

**EDUCATIONAL ATTAINMENT OF THREE GENERATIONS
OF IMMIGRANTS IN CANADA: INITIAL EVIDENCE
FROM THE ETHNIC DIVERSITY SURVEY**

by

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**Educational Attainment of Three Generations of Immigrants in Canada:
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Abstract

This paper examines differences in educational attainment among three generations of immigrants compared to the remaining Canadian-born population. I find that second-generation immigrants have significantly higher levels of education than the fourth and higher generation even after controlling for age, parental education and ethnic composition. This advantage is concentrated among individuals from low-education backgrounds and increases with the proportion of foreign-born family members. Third-generation immigrants also have on average higher educational attainment than the fourth generation. In contrast to the second generation, the gap can be explained in large part by parental education differences. This cross-generational pattern is evident within many dissimilar ethnic origin groups.

JEL classification: I21, J24, J61

Keywords: educational attainment, immigrants, second and third generation

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Educational Attainment of Three Generations of Immigrants in Canada: Initial Evidence from the Ethnic Diversity Survey

1. Introduction

Canada has a long-standing tradition as a major immigrant-receiving country. The 2001 Canadian Census indicates that immigrants (foreign-born individuals) form around 22% of Canada's population aged 15 and older.¹ A further 16% are second-generation immigrants.² Successful adaptation of immigrants and their descendants is important if only because of their large share in the population. The source country composition of successive immigrant cohorts in Canada has been changing over the course of the 20th century. Since the 1980s, it was accompanied by falling entry earnings, which were offset by steeper earnings-experience profiles in the 1990s but not the 1980s (Green and Worswick 2004).³ These changes in immigrant characteristics and post-migration experiences may affect outcomes of the future second generation. A better understanding of intergenerational transmission of outcomes among immigrants could therefore have important policy implications. This paper is aimed at laying the groundwork for more in-depth research into this topic. I present some salient facts about the present immigrants, children of immigrants and grandchildren of immigrants in Canada with particular emphasis on their educational attainment. My goal in this paper is to establish key cross-generational patterns, leaving an in-depth analysis of specific explanations for these patterns to future work.

Educational attainment is a particularly interesting dimension of the immigrant adaptation process. Its importance in determining many individual outcomes including but not restricted to labour market success is well documented. It has further significance in the immigrant context. Imperfect recognition of skills and credentials acquired outside the host country has been linked to setbacks faced by new immigrants in the host country labour market. Assimilation in terms of education quantity and quality, however, extends beyond the experiences of a single generation. Existing research into the outcomes of second-generation immigrants finds two distinct trends. In some countries, e.g. Canada and the US, children of immigrants acquire on average more education than both the immigrant generation and the remaining native-born population. In others, e.g. several Northwestern European

¹ Based on data from Statistics Canada 2001 Canadian Census tabulations, catalogue no. 97F0009XCB2001006.

² Ibid. In the Census tabulations, second-generation immigrants are defined as Canadian-born individuals with at least one foreign-born parent.

³ See also Baker and Benjamin (1994). The phenomenon of falling entry earnings has been documented in the US as well. See for example Borjas (1995) and Duleep and Regets (1997, 2002).

countries, they fall short of the native population average. A finding common to both sets of countries is that standard socioeconomic characteristics cannot explain the entire gap in mean educational outcomes between second-generation immigrants and the remaining native-born population. The comparison of relative outcomes of the second and third-generation immigrants presented in this paper suggests that, in Canada at least, this unexplained difference is characteristic of only the second generation. This result raises additional questions about the exact nature of the relationship between immigrant outcomes and those of their children, highlighting the need for further research in this area.

The key to the analysis in this paper is the Canadian Ethnic Diversity Survey (EDS). It contains rare information on the birthplace of the respondents' grandparents, allowing the study of characteristics and outcomes of a group about which little is known – third-generation immigrants.⁴ Of equal importance is the ability to compare education transmission across several generations of immigrants. The availability of data on parental education in EDS is indispensable to this analysis. Furthermore, oversampling on the basis of generation status and ethnic ancestry in EDS provides relatively large samples of each generation group, which enables such intergenerational comparisons. It also ensures that larger non-European ethnic minority groups are well represented in the sample. Given this unique combination of sample design and data collected, EDS is well suited to the analysis in this paper.

This study compares educational outcomes across three generations of immigrants and the remaining Canadian-born population, which I refer to as the “fourth and higher generation”, or simply the fourth generation. Three measures of educational attainment are examined: years of schooling, probability of completing at least high school and probability of holding a university degree. I find that second and third-generation immigrants in Canada currently have on average more education than immigrants and the fourth generation. Consistent with previous findings for Canada, the educational attainment gap between the second and fourth generations cannot be explained by differences in age, parental education and ethnic composition. Foreign parentage appears to be the key factor as education levels (relative to the fourth generation) are lower among second-generation immigrants with one immigrant and one third-and-higher-generation parent than among those with two immigrant parents. Furthermore, this gap is biggest among individuals from low-education backgrounds. In contrast, essentially the entire gap between the third and fourth generations can be explained with parental education differences. The initial analysis in this study suggests that this pattern is present within many ethnic origin groups.

⁴ Borjas (1994) examines the intergenerational transmission of education and earnings between third generation immigrants and their parents in the US in the 1980s using data from the General Social Survey.

This paper is organized as follows: Section 2 surveys the literature on outcomes of second-generation immigrants, Section 3 presents the data, the definition of immigrant generation status and the study sample, Section 4 contains a descriptive overview of standard demographic characteristics and labour market outcomes of the four generation groups, Section 5 presents key cross-generational patterns in educational attainment, and Section 6 concludes.

2. Literature

The existing literature that documents earnings and educational attainment of the first and second-generation immigrants in various countries reveals different patterns of intergenerational assimilation. Several European studies provide evidence of smooth assimilation in the second generation in terms of various measures of educational attainment. For example, Van Ours and Veenman (2001) find that in the Netherlands, second-generation immigrants close the gap between their parents' educational attainment and that of the native population. This is true of ethnic groups that are on average less and more educated in the first generation than the average Dutch native. They further show that the gap in attainment between second-generation males and their native counterparts is almost entirely explained by parental education differences, but this is not the case for women. Gang and Zimmerman (2000) also find convergence to the mean in educational attainment among the second-generation immigrants in Germany. The gap that still separates that generation from the native Germans cannot be explained by differences in standard socioeconomic characteristics. In addition, parental education appears to have no predictive power for the second generation's outcomes. Riphahn (2003) further documents that the gap in educational attainment between children of immigrants and German natives has been growing over the past few decades, a fact that the author attributes to the changing ethnic composition of immigrants to Germany.

A different pattern is documented in studies on data from Canada, the US and Israel. Hansen and Kucera (2004) analyze the educational attainment of second-generation immigrant men in Canada as compared to Canadian natives (i.e. third and higher generations) using the Survey of Labour and Income Dynamics (SLID). They find that after controlling for several individual characteristics including parental education, visible minority status, mother tongue being English or French and ethnic origin, there still remains a gap in educational attainment in favour of the second-generation immigrants. Further, once indicators for parental education and mother tongue were included in regressions, ethnic origin had little additional predictive power.

Aydemir, Chen and Corak (2005) study intergenerational mobility in earnings among immigrants in Canada and the possible channels of the transmission of earnings. They take advantage

of new information on parental birthplace in the 2001 Canadian Census to identify second-generation immigrants and calculate average earnings and education of “potential fathers” from the 1981 Census. They find that although paternal earnings have a significant effect on years of schooling of children (particularly sons), the overall importance of this channel in the generational earnings elasticity is small. They also find that conditional on average education of potential fathers, second-generation immigrants from low-income ethnic groups become above-average earners.

Worswick (2004) looks at the performance of immigrants’ children in Canadian schools using data from the National Longitudinal Survey of Children and Youth covering the 1994-1999 period. He finds that children aged four to six with an immigrant parent have lower performance on vocabulary tests than children of Canadian-born parents. For children with an immigrant parent whose mother tongue is neither English nor French, this initial disadvantage is still evident in performance on reading tests at older ages, but disappears by age fourteen. There is no difference in performance on mathematics tests between children (aged seven to fourteen) with immigrant and Canadian-born parents.

In the US, Card, DiNardo and Estes (2000) find that controlling for differences in region of residence, age and ethnic composition, second-generation immigrants also have the highest average wages compared to the rest of the US population. Furthermore, this advantage was apparent over the 1970 – mid-1990s period despite increasing wage inequality and the changing age and ethnic composition of the second generation. A study of intergenerational transmission of earnings reveals that education of the second generation is the main transmission mechanism. They find that potential fathers’ earnings have a significant effect on education and earnings of second-generation immigrants observed in the 1970 US Census. For second-generation immigrants observed the 1994-1996 Current Population Survey in contrast, it is paternal education that has a significant effect. Further, when the children’s education is controlled for, fathers’ outcomes no longer have a significant effect on earnings.

Using data from the 1995-2002 Current Population Survey, Card (2005) shows that the higher wages of second-generation immigrants in the US can be explained to a large extent by their higher education levels relative to the US natives and by their geographic distribution. Children of immigrants obtain above-average education levels even though their parents are on average less educated than the third and higher generation.

Chiswick and DebBurman (2004) find that second-generation immigrants in the US who have only one immigrant parent have slightly higher education levels than those with two immigrant parents, controlling for several socio-demographic characteristics that do not include parental

education. They attribute the overall higher education levels of second-generation immigrants (US-born individuals with at least one immigrant parent) to on average higher ability parents (due to immigrant self-selection) who are therefore “more inclined to invest in their children’s schooling than native-born parents” (p373).

The earnings advantage of the second generation is also evident in data from Israel analyzed in Epstein and Lecker (2001). The authors compare earnings across three generations of immigrants relative to native Israelis. They are able to identify individuals whose parents immigrated to Israel as young children and treat them as third-generation immigrants. The study finds that the advantage of immigrants’ children is not as pronounced among the grandchildren who do better than the immigrant generation in terms of earnings, but not as well as the second generation.

Few studies provide a theoretical framework for thinking about the transmission of outcomes between immigrants and their children. A model of bilateral altruism between fathers and sons in Epstein and Lecker (2001) generates a negative relationship between earnings of two consecutive generations. The authors use this model to explain the earnings advantage of second-generation immigrants in Israel. However, the same framework could be applied to the outcomes of the native population. It would therefore predict a similar intergenerational pattern in earnings whereby children from low income native families would put more effort into accumulating human capital in order to increase their earnings potential, while those from high income families, less effort. Canadian data on the contrary suggest that education choices of second-generation immigrants differ significantly from those of comparable third-and-higher-generation individuals.

Borjas (1993) links earnings outcomes of second-generation immigrants in the US to their parents’ decision to migrate. In this model, relative returns to skills between countries as well as the degree of intergenerational mobility play a crucial role in determining individuals’ decision to immigrate. The model assumes that only skills valued in the host country labour market are passed on to children. This implies that highly educated immigrants whose credentials are not fully recognized in the host economy will have low earnings post-migration and so will their descendants. This model does not allow for the possibility that children of well-educated immigrants will also be well educated. Since they will not face problems of credential recognition having been educated in Canada, they could earn higher incomes than their parents. The model also predicts that skilled parents will have no incentive to migrate to countries with relatively high intergenerational mobility since it will be more difficult for them to pass their skills, and hence earnings potential, to their children there. If one is willing to equate education level with skill level, however, this prediction is not easily reconciled with Canadian data. Canada has one of the highest rates of intergenerational mobility in earnings among

developed countries, higher than the US and UK (Fortin and Lefebvre 1998, Grawe 2004, Aydemir, Chen and Corak 2005), yet it attracts many well-educated immigrants.⁵

Caponi (2004) builds on the intergenerational model of migration in Borjas (1993) to explain the U-shape relationship between education and migration decision of Mexicans. He differentiates between intrinsic human capital, which immigrants accumulate in their source country, and marketable human capital, the fraction of intrinsic human capital that is used to generate earnings in the host country. The model includes a human capital production function and assumes that the intrinsic human capital of parents (as opposed to the marketable human capital) is used in the production of children's human capital. One prediction of the model which contrasts with Borjas (1993) is that the disadvantage faced by immigrant parents in the host country labour market due to imperfectly transferable human capital will not be passed on to the second generation.

3. Data and Definitions

Data – the Ethnic Diversity Survey

The analysis in this study is based on data from the master files of the Ethnic Diversity Survey (EDS).⁶ The data were collected through telephone interviews conducted in ten Canadian provinces between April and August of 2002. EDS is a post-censal survey, i.e. respondents were selected from among those who answered the “long form” of the 2001 Canadian Census questionnaire. Answers of EDS respondents to several Census questions collected in 2001 were also included in the EDS dataset. The target population for the survey includes individuals aged 15 and older who live in private dwellings. Individuals living on Indian reserves and those who reported Aboriginal ancestry or identity on the 2001 Census were not within the target population, although a small number of EDS respondents still report Aboriginal ancestry or identity. The total EDS sample consists of 42,476 individuals.

EDS is well suited to the analysis of educational outcomes across several generations of immigrants as it contains information on the birthplace of parents and grandparents as well as parental

⁵ Grawe (2004) conducts a cross-country comparison of intergenerational transmission of earnings. He finds that estimates of intergenerational mobility in the US are sensitive to the dataset used for the analysis. In particular, the difference in the average intergenerational mobility between Canada and the US is quite large when the US estimates are based on the Panel Study of Income Dynamics (PSID), but very small when based on the Original Cohort National Longitudinal Survey (NLS).

⁶ These files were accessed through the British Columbia Interuniversity Research Data Centre funded by Simon Fraser University, The University of British Columbia, The University of Victoria, the Social Sciences and Humanities Research Council and Statistics Canada.

education. Data on birthplace of grandparents are rarely available.⁷ This information allows the study of characteristics and outcomes of three generations of immigrants in relation to those of individuals whose families have lived in Canada for several generations. It also permits a more accurate assignment of generation status compared to previous studies, particularly in case of immigrants and second-generation immigrants. A detailed description of generation status definitions is presented in the next sub-section.

Analysis of intergenerational transmission of education requires data on educational outcomes of both the respondent and his or her parents. In the absence of such information, several previous studies on intergenerational transmission (of education and/or earnings) used instead the average outcomes of individuals whose age, ethnic origin and immigrant status made them potential parents of individuals in the study sample. These average outcomes were typically calculated from a separate data source. For example, if the study sample came from a census, the outcomes of potential parents were calculated from another census conducted 20 or 30 years earlier. This method obviously involves a certain amount of slippage, a problem that is bypassed in this study thanks to the information on parental education in EDS.

A further advantage of EDS is its sample design. Respondents were selected based on their answers to the 2001 Census questions regarding ethnic origin, birthplace and the birthplace of parents. This resulted in relatively large samples of the population groups of interest, particularly the second-generation immigrants. Further, the sample was constructed such that around two-thirds of the respondents report at least one ethnic origin other than British, French, Canadian, American, Australian or New Zealander. This ensured that a good mix of individuals with other European and non-European origins was selected. For example, the fraction of sampled second-generation individuals who report visible minority status is around 11.5% percent. Random sampling would have resulted in less than 7% being visible minorities. To the extent that decisions about investment in education differ across ethnic groups, it is not obvious that results from an analysis based on a sample of second-generation individuals from traditional European source countries will also hold for other ethnic groups. Given the changing ethnic composition of immigrant inflows, the future second generation in Canada will be an increasingly diverse group, raising the need for analysis based on data reflecting that diversity.

⁷ The US General Social Survey asks respondents whether or not their grandparents were born in the US. The sample size of the individual cross-sectional surveys is very small, however. One could obtain an overall sample comparable in size to EDS by pooling the 25 cross-sections of GSS spanning a 32-year period from 1972 to 2004.

Generation Status

Throughout this paper I use the term “immigrant generation” or simply “generation” to define the entire stock of individuals in the Canadian population who share common characteristics with respect to who within their family was born in versus outside Canada. In general, I refer to immigrants as the first generation, the children of immigrants as the second generation, the grandchildren of immigrants as the third generation, and individuals whose families have lived in Canada since before their grandparents were born as the fourth generation. I do not use the term generation to refer to either immigrant arrival cohort or age (birth) cohort.

The most commonly used definition of immigrant generation status classifies all foreign-born individuals as first generation, and those born in Canada to at least one foreign-born parent as the second generation.⁸ The remaining population is usually classified as the third and higher generation. Given information on birthplace of grandparents, one could extend this definition such that individuals born in Canada to two Canadian-born parents and at least one foreign-born grandparent would be the third generation, and individuals born in Canada to two parents and all four grandparents born in Canada the fourth generation. The EDS dataset contains a derived variable that defines generation status in this manner. I will refer to this definition of generation status as the “EDS definition”. In some studies, immigrants who arrived as young children, typically below 10 or 12 years of age, are classified as second rather than first generation.

The information on birthplace of grandparents in EDS allows me to create a more accurate definition that differentiates between immigrants and foreign-born individuals who are likely Canadian by birth, as well as between second-generation immigrants and third-and-higher-generation individuals who happen to have at least one foreign-born (but not immigrant) parent.⁹ I define the first generation as foreign-born individuals who arrived in Canada at age six or older and who have at least one immigrant parent (i.e. parent who is foreign-born and has at least one foreign-born parent of his/her own). Respondents are classified as second generation if they were born in Canada and have at least one immigrant parent, as well as those born outside Canada who have at least one immigrant parent and arrived at age five or younger. Individuals with at least one second-generation parent (i.e. parent who is born in Canada to at least one foreign-born parent of his/her own) are the third generation, regardless of their own place of birth. Finally, individuals with all four Canadian-born grandparents are the fourth generation, regardless of their own birthplace, or that of their parents.

⁸ A more restrictive version of the definition requires that both parents be foreign-born.

⁹ Card et al (2000) excluded foreign-born individuals with US parents from the immigrant group, classifying them instead as third and higher generation.

I classify immigrants who arrived before the age of six as second rather than first generation on the premise that the mere fact of being born outside Canada should not affect future investments in education when individuals complete all of their schooling in Canada. Lack of information on age at immigration of parents does not allow me to make the same adjustment to the third-generation group. Applying the definition proposed in this paper rather than the more common EDS definition does not significantly alter estimation results.

The Sample

The sample is restricted to respondents aged 25 and older at the time of the survey since most individuals may be expected to have completed their education by age 25. Individuals who reported Aboriginal ancestry or identity were excluded from analysis, as were temporary residents and individuals with invalid information on residential status in Canada. This reduced the sample size to 33,077.

A further sample restriction resulted from the data requirements in assigning generation status and missing information. Observations with missing information on one or more of the birthplaces of the respondent, the parents, all four grandparents and age at immigration (when applicable) were excluded from the sample if the available information was such that it was impossible to determine generation status. As a result 1,393 observations were dropped. Out of these excluded observations, 4.8% were dropped because of missing age at immigration, and the remaining due to missing birthplace information. Birthplace of at least one grandparent was the most common missing birthplace information, followed by the birthplace of at least one parent, and finally that of the respondent. Observations with missing information on birthplaces of family members or own age at immigration, when applicable, appear not to be a random draw from the population. In particular, they tend to have lower levels of education. Those excluded from the sample have 11.5 years of schooling on average, compared to an average of roughly 13 years for individuals in the sample.

4. Descriptive Overview

I begin with a descriptive overview of the four generation groups. The first row in Table 1 shows the fraction of each generation group in Canadian population aged 25 and older. The fourth generation forms around 36% of the population. Immigrants, or the first generation, account for nearly 23%, the second generation for 19%, and the remaining 22% are the third generation.

The four generation groups differ in many characteristics. Age composition is one of them. Immigrants are on average the oldest group, followed by the second generation, even though the latter

group has a relatively high proportion of individuals aged 25-34. Relative to the third and fourth generations, the first two generations are disproportionately more represented in the 65 and above age group.

The shift in national origin composition of successive immigrant cohorts is reflected in the proportion of visible minorities in each generation. Nearly 50% of the current immigrant population can be characterized as visible minorities, compared to around 7% of the second generation, and less than 1% of the third and higher generations.

Years of schooling is a derived variable from the 2001 Canadian Census which I update using information collected in EDS on the respondents' main activity in the 12 months prior to the survey. Specifically, I added one extra year for respondents who reported attending school as their main activity, regardless of whether attendance was full or part time. Second and third-generation individuals have similar average years of schooling, with the highest of 13.7 among second-generation men. In contrast, the fourth generation has an average of around 13 years of schooling.

The difference between generation groups is much more pronounced in educational attainment. The highest level of schooling is derived from information collected in EDS (see Appendix A for details on education variables in EDS). Immigrant men have the highest fraction of university graduates relative to other groups, roughly 32%, which declines gradually in subsequent generations. A similar pattern is observed among women, although the differences between generations are much smaller. Roughly 25% of immigrant women are university graduates, only slightly more than in the second and third generations. At the other extreme, the fraction of individuals who did not complete high school is the highest among the fourth generation, roughly 28% for both men and women. The fraction of individuals with less than a high school diploma is at least six percentage points lower among the remaining groups, with the exception of immigrant women.

Immigrants have the highest fraction of university-educated fathers, nearly twice as large as that in the fourth generation.¹⁰ They also have the lowest fraction of fathers with less than a high school diploma. The opposite is true of the fourth generation. Third-generation individuals have the highest fraction of university-educated mothers and the lowest fraction of mothers with less than a high school diploma. While differences in the fraction of mothers with university education are relatively small across generations, those in the fraction without a high school diploma are quite stark. Roughly 18 percentage points separate third-generation from fourth-generation men, a 15-percentage-point difference in case of women.

¹⁰ The fraction of parents with a university degree may be underestimated. See the education section in Appendix A for details.

There are two sources of information about respondents' labour market outcomes in the EDS dataset. One is the data collected in EDS in 2002. The other is data collected in the 2001 Census. Given that the number of questions regarding labour market activities is limited in EDS relative to the Census and the non-response rate in reporting income is quite high in EDS, it is worthwhile to present statistics based on information from both sources.¹¹ In order to make the two sets of estimates as comparable as possible, I restrict the sample to individuals aged 27 and older at the time of the EDS interview, or 25 and older in 2000, to obtain estimates based on the Census data.

Based on data collected in EDS, the fraction of men and women in the labour force is the highest in the third generation and the lowest among immigrants and second-generation individuals. The relatively high proportion of retirement-age individuals among the first and second-generation immigrants is at least in part responsible for this pattern, particularly in case of the latter group.¹² The fraction of unemployed individuals is the lowest in the second and third generations. The patterns evident in data collected in the 2001 Census give a similar ranking of generations although they suggest higher labour force participation, especially in the case of women. The cross-generation patterns in the fraction of individuals who are unemployed remain unchanged, except that unemployment incidence is highest among the fourth generation and not immigrants. These data also point to a higher fraction of each generation group being unemployed, with bigger differences between generations. For example, 3% of second-generation men and 2.5% of women are unemployed, compared to 5% of fourth-generation men and 4.7% of women.

Estimates of labour force activity particularly for women are substantially different when based on data collected in EDS versus the Census. Although they pertain to a different period and a slightly different sample, some differences in the types of questions asked are worth mentioning. In EDS, labour force activity can be derived from answers to a single question that asks respondents about their main activity in the 12 months prior to the survey. In contrast, the Census labour force activity variable pertains to the week (Saturday to Sunday) prior to Census Day (May 15, 2001) and was derived from responses to six questions. These questions asked respondents about hours worked and temporary lay-off or absence from work during the reference week, whether they were starting a new job within four weeks, whether they looked for paid work in the past four weeks, reasons why they were unable to start a job in the reference week and when they last worked for pay or were self-employed.

¹¹ The fraction of EDS respondents aged 25 and older for whom total personal income information is missing is 16.4% for men and 20.2% for women.

¹² Labour force participation rates among individuals aged 25-64 are much higher and more comparable across generation groups. They are in fact highest among second and third generation immigrants in that age group.

Thus individuals who in the EDS interview said that “looking for work” was their main activity in the previous 12 months were likely unemployed for several months. In contrast, the Census variable was more likely to capture also shorter spells of unemployment. Hence we could expect the EDS measure to underestimate unemployment incidence. Similarly, the labour force participation of women is likely underestimated with the EDS measure. For example, since taking care of one’s children is one response category to the EDS question on main activity, women working part-time and taking care of their children the rest of the time might be reporting the latter as their main activity.

Total personal income data collected in EDS pertain to the 12-month period prior to the survey. Income variables in the 2001 Census pertain to the calendar year 2000. Average annual income (for workers and non-workers) and weekly earnings (for workers) presented in Table 1 are reported in 2000 dollars.

Average annual incomes based on EDS data are highest for the second and third generations. The lowest average incomes are among immigrants. Although Census data yield income estimates that are somewhat lower for men and higher for women relative to those based on EDS, the cross generation patterns are the same. The Census data also allow me to calculate average weekly earnings for the year 2000 (calculated as the ratio of the sum of positive values of wages and salaries, non-farm self-employment income and farm income to weeks worked). Weekly earnings are highest among second and third-generation men. They are also highest in the second generation among women. On average, immigrants have weekly earnings that are comparable to those of the fourth generation.

Comparing average government transfers received by individuals in the four generation groups in the year 2000 shows that first and second-generation immigrants have highest average levels of government pensions.¹³ This may be explained by the relatively high proportion of retirement-age individuals in these two generations compared to the remaining two groups. The per capita employment insurance benefits and other government income (which includes social assistance payments) are lowest among the second and third generations.

Finally, I calculate the fraction of self-employed in each generation (incorporated and non-incorporated, with or without hired help) for individuals who were employed at some point between January 2000 and the Census reference week. The fraction of self-employed is highest among second-generation men at almost 20% and lowest among fourth-generation men. The fraction of self-employed women is lower than that of men. The highest fraction is among the third generation, over 13%, the lowest among fourth-generation women.

¹³ Mean government transfers are calculated for the entire generation group, not just individuals who report having received such payments in 2000.

Thus far, the second and third generations appear to be very much alike. Both have on average more education than the fourth generation, which seems to translate into better labour market outcomes. Treating third-and-higher-generation individuals as a homogeneous group therefore masks important intergenerational differences. Taking into account compositional differences among the generation groups, however, reveals important dissimilarities between second-generation immigrants and the remaining population.

5. Econometric Specification

Table 1 revealed intergenerational differences in mean characteristics that are likely to explain at least some of the observed differences in educational outcomes. These characteristics are age, parental education and ethnic origin. All of these are exogenous to the human capital investment decision of any given individual. For the purposes of the initial analysis presented in this paper, I focus on controlling for intergenerational differences along these three dimensions.

Table 2 reveals that years of schooling increase in younger age cohorts for all generation groups, with rising proportions of university educated individuals and falling proportions of high school dropouts. Groups with higher fractions of younger individuals could therefore be expected to have higher average education levels.

Family background is an important, if not the most important determinant of a person's educational attainment (e.g. Haveman and Wolfe 1995). One measure of family background, which varies considerably by generation status as shown in Table 1, is parental educational attainment. In fact, given that immigrants in Canada as a group are on average better educated than the rest of the population (see also Schaafsma and Sweetman 2001), one might expect that their children would also be better educated than the fourth generation. Adjusting for differences in parental education is therefore likely to explain at least part of the gap in education levels between the different generation groups.

Finally, given the changing national origin mix of successive immigrant cohorts over the 20th century, the ethnic composition of the four generation groups is vastly different, with the fourth generation being predominantly of European descent, and the first generation being much more diverse with a large fraction of individuals of non-European descent. In the context of investment in education, ethnic origin can capture several different factors like different returns to education (e.g. Sweetman and Dicks 1999), different fertility choices and family size (e.g. Chiswick 1988), differences in unobserved skills due to the nature of self-selection of immigrants, and different attitudes towards education. Ethnic origin indicators will capture these differences to the extent that

such differences persist across generations and as long as the type of selection of immigrants from a given source country has not changed over time. If it has, the ethnic indicator may be representing very different things for the first-generation immigrants than for individuals with the same ancestry in higher generations.

In order to assess the differences in educational outcomes across immigrant generations, I compare the four generation groups on three measures of educational attainment: years of schooling, the probability of having completed high school or more, and the probability of having completed a university degree.¹⁴ I estimate the following descriptive regression by least squares in case of years of schooling and probit estimation in case of the two remaining measures of educational attainment:

$$S_i = \alpha + \gamma_1 \text{GEN1}_i + \gamma_2 \text{GEN2}_i + \gamma_3 \text{GEN3}_i + \sum_{j=1}^n \phi_j \text{AGE}_{ij} + \sum_{j=1}^p \pi_j^F \text{EDUC}_{ij} + \sum_{j=1}^p \pi_j^M \text{EDUC}_{ij} + \sum_{j=1}^k \theta_j \text{ETH}_{ij} + \varepsilon_i \quad (1)$$

where S_i is a measure of educational attainment of person i . GEN1_i through GEN3_i are indicators of generation status, where GEN1_i takes the value one if the respondent is an immigrant, GEN2_i takes the value one if the respondent is a second-generation immigrant and GEN3_i takes the value one if the respondent is a third-generation immigrant. The remaining right-hand-side variables are indicators for ten-year age groups (AGE_{ij}), indicators for highest level of schooling completed by the respondent's father and mother (EDUC_{ij}), and indicators for respondent's ethnic origin (ETH_{ij}). In probit estimation, I substitute broad geographic regions for the smaller ethnic origin groups as several ethnic origin indicators are perfect predictors of the left-hand-side variable (see Appendix A for more details on the parental education and ethnic ancestry indicators).¹⁵

Regression Results

Basic Specification

In this section, I concentrate discussion on results pertaining to second and third-generation immigrants, although results for the first generation are presented for reference. Estimation results are presented in Tables 3 and 4. Column 2 of Table 3 shows the age-adjusted gap in mean years of schooling among three generations of immigrants and the fourth generation. Controlling for parental education (column 3) reduces the gap relative to the fourth generation for all three generation groups. In fact, in case of the third generation, the gap is no longer statistically significant. Controlling further

¹⁴ The probability of having completed at least high school means that a person listed high school or any post secondary education, completed or not, as their highest level of schooling. In fact, some individuals who report having at least some post-secondary education may not have graduated from high school.

¹⁵ Substituting regional dummies instead of ethnic origin dummies into years of schooling regressions had little effect on the estimated second and third generation coefficients.

for ethnic origin has hardly any effect on the magnitude of the estimated coefficients on generation status.

Table 4 presents probit estimation results. I report marginal effects evaluated for a second-generation individual aged 25-34, of East or Southeast Asian origin, who has both parents with less than a high school diploma.¹⁶ Panel A of Table 4 presents marginal effects on the probability of having completed at least a high school diploma. Conditioning on parental education (column 3) raises the gap in age-adjusted probabilities between second and fourth-generation individuals by roughly 3 percentage points, but has little effect on the third generation coefficient. Ethnic ancestry explains part of the gap for men, less so for women. Conditional on age, parental education and ethnic origin, second-generation men are 5.5 percentage points more likely to have graduated from high school than comparable fourth-generation individuals. The corresponding difference for women is 7.6 percentage points. A small but statistically significant gap in the third generation remains only for women.

Panel B of Table 4 shows marginal effects on the probability of holding a university degree. This time, parental education explains roughly half of the age-adjusted gap between the second and fourth generations. After adding controls for ethnic origin, this gap is no longer significant for men but remains significant at 4 percentage points for women. In case of the third generation, conditional on age, parental education and ethnicity, third-generation men are actually 5 percentage points less likely to hold a university degree than fourth-generation men, but there is no significant difference between third and fourth-generation women.

Several important conclusions emerge from Tables 3 and 4. Compositional differences in age and parental education appear to explain the observed differences in educational outcomes between the third and fourth generations. In contrast, they are not enough to explain the gap between second-generation immigrants and the fourth generation. Gender appears to play a role in intergenerational transmission of education. There is a larger gap between second and fourth-generation women than is the case for men. Further, there is still some evidence of a gap in educational attainment between third and fourth-generation women, but not men.

Parental Education

Equation 1 restricts the effect of parental education on children's educational attainment to be the same across generation groups. Comparing results in columns 2 and 3 from both panels of Table 4

¹⁶ Evaluating the marginal effects at mean values of all right-hand-side variables yielded qualitatively similar results. The relevant marginal effects on the probability of having completed at least high school were for the most part slightly larger when evaluated at the mean.

suggests there might be bigger differences in educational attainment between the second and fourth generations at the lower end of the parental education distribution. This further implies that the relationship between the education of parents and children may vary by generation. I re-estimate Equation 1 with years of schooling as the dependent variable allowing the effect of parental education to vary with generation status. Table 5 reports estimated coefficients on indicators for generation status, parental education and the full set of generation-parental education interactions. At the very least, one might expect the parental education profiles to differ between the second and fourth generations. Individual educational attainment is determined by both individual demand and supply side factors. If nothing else, these supply side factors are likely to be different for second-generation immigrants in Canada than they were for their parents who likely completed much of their education in their source country.¹⁷

I test whether the parental education profiles (separately for father's and mother's education) in the first three immigrant generations have the same shape as those in the fourth generation. In case of second-generation men and their fathers, and second-generation women and their mothers, I can reject that null at conventional significance levels.¹⁸ Estimated coefficients presented in Table 5 suggest that the biggest difference in years of schooling between second and fourth-generation individuals in favour of the second generation is found among individuals whose parents have not completed high school.¹⁹ These individuals are a sizable group. As indicated in Table 1, over 50% of second-generation immigrants and over 60% of fourth-generation individuals have fathers who never completed high school. Similar fractions have mothers with less than a high school education. On the other hand, there appears to be no significant difference between individuals with well-educated parents across the different generation groups.

The null of parental education profiles matching those in the fourth generation can also be rejected in case of the father's education for immigrant women and mother's education for third-

¹⁷ This is more likely for immigrants who arrived in Canada with small children. At least some of the immigrant parents of second generation individuals born in Canada have themselves immigrated at a young age and completed their education in Canada.

¹⁸ The F-test statistics equal 4.54 and 3.03 and are distributed as $F(8,14488)$ and $F(8,16958)$, respectively. The p-value of the first test is zero to four decimal places and 0.0021 for the second.

¹⁹ Some individuals who were unsure about the exact highest level of schooling of their parents were prompted for an approximate response, as described in Appendix A. Two separate categories created for such responses are "degree or diploma from college or university" and "some college or university". The estimated interaction effects of these categories with generation status indicators are in most cases large in magnitude and statistically significant, even though the cell sizes represented by these indicators are quite small. It is unclear what interpretation can be attached to them. Second generation immigrants may have difficulty classifying their parents' highest level of schooling simply because they are unfamiliar with the education system in their parents' source country. This is less likely to be an issue for individuals in any other generation group. Consequently, I repeated tests of the hypothesis that the parental education profiles have the same shape across generations excluding interaction terms corresponding to the two education categories listed above. The test results reported in this section are robust to this exclusion.

generation women. In the latter case, however, the test can only be rejected at the 10% level of significance.²⁰

Ethnic Origin

Results in Tables 3 and 4 indicate that controlling for ethnic origin does not change the magnitude of the gap in educational outcomes between the second and fourth generations by much. However, many ethnic origins represented in the first and second generation are not present at all in the fourth and higher generation. I therefore re-estimated Equation 1 with years of schooling as the dependent variable on the sample of ethnic groups represented in at least the first three generations and again on the sample of ethnic groups represented in all four generations. The second restriction eliminated many non-European ethnic origin groups, e.g. Chinese and East Indian, from the sample. Neither restriction had much effect on the magnitude of the second generation coefficient. This suggests that the relatively higher education levels of second-generation immigrants may be observed across many ethnic groups.

To further explore this idea I restricted individuals in the first three generations to a particular ethnic group while keeping the entire fourth generation sample and re-estimated the differences in years of schooling for ethnic groups with sufficiently large samples in EDS. Generation status coefficients were estimated for cell counts of a minimum of 20 observations. Results are presented in Table 6.

Conditional on parental education and age, there is essentially no difference in average schooling between the third and fourth generations across the ethnic groups considered. For men, the estimated coefficients are by and large small and insignificant. For women, the coefficients tend to be larger in magnitude, but also insignificant. This may be due to small sample sizes, especially for most of the non-European origin groups. The Japanese are one notable exception with third-generation individuals of Japanese origin showing significantly higher average years of schooling compared to the fourth generation.

In contrast, second-generation individuals tend to have on average more years of schooling relative to the fourth generation across most of the ethnic groups considered. This is also true of groups in which the immigrant generation has significantly lower levels of education, although this may be an artifact of changing characteristics of immigrants from the same source country over time.

²⁰ The F-test statistics equal 2.70 and 1.86, respectively, and are both distributed as F(8,16958). The p-value of the test is 0.0058 for immigrant women and 0.0619 for third generation women. These results are robust to different specifications of the test (see footnote 19 for details).

A gap of between a half and two years of schooling is observed between second-generation immigrants from several European and Asian origins and the fourth generation. Some of these coefficients are quite large in magnitude but not statistically significant. Again, this may be partly due to the relatively small sample sizes.

Some of the results in Table 6 are surprising. If positive self-selection of immigrants is the main force behind the above-average attainment of their children, then it is difficult to imagine why immigrants from seemingly similar developed countries would self-select differently. For example, it is not obvious why we observe a large gap between second and fourth-generation individuals of English, Austrian or Finnish origin, but not Dutch or Danish.

It will be instructive to decompose the broad and rather vague “ethnic effect” into its underlying effects. These include observable differences between source countries and cultures as well as differences in characteristics of the communities that second-generation immigrants from various ethnic backgrounds grew up in. This might explain why second-generation immigrants with seemingly similar ancestries appear to make different investments in schooling.

Foreign Parentage

Previous studies have commonly used two basic definitions of second-generation immigrants: individuals born in the host country with two foreign-born parents, or alternatively with at least one foreign-born parent. However, comparing individuals with two versus one immigrant parent can be an informative exercise.²¹ I therefore estimate Equation 1 again for all three measures of educational attainment except this time instead of one indicator for second-generation status I introduce four new ones. I divide the second-generation immigrants into the following subgroups: (1) individuals with two immigrant parents (both parents and all four grandparents born outside Canada), (2) individuals with an immigrant mother and a third-and-higher-generation father (Canadian-born father whose parents were also born in Canada), (3) individuals with an immigrant father and a third-and-higher-generation mother, and (4) all remaining second-generation individuals. The latter group includes individuals with missing information on the birthplace of at least one parent or grandparent, which prevents classification into one of the previous three groups. Results are reported in Tables 7 and 8.

Column 1 in Table 7 reports the gap in mean years of schooling between the four subgroups of second-generation individuals and the fourth generation. Men with two immigrant parents have on

²¹ A similar idea was used in Benjamin and Baker (1997) who compare labour market outcomes of couples in which both spouses are immigrants, those where only one spouse is an immigrant and native-born couples to provide support for the family investment hypothesis.

average close to 1 year of schooling more than fourth-generation men. The corresponding gap for women is 0.9 years of schooling. Second-generation individuals with only one immigrant parent also have on average more years of schooling than the fourth generation, although the gap is smaller. Men have slightly more schooling if the mother is an immigrant rather than the father. The opposite is true of women. These findings are in line with the mean years of schooling presented for subgroups of second-generation immigrants in Aydemir, Chen and Corak (2005) and calculated on much larger samples from the 2001 Canadian Census. In the latter study the second generation is split into three groups: individuals with two immigrant parents, with an immigrant father, and with an immigrant mother. Using this same definition, Chiswick and DebBurman (2004) find a reversed pattern in US data; second-generation men with two immigrant parents have slightly less education than those with one immigrant parent.²²

Column 3 of Table 7 shows that after controlling for age, parental education and ethnic origin more than 1 year of schooling separates second-generation immigrants with two immigrant parents from comparable fourth-generation individuals. In contrast, no significant difference remains between the latter group and individuals with only one immigrant parent. As for the fourth subgroup, a significant gap remains, although it is only about half the magnitude of the gap for individuals with two immigrant parents.

A similar pattern is present in the probability of completing at least high school and the probability of holding a university degree as seen in Table 8. Controlling for age, parental education and ethnicity, the probability of completing at least high school is 8 percentage points higher for second-generation men with two immigrant parents than for fourth-generation men, and nearly 10 percentage points higher for women. There is no significant difference between second-generation immigrants with only one immigrant parent and the fourth generation, but a small gap remains for the fourth subgroup. Second-generation men with two immigrant parents have a 5-percentage-points higher probability of holding a university degree than fourth-generation men. The corresponding difference for women is 7.5 percentage points. There is no significant difference between the remaining second-generation individuals and the fourth generation.

Results presented in this study raise several questions. Perhaps the most important one is why children of immigrants pursue on average more education than third-and-higher-generation individuals

²² Chiswick and DebBurman control for several demographic characteristics (excluding parental education) while Aydemir, Chen and Corak do not. This alone is not likely to reverse the ordering of the relative gap in years of schooling for subgroups of the second generation.

from similar backgrounds? Several explanations are possible. Assume that ability is perfectly transmitted from parents to children. Educational attainment is determined by one's ability and country-specific costs of education. In any given country, average education levels of a birth cohort could then be explained by parental education provided that both parents and children are educated in that same country. As long as education in Canada is more accessible and/or affordable than it is in immigrant source countries, then for a given ability level, immigrant parents will have less education than third-and-higher-generation parents. Further, if the average ability level of immigrants is at least as high as that of the third and higher generation, then children of immigrants in Canada will have more education than fourth-generation children, controlling for parental education.

This explanation is consistent with several main results in this study. For example, university-educated immigrants would likely have had university-educated children had they remained in their source country. Children from low-education, likely poorer family backgrounds will be more restricted in their human capital investment by supply side factors in their source country. This may account for the observation that the unexplained difference between children of immigrants and the fourth generation is driven by individuals at the lower end of the parental education distribution.

It may also explain the difference between children from families with two immigrant parents versus one immigrant parent. Immigrant parents with third-and-higher-generation spouses may have immigrated at a relatively young age and completed their highest level of schooling in Canada.²³ Their education level will then reflect family ability passed on to children in the same way as the education of third-and-higher-generation parents. On the other hand, immigrant parents with immigrant spouses are more likely to have arrived together as a family and at an older age. It is more likely that they will have already completed their highest level of schooling in their source country prior to emigrating. Therefore, their education will not accurately reflect the level of education their children are likely to achieve in Canada, given family ability levels. This may explain why there is no difference in educational attainment between fourth-generation and second-generation individuals with one immigrant and one third-and-higher-generation parent, controlling for parental education, while a significant difference remains between children of two immigrant parents and the fourth generation.

An alternative or complementary explanation is one of immigrant self-selection. A standard prediction of Roy's model of self-selection applied to immigration is that those who choose to emigrate face higher returns to their skills in the host country (see e.g. Borjas 1993). Assuming that

²³ Aydemir, Chen and Corak (2005) find that among married immigrant men, 43.6% of those who arrived at age 11 or younger are married to a native (third and higher generation), and 30.6% are married to an immigrant (immigrant women who arrived young are more likely to marry another immigrant than are men). Among immigrant men who arrived at age 12 or older, only 10.8% are married to a native, and 82.3% are married to an immigrant.

parents are altruistic and maximize household or family income, individuals could be willing to migrate even if their personal net returns are non-positive. An intermediate step between unobserved skills and earnings generation is necessary, i.e. education or human capital production (as in e.g. Caponi 2004). If parents can invest in their children's human capital to increase their lifetime earnings, they could choose to immigrate at a potentially high cost to themselves as long as their children's outcomes would compensate for these costs. Thus immigrants could be making higher than average investments in their children's human capital, particularly if they themselves had to incur high immigration costs, otherwise the move would not have been worth it.

It is not unreasonable to expect that families with two immigrant parents faced higher immigration costs than families with only one immigrant parent, all else equal. This suggests that second-generation individuals with two immigrant parents may be expected to have on average higher education levels than those with only one immigrant parent. Similarly, third-generation immigrants may have lower education levels than second-generation immigrants since their parents faced no costs of immigration. Results in this study support these predictions. A more detailed evaluation of these explanations is left to further research.

6. Conclusions and Future Research

In this paper, I characterize and compare the educational attainment of immigrants, second-generation and third-generation immigrants in Canada. This analysis reveals several surprising patterns. Both second and third-generation immigrants have on average more schooling than the remaining native-born population. In case of third-generation immigrants, this gap can be explained almost entirely by differences in parental education. In contrast, a positive and significant gap in the amount of schooling remains between the second and fourth generations, even after controlling for age, parental education and ethnic composition. This is particularly true of second-generation individuals with two immigrant parents, but not of individuals with one immigrant and one third-and-higher-generation parent. Further, this gap is concentrated among individuals from low-education backgrounds. The overall cross-generational pattern is common to many ethnic origin groups.

The relationship between the characteristics of immigrants and the outcomes of their children is not yet fully understood. However, something about having immigrant parents translates into higher than average educational attainment for second-generation immigrants as a group. This advantage is then reflected in educational outcomes of subsequent generations through known channels, mainly parental education. Although there is some evidence of mean reversion in the third generation, immigration has thus far had a positive impact on average education levels in the Canadian population

as a whole. The question of whether this positive long-lasting impact will be characteristic of more recent immigrant cohorts remains an important open question. The answer lies in understanding what exactly drives the above-average outcomes of current second-generation immigrants. I will undertake a more detailed exploration of these questions in future work.

References

- Aydemir, A., W.H. Chen and M. Corak (2005) "Intergenerational Earnings Mobility Among the Children of Canadian Immigrants" paper presented at the Canadian Economics Association meetings, Hamilton.
- Baker, M. and D. Benjamin (1994) "The Performance of Immigrants in the Canadian Labor Market" *Journal of Labor Economics* 12(3): 369-405.
- Baker, M. and D. Benjamin (1997) "The Role of the Family in Immigrants' Labor-Market Activity: An Evaluation of Alternative Explanations" *The American Economic Review* 87(4): 705-727.
- Borjas, G.J. (1993) "The Intergenerational Mobility of Immigrants" *Journal of Labor Economics* 11(1): 113-135.
- Borjas, G.J. (1994) "Long-Run Convergence of Ethnic Skill Differentials: The Children And Grandchildren of the Great Migration" *Industrial and Labor Relations Review* 47(4): 553-573.
- Borjas, G.J. (1995) "Assimilation and Changes in Cohort Quality Revisited: What Happened to Immigrant Earnings in the 1980s?" *Journal of Labor Economics* 13(2): 201-245.
- Caponi, V. (2004) "Heterogeneous Human Capital and Migration: Who Migrates from Mexico to the US?" University of Western Ontario, mimeo.
- Card, D., J. DiNardo, and E. Estes (2000) "The More Things Change: Immigrants and the Children of Immigrants in the 1940s, 1970s, and the 1990s" in Issues in the Economics of Immigration, edited by G. J. Borjas (The University of Chicago Press).
- Card, D. (2005) "Is the New Immigration Really So Bad?" NBER Working Paper No. 11547.
- Chiswick, B. (1988) "Differences in Education and Earnings Across Racial and Ethnic Groups: Tastes, Discrimination, and Investments in Child Quality" *The Quarterly Journal of Economics* August: 571-597.
- Chiswick B. and N. DebBurman (2004) "Educational Attainment: Analysis by Immigrant Generation" *Economics of Education Review* 23: 361-379.
- Corak, M. (2004) "Do Poor Children Become Poor Adults? Lessons for Public Policy from a Cross Country Comparison of Generational Earnings Mobility" paper presented at the workshop on

- “The Welfare State in an Intertemporal Perspective” organized by CRISS – the Network for the Economics of the Welfare State and the J. Monnet Chair in European Macroeconomics at the University of Siena, Certosa di Pontignano.
- Corak, M. (2005) “Equality of Opportunity and Inequality Across the Generations: Challenges Ahead” *Policy Options* March-April.
- Duleep, H.O. and M. Regets (1997) “The Decline in Immigrant Entry Earnings: Less Transferable Skills or Lower Ability?” *The Quarterly Review of Economics and Finance* 37, special issue: 189-208.
- Duleep, H.O. and M. Regets (2002). “The Elusive Concept of Immigrant Quality: Evidence from 1970-1990” IZA Discussion Paper 631.
- Epstein, G. and T. Lecker (2001) “Multi-Generation Model of Immigrant Earnings: Theory and Application” IZA discussion paper No. 275.
- Fortin, N.M. and S. Lefebvre (1998) “Intergenerational Income Mobility in Canada” in Labour Markets, Social Institutions, and the Future of Canada’s Children edited by M. Corak (Statistics Canada).
- Gang, I. and K.F. Zimmermann (2000) “Is Child Like a Parent? Educational Attainment and Ethnic Origin” *Journal of Human Resources* 35(3): 550-569.
- Grawe, N. (2004) “Intergenerational Mobility for Whom? The Experience of High- and Low-Earning Sons in International Perspective” in Generational Income Mobility in North America and Europe edited by M. Corak (Cambridge: Cambridge University Press).
- Green, D.A. and C. Worswick (2004) “Immigrant Earnings Profiles in the Presence of Human Capital Investment: Measuring Cohort and Macro Effects” University of British Columbia, mimeo.
- Hansen, J. and M. Kucera (2004) “The Educational Attainment of Second Generation Immigrants in Canada: Evidence from SLID” Concordia University, mimeo.
- Haveman, R. and B. Wolfe (1995) “The Determinants of Children’s Attainments: A Review of Methods and Findings” *Journal of Economic Literature* 33(4): 1829-1978.
- Parent, D. (2004) “Education of Second Generation French-Canadian Immigrants in the United States” paper presented at the TARGET Labour Group workshop, University of British Columbia, November 26, 2004.
- Riphahn, R.T. (2003) “Cohort Effects in the Educational Attainment of Second Generation Immigrants in Germany: An Analysis of Census Data” *Journal of Population Economics* 16: 711-737.
- Schaafsma, J. and A. Sweetman (2001) “Immigrant Earnings: Age at Immigration Matters” *Canadian Journal of Economics* 34(4): 1066-1099.
- Statistics Canada (2003) “The Changing Profile of Canada’s Labour Force” Catalogue No. 96F0030XIE2001009, February.

Sweetman, A. and G. Dicks (1999) "Education and Ethnicity in Canada: An Intergenerational Perspective" *The Journal of Human Resources* 34 (4): 668-696.

Van Ours, J.C. and J. Veenman (2001) "The Educational Attainment of Second Generation Immigrants in the Netherlands" IZA discussion paper 297.

Worswick, C. (2004) "Adaptation and Inequality: Children of Immigrants in Canadian Schools" *Canadian Journal of Economics* 37(1): 53-77.

Table 1 Characteristics of Canadian Population Aged 25 and Older by Immigrant Generation Status

	Males				Females			
	Immigrants	Second Generation	Third Generation	Fourth Generation	Immigrants	Second Generation	Third Generation	Fourth Generation
Fraction of population aged 25 and older	0.227	0.193	0.212	0.368	0.228	0.193	0.220	0.359
Sample size*	3,798	5,417	2,564	2,846	4,261	6,326	3,280	3,222
Mean age	52.1	49.4	46.8	47.3	51.8	51.4	47.8	48.3
Fraction in age groups:								
25-34	0.133	0.229	0.189	0.241	0.148	0.211	0.181	0.215
35-44	0.221	0.232	0.269	0.229	0.225	0.215	0.268	0.238
45-54	0.222	0.186	0.283	0.221	0.216	0.175	0.273	0.227
55-64	0.189	0.126	0.162	0.159	0.178	0.119	0.153	0.145
65+	0.235	0.227	0.096	0.149	0.233	0.281	0.125	0.175
Fraction visible minority	0.487	0.073	0.007	0.002	0.503	0.064	0.008	0.003
Years of schooling	13.5	13.7	13.5	13	12.7	13.4	13.5	12.8
Fraction with educational attainment:								
university degree	0.323	0.256	0.208	0.208	0.246	0.235	0.235	0.187
post-secondary	0.263	0.328	0.334	0.295	0.273	0.346	0.345	0.316
high school	0.200	0.201	0.256	0.214	0.221	0.216	0.253	0.221
no high school	0.214	0.215	0.202	0.282	0.260	0.204	0.167	0.276
Fraction with father's educational attainment:								
university degree	0.167	0.141	0.123	0.088	0.162	0.125	0.117	0.083
post-secondary	0.117	0.141	0.105	0.099	0.146	0.168	0.127	0.108
high school	0.195	0.188	0.244	0.168	0.203	0.169	0.223	0.147
no high school	0.521	0.530	0.528	0.644	0.488	0.538	0.533	0.663
Fraction with mother's educational attainment:								
university degree	0.082	0.097	0.095	0.069	0.083	0.074	0.095	0.067
post-secondary	0.078	0.139	0.158	0.120	0.089	0.156	0.180	0.133
high school	0.208	0.273	0.354	0.243	0.203	0.248	0.264	0.187
no high school	0.632	0.491	0.394	0.569	0.625	0.522	0.462	0.614

Table 1 cont'd

	Males				Females			
	Immigrants	Second Generation	Third Generation	Fourth Generation	Immigrants	Second Generation	Third Generation	Fourth Generation
Labour Force outcomes based on data collected in EDS:								
Fraction employed	0.659	0.695	0.785	0.724	0.485	0.502	0.582	0.544
Fraction unemployed	0.035	0.020	0.020	0.025	0.020	0.011	0.015	0.017
Fraction out of LF	0.307	0.285	0.195	0.251	0.495	0.487	0.404	0.439
Mean income (2000\$)	40,290	49,410	49,880	42,160	20,790	27,270	26,570	23,490
Median income (2000\$)	32,910	41,140	42,590	34,850	15,490	24,200	24,200	19,360
Labour Force outcomes based on data collected in the 2001 Census:								
Fraction employed	0.653	0.706	0.797	0.720	0.511	0.559	0.657	0.579
Fraction unemployed	0.044	0.029	0.033	0.050	0.044	0.025	0.027	0.047
Fraction not in LF	0.303	0.265	0.170	0.230	0.445	0.416	0.316	0.375
Mean income	37,030	44,390	46,840	40,430	22,610	27,600	27,320	24,350
Median income	28,410	37,530	39,010	34,320	16,390	22,650	22,310	19,500
Fraction full-time	91.5	91.0	95.0	92.8	77.5	73.8	71.1	78.4
Avg. weekly earnings	930	1030	1040	950	650	750	700	660
Government pension	2,660	2,840	1,410	2,020	2,460	3,300	1,620	2,040
Employment insurance benefits	270	280	280	540	270	320	310	460
Other government income**	880	690	640	920	640	620	600	660
Fraction self-employed	0.185	0.198	0.183	0.155	0.109	0.119	0.134	0.099

* Estimates of means and proportions of variables other than age are based on sample sizes smaller than those reported in row 2. This is due to missing information, and in case of estimates calculated from the 2001 Census, also due to the sample being restricted to individuals aged 27 and older in 2002.

** "Other government income" does not include payments received under the Canada Child Tax Benefits and National Child Benefit Supplement.

Table 2 Educational Attainment by Immigrant Generation and Age Group

	Males				Females			
	Immigrants	Second Generation	Third Generation	Fourth Generation	Immigrants	Second Generation	Third Generation	Fourth Generation
Mean years of schooling								
Age group:								
25-34	14.8	15.1	14.7	14.3	14.6	15.3	15.1	14.8
35-44	14.7	14.5	14.0	13.6	14.2	14.4	13.8	13.6
45-54	14.0	14.3	13.4	13.3	13.4	13.8	13.7	13.3
55-64	13.3	13.1	12.7	12.2	12.0	12.9	12.5	11.3
65+	11.1	11.2	11.1	10.3	9.9	11.4	11.3	9.8
Fraction with university degree								
Age group:								
25-34	0.429	0.366	0.275	0.247	0.395	0.387	0.372	0.293
35-44	0.393	0.274	0.197	0.190	0.317	0.278	0.234	0.210
45-54	0.348	0.274	0.206	0.221	0.281	0.255	0.244	0.177
55-64	0.324	0.216	0.203	0.233	0.189	0.186	0.192	0.134
65+	0.165	0.131	0.116	0.128	0.085	0.094	0.075	0.081
Fraction without high school diploma								
Age group:								
25-34	0.093	0.045	0.083	0.126	0.121	0.027	0.036	0.093
35-44	0.114	0.086	0.112	0.195	0.148	0.077	0.117	0.174
45-54	0.172	0.152	0.202	0.240	0.169	0.115	0.126	0.186
55-64	0.248	0.293	0.313	0.380	0.301	0.256	0.277	0.457
65+	0.402	0.529	0.497	0.627	0.519	0.468	0.418	0.611

Table 3 Years of Schooling by Immigrant Generation Relative to the Fourth Generation

	Males				Females			
	1	2	3	4	1	2	3	4
Generation 1	0.496 (0.128)	0.885 (0.122)	0.466 (0.116)	0.471 (0.153)	-0.074 (0.124)	0.256 (0.112)	-0.128 (0.105)	0.062 (0.126)
Generation 2	0.725 (0.115)	0.930 (0.107)	0.668 (0.101)	0.731 (0.122)	0.665 (0.104)	0.969 (0.093)	0.718 (0.086)	0.772 (0.102)
Generation 3	0.527 (0.134)	0.410 (0.125)	-0.005 (0.115)	-0.049 (0.130)	0.716 (0.115)	0.610 (0.103)	0.180 (0.095)	0.113 (0.101)
Indicators:								
Age group		x	x	x		x	x	x
Parental education			x	x			x	x
Ethnic origin				x				x
Sample size	14,617	14,617	14,617	14,617	17,087	17,087	17,087	17,087

Table 4 Educational Attainment by Immigrant Generation Relative to the Fourth Generation

	Males				Females			
	1	2	3	4	1	2	3	4
Panel A: High school graduate or higher								
Generation 1	0.057 (0.011)	0.037 (0.005)	0.064 (0.010)	0.043 (0.012)	0.013 (0.011)	0.013 (0.003)	0.010 (0.008)	0.021 (0.010)
Generation 2	0.068 (0.014)	0.057 (0.009)	0.086 (0.015)	0.055 (0.016)	0.072 (0.013)	0.054 (0.007)	0.087 (0.012)	0.076 (0.016)
Generation 3	0.067 (0.013)	0.026 (0.006)	0.026 (0.013)	0.006 (0.013)	0.089 (0.010)	0.025 (0.004)	0.035 (0.009)	0.024 (0.009)
Panel B: University degree								
Generation 1	0.125 (0.017)	0.159 (0.018)	0.078 (0.015)	0.022 (0.021)	0.066 (0.015)	0.106 (0.017)	0.038 (0.014)	-0.022 (0.020)
Generation 2	0.047 (0.013)	0.065 (0.015)	0.026 (0.010)	0.020 (0.017)	0.048 (0.012)	0.082 (0.015)	0.042 (0.011)	0.041 (0.017)
Generation 3	-0.001 (0.017)	-0.005 (0.019)	-0.035 (0.011)	-0.050 (0.017)	0.054 (0.016)	0.063 (0.019)	0.006 (0.014)	0.006 (0.019)
Indicators:								
Age group		x	x	x		x	x	x
Parental education			x	x			x	x
Ethnic origin				x				x
Sample size	14,346	14,346	14,346	14,346	16,827	16,827	16,827	16,827

Table 5 Generation-Specific Effect of Parental Education on Years of Schooling

Panel A: Males

		Parental Education		Father		Mother		Father X Gen1		Father X Gen2		Father X Gen3		Mother X Gen1		Mother X Gen2		Mother X Gen3			
Gen 1	1.049 (0.289)	Graduate degree	2.290 (0.559)	1.025 (0.785)	-0.283 (0.641)	0.073 (0.640)	-0.562 (0.767)	-0.752 (0.882)	-0.629 (0.926)	0.125 (3.056)	0.125 (1.221)	0.125 (3.056)	0.125 (1.221)	0.125 (3.056)	0.125 (1.221)	0.125 (3.056)	0.125 (1.221)	0.125 (3.056)	0.125 (1.221)	0.125 (3.056)	
Gen 2	0.024 (0.275)	University	1.878 (0.437)	0.789 (0.345)	-0.704 (0.515)	-0.379 (0.531)	-0.698 (0.565)	-0.921 (0.450)	-0.575 (0.435)	0.088 (1.195)	0.088 (1.195)	0.088 (1.195)	0.088 (1.195)	0.088 (1.195)	0.088 (1.195)	0.088 (1.195)	0.088 (1.195)	0.088 (1.195)	0.088 (1.195)	0.088 (1.195)	
Gen 3	-0.031 (0.272)	College	0.918 (0.350)	0.246 (0.389)	-0.305 (0.470)	-0.275 (0.434)	-0.521 (0.523)	-1.076 (0.533)	-0.020 (0.463)	0.084 (0.527)	0.084 (0.527)	0.084 (0.527)	0.084 (0.527)	0.084 (0.527)	0.084 (0.527)	0.084 (0.527)	0.084 (0.527)	0.084 (0.527)	0.084 (0.527)	0.084 (0.527)	
		College or univ.	2.197 (0.552)	-1.793 (1.341)	-1.007 (1.234)	-2.548 (0.958)	-3.544 (0.798)	0.125 (3.056)	1.221 (1.672)	0.179 (1.487)	0.179 (1.487)	0.179 (1.487)	0.179 (1.487)	0.179 (1.487)	0.179 (1.487)	0.179 (1.487)	0.179 (1.487)	0.179 (1.487)	0.179 (1.487)	0.179 (1.487)	0.179 (1.487)
		Some university	0.686 (0.757)	-0.189 (1.110)	-0.198 (0.908)	-0.055 (0.901)	0.369 (0.932)	0.088 (1.433)	0.421 (1.195)	-0.302 (1.229)	-0.302 (1.229)	-0.302 (1.229)	-0.302 (1.229)	-0.302 (1.229)	-0.302 (1.229)	-0.302 (1.229)	-0.302 (1.229)	-0.302 (1.229)	-0.302 (1.229)	-0.302 (1.229)	-0.302 (1.229)
		Some college	1.269 (0.678)	-0.116 (0.482)	-1.847 (0.836)	-0.765 (0.761)	-1.275 (0.886)	0.869 (0.694)	0.212 (0.625)	-0.115 (0.762)	-0.115 (0.762)	-0.115 (0.762)	-0.115 (0.762)	-0.115 (0.762)	-0.115 (0.762)	-0.115 (0.762)	-0.115 (0.762)	-0.115 (0.762)	-0.115 (0.762)	-0.115 (0.762)	-0.115 (0.762)
		Some coll. or univ.	-2.292 (0.826)	-0.037 (0.762)	1.561 (1.383)	2.143 (0.976)	0.787 (1.008)	-1.471 (1.146)	-0.571 (0.954)	0.793 (1.106)	0.793 (1.106)	0.793 (1.106)	0.793 (1.106)	0.793 (1.106)	0.793 (1.106)	0.793 (1.106)	0.793 (1.106)	0.793 (1.106)	0.793 (1.106)	0.793 (1.106)	0.793 (1.106)
		No high school diploma	-1.050 (0.225)	-0.771 (0.212)	-0.330 (0.319)	0.963 (0.314)	0.137 (0.307)	-0.527 (0.297)	0.352 (0.281)	-0.041 (0.292)	-0.041 (0.292)	-0.041 (0.292)	-0.041 (0.292)	-0.041 (0.292)	-0.041 (0.292)	-0.041 (0.292)	-0.041 (0.292)	-0.041 (0.292)	-0.041 (0.292)	-0.041 (0.292)	-0.041 (0.292)

Table 5 cont'd

Panel B: Females

		Parental Education		Father	Mother	Father X Gen1	Father X Gen2	Father X Gen3	Mother X Gen1	Mother X Gen2	Mother X Gen3
Gen 1	0.114 (0.282)	Graduate degree	1.767 (0.411)	1.662 (0.442)	-0.127 (0.567)	-0.195 (0.521)	-0.108 (0.655)	0.116 (0.736)	-0.457 (0.701)	-0.079 (0.922)	
Gen 2	-0.068 (0.270)	University	0.537 (0.343)	1.053 (0.322)	0.626 (0.463)	0.328 (0.416)	0.899 (0.430)	-0.383 (0.464)	-0.308 (0.400)	0.471 (0.418)	
Gen 3	-0.638 (0.277)	College	-0.071 (0.313)	0.822 (0.270)	0.983 (0.427)	0.522 (0.395)	0.453 (0.425)	-0.161 (0.380)	-0.548 (0.344)	-0.163 (0.359)	
		College or univ.	-0.025 (0.648)	-3.063 (1.900)	0.839 (1.178)	-1.303 (0.928)	-0.349 (1.252)	4.122 (2.249)	2.371 (1.942)	4.434 (2.330)	
		Some university	0.692 (0.568)	1.534 (0.697)	0.084 (0.725)	0.209 (0.719)	0.145 (0.677)	-1.360 (0.900)	-0.502 (0.798)	-0.080 (1.097)	
		Some college	0.450 (0.468)	0.307 (0.385)	-0.366 (0.588)	-0.254 (0.560)	-0.207 (0.702)	0.132 (0.596)	0.059 (0.484)	0.297 (0.545)	
		Some coll. or univ.	-0.133 (0.856)	-0.703 (1.134)	-1.361 (1.049)	-1.562 (0.959)	-1.687 (1.005)	4.234 (1.556)	-0.761 (1.256)	0.268 (1.341)	
		No high school diploma	-0.955 (0.231)	-1.027 (0.196)	-0.599 (0.312)	0.665 (0.284)	0.356 (0.296)	0.180 (0.276)	0.710 (0.250)	0.715 (0.262)	

N.B. Regressions include controls for age group and ethnic origin.

Table 6 Years of Schooling by Ethnic Group and Immigrant Generation

	Males			Females		
	Gen 1	Gen 2	Gen 3	Gen 1	Gen 2	Gen 3
English	1.489 (0.375)	0.493 (0.181)	-0.074 (0.214)	1.424 (0.269)	0.817 (0.152)	0.178 (0.172)
Irish	1.320 (0.655)	0.097 (0.348)	0.032 (0.278)	1.737 (0.553)	0.845 (0.252)	-0.028 (0.211)
Scottish	1.763 (0.457)	0.469 (0.245)	-0.277 (0.226)	1.475 (0.304)	0.974 (0.212)	0.414 (0.215)
French	1.014 (0.582)	0.008 (0.458)	-0.227 (0.555)	1.417 (0.470)	0.103 (0.345)	0.070 (0.284)
Austrian	1.504 (0.849)	1.785 (0.499)			0.776 (0.449)	0.604 (0.547)
Belgian		-0.231 (0.759)			0.555 (0.754)	0.872 (0.477)
Dutch	0.450 (0.457)	-0.117 (0.240)	-0.960 (0.616)	0.824 (0.345)	0.152 (0.224)	0.105 (0.631)
German	0.988 (0.324)	0.278 (0.223)	0.135 (0.262)	0.850 (0.247)	0.555 (0.207)	0.080 (0.209)
Swiss	1.031 (0.774)	-0.946 (0.442)			1.058 (1.034)	
Finnish		2.265 (0.682)			1.266 (0.574)	1.300 (0.829)
Danish		0.010 (0.631)	-0.222 (0.467)		0.255 (0.411)	-0.732 (0.591)
Norwegian		0.596 (0.444)	-0.086 (0.439)		0.477 (0.454)	-0.249 (0.385)
Swedish		1.135 (0.816)	-0.106 (0.539)		1.042 (0.513)	-0.062 (0.426)
Czechoslovakian	1.385 (0.606)	1.301 (0.531)		1.751 (0.724)	0.805 (0.472)	1.134 (0.607)
Hungarian	1.250 (0.442)	0.792 (0.353)		0.349 (0.372)	0.593 (0.351)	0.716 (0.686)
Polish	0.363 (0.371)	0.743 (0.399)	0.155 (0.429)	0.560 (0.313)	1.103 (0.290)	-0.348 (0.345)
Romanian				0.301 (0.590)	2.083 (0.952)	
Russian	1.664 (0.768)	0.438 (0.622)	-0.078 (0.562)	0.951 (0.652)	0.915 (0.600)	-0.739 (0.482)
Ukrainian	0.441 (0.662)	1.074 (0.335)	0.019 (0.251)	0.215 (0.697)	0.960 (0.234)	0.459 (0.272)
Croatian	-1.003 (0.877)	1.336 (0.686)		-0.824 (0.631)	1.129 (0.707)	

Table 6 cont'd

	Males			Females		
	Gen 1	Gen 2	Gen 3	Gen 1	Gen 2	Gen 3
Greek	-1.822 (0.799)	1.595 (0.420)		-1.352 (0.648)	1.688 (0.423)	
Italian	-2.604 (0.295)	1.398 (0.225)	0.774 (0.455)	-2.826 (0.289)	1.320 (0.192)	0.214 (0.441)
Portuguese	-3.538 (0.406)	1.466 (0.588)		-4.229 (0.435)	0.954 (0.313)	
Spanish				1.221 (0.841)	-0.213 (0.813)	
Jewish	1.586 (0.767)	2.742 (0.654)	1.097 (0.805)	2.049 (0.743)	1.461 (0.554)	0.234 (0.564)
American	1.335 (0.683)	-0.651 (0.443)		0.643 (0.582)	-0.302 (0.871)	-0.768 (0.673)
Chinese	0.834 (0.253)	1.715 (0.311)	1.239 (0.659)	-0.480 (0.236)	1.957 (0.292)	-0.089 (1.250)
Filipino	0.752 (0.363)	0.088 (0.675)		0.864 (0.289)	0.304 (0.427)	
Japanese		1.132 (0.453)	0.961 (0.476)	0.240 (0.602)	2.016 (0.550)	1.469 (0.295)
East Indian	0.765 (0.264)	0.527 (0.485)		-0.028 (0.340)	1.671 (0.403)	
Lebanese	1.256 (0.655)	1.154 (0.825)	-0.376 (0.568)	-0.474 (0.592)	0.658 (0.636)	0.286 (0.467)
Jamaican	-0.322 (0.547)	-0.008 (0.709)		-0.215 (0.592)	-0.500 (0.697)	

N.B. Regressions include controls for age group and parental education.

Table 7 Years of Schooling by Subgroup of Second Generation Immigrants

	Males				Females			
	1	2	3	4	1	2	3	4
G2 – 2 immigrant parents	0.950 (0.134)	1.056 (0.123)	0.852 (0.118)	1.037 (0.147)	0.887 (0.119)	1.098 (0.107)	0.984 (0.100)	1.184 (0.123)
G2 – immigrant mother 3 rd -and-higher-gen. father	0.828 (0.258)	0.818 (0.242)	0.273 (0.222)	0.318 (0.228)	0.302 (0.218)	0.615 (0.207)	0.012 (0.184)	0.011 (0.188)
G2 – immigrant father 3 rd -and-higher-gen. mother	0.586 (0.244)	0.677 (0.224)	0.189 (0.199)	0.248 (0.211)	0.515 (0.229)	0.676 (0.208)	0.207 (0.186)	0.274 (0.187)
G2 – all others	0.343 (0.151)	0.799 (0.143)	0.547 (0.136)	0.544 (0.147)	0.414 (0.129)	0.914 (0.120)	0.568 (0.113)	0.574 (0.122)
Indicators:								
Age group		x	x	x		x	x	x
Parental education			x	x			x	x
Ethnic origin				x				x

Table 8 Educational Attainment by Subgroup of Second Generation Immigrants

	Males				Females			
	1	2	3	4	1	2	3	4
Panel A – High school graduate or higher								
G2 – 2 immigrant parents	0.094 (0.016)	0.065 (0.010)	0.111 (0.017)	0.081 (0.020)	0.083 (0.015)	0.057 (0.008)	0.104 (0.014)	0.099 (0.019)
G2 – immigrant mother 3 rd -and-higher-gen. father	0.077 (0.021)	0.034 (0.008)	0.044 (0.019)	0.025 (0.015)	0.050 (0.024)	0.023 (0.006)	0.027 (0.016)	0.021 (0.015)
G2 – immigrant father 3 rd -and-higher-gen. mother	0.037 (0.026)	0.021 (0.011)	0.012 (0.027)	0.003 (0.021)	0.037 (0.024)	0.019 (0.006)	0.022 (0.016)	0.021 (0.014)
G2 – all others	0.015 (1.015)	0.026 (0.005)	0.043 (0.011)	0.023 (0.010)	0.049 (0.013)	0.026 (0.004)	0.045 (0.008)	0.036 (0.009)
Panel B – University degree								
G2 – 2 immigrant parents	0.074 (0.016)	0.094 (0.018)	0.053 (0.013)	0.050 (0.020)	0.068 (0.014)	0.101 (0.018)	0.072 (0.014)	0.075 (0.021)
G2 – immigrant mother 3 rd -and-higher-gen. father	0.096 (0.035)	0.105 (0.038)	0.037 (0.028)	0.050 (0.036)	0.019 (0.032)	0.045 (0.041)	-0.036 (0.029)	-0.036 (0.036)
G2 – immigrant father 3 rd -and-higher-gen. mother	0.025 (0.031)	0.031 (0.034)	-0.021 (0.022)	-0.033 (0.029)	0.053 (0.029)	0.072 (0.034)	0.005 (0.026)	0.014 (0.032)
G2 – all others	-0.002 (0.020)	0.017 (0.023)	-0.010 (0.016)	-0.020 (0.022)	0.025 (0.019)	0.069 (0.023)	0.023 (0.019)	0.024 (0.024)
Indicators:								
Age group		x	x	x		x	x	x
Parental education			x	x			x	x
Ethnic origin				x				x

Appendix A – Description of Variables

Education

EDS asks only one question on the highest level of schooling attained by the respondent. The exact wording of the question is: “What is the highest level of education that you have attained?”

There are seven response categories:

1. Earned doctorate, Master’s degree or degree in Medicine, Dentistry, Veterinary medicine or Optometry,
2. Bachelor’s or undergraduate university degree,
3. Diploma or certificate from college, CEGEP, nursing school, trade, technical or vocational school or business college,
4. Some university
5. Some college, CEGEP, nursing school, trade, technical or vocational school or business college,
6. High school diploma,
7. Less than a high school diploma (includes no schooling).

Two questions were asked about the education of the respondent’s mother and father. The first question is “What was the highest level of education that your mother (father) attained?” Respondents who did not know the detailed highest level of education of their parents were asked a follow-up question: “Do you think she (he) (1) received a degree, diploma or certificate from college or university? (2) had some college or university education? (3) graduated from high school? (4) had some high school? (5) or had less than a high school education?” The variables derived from answers to the above two questions were classified into the following response categories:

1. Earned doctorate, Master’s degree or degree in Medicine, Dentistry, Veterinary medicine or Optometry,
2. Bachelor’s or undergraduate university degree,
3. Diploma or certificate from college, CEGEP, nursing school, trade, technical or vocational school or business college,
4. Degree, diploma or certificate from college or university – level unknown
5. Some university
6. Some college, CEGEP, nursing school, trade, technical or vocational school or business college,
7. Some university or college – level unknown
8. High school diploma,
9. Less than a high school diploma (includes no schooling).

In regressions reported in this paper, parental education indicators correspond to the response categories listed above, with “high school diploma” being the base category.

In Table 1, the categories of highest level of education for both the respondents and their parents are defined as follows. The “university degree” category includes undergraduate and graduate degrees; the “post-secondary” category includes all reported education levels higher than a high school diploma and less than a completed Bachelor degree, including the category “degree or diploma from university or college” in case of parental education. The number of responses in the latter category in each generation–gender cell is very small, but the fraction of individuals with a parent who has at least an undergraduate degree may be slightly underestimated nevertheless.

When comparing answers to the EDS highest level of schooling question with the derived highest level of schooling obtained from the respondents’ answers to the 2001 Census, it appeared that many individuals classified as having some post-secondary education in the Census, roughly a year later in the EDS interview stated that their highest level of schooling was a high school diploma. Thus the proportion of individuals with post-secondary education reported in Table 1 may be overestimated and the high school category underestimated, assuming there is less measurement error in the Census variable than in the EDS variable. The same may also be true of the corresponding categories of parental education.

Ethnic Origin

In previous studies, ethnic or national origin of immigrants was often defined by the respondents’ country of birth, and that of second-generation immigrants, by their father’s country of birth. Given that I am trying to create a measure of ethnic ancestry that I can apply to four generation groups, this method is not very useful. Instead, I classify individuals by the ethnic ancestry they report. Since up to eight ethnic ancestries can be reported in EDS, I use the reported importance ratings for each ancestry listed in assigning respondents with multiple ethnic ancestries to a single ethnic ancestry group. More specifically, I assign them to the first-reported highest-rated ethnic origin group.

Individuals with multiple ancestries who did not give a valid importance rating for at least one of their ancestries, whose first-reported highest-rated ancestry was uncodeable, who reported a single ancestry which was also uncodeable, or who did not respond to the ethnic ancestry question at all were not assigned to any ethnic origin group. These observations are identified with a separate indicator variable in all regressions.

I define two Canadian ancestries: “English” and “French”. The former category includes first-reported highest-rated responses of: Canadian, Newfoundlander and “other provincial or regional

groups”. The latter includes responses of: Canadien(ne), Quebecois, French-Canadian, Acadian, and “other provincial or regional groups (Quebec)”.

Ethnic origin indicators included in regressions with years of schooling as the dependent variable are: English, Irish, Scottish, Welsh, British other, French, Austrian, Belgian, Dutch, German, Swiss, Finnish, Danish, Norwegian, Swedish, Czechoslovakian, Hungarian, Polish, Romanian, Russian, Ukrainian, Croatian, Yugoslavian other, Greek, Italian, Portuguese, Spanish, Jewish, European other, Egyptian, Lebanese, Armenian, Iranian, East Indian, Punjabi, Sri Lankan, Chinese, Filipino, Vietnamese, Japanese, Korean, African Black other, Black, Haitian, Jamaican, American, and Canadian (French). Canadian (English) is the base category. These are all groups with at least 30 observations per gender. All remaining ancestries are grouped together and identified with a separate indicator.

Out of the entire sample under study, I was unable to assign ethnic origin to 4.1% of males and 4.5% of females. Individuals whose ethnic ancestry is Canadian (English or French) account for 12% of the male and 13.4% of the female sample. The remaining ethnic origins listed above account for 78.3% of the male and 76.8% of the female sample. Ethnic origin groups with fewer than 30 representatives in both gender groups account for 5.6% of the male and 5.3% of the female sample.

For the probit estimation of the probability of completing at least high school and the probability of holding a university degree, I include indicators for broader ethnic origin groups instead: Canadian (French); British Isles; Caribbean; Latin, Central and South American; Northern European; Western European; Eastern European; Southern European; Other European; Jewish; African; Arab; West Asian; South Asian; East and Southeast Asian; American, Australian or New Zealander; and all remaining origins. Canadian (English) is again the base category.

Labour Force Status

I derive labour force status from answers to a single question in EDS regarding respondents’ main activity in the 12 months prior to the survey. I counted individuals as employed if they reported “working at a job or business (or self-employed)” or “maternity/paternity leave”. Individuals were counted as unemployed if they answered “looking for paid work”. Individuals were counted as out of the labour force if their responses fell into one of the remaining categories: “long term illness”, “retired”, “caring for own children”, “caring for other family members”, “household work”, “other home activities”, “volunteering”, “going to school”, or “leisure/sports”.

The derived Census variable for labour force activity included in the EDS dataset breaks down the relevant population into employed, unemployed, and not in the labour force. Each of those is

further subdivided to create a total of 21 categories. This variable was itself derived from seven separate questions described in the text.

Income

Total personal income was derived from data collected in EDS in two steps. Individuals who reported a valid main source of income were asked about the value of that income. The reported income was bottom-coded at zero, i.e. negative net income from self-employment for example was reported as a zero income. Individuals who reported “no income” in answer to the main source of income question were assigned a separate “not applicable” code in the total personal income variable. I assigned to these observations an income value of zero. In order to make the income statistics more comparable to those calculated from the Census variables, I deflated the EDS income variable using the average monthly CPI value between July 2001 and June 2002 in order to convert to 2000 dollars. I then top-coded the deflated income variable at \$350,000, the highest income value in the 2001 Census total personal income variable. The total personal income variable derived from the Census answers allowed reports of negative income. For comparison with the EDS variable, I bottom-coded it at zero.