Aspirations of Canadian youth for higher education

Final Report

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Abstract

This paper examines the educational aspirations of 15-year-old Canadian youth, using data from cycle 1 of the Youth in Transition Survey (YITS) and the Programme for International Student Assessment (PISA). It profiles the range of youth's educational aspirations, examining key influences on these plans. Identifying these influences constitutes the main research focus of this analysis. It also sets the stage for long term analyses of the life course trajectories of Canadian youth as additional phases of the YITS are undertaken.

The YITS/PISA data includes information from 29,687 youth born in 1984, attending a school in one of the ten Canadian provinces in the year 2000. A two-stage sampling design was used, of schools and students within schools. Surveys were also obtained from a parent and from the school, but only the youth data were available for this analysis. Analyses were conducted using the statistical programs WESVAR and SPSS. Profiles of the factors affecting youth plans were conducted using bivariate analyses (cross-tabulations, comparison of means, correlations); multivariate ordinary least squares regression helped identify the direct effects of the variables which, at the bivariate level, had been found to influence youth plans.

The major findings show that Canadian youth continue to aim high. Almost all want to go beyond high school, and most want to attend university. Gender has an effect on educational plans: girls perform better in school and have higher educational aspirations. While the same variables affect the plans of males and females, the magnitude of effects sometimes differs. Parental socio-economic status affects the youth plans, but has less of an impact than parental encouragement. There are some community size differences, with youth attending schools in smaller communities having lower aspirations, particularly being less likely to plan to attend a university. Francophones in Quebec have a different pattern of educational aspirations than other youth. Academic performance, and program of study have pronounced effects on youth plans, as does academic effort. Other experiences, in and out of school, have less of an effect, including: participation in extracurricular activities, attachment to school, academic self-confidence, and bending or breaking rules in the home or the school. Those who frequently use Information Technology for educational purposes have higher aspirations, net of other effects. The multivariate analyses allow a separation of direct and indirect effects on these educational plans.

Policy issues raised by the analysis include an emphasis on the importance of encouraging more diversity in youth's educational paths, perhaps with more pro-active counselling in the schools. The youth's current plans are very optimistic and cannot be achieved without a dramatic increase in the capacity of universities. However, some youth continue to aim low. Alternative sources of encouragement might be explored for those who lack this incentive at home. Suggestions are made as to how to modify the lower attachment of males to school. Incorporating work experience into school programs, not just for those who excel academically, may have beneficial effects, particularly for young men. The area where young women need encouragement is in programs that lead to occupations in the skilled trades. Regional differences in educational plans suggest the need to explore alternate forms of delivery of educational programs.

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Executive Summary

- Educational aspirations among Canadian 15-year-old youth are remarkably high: almost all aspire to complete high school, and over nine in ten say they want to go on beyond high school. University is clearly the post-secondary pathway of choice, being named by over two thirds of the youth. Less than one in ten say they want to pursue an apprenticeship or attend a post secondary trade or vocational school.

- Girls' aspirations continue to outstrip those of boys, with more than two in five of them (compared to about one third of the boys) desiring to obtain two or more university degrees. At the other end, more boys say they would be satisfied with a high school diploma or to not even complete high school. The traditional greater popularity of apprenticeships, trade or vocational education among boys remains.

- A variety of aspects of academic performance collectively are the most important determinants of educational aspirations. Especially decisive is the school program or academic stream in which students are placed, although marks, reading skills, and having taken advanced or enriched classes each have additional effects. The academic performance of girls is consistently better than that of their male counterparts, regardless of the specific aspect examined. At the same time, the academic performance measures are more decisive for the aspirations of boys than for girls. That is, how much education young people desire hinges more on academic performance among boys than among girls.

- Youth who aspire to higher levels of education put more effort into their school work. Girls spend more time than boys on homework, and this may be one of the reasons they perform better academically. However, the effect effort has on aspirations is also stronger among girls than boys, suggesting that girls more than boys prioritize the activities in their daily lives to better actualize their desired futures.

- Confidence in one's ability to do well in college and/or university is a key ingredient in young people's desired educational pathways and young people on the whole possess this confidence: eight in every ten believe they have the ability to do well in university, and even more (nine in ten) feel they have the ability to do well in community college. Such confidence, or the lack of it, has an effect above and beyond all indicators of academic performance and other measured factors that might be a source of such confidence.

- Most youth recognize the importance of education for their future jobs, and see university as the path to future achievement. Such beliefs about the job relevance of education are one of the strongest predictors of educational aspirations, playing a substantial role, independent of academic performance and other factors, in the anticipated pathways of young people.

- As is to be expected, students whose school experience has been more negative have less desire to pursue their education. Further, youth who bend or break school and/or home rules generally have lower aspirations. However, these latter factors operate primarily through their effects on academic performance—they have no independent effects on their aspirations.

- Participation in school and community activities, including extracurricular activities, goes hand-in-hand with higher aspirations. The evidence suggests that such participation exerts an independent effect on teenagers' desired educational pathways.

- Access to Information Technology (IT) is an important topic in its own right, given the heavy investment of schools in IT. The more frequently young people use computers for educational purposes, the higher are their aspirations. This connection is more pronounced among boys. Of special significance is the fact that these effects cannot be totally attributed to differences in parental background, nor to academically better students being more likely to use computers frequently. That is, a net effect of educational computer use was found, after controlling for all other factors relevant to aspirations.

- Parents play key roles in the educational aspirations of young people. Not only are the aspirations of their children constrained by the socio-economic position of the parents, but such aspirations are also furthered by a variety of parental resources, such as cultural capital, cultural communication, and educational resources at home. Further, young people who believe their parents want them to pursue higher education are encouraged by this to desire more education.

- The more academically-oriented one's friends, the more likely one is to have high educational aspirations. Conversely, the more involved one's peers are with various delinquent acts, the lower one's aspirations. Yet it is unlikely that peer networks are a significant factor in young people's aspirations, since the perceived orientations of one's peer network have no independent effect on young people's aspirations. This suggests that young people surround themselves with friends who share their aspirations, rather than that peers shape one's aspirations.

- The only regional/provincial differences of any note in youth aspirations are those that intersect with language. Francophones in Quebec are the least likely to aspire to university education; Anglophones outside Quebec the most likely. In general, Francophones in Quebec have different patterns of educational pathways than do other youth, particularly in terms of preferring college to university. To some extent this difference reflects the presence of the CEGEP system in Quebec, although it seems to have little impact on the aspirations of Quebec Anglophones.

- Children from single-parent families hold educational aspirations that are practically indistinguishable from those who have two parents. The implication is that neither the lesser financial resources, nor the lesser social capital (and other educationally-relevant resources) have a dampening effect on the aspirations of children living in such a family structure.

- Students attending schools in smaller communities have lower aspirations than their counterparts in larger communities. These differences are not due solely to differences in educational attainment of parents, nor to any difference in the extent to which education is considered important to either the parent or the student. Indeed, the community size difference remains significant even after controlling for all other factors found to be important determinants of educational aspirations.

- Holding a paid job during one's high school years is a fact of life for more than nine out of every ten of today's teenagers. Even during the school year, two-thirds of Canadian 15-year-olds have a paid job. Unexpectedly, on all counts girls work more than do boys—they are more likely to have a paid job, they work during more months of the school year, they work more hours during school days as well as on weekends. At the same time, girls are more cognizant than boys of the ways in which paid work might interfere with their academic work and are more likely to take these factors into account in deciding whether to work and for what reasons they work (or decide not to work).

- By and large, teenagers feel that, on balance, paid work is neutral with respect to any effect on their academic work. However, the students are not altogether wrong in their personal assessments that paid work has little effect on their school work, since only modest negative connections were found between paid work and academic performance. The intensity of paid work, especially on weekends, has a dampening effect on educational aspirations. This dampening effect persists after adjusting for the effects of all other variables found to influence aspirations. There is some evidence indicating that heavy involvement in paid work is a symptom of withdrawal from educational pursuits, but only among boys. There are no signs that paid work has such an effect among girls, perhaps because they have learned to integrate paid work with school work better.

