows is better positioned to do that, since it controls for differences in other characteristics. However, the unadjusted results do indicate the kind of outcomes immigrant children from low-income or less-educated families experience, for whatever reasons.

Mothers' and fathers' education had a similar relationship with childhood immigrants' educational attainment. Childhood immigrants whose mothers had a bachelor's degree or higher were 1.85 times more likely to have at least a bachelor's degree themselves in 2016, compared with those whose mothers did not complete a postsecondary education. For fathers' education, the ratio was 1.95 (Table 2).

There was some variation by source region in the relationship between parents' and childhood immigrants' education levels (Table 2). This relationship was particularly weak for childhood immigrants with East Asian (mainly Chinese) backgrounds, where the ratio was only 1.29 (1.31 by fathers' education). That is, whether the parents had a high school education or a bachelor's degree or higher mattered less regarding the likelihood of the child completing a bachelor's degree or higher. The relationship was the strongest for childhood immigrants from Europe, developed English-speaking countries, South and Central America, and South Asia. For families from these regions, it mattered whether the parents had a high school education or a bachelor's degree or higher.

6. This is slightly different from the 42% reported above in Table 1, because this figure is based on data that match educational outcomes to parents' education; the match rate was 80.5% (Appendix Table A.1). The figure reported in Table 1 was based on the entire sample.

Table 2
Percentage of childhood immigrants with a bachelor's degree or higher, by parents' education and source region, 2016

	Linked to at least one parent											
	Mother's education						Father's education					
	Column 1	Column 2	Column 3	Column 4	Ratio of column 3 to column 1	Column 1	Column 2	Column 3	Column 4	Ratio of column 3 to column 1	Linked to neither parent	
	High school or less	Some postsecondary credential ¹	Bachelor's degree or higher	Not present but linked to the other parent		High school or less	Some postsecondary credential ¹	Bachelor's degree or higher	Not present but linked to the other parent			
Total	percent		percent		ratio	percent		ratio		percent		
Total	44.1	34.7	50.1	64.2	29.1	1.85	32.8	45.5	64.0	29.6	1.95	33.3
Source region												
East Asia	68.9	62.2	75.9	80.4	57.7	1.29	60.2	73.9	79.1	54.9	1.31	62.4
South Asia	48.1	36.4	59.4	71.1	38.1	1.95	30.1	52.3	67.5	36.9	2.24	36.7
Southeast Asia	30.3	25.7	33.2	40.3	19.6	1.57	24.3	34.8	42.4	20.9	1.75	26.9
West Asia	48.9	37.7	54.7	70.0	43.6	1.86	31.8	47.7	66.4	36.9	2.09	41.0
Developed English-speaking countries	43.8	33.6	45.9	67.6	41.5	2.01	31.4	36.3	67.1	27.0	2.14	35.5
South and Central America	22.1	17.0	31.9	48.4	14.0	2.84	16.4	28.0	46.5	16.7	2.83	12.9
Africa	45.4	33.4	49.4	69.0	34.1	2.07	32.8	39.9	64.4	33.3	1.96	35.7
Northern and Western Europe	40.9	33.1	39.0	68.1	35.2	2.05	31.7	33.8	68.6	33.4	2.17	39.1
Southern and Eastern Europe	42.3	25.8	42.1	65.4	35.2	2.53	22.2	38.6	64.1	36.7	2.89	31.6

1. Includes university certificates and diplomas below the bachelor's level, as well as college certificates and diplomas.

Note: All results were weighted with census sample weights.

Sources: Statistics Canada, 2016 Census of Population, Longitudinal Immigration Database and T1 Family File.

The relationships with parents' education were weaker when the completion of any postsecondary education was used as the outcome variable. Childhood immigrants whose fathers had at least a bachelor's degree were only 1.26 times as likely to graduate from a postsecondary program as those whose fathers had a high school education or less (Table 3).

Table 3
Percentage of childhood immigrants with completion of postsecondary education, by parents' education and source region, 2016

	Linked to at least one parent											
	Mother's education						Father's education					
	Column 1	Column 2	Column 3	Column 4	Ratio of column 3 to column 1	Column 1	Column 2	Column 3	Column 4	Ratio of column 3 to column 1	Linked to neither parent	
	High school or less	Some postsecondary credential ¹	Bachelor's degree or higher	Not present but linked to the other parent		High school or less	Some postsecondary credential ¹	Bachelor's degree or higher	Not present but linked to the other parent			
Total	percent		percent		ratio	percent		ratio		percent		
Total	75.6	69.5	81.4	86.6	66.9	1.25	68.1	79.2	86.1	67.4	1.26	64.3
Source region												
East Asia	85.6	82.3	90.4	90.7	74.3	1.10	80.9	89.7	90.4	77.3	1.12	81.4
South Asia	75.4	68.7	82.8	88.6	68.7	1.29	64.9	81.0	86.8	67.4	1.34	62.8
Southeast Asia	70.4	64.2	76.2	80.8	65.1	1.26	63.7	76.3	81.3	63.4	1.28	62.0
West Asia	76.9	70.2	83.1	87.9	76.2	1.25	68.0	79.9	86.0	67.3	1.27	69.4
Developed English-speaking countries	75.0	70.7	75.7	86.3	70.0	1.22	68.7	73.5	86.0	63.5	1.25	67.7
South and Central America	65.6	62.3	73.6	80.9	59.8	1.30	61.7	71.0	79.7	62.5	1.29	50.9
Africa	77.2	70.7	82.3	88.1	70.4	1.25	70.4	76.7	85.7	71.5	1.22	68.6
Northern and Western Europe	78.9	73.3	79.9	91.2	77.5	1.24	72.9	78.2	91.2	68.8	1.25	71.2
Southern and Eastern Europe	75.6	64.9	79.9	87.1	69.2	1.34	61.4	76.9	86.6	73.4	1.41	64.1

1. Includes university certificates and diplomas below the bachelor's level, as well as college certificates and diplomas.

Note: All results were weighted with census sample weights.

Sources: Statistics Canada, 2016 Census of Population, Longitudinal Immigration Database and T1 Family File.

The variation among source regions was also smaller when the outcome was any postsecondary education. For example, the ratio reported for childhood immigrants from East Asia, at 1.12, was comparable to those from other regions. This result occurs largely because childhood immigrants from many source regions (e.g., the developed nations) are more likely to opt for college or vocational training, compared with those of East Asian backgrounds, who focus strongly on a bachelor's degree or higher.

Differences by family income

Overall, childhood immigrants from families with family income above the national median were 1.26 times more likely to have at least a bachelor's degree than those from families earning less than 0.4 times the national median (Table 4). This relationship was much stronger for childhood immigrants from South and Central America, Europe, Africa, and South Asia. Similarly, immigrant children from families with higher incomes were only 1.12 times more likely to have a postsecondary education (Table 5). There was smaller difference by family income in the likelihood of graduating from some form of postsecondary education.

Table 4
Percentage of childhood immigrants with a bachelor's degree or higher, by family income and source region, 2016

	Linked to at least one parent					Ratio of column 4 to column 1	Linked to neither parent
	Family income						
	Column 1	Column 2	Column 3	Column 4	Column 5		
	Less than 0.4 times the national median	0.4 to 0.7 times the national median	0.7 to 1.0 times the national median	More than and equal to 1.0 times the national median	No information available		
Total	44.9	38.9	43.8	56.6	39.5	1.26	33.3
Source region			percent			ratio	percent
East Asia	65.7	65.1	73.0	81.8	58.3	1.25	62.4
South Asia	41.2	44.5	51.5	66.9	37.0	1.62	36.7
Southeast Asia	29.0	26.1	31.0	38.8	31.6	1.34	26.9
West Asia	51.3	42.6	53.1	69.0	45.6	1.34	41.0
Developed English-speaking countries	43.5	36.5	37.8	50.8	41.8	1.17	35.5
South and Central America	18.3	18.6	24.9	38.8	20.4	2.12	12.9
Africa	38.2	39.7	48.6	60.2	45.9	1.58	35.7
Northern and Western Europe	36.7	34.5	39.4	55.1	47.7	1.50	39.1
Southern and Eastern Europe	36.3	37.1	41.2	54.2	33.3	1.50	31.6

Note: All results were weighted with census sample weights.

Sources: Statistics Canada, 2016 Census of Population, Longitudinal Immigration Database and T1 Family File.

Table 5
Percentage of childhood immigrants with completion of postsecondary education, by family income and source region, 2016

	Linked to at least one parent							
	Family income					No information available	Ratio of column 4 to column 1	Linked to neither parent
	Column 1	Column 2	Column 3	Column 4	Column 5			
Less than 0.4 times the national median	0.4 to 0.7 times the national median	0.7 to 1.0 times the national median	More than and equal to 1.0 times the national median					
Total	74.1	72.5	76.5	83.2	72.0	1.12	64.3	
Source region								
East Asia	83.4	83.6	88.0	92.6	82.3	1.11	81.4	
South Asia	68.0	74.6	78.3	85.6	64.5	1.26	62.8	
Southeast Asia	64.9	65.9	73.2	78.2	72.3	1.20	62.0	
West Asia	78.4	72.9	79.9	90.2	72.6	1.15	69.4	
Developed English-speaking countries	76.4	70.3	71.8	78.8	72.8	1.03	67.7	
South and Central America	62.0	64.2	66.7	75.7	65.1	1.22	50.9	
Africa	74.0	74.0	79.5	84.6	75.2	1.14	68.6	
Northern and Western Europe	77.4	76.0	78.7	84.5	81.5	1.09	71.2	
Southern and Eastern Europe	68.7	72.5	75.8	82.6	64.9	1.20	64.1	

Note: All results were weighted with census sample weights.

Sources: Statistics Canada, 2016 Census of Population, Longitudinal Immigration Database and T1 Family File.

Multivariate analysis

The effect on completing a bachelor's degree or higher

The results reported in this section are the marginal effects of each variable on the likelihood of completing a bachelor's degree or higher, based on the probit model with the Heckman correction for sample selection. The marginal effect for a categorical variable is the difference in the predicted average rates of graduation with at least a bachelor's degree between the category of interest (e.g., mothers have at least a bachelor's degree) and the reference group (mothers have a high school education or less). In this example, the marginal effect of the mother's degree was 0.136, or 13.6 percentage points (Column 1 of Table 6). Thus, the childhood immigrant whose mother had a degree was 13.6 percentage points more likely (or 1.4 times as likely⁷) to graduate with a bachelor's degree or higher than a peer whose mother had a high school education or less, controlling for other background characteristics. The effect of fathers' education was about the same, at 14.6 percentage points (or 1.5 times more likely).

7. The probability of a childhood immigrant graduating with a degree increased from 0.329 to 0.465 when parents' education changed from high school to a degree, holding all other variables constant.

Table 6
Regression analysis for educational outcomes of childhood immigrants

	With a bachelor's degree or higher	Completion of postsecondary education
marginal effects		
Mother's education		
High school or less (reference group)	...	...
Some postsecondary credential ¹	0.068 ***	0.070 ***
Bachelor's degree or higher	0.136 ***	0.104 ***
Not present but linked to the other parent	0.005	0.000
Father's education		
High school or less (reference group)	...	...
Some postsecondary credential ¹	0.052 ***	0.061 ***
Bachelor's degree or higher	0.146 ***	0.103 ***
Not present but linked to the other parent	0.027 ***	0.016 ***
Family income		
<0.4 times the national median (reference group)	...	...
0.4 to 0.7 times the national median	-0.006	0.011 ***
0.7 to 1.0 times the national median	0.018 ***	0.034 ***
>= 1.0 times the national median	0.069 ***	0.068 ***
No information available	-0.022 ***	-0.007
Source region		
East Asia (reference group)	...	...
South Asia	-0.124 ***	-0.043 ***
Southeast Asia	-0.278 ***	-0.098 ***
West Asia	-0.144 ***	-0.056 ***
Developed English-speaking countries	-0.226 ***	-0.116 ***
South and Central America	-0.314 ***	-0.154 ***
Africa	-0.178 ***	-0.070 ***
Northern and Western Europe	-0.222 ***	-0.064 ***
Southern and Eastern Europe	-0.196 ***	-0.065 ***
Immigration admission category		
Economic immigrants (reference group)	...	...
Immigrants sponsored by family	-0.147 ***	-0.150 ***
Refugees	-0.079 ***	-0.076 ***
Other immigrants	-0.073 ***	-0.083 ***
Sex		
Male (reference group)	...	...
Female	0.097 ***	0.109 ***
Age at immigration		
0 to 5 (reference group)	...	...
6 to 12	-0.029 ***	0.005
13 to 15	-0.073 ***	-0.024 ***
Year since landing	0.0011 ***	0.0003
Mother tongue		
Other languages (reference group)	...	...
English or French	-0.022 ***	-0.027 ***
	number	
Observations	102,937	102,937

... not applicable

*** significantly different from reference category (p < 0.001)

1. Includes university certificates and diplomas below the bachelor's level, as well as college certificates and diplomas.

Notes: This table presents marginal effects from Heckman's two-step probit regression models with sample selection correction. The model also controls for province of residence. All results were weighted with census sample weights.

Sources: Statistics Canada, 2016 Census of Population, Longitudinal Immigration Database and T1 Family File.

The results are put into perspective by comparing them with the unadjusted data. In the unadjusted data, the share of childhood immigrants who graduated with at least a bachelor's degree increased by 31.2 percentage points (from 32.8% to 64.0%, in Table 2) when the father had at least a bachelor's degree, compared with when the father had a high school education or less. About one-half of this observed 31.2 percentage point difference was not associated with the father's education, but rather with the other control variables included in the regression,⁸ such as the immigrant class of the childhood immigrant's parents.⁹

The adjusted results also confirmed variation by source country in the relationship between parents' and childhood immigrants' education (Table 7). To demonstrate this point, the results for fathers' education were used, since fathers tended to be more highly educated than mothers in the study sample.¹⁰ The results were similar based on the mother's education. East Asian childhood immigrants with highly educated fathers were 9.2 percentage points more likely to complete a bachelor's degree or higher compared with those with less-educated fathers. At the other extreme, this difference was 21.9 percentage points for those originating in Southern or Eastern Europe. The effect of parents' education was weaker for those from East Asia, Southeast Asia, and South and Central America. For these source regions, whether the father had a degree or a high school education or less had a smaller, but still significant, effect on the likelihood of the childhood immigrant graduating with a degree. This effect was stronger for immigrants from all other regions, notably Europe.

8. The advantage in completing a degree for childhood immigrants with a degree-holding father was 31.2 percentage points in the unadjusted data (no controls). With controls, the advantage was reduced to 14.6 percentage points. Hence, the control variables accounted for 16.6 percentage points, or 53% (16.6/31.2), of the observed difference in degree completion rates between those with less and more highly educated fathers.

9. Among fathers with at least a bachelor's degree, 80% entered via the economic class, compared with 50% of those with a high school education. The likelihood of completing at least a bachelor's degree was higher for those in the economic class compared with other classes, as seen in Table 6.

10. Among fathers of childhood immigrants, 31% had at least a bachelor's degree, compared with 24% of mothers (Appendix Table A.1).

Table 7
Regression models predicting the likelihood of completing a bachelor's degree or higher, by source region

	Source region									
	Total	East Asia	South Asia	Southeast Asia	West Asia	Developed English-speaking countries	South and Central America	Africa	Northern and Western Europe	Southern and Eastern Europe
marginal effects										
Mother's education										
High school or less (reference group)	...	...	...	...	...	...	...	...	...	...
Some postsecondary credential ¹	0.068 ***	0.055 ***	0.072 ***	0.025 *	0.070 ***	0.067 ***	0.058 ***	0.084 ***	0.048 ***	0.091 ***
Bachelor's degree or higher	0.136 ***	0.091 ***	0.136 ***	0.032 ***	0.143 ***	0.161 ***	0.121 ***	0.177 ***	0.180 ***	0.215 ***
Not present but linked to the other	0.005	0.016	0.025	-0.049 ***	0.082 ***	0.056 *	-0.012 *	0.035 *	-0.026	0.064 ***
Father's education										
High school or less (reference group)	...	...	...	...	...	...	...	...	...	...
Some postsecondary credential ¹	0.052 ***	0.066 ***	0.073 ***	0.047 ***	0.073 ***	0.029 *	0.034 ***	0.022	-0.011	0.095 ***
Bachelor's degree or higher	0.146 ***	0.092 ***	0.156 ***	0.094 ***	0.187 ***	0.211 ***	0.100 ***	0.141 ***	0.214 ***	0.219 ***
Not present but linked to the other	0.027 ***	0.017	0.063 ***	-0.015	0.085 ***	-0.018	0.003	0.037 **	-0.025	0.097 ***
Family income										
<0.4 times the national median (reference group)	...	...	...	...	...	...	...	...	...	...
0.4 to 0.7 times the national median	-0.006	0.010	0.029 ***	-0.025 **	-0.031 ***	-0.024	-0.002	0.011	-0.017	0.013
0.7 to 1.0 times the national median	0.018 ***	0.054 ***	0.052 ***	-0.013	-0.012	-0.001	0.019 **	0.026 *	0.005	0.055 ***
>= 1.0 times the national median	0.069 ***	0.095 ***	0.104 ***	0.024 *	0.044 ***	0.050 **	0.060 ***	0.070 ***	0.071 ***	0.112 ***
No information available	-0.022 ***	-0.068 ***	-0.044 *	0.003	-0.047 *	-0.023	0.006	0.036	0.079	-0.020
number										
Observations	102,744	17,227	12,277	13,265	11,972	5,805	14,195	7,143	3,297	17,563

... not applicable

* significantly different from reference category (p < 0.05)

** significantly different from reference category (p < 0.01)

*** significantly different from reference category (p < 0.001)

1. Includes university certificates and diplomas below the bachelor's level, as well as college certificates and diplomas.

Notes: This table presents marginal effects from Heckman's two-step probit regression models. Each regression model also controls for immigration admission category, sex, age at immigration, years since immigration and years squared, mother tongue, and geographic location of residence. The models were estimated separately for each source country. All results were weighted with census sample weights.

Sources: Statistics Canada, 2016 Census of Population, Longitudinal Immigration Database and T1 Family File.

Up to this point, the effects of mothers' and fathers' education have been discussed independently of each other. Not surprisingly, mothers' and fathers' education levels were correlated. In 31% of the families of childhood immigrants, both parents had a high school education or less, and in 24% of the cases, both parents had at least a bachelor's degree. The effect on educational outcomes may be greater if both parents, rather than just one parent, have a degree. To assess this possibility, a probit regression identical to the one described above was employed, but the variables "father's education" and "mother's education" were replaced by a seven-category variable that defines parents' education jointly, based on both mothers' and fathers' education (see Table 8).

Table 8
Regression analysis: Interaction of mother's and father's education

	Completion of a bachelor's degree or higher	Completion of postsecondary education
	marginal effects	
Parents' education		
Both with high school or less (reference group)	...	...
Some postsecondary credential ¹	0.073 ***	0.089 ***
Father with a bachelor's degree or higher, mother with a lower level of education	0.184 ***	0.141 ***
Mother with a bachelor's degree or higher, father with a lower level of education	0.165 ***	0.144 ***
Both with a bachelor's degree or higher	0.270 ***	0.187 ***
Mother not present but linked to the father	0.063 ***	0.048 ***
Father not present but linked to mother	0.054 ***	0.039 ***
	number	
Observations	102,937	102,937

... not applicable

*** significantly different from reference category ($p < 0.001$)

1. Includes university certificates and diplomas below the bachelor's level, as well as college certificates and diplomas.

Notes: This table presents marginal effects from Heckman's two-step probit regression models with sample selection correction for two educational outcomes. Each regression model also controls for family income, source country, immigration admission category, sex, age at immigration, years since immigration and years squared, mother tongue, and geographic location of residence. All results were weighted with census sample weights.

Sources: Statistics Canada, 2016 Census of Population, Longitudinal Immigration Database and T1 Family File.

The likelihood of completing a degree increased by 27 percentage points if both parents had a degree compared with the case where both parents had high school education or less (Table 8). Put another way, the likelihood of completing a degree was almost twice as high¹¹ if both parents had degrees compared with both parents having a high school education. This is a large effect. The results also suggested that the effects of mothers' and fathers' education were relatively independent.¹² Furthermore, the effect of both parents having a degree was substantially greater than if only one parent had a degree; the probability of completing a degree was 8 to 10 percentage points higher.

The results by source region indicated a large effect of combined educational levels of both parents for most regions. For example, for childhood immigrants from East Asia, instead of a 9 percentage point effect for one parent having a degree, the effect was closer to 18 percentage points if both parents had a degree, a significantly larger effect. For immigrant families from Europe, the two degree-holding parent effect was in the 39 to 43 percentage point range. These estimates for source regions were determined by assuming that the effects of mothers' and fathers' education are independent and additive (Table 7).

Family income during the first five years after entry to Canada had only a small effect on the likelihood of the childhood immigrant completing a degree, controlling for parents' education and other variables (Table 6). Those from families with more than the national median family income were 6.9 percentage points more likely to complete a degree than when the family had less than 0.4 times the national median income. Across the nine source regions, this difference was mostly below 10.0 percentage points (with exception of 11.2 points for Southern and Eastern Europe and 10.4 points for South Asia). The relatively small effect of low family income on degree completion among childhood immigrants (controlling for other background variables) is consistent with earlier research. The difference was also relatively small in the

11. The probability of completing a degree increased from 0.290 to 0.560 when both parents' education changed from high school to a bachelor's degree, holding all other variables constant.

12. When the separate effects of each parent having a degree (relative to those with a high school education or less) from Table 6 were added together, it resulted in a combined estimated effect of 28.2 percentage points if both parents had a degree. This was close to the estimate of 27.0 percentage points when the effects are estimated jointly (Table 8).

unadjusted data, at 11.7 percentage points. The control variables accounted for 41% of the unadjusted difference in degree completion.

The effect on postsecondary completion

The effect of parents' education was smaller when the outcome was the likelihood of graduating from some form of postsecondary education. Having a mother or a father with a degree increased the likelihood of immigrant children graduating from a postsecondary program by about 10 percentage points (Column 2 of Table 6) compared with having a parent with a high school education or less. In the unadjusted data, this likelihood was increased 18 percentage points (from 68% to 86% by fathers' education). Hence, 44% of this 18 percentage point increase in the likelihood was accounted for through channels associated with the control variables. When both the mother and the father had a degree, the effect on the completion of the postsecondary program became relatively large, at 18.7 percentage points, compared with the case where both parents had a high school education or less (Table 8).

While there was some variation by source region in the effect of parental education on completing any postsecondary credential, it was not large (Table 9). Consistent with the unadjusted results reported above, family income had a relatively small effect on the likelihood of completing some form of postsecondary education (Table 9).

Table 9
Regression models predicting the likelihood of completing postsecondary education, by source region

	Source region									
	Total	East Asia	South Asia	Southeast Asia	West Asia	English-speaking countries	South and Central America	Africa	Northern and Western Europe	Southern and Eastern Europe
marginal effects										
Mother's education										
High school or less (reference group)	...	...	...	...	...	...	...	...	...	...
Some postsecondary credential ¹	0.071 ***	0.046 ***	0.045 ***	0.059 ***	0.075 ***	0.026 *	0.076 ***	0.094 ***	0.047 ***	0.092 ***
Bachelor's degree or higher	0.104 ***	0.052 ***	0.099 ***	0.068 ***	0.102 ***	0.091 ***	0.132 ***	0.131 ***	0.117 ***	0.140 ***
Not present but linked to the other parent	-0.001	-0.025	-0.005	-0.006	0.065 ***	-0.015	-0.019	0.020	0.010	0.019
Father's education										
High school or less (reference group)	...	...	...	...	...	...	...	...	...	...
Some postsecondary credential ¹	0.061 ***	0.059 ***	0.066 ***	0.057 ***	0.068 ***	0.028 *	0.051 ***	0.032 *	0.026	0.087 ***
Bachelor's degree or higher	0.103 ***	0.061 ***	0.106 ***	0.079 ***	0.108 ***	0.103 ***	0.110 ***	0.088 ***	0.109 ***	0.147 ***
Not present but linked to the other parent	0.016 ***	0.021 *	0.016	-0.007	0.019	-0.046 **	0.007	0.030 *	-0.044	0.069 ***
Family income										
<0.4 times the national median (reference group)	...	...	...	...	...	...	...	...	...	...
0.4 to 0.7 times the national median	0.011 ***	0.014 *	0.067 ***	0.005	-0.027 ***	-0.036 *	0.027 **	0.002	-0.012	0.039 ***
0.7 to 1.0 times the national median	0.034 ***	0.046 ***	0.080 ***	0.032 ***	-0.003	-0.028	0.040 ***	0.011	0.009	0.084 ***
>= 1.0 times the national median	0.068 ***	0.075 ***	0.108 ***	0.055 ***	0.071 ***	0.004	0.103 ***	0.036 *	0.027	0.122 ***
No information available	-0.007	-0.021	-0.030	0.057 **	-0.059 **	-0.033	0.030	-0.007	0.044	-0.013
number										
Observations	102,744	17,227	12,277	13,265	11,972	5,805	14,195	7,143	3,297	17,563

... not applicable

* significantly different from reference category (p < 0.05)

** significantly different from reference category (p < 0.01)

*** significantly different from reference category (p < 0.001)

1. Includes university certificates and diplomas below the bachelor's level, as well as college certificates and diplomas.

Notes: This table presents marginal effects from Heckman's two-step probit regression models. Each regression model also controls for immigration admission category, sex, age at immigration, years since immigration and years squared, mother tongue, and geographic location of residence. The models were estimated separately for each source country. All results were weighted with census sample weights.

Sources: Statistics Canada, 2016 Census of Population, Longitudinal Immigration Database and T1 Family File.

Conclusion and discussion

This paper asks to what extent parents' education and income affect the educational attainment of childhood immigrants. There are several key findings.

First, higher levels of parental education were associated with significantly higher rates of completing a bachelor's degree or higher among childhood immigrants, particularly when both parents were highly educated. When the father had a degree, 64% of childhood immigrants completed a degree, compared with 33% of those whose father had a high school education or less (actual unadjusted results). About one-half of this 31 percentage point difference was not associated with fathers' education but rather with effects of control variables, such as the immigrant class of the parents. When differences in the control variables were taken into consideration, childhood immigrants with a degree-holding father were 15 percentage points (or roughly 1.5 times) more likely to acquire a degree themselves than when their father had a high school education or less. The effect of mothers' education was similar. Furthermore, if both parents had a degree, the magnitude of the effect almost doubled. Childhood immigrants with two degree-holding parents were 27 percentage points more likely to complete a degree than if both parents had a high school education or less, controlling for other variables.

Second, there was some variation by source region. The effect of parents' education was weaker, but still statistically significant, among immigrant families from East Asia and Southeast Asia.¹³ That is, among immigrant families from these regions, whether the parents had low or high levels of education had a smaller effect on childhood immigrants completing a degree than among immigrant families from Europe and English-speaking developed countries.

Third, when educational attainment was broadened to include trades or college certification,¹⁴ several results changed. The significant advantage of the 1.5 and second generations over the third generation or more regarding postsecondary completion was considerably reduced. Also, the effect of parents' education on children's educational attainment was much weaker; whether the parents had a higher or lower level of education mattered less. The variation among source regions was also considerably less. These changes occurred because many immigrant families from East and Southeast Asia focus on university graduation, while immigrant families from some other regions, and families with Canadian-born parents, are more likely to consider other postsecondary alternatives such as college or trades programs.

Fourth, family income during the first five years after entry to Canada had only a small effect on the likelihood of childhood immigrants completing a degree, or any form of postsecondary certification, after controlling for parents' education and other background variables.

Of what significance are these findings, and why are they occurring? First, the relatively small effect of family income is particularly important for immigrant families, since many struggle economically in the initial years after immigration. Such low family incomes do not appear to have a large effect on the educational outcomes of their children. The strong effect of parental education on the child's education, particularly if both parents are university-educated, also has significant policy implications. Through the selection of highly educated immigrants, Canada is able to maintain strong education outcomes among the 1.5 and second generations, seen in few countries globally. It must be noted that there was some

13. The weak effect may reflect different processes for the two groups. Earlier studies observed that most children of Chinese immigrants completed a university degree regardless of their parents' educational level. In comparison, children of Filipino immigrants (the main source country in Southeast Asia), on average, did not surpass their parents' education level (Abada et al., 2009; Picot & Hou, 2013).

14. As well as university degrees or diplomas below the bachelor's level.

variation by source region. In particular, the effect of parental education on degree completion was somewhat weaker among those families from East Asia and Southeast Asia.

Including all postsecondary programs as an outcome variable highlighted important differences in postsecondary education patterns. Among childhood immigrants with some form of postsecondary certification, 43% graduated from a trades or college program, or a university program below the bachelor's level. Among children of Canadian-born parents, this figure was 61%. Additionally, there was significant variation by source region. At one extreme, among East Asian childhood immigrants, 20% of those who acquired some form of postsecondary certification did so below a bachelor's degree. Among those from South and Central America, this figure was 66%. For childhood immigrants from Europe, it was around 45%. Such differences can affect the types of skills that they bring to the labour market and the types of jobs in which childhood immigrants compete.

There may be many mechanisms through which parental education influences both the likelihood of acquiring a postsecondary education and the type of education obtained. While the data were not available to address parental and student aspirations and expectations regarding higher education, earlier research has indicated that they play an important role (Picot & Hou, 2013; Foley et al., 2010; Childs et al., 2017). The research indicated that parents' and students' own aspirations regarding university attendance accounted for much of the difference in the attendance pattern between the 1.5 generation and the third generation or more. Furthermore, when parents' and students' own aspirations were included in a model, the effect of parental education on university attendance was markedly reduced, suggesting that parental education works through aspirations to a considerable extent.

There are other mechanisms through which parents' education affects the educational outcomes of immigrant children. Compared with less-educated parents, highly educated immigrant parents may also pass on a belief in the high value of university or other postsecondary education, have more resources available to their children to better prepare them for higher education, and display the possibility of postsecondary education by their own example. Unfortunately, these and other possibilities cannot be evaluated with the data used in this study.

Appendix

Appendix Table A.1

Percentage of childhood immigrants by mother's education, father's education and family income

Characteristics	Percentage of childhood immigrants
	percent
Linked to neither parent	19.6
Linked to at least one parent	80.5
Linked to mother	75.3
Linked to father	63.7
Linked to both mother and father	58.6
Childhood immigrants linked to at least one parent	
Mother's education	
High school or less	52.0
Some postsecondary credential ¹	17.8
Bachelor's degree or higher	23.9
Not present but linked to the other parent	6.4
Father's education	
High school or less	29.9
Some postsecondary credential ¹	18.0
Bachelor's degree or higher	31.2
Not present but linked to the other parent	20.9
Family income	
<0.4 times the national median	17.1
0.4 to 0.7 times the national median	39.0
0.7 to 1.0 times the national median	24.9
>= 1.0 times the national median	16.8
No information available	2.2

1. Includes university certificates and diplomas below the bachelor's level, as well as college certificates and diplomas.

Note: All results were weighted with census sample weights.

Sources: Statistics Canada, 2016 Census of Population, Longitudinal Immigration Database and T1 Family File.

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