- A number of policy suggestions derive from these analyses. These include: suggestions for encouraging youth to diversify their post-secondary options; encouraging students from small as well as large communities to participate of in universities; providing alternative sources of encouragement for those whose parents do not provide it; increasing the attachment of youth (especially boys) to school; increasing the participation of girls in Information Technology and in the trades; incorporating work experience in the school experience of more students; and making counselling in school more proactive.

1. Introduction

It is well known that participation in some form of post-secondary education is steadily increasing (Lowe, Krahn, and Bowlby 1997), and that the earnings payoff among the most highly educated increased during the 1980s and 1990s (Gladieux and Swail 2000). At the same time, the gaps in labour market outcomes (especially earnings) between university-educated and other young people has also widened, leading some observers to predict a "continuing polarization of income" among Canadian youth (Allahar and Côté 1998:145). This makes it imperative to better understand how young people are preparing themselves for participation in the new economy. Scholars of educational systems have noted repeatedly that, relative to many European countries (especially the German-speaking countries of Germany, Switzerland and Austria), Canada, like the US, has a relatively undifferentiated, and vocationally non-specific educational system (Buchman and Dalton 2002; Müller and Shavit 1998; Turner 1960). Such "open" systems are thought to produce certain distinct consequences, one of which is high aspirations. The aim of this report is to further our understanding of youth plans by analyzing the factors associated with young people's educational aspirations.

This report is based on the responses of 29,687 15-year-olds who were part of the Canadian PISA/YITS survey.[1] At the age of 15, education is among the most important activities—if not the most important activity—in young people's lives. It is the last year of compulsory education for them, but as will be documented shortly, almost all of them expect to continue their schooling, with many of them desiring to obtain at least two university degrees.

1.1 Organization of the report

This report begins by profiling young people's desired educational pathways, starting with broad background characteristics. This will identify particular pockets or subgroups in Canadian society where certain educational pathways are particularly popular. Next we explore a variety of high school experiences, such as academic performance, school engagement, use of information technology, work experiences, and friendship networks that previous research and scholarship has shown or argued to be involved in the processes that lead to youth's aspirations. Although it is well known that parental socio-economic status is intimately connected to their children's aspirations and outcomes, there is much debate about the specific dynamics through which such socio-economic advantages translate to higher aspirations. For this reason, we next focus on the role that familial social and cultural capital, parental encouragement, familial homework support, and household educational resources have on aspirations.

[1] Details on sampling design and other methodological issues are contained in the Appendix .

On the basis of these profiles, the results of a series of multivariate analyses are presented. These multivariate analyses permit one to assess the relative importance of the various factors, and to determine which of them directly affect aspirations and which of them do so only indirectly or not at all, once other factors are statistically held constant.

The final sections of the report highlight the policy issues that the analysis has raised and then presents some more general conclusions. These focus on the effects of Canada's open system of education. A methodological appendix that details the measures used and the composite measures created follows the main body of the report.

A main feature of young people's educational aspirations is the changing role of gender. Prior to the 1980s, the aspirations of girls were lower than those of boys. Since then, women have caught up with and even surpassed men, especially on the educational front. Focussing on the role that gender plays in the aspiration processes is therefore especially timely. At each stage in this report, attention is focussed on gender difference and similarity.

The information contained in the two questionnaires (PISA and YITS) is too rich to be presented adequately within the confines of one report. Several decisions were therefore made to keep this report within manageable limits. First, supporting tables and/or figures are not provided for those factors that relate to aspirations in only minor ways; the lack of a relationship is simply described textually. Second, where several conceptually similar measures exist, the effect of only one of them is shown in a table or graph. Third, composite indices that condense information from several questionnaire items were constructed wherever feasible, and these are used in place of the separate items, especially in the multivariate analyses.

1.2 Measurement issues

Before profiling young people's desired educational pathways, a word about its measurement is necessary. These teenagers were asked "What is the highest level of education you would like to get?" Educational *aspiration* is generally defined as the amount and type of education someone would ideally like to have. In contrast, educational *expectations* are thought to be tempered by a variety of reality constraints. Empson-Warner and Krahn (1992) attempted to make a similar distinction between occupational aspirations and expectations and concluded that this distinction was not captured well in the responses of high school seniors.

If educational expectations are constrained by factors such as academic performance and financial considerations at the upper end, then at the lower end such things as parental pressure perhaps expand them. Since this study did not ask youth about their educational expectations beyond high school, it is not possible to assess the extent to which youth feel that their post-secondary educational plans are constrained. Nevertheless, the analyses immediately following will document that educational aspirations themselves appear to be tempered by a variety of reality considerations.

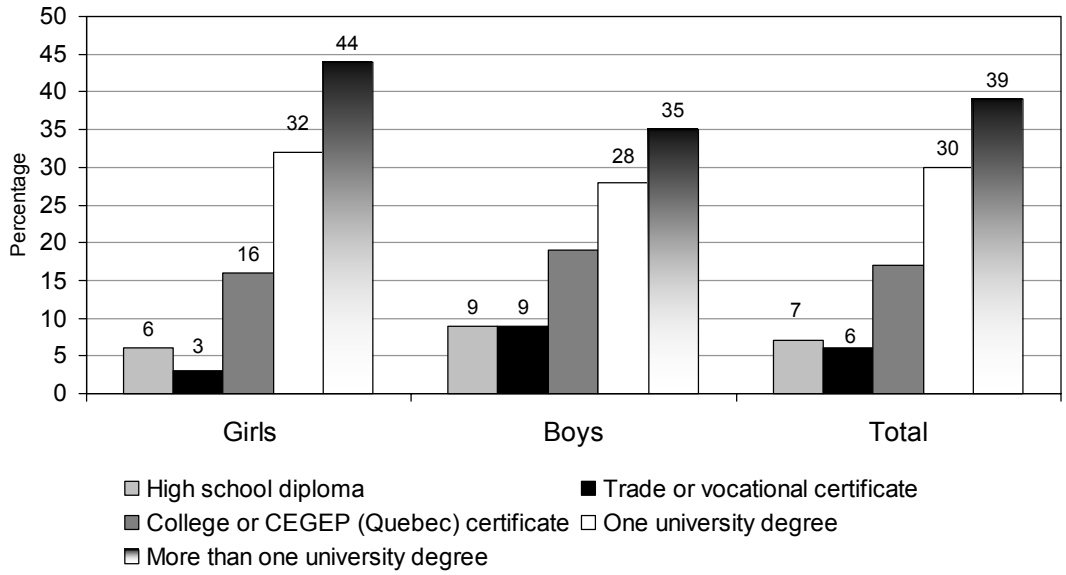
Our aim in the analyses below is to summarize clearly the relationships among the factors that are associated with, and which can be interpreted as affecting, youth educational aspirations. In some instances this involves identifying the educational aspirations of those in different subgroups (such as males and females). In other analyses the patterns are clearer if the characteristics of those with a particular educational aspiration are identified, for example, by identifying the groups from which university aspirants are drawn compared to those with other aspirations. As is true in any cross-sectional analysis we cannot identify time or causal ordering of the variables. It will be evident in our discussions that we are examining variables which we feel affect the youth's educational aspirations.

2. Profile of educational aspirations

2.1 Background variables

Earlier studies have shown that Canadian youth have high educational aims (Baker 1985). The YITS data confirm that this trend is continuing and that 15 year olds, who are still a few years away from deciding their post-secondary path, anticipate not only going beyond high school, but obtaining one or more university degrees. Consistent with previous research (Bibby 2001), university is clearly the post-secondary destination of choice. Almost seventy percent of teenagers say they want one or more university degrees (see Figure 1). The most frequent response (given by 39.3% of the youth) is that they want more than one university degree. Few (6.2%) say the highest level of education they want is an apprenticeship or some trade or vocational diploma or certificate. An additional 7.3% report that they would be satisfied with a high school certificate or less (with less than one in a hundred stating they do not want to complete high school).

Figure 1
Educational aspirations by gender



These high aspirations document the extent to which youth have bought the argument that "high school may not be enough" (Human Resources Development Canada and Statistics Canada 1998). They also show the persistence of the preference for university over other forms of post-secondary education, despite provincial efforts to promote and encourage trades and technical training. It may not be realistic to assume that 15 year olds fully understand what would be involved in undertaking "more than one university degree", but the results suggest that they see more as better.

2.1.1 Gender

This preference of university over other forms of post-secondary education is even more pronounced among girls. While few students overall say they want high school or less, slightly more males than females give this response. However, it is at the post-secondary level that the gender differences become striking. An apprenticeship, trade, or vocational school pathway is more popular among boys than among girls (9.3% and 3.3%, respectively). In further contrast, 43.7% of the girls, compared to 34.9% of the boys say they want more than one university degree. Approximately equal numbers of each gender list a college/CEGEP[2] diploma (18.8% versus 15.6%) or one university degree (28.3% of males and 31.6% of females). Confirming trends that were detected in the 1990s (Andres, Anisef, Krahn, Looker, and Thiessen 1999; Anisef, Sweet, Plickert, and Tom-Kun 2001; Butlin 1999; Clift and Vaughan 1997; Guppy and Davies 1998; Lowe, Krahn, and Bowlby 1997; Stevens and Putchell 1992; Thiessen and Nickerson 1999), young women seem to be aiming the highest.

2.1.2 Region and language

Regional differences in desired educational pathways are generally small, with one exception: Quebec compared to all other regions. Students in Quebec are much more likely than others to list "college or CEGEP" as their preferred educational outcome. They are less likely than those from other areas to opt for a university education, and are much less likely than those from other regions to say they want more than one university degree.[3]

Any discussion of regional differences in Canada is confounded by French-English[4] differences both inside and outside of Quebec (Butlin 1999). To examine these confounding effects, respondents were classified into four categories on the basis of primary language spoken at home (French versus English) and province (Quebec versus the rest of the provinces). Examining Figure 2, the key source of the difference in educational aspirations seems to be cultural, with the different educational structure in Quebec versus the rest of Canada constituting a subsidiary factor. Several patterns support this conclusion. First, among Anglophones, whether a student resides in Quebec or elsewhere plays a minor role at best. To illustrate 44.7% of the former, compared to 46.0% of the latter aspire to obtain two or more university degrees. This contrasts sharply with the aspirations of Francophones, who are substantially less likely to hold such high aspirations. A second pattern is that for Francophones it matters whether they live in Quebec or elsewhere. Only 17.2% of those living in Quebec, but 29.1% of those residing outside of Quebec aspire to more than one university degree. Third, for all educational pathways, Quebec Francophones are at polar-opposite ends from Anglophones generally.

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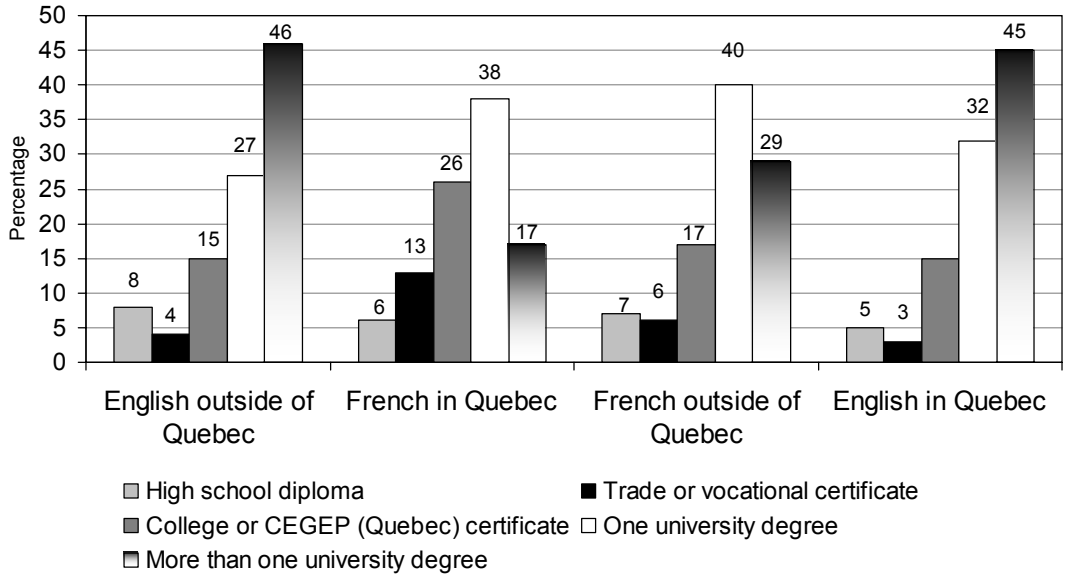
[2] Collège d'enseignement général et professionnel – a college system available to students after grade 11 in the province of Quebec.

[3] A smaller regional difference is that students in Ontario are somewhat less likely than those in other regions to aspire to trade school and somewhat more likely than those in most other areas to say they want to attend a college or CEGEP (rather than a university).

[4] Additional data on ethnic and racial origin were obtained in the parental questionnaire that was part of the YITS data collection. These data are not yet available for analysis.

Non-Quebec Francophones stand in between these two extremes: they have somewhat higher aspirations than Francophones in Quebec, but not as high as the aspirations of the Anglophones, regardless of where the latter live.

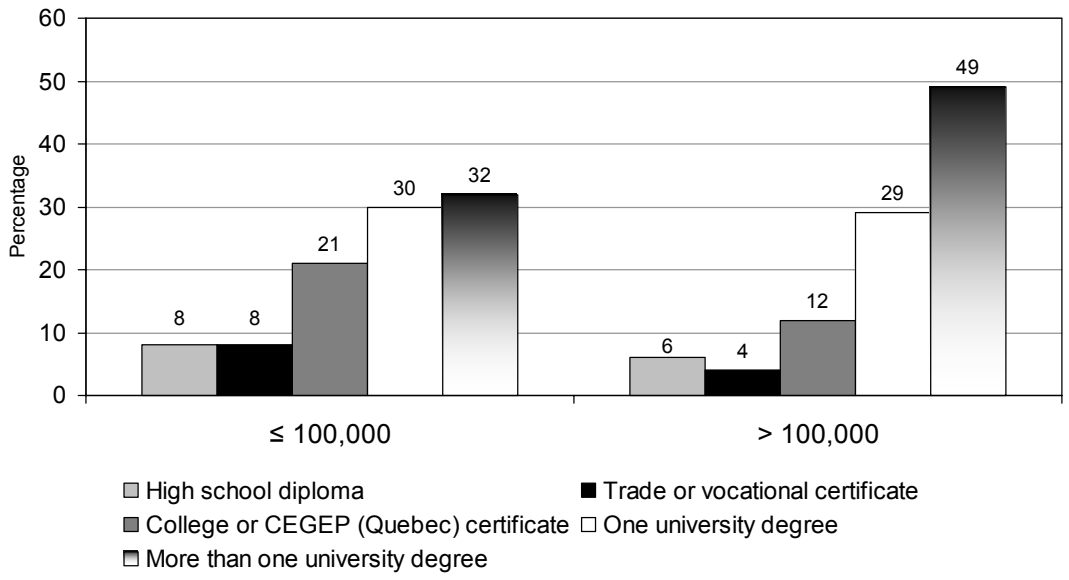
Figure 2
Educational aspirations by language and residence inside and outside of Quebec



2.1.3 Community size

Previous research has shown that educational aspirations and attainments are higher in urban than in rural areas (Anisef, Axelrod, Baichman-Anisef, James, and Turritin 2000; Howell, Tung, and Wade-Harper 1996; Looker and Dwyer 1998; Looker 1993; McGrath, Swisher, Elder, and Conger 2001). Part of the reason may be that access to post-secondary education is more problematic in rural areas. Additionally, and acting in a self-perpetuating way, parents in smaller communities tend to have less education than their city counterparts. To the extent that parents act as role models, we would expect community size differences in children's aspirations to reflect these differences in parental educational attainments. Confirming these expectations, youth in towns are more likely to list lower levels of education (high school or less) and less likely to list higher levels (more than one university degree) than city youth. As Figure 3 shows, almost half (49.0%) of city youth say they want to get more than one university degree; only 32.3% of youth living in smaller communities say the same.

Figure 3
Educational aspirations by community size



2.1.4 Family structure and birth order

It is common knowledge that single parents have fewer financial resources than that available in two-parent families, a difference that is thought to account for the lesser educational attainment of children from single-parent households (Magee 1998). Despite this, in the YITS/PISA data there is surprisingly little effect of family structure on youth aspirations. Moreover, what little effect family structure exerts is not primarily a contrast between single- and two-parent households. Rather, children from "mixed" households are somewhat less likely than others to opt for more than one university degree, and somewhat more likely than those in "nuclear" families to say they want to attend some non-university post-secondary institution.

Birth order has at best a minor effect on educational aspirations. Only children and eldest children are more likely to say they want more than one university degree, but the differences are small, between 3% and 5%.

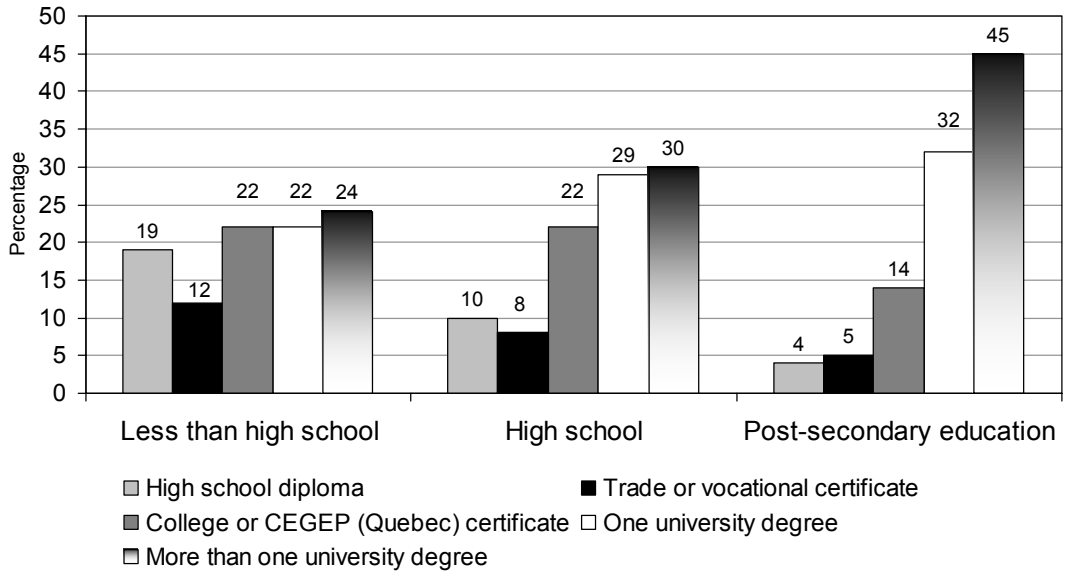
2.1.5 Maternal work status

The work status of mothers has virtually no effect on their children's educational aspirations. Regardless of whether the mother works full-time, part-time, or is not in the labour force, similar percentages of youth list a given outcome as their desired education.

2.1.6 Parental education and financial resources

One of the strongest background factors predicting youth's educational aspirations (and their later attainments) is the level of education of their parents (Andres and Krahn 1999; Ball and Lamb 2001; Council of Economic Advisors 2000; Crysdale, King, and Mandell 1999; Looker and Lowe 2001; McGrath 1996; Teachman, Paasch, Day, and Carver 1997). The effect of parental education is seen both in the desire to pursue education beyond high school, and in the type and extent of post-secondary education desired. Since the relationships are almost identical when assessed on the basis of the mother's education or the father's, a composite index measuring the highest level of education obtained by either parent was used. Those whose parent did not themselves pursue any post-secondary education were much more likely to either say they wanted to stop after high school or to list a non-university program as their desired path. For example, 19.4% of those whose parents did not complete high school, compared to 10.2% of those with at least one parent with a high school education, and 4.3% of those with a parent with some post-secondary education, gave "high school or less" as their educational aspiration (see Figure 4). Vice versa, teenagers whose parents had obtained some post-secondary education were much more likely to say they wanted to get more than one university degree than those whose parents had completed high school and those whose parents did not complete high school (45.0%, 30.4%, and 24.5%, respectively).

Figure 4
Educational aspirations by parental level of education



Parental income was not ascertained in the student questionnaire. However, students were asked about various household possessions, which can serve as an indirect measure

of wealth.[5] The index of household possessions shows a similar relationship to aspirations as was found for parental education. That is, the greater the number of household possessions, the higher the educational aspirations.

2.1.7 Summary – Background variables

This introductory profile of educational aspirations clearly shows that these youth aim high. Most plan to pursue some form of post-secondary education; the majority plan to attend university. Overall, girls have higher aspirations than boys, with more of them wanting more than one university degree. Francophone youth, especially those in Quebec, tend to have lower aspirations than other youth. The other regional difference that comes through is that youth who attend schools in smaller communities have lower aspirations than their urban counterparts, particularly in terms of the proportions who plan to attend university. In contrast to some earlier research, neither family structure nor birth order has much effect on the educational plans of these young people. Mother's work status has a similarly minor effect. However, parents do matter, as is evident from the fairly strong association between level of parental education, as reported by the youth, and the youth's own educational plans.

2.2 Academic performance

School grade retention, current marks, and school program (university preparatory or general program, for example) are perhaps the clearest signals young people receive concerning their ability to do well in educational settings. These signals serve as the most immediate reality constraints on young people's educational aspirations. Certainly previous research shows that these are among the most powerful determinants of both educational aspirations and participation in post-secondary education (Andres et al. 1999; Butlin 1999; Looker 2002). This section explores how young people fare on these indicators, and the connection of these measures to their educational desires.

2.2.1 Grade retention

The students in this study were not asked whether they had ever repeated a school year. However, they were asked in what grade they were currently registered. Since all students were 15 years old when this study was conducted, an indirect measure of grade retention can be devised. Students who were below Grade 10 (15.3% of the students) were considered below grade for their age. Studies generally show that boys are more likely than girls to have repeated a grade (Atlantic Provinces Education Foundation 1996: 19; Thiessen and Looker 1999), and our measure is validated to some extent in this respect, since 18.0% of the boys compared to 12.7% of the girls were below Grade 10 at the age of 15.

[5] Details about the construction of this, and all other indices analyzed in this report are given in the methodological appendix. Although parental income was ascertained in the parent questionnaire, these data were not available at the time that this paper was prepared.

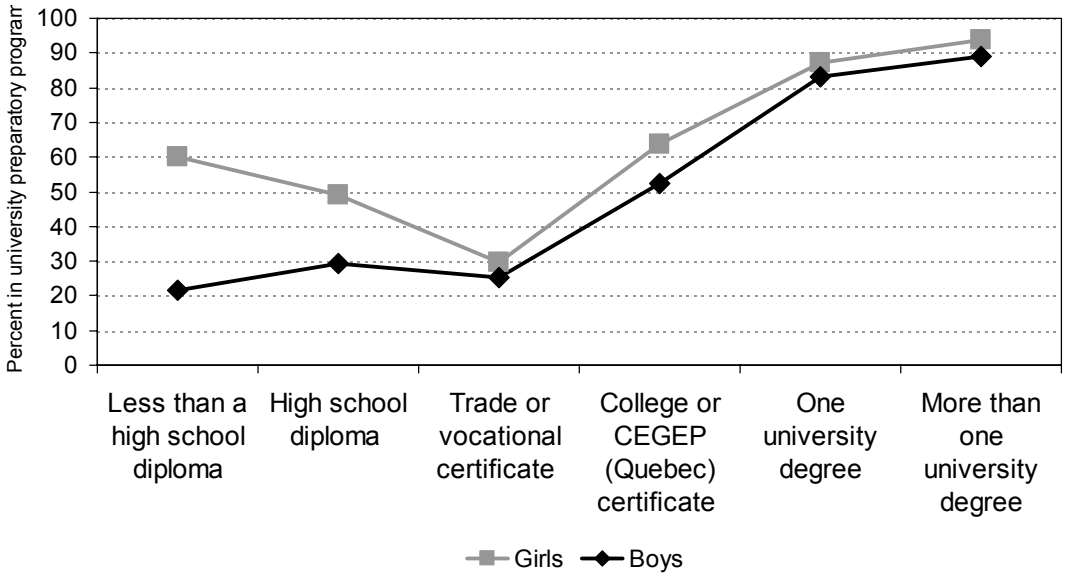
The experience of grade retention has a dampening effect on educational aspirations. For both genders, over half of those who do not wish to complete high school are below grade for their age. In sharp contrast, only 7.7% of girls and 12.2% of boys who desire to obtain two or more university degrees are below grade for their age. Among the boys, the higher their aspirations, the less likely they are to be below grade for their age. This tends also to be the case for girls, with one exception. As noted earlier, relatively few girls desire to attend a trade or vocational school, yet among those who do, a surprisingly high percentage (38.8%) probably have repeated a grade.

Having failed a grade seems less of a barrier for aspiring to enter college or university among boys than among girls. This is inferred from the fact that a higher percentage of boys than girls with such aspirations are below grade for their age. As one example of this, 4.5% more boys than girls desire to obtain two or more university degrees despite having repeated a grade. Although this is not a large difference, the same pattern is manifest among those who desire to attend college as well as among those who desire to obtain a baccalaureate degree.

2.2.2 School program

As expected from previous research (Andres et al. 1999; Andres and Krahn 1999; Butlin 1999; Looker 2002), the school program to which students are assigned (or which they select) has a strong bearing on their educational desires (see Figure 5). Note first that only about one fifth of those who desire to attend a trade or technical school are in a program that prepares them for entry to a college or university. For girls, this is substantially fewer than among those who desire no post-secondary education, or even those who would rather not complete high school. This is strong evidence that the school program in which one is placed drives educational desires.

Figure 5
Educational aspirations by university-preparatory program, by gender



At every level of educational aspirations girls are more likely than boys to be in a program that prepares them for entry into college or university. The corollary of this finding is that a higher proportion of girls than boys who do not desire to go to college or university nevertheless are in a program that would permit them to attend such institutions if they wished. The puzzle, then, is why they do not have such aspirations.

Another form of streaming is placement or participation in enriched or remedial classes. In the PISA questionnaire, students were asked whether during their last three years they had attended any special courses (separately for at their school or outside of school) to improve their results. Information on each of the following types of special courses was obtained: enriched or additional courses, remedial or make-up courses in English language and literature, remedial or make-up courses in other subjects, training to improve their study skills, and (only for outside of school), private tutoring.

Just under a third (31.7%) of students have taken an enriched class in school; attending a remedial language class in school is less prevalent (11.1%); and less than one-fifth (17.7%) have taken remedial classes in other subjects in school. Taking any of these courses outside of school is approximately half as likely as taking the corresponding class in school. About one-quarter of these teenagers (24.1%) have taken special training in school to improve their study skills, and 14.7% have taken such training outside of school.

Gender differences in taking special courses are small, but they paint a consistent image: girls are slightly more likely than boys to take enriched classes; the reverse is true for remedial language classes (none of the gender differences exceed 4%). Boys and girls are about equally likely to have taken other remedial classes or training to improve their study skills.

We reported above that girls who desire to attend a trade or vocational school were noticeably less likely than expected to be in a university- or college preparatory program. Supporting the conclusion that this group of girls might be experiencing academic difficulties is the finding that they are also appreciably more likely to have taken a remedial course in school; 35.2% have taken such a course, a figure that is higher than that found for any other group of girls. Finally, two groups of students are particularly likely to have been exposed to training to improve their study skills: girls whose highest desired level of education is completion of high school (37.6%) and boys who desire to drop out even prior to that (36.2%). Such training is not otherwise systematically related to educational aspirations.

Whether special courses are taken in school or outside of school does not seem to matter in the context of students' educational aspirations; neither does the subject area (reading or other courses) for any remedial classes taken. For these reasons, two summary measures were constructed, one capturing whether a student had taken any advanced courses in the past three years, and the other whether a student had been in a remedial class. Taking advanced courses and taking remedial courses affect educational aspirations, but in opposite ways: Those who have taken advanced courses tend to have higher aspirations, and those who have taken remedial courses are likely to have lower aspirations.[6]

2.2.3 Marks

Educational practitioners and researchers generally agree that performance in the primary language of instruction (English or French), math, and science courses constitutes the most decisive evidence of the likelihood of doing well in most post-secondary educational programs. Students were asked whether the mark on their last report card in each of these three subject areas was above the pass mark, at the pass mark, or below the pass mark.[7]

Little gender difference was found in self-reported academic performance in English/French, math, and science, although boys are somewhat more likely than girls to report inadequate performance: 4.1% of boys compared to 3.1% of girls failed all three, and the corresponding percentages for obtaining above the passing mark on all three is 55.6% and 59.3%. Canadian youth's educational aspirations are fundamentally and

[6] One puzzling finding is that boys who don't even want to complete high school report having taken enriched classes (both in and outside of school) more often than one would expect on the basis of what we already know about this group. Thus, over one-quarter of them (27.3%) say they have taken an enriched class, which is a higher percentage than that found even for those males who have college aspiration (20.0% of whom have taken an enriched class). Likewise, 10.3% of them report having taken an enriched class outside of school, a figure that is virtually identical to that found among their university aspirant counterparts (10.4%). One plausible explanation for these anomalies is methodological, and concerns ambiguous question wording. The precise question wording was "enriched or additional courses". Perhaps boys with extremely low aspirations were confused by "additional courses", since they probably have taken "additional" but not "enriched" courses. Hence for them this constituted a "double-barrelled" question.

[7] In the YITS component of the survey, students were asked to provide more detailed information about their performance in these three subject areas. Unfortunately, these data were not yet available in a form that permits analysis of that data. As a consequence of the reliance on cruder measures, the effects of academic performance documented in this report in all likelihood underestimate the true effects.

intimately connected to their academic performance. Indeed, looking just at whether they obtained above passing marks in English/French, mathematics and science discriminates sharply between the amount and type education they prefer. Here educational aspirations are indeed ordinal with respect to each of the measures of academic performance, except for a minor reversal between high school completion and trade/vocational certificate, with the latter having a somewhat lower percentage obtaining above a passing mark in English/French.

Each of the three subject areas shows the same strong relationship, and this relationship applies equally to girls and boys, although there is some suggestion that it is stronger for boys. Looking closely at these relationships separately for girls and boys, it becomes clear that at the highest level of educational aspirations (more than one university degree), the percentage of girls performing above the pass mark in these three subjects is almost identical to that of boys performing at that level (English/French: 88.6% versus 84.7%; Math: 80.2% versus 81.9%; Science: 85.4% versus 86.5%; all comparisons are for girls and boys, respectively). However, at the opposite end of the spectrum (less than high school completion) a consistent gender difference emerges: girls are more likely than boys to have performed sufficiently well to warrant higher aspirations (English/French: 49.1% versus 41.0%; Math: 32.1% versus 28.0%; Science: 48.1% versus 37.1%; all comparisons are for girls and boys, respectively). Overall, girls who aspire to less than high school completion are twice as likely as boys to report above passing marks on all three subjects (16.7% versus 8.1%, respectively). This pattern indicates that dropping out of high school is more likely to be triggered by inadequate academic performance among boys than among girls.

2.2.4 Reading achievement

Previous analysis of the PISA data documented that girls scored higher than boys on the reading test[8], and that reading achievement was positively related to educational aspirations (Human Resources Development Canada, Council of Ministers of Education, and Statistics Canada 2001:25,29). We can add to this that at every level of educational aspiration, girls on average score higher than boys. Further, the relationship between reading achievement and educational aspirations is, without exception for both boys and girls, a monotonically increasing one: that is the higher the aspiration the higher the reading achievement.

Clearly the educational aspirations of Canadian youth are tempered by their academic performance as early as Grade 10 (the modal grade of these 15-year-olds). Thus, over half (53.8%) of youth whose aspirations are less than high school completion have failed at least one of their last English/French, math, or science classes. Some youth do hold extremely unrealistic educational expectations, but they are few in number. For example, 2.2% of those who aspire to more than one university degree have failed all three of their last English/French, math, and science classes.

8 For details on the construction and content of the reading test, see OECD OECD. 1999. "Measuring Student Knowledge and Skills: A New Framework for Assessment." Organisation for Economic Cooperation and Development, Paris.

2.2.5 Summary – Academic performance

Not surprisingly, the academic performance of the youth has a major impact on their educational aspirations. Those who are not yet in Grade 10 (i.e. those who have likely repeated a year) have lower aspirations than others. School program, particularly whether or not one's courses are designed to prepare one to attend university, has the expected link to post high school plans. Those in these courses are more likely to want to attend university, and to get more than one degree; those in non-university preparatory classes tend to opt for other educational paths. Special courses reinforce these decisions, with those taking enriched classes being more likely to be university bound, while those taking remedial course report lower aspirations. Marks and levels of reading achievement also have the expected positive relationship with educational plans. Girls are more likely than boys to have high levels of academic performance as measured in this section. That is, they have better marks, are less likely to have repeated a grade, take more enriched and fewer remedial course and are more likely to be in university preparatory classes.

2.3 School involvement

The previous section documented that academic performance is a primary determinant of educational aspirations. It also revealed consistent gender differences in academic performance, with girls doing better on all measures than boys. The question now turns to some of the possible reasons, and perhaps some of the possible consequences of variations in academic performance. In this section we focus on a variety of behaviours and attitudes that collectively are indicative of young people's school engagement. Our use of the term school engagement is multifaceted, involving various behaviours, beliefs, values and attitudes that indicate the extent to which school is salient to a student. Traditionally, scholars distinguish between two forms of school involvement: academic engagement and social engagement (Finn 1993; Voelkl 1996). In this report we will not make a sharp distinction between these two forms, preferring instead to examine the effect of each of a number of factors that could be argued to reflect school involvement. Some of the factors, such as involvement in school-based extracurricular activities, are unambiguous indicators of social engagement. Others, however, such as bending or breaking school rules, are less-easily categorized as one or the other form of engagement, yet most would agree that such behaviours are manifestations of the extent of school involvement.

2.3.1 Homework

The amount of time spent on homework could reflect either that one is struggling academically (and therefore need to spend more time just to keep post-secondary educational options open) or that one is committed to a pursuit of academic excellence (in which case, students who are performing relatively well are the ones who spend the most time on homework). Further, if homework is done primarily to obtain or maintain academic excellence, then it would not be surprising to find that girls do more homework than boys, since they have better academic records and higher educational aspirations. In this interpretation, working harder at school work is one of the reasons why girls

perform better. On the other hand, if homework is done primarily when one is struggling academically, then boys should be doing more homework than girls.

Although both of these factors may be at play, conceptualizing time spent on homework as an indicator of the pursuit of academic excellence fits the data better in three respects. First, the amount of time spent on homework is positively related to all measures of academic performance, such as marks (r = 0.181), reading achievement (r = 0.199), having taken advanced classes (r = 0.153) and school program (r = 0.221).[9] It is probably also an indirect measure of their enjoyment and involvement of academic pursuits.

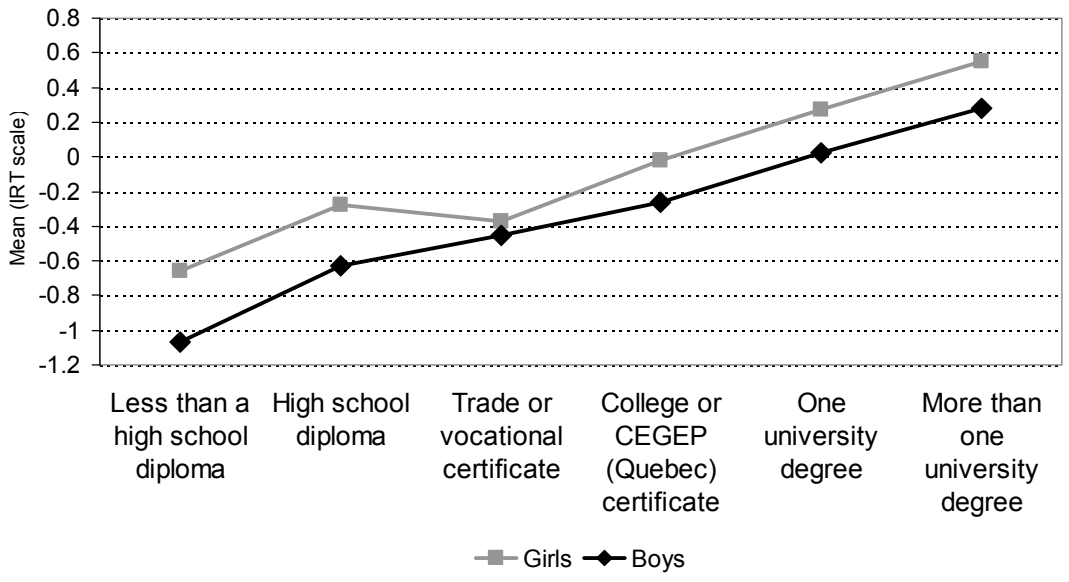
Second, there is little doubt that among these teens, boys spend less time on homework than do girls: almost a third of the males (31.6%) but less than two-fifths of the females (18.9%) report spending less than one hour per week on homework. Consequently, one of the reasons girls do better than boys in school may be that they work harder at it, with 40.5% of them spending at least four hours a week on homework, compared to 29.6% of their male counterparts.

Finally, the higher the educational aspirations, the more time is spent on homework. The following figure shows this relationship, using a composite scale for time spent on homework.[10]

[9] The numbers in parentheses are Pearson correlation coefficients. These can vary between –1.0 and +1.0. A positive number indicates a direct or positive relationship between the two variables; i.e., larger numbers in one variable are associated with larger values in the other. Negative coefficients are obtained for inverse or negative relationships, where higher scores in one variable are associated with lower numbers in the other. The closer the coefficient is to zero, the weaker is the linear association between the two variables.

[10] Technically, this index is an item response theory (IRT) scale that transforms items with ordinal response categories into a single score that has better metric properties. All IRT indices in this report were constructed previously for the purpose of making international comparisons. Hence they are standardized to the international mean (i.e., a score of zero indicates being at the international mean), with a standard deviation of 1.0.

Figure 6
Educational Aspirations by Time Spent on Homework, by gender



2.3.2 Bending the rules at school

Various forms of deviant or delinquent behaviour have been shown to be associated with school performance and outcomes (Tanner, Davies, and O'Grady 1999). We start with those school behaviours that are mild infractions of the rules at school, infractions that intuitively should be related to academic performance, such as being absent from school, skipping classes, and arriving late to school. The YITS data reveal that between about a half and three quarters of these teenagers say they have not missed school, arrived late, or skipped a class in the two weeks prior to the survey. Even in the time frame of the whole school year, barely a majority (52.7%) admit to having cut or skipped a class without permission. In short, most students rarely bend the school rules.

Both from popular stereotypes and from the gender differences in academic performance, one might expect large gender differences in bending school rules, but this is not the case. Only minor gender differences in these reported school behaviours can be observed, and these are not altogether consistent; for example, girls are slightly more likely to have missed school than boys, but they are also slightly less likely to have arrived late. Taken together, these findings suggest that girls and boys do not differ in their tendency to bend the school rules. Hence this factor cannot account for, nor be a consequence of, the previously reported gender difference in academic performance, nor for the finding that girls have higher aspirations than boys.

Are these school behaviours nevertheless related to aspirations, even if they cannot account for the gender difference in aspirations? A monotonically decreasing relationship is found between bending of school rules and educational aspirations. Among those who don't even wish to complete high school, the mean score on the index

of bending school rules is 1.11. This decreases steadily to about half that number (0.57) among those who desire two or more university degrees. That is, those with lower educational aspirations are more likely to bend school rules. The relationship is approximately the same for both genders. Note that Gilbert et al. (1993: 29-30) found that dissatisfaction with school rules, as well as skipping classes, were associated with leaving school prior to high school graduation, and that the effect of these were about equal for males and females.

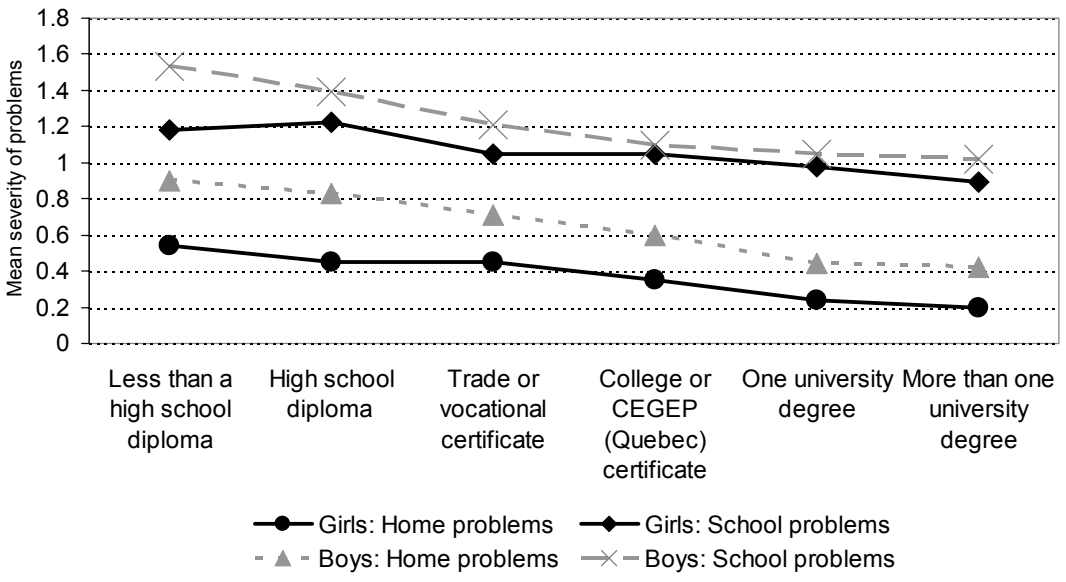
2.3.3 Breaking the rules at home and at school

As many parents and teachers will attest, 15-year-olds can be most difficult at times, with rules at home and at school being especially contentious. It would be easy to overstate these difficulties, since a majority of Canadian 15-year-olds (56.0%) report that they have stayed out later than their parents or guardians said they could at least once during the past 12 months. However, it should be noted that substantially fewer (15.9%) said that they stayed out all night without permission. Likewise, less than one-fifth (15.8%) admit that they have caused sufficient trouble at school to have had to talk with the school principal or other administrator, less than one in ten (8.2%) have ever been kicked out of school, and only one in forty (2.5%) have run away from home in the past year. In contrast to bending school rules, boys are consistently more likely than girls to have engaged in these problematic behaviours.

Are these behaviours connected in some way to youth's aspirations? To answer this question, a summary index of the severity of problems at school was constructed, that ranges from 0 (no problems in the past year) to 2 (has been kicked out of school). An analogous index was constructed for the severity of problems at home, ranging from 0 (no problems in the past year) to 3 (ran away from home). Figure 7 depicts the mean severity of problems by educational aspirations. For both boys and girls those with the lowest educational aspirations have the most severe problems both in school and at home. The severity of the problems generally decreases with the amount of education desired[11]. Note that at every level of education, problems both in school and at home are more severe among boys than among girls.

[11] The one exception to this finding is that girls who desire high school graduation versus girls who desire less than that. This result is best attributed to sampling fluctuation, since there are so few girls who desire less education than high school completion.

Figure 7
Educational aspirations by home and school problems, by gender

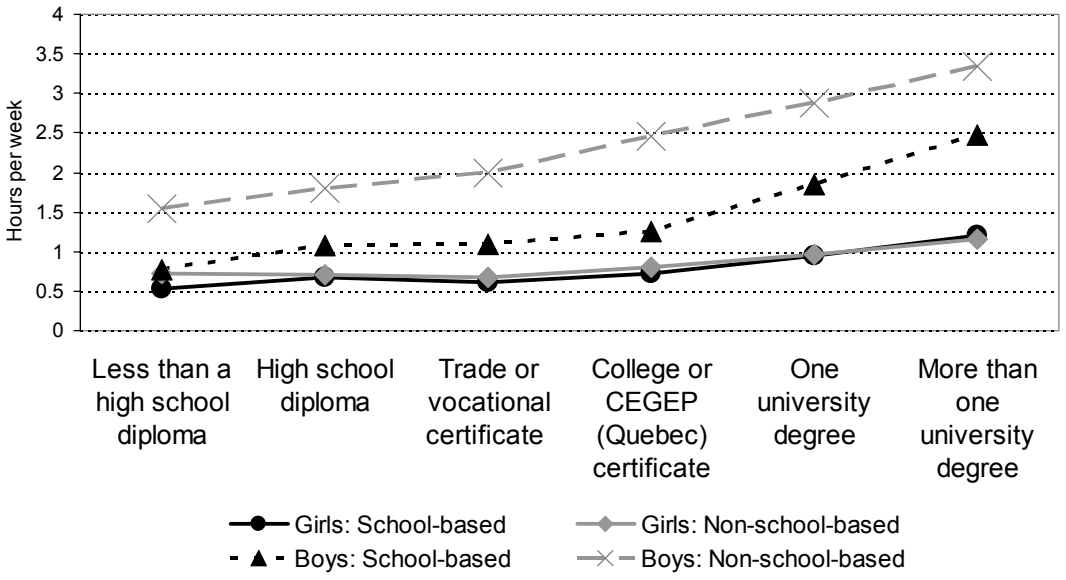


2.3.4 Extracurricular activities

Almost two thirds (62.5%) of Canadian youth are involved in at least one school-based extracurricular activity and 66.7% participate in at least one extracurricular activity that is not organized by the school. Only 18.5% do not participate in either type of activity. Boys and girls participate in those extracurricular activities that are typically associated with their gender. That is, boys are more likely than girls to participate in sport, regardless of whether it is school-based or not, although sports are the most popular activity for both genders. Girls, in contrast, are more likely to participate in all other types of extracurricular activities, again regardless of its connection to the school. This finding is interesting given Blackwell and McLaughlin's (1999) documentation that females obtain less educational benefit from extra-curricular activities.

Participation in extracurricular activities is positively related to educational aspirations: the more extracurricular activities in which youth are involved, and the greater the number of hours spent in extracurricular activities, the more education they desire. This is true for both boys and girls and for those extracurricular activities organized by the school as well as the ones not organized by the school. These results are consistent with those reported by Power (1999), which sees participation in extra-curricular activities as a way to expand students' social capital (see also Butlin 1999). Figure 8 shows the relationship between educational aspirations and average number of hours per week boys and girls spent in both types of extracurricular activities. Note that at all levels of educational aspirations, boys average more hours than girls of both school-based and non-school-based extracurricular activities.

Figure 8
Educational aspirations by estimated hours spent in extracurricular activities, by gender

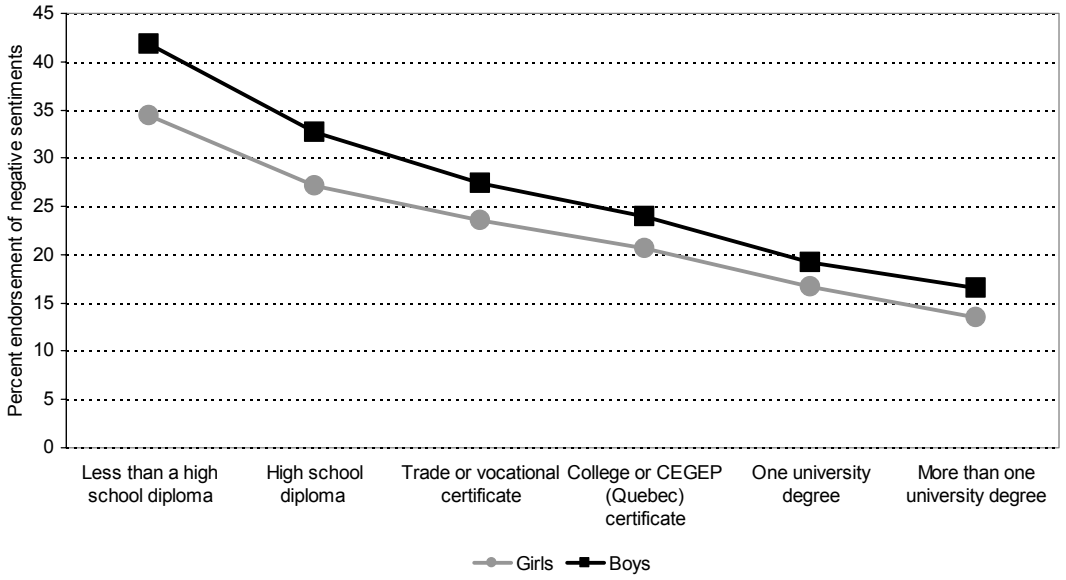


2.3.5 Disinterest and estrangement from school

The indicators of school involvement discussed in the previous sections had in common that they focussed on specific behaviours, such as skipping classes. In this final section on school involvement, we shift attention to more subjective, attitudinal aspects of school involvement. How do young people feel about school? (See Dandurand and Oullet(1993) for a discussion of these effects for Quebec students; See also Andres (1999); Perron (1996)). The YITS survey asked many questions about interest in and sense of mastery of school work on the one hand, and about more pervasive feelings of estrangement from school on the other. Summary measures of both disinterest and estrangement were constructed[12] and they reveal two consistent patterns. First, boys score higher than girls on both disinterest and estrangement (with averages of 16.4% and 14.1% on disinterest, and of 27.5% and 21.4% on estrangement, respectively). Second, both disinterest and estrangement are strongly associated with educational aspirations: the greater the disinterest and/or estrangement, the lower the educational aspirations. Figure 9 shows the relationship between estrangement and aspirations. Note that at each level of aspiration, boys are more estranged from school than are girls.

[12] For details on these summary measures, see the descriptions of *School disinterest* and *School estrangement* in the section on composite measures in the methodological appendix.

Figure 9
Educational aspirations by estrangement from school, by gender



From these patterns two conclusions seem warranted. First, for whatever reasons, boys experience their school environment as more alienating than do girls; this greater estrangement appears to be one of the factors accounting for their lower aspirations. Second, even those boys with the highest aspirations find their school environment to be more negative than do their female counterparts. Thus they are willing to pursue their aspirations despite the greater psychological costs currently associated with their education. Indeed, as we will show later, even by age 15 boys are less likely than girls to anticipate that they will enjoy going to college or university.

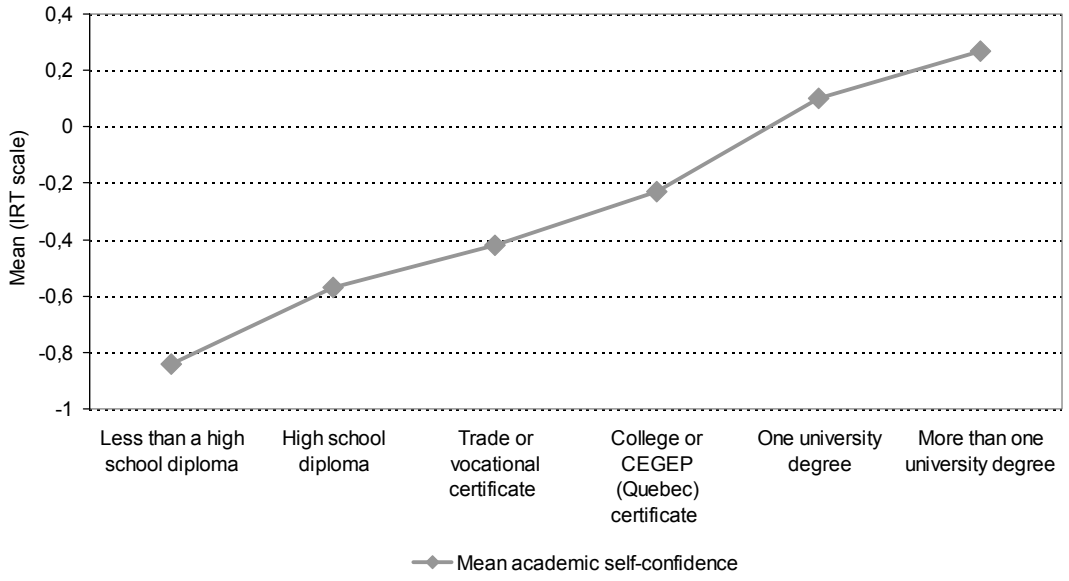
2.3.6 Summary – School involvement

This section looked at different indications of the youth's engagement and involvement with the school. As indicated above, on all measures, boys seem less integrated with the schools than girls. The overall patterns suggest that the more involved and engaged the student, the higher their educational aspirations. So, those who report spending more time on homework and those who participate in extra-curricular activities have higher educational aspirations; those who tend to bend or break the rules at home and at school and those who report fewer positive attitudes to their school, have lower aspirations. These differences may reflect gender differences in types of school program, discussed above. They may also account for at least some of the gender differences in educational aspirations. The multivariate analyses, below, allow us to examine the simultaneous effects of these different sets of variables.

2.4 Academic self-confidence

On the whole, young people are confident in their ability to do well in college or university; almost nine in ten young people (89.7%) agree or strongly agree with the statement "I am smart enough to do well in college." About 9% fewer students (80.6%) have the same level of confidence about their ability to do well in university. There is no gender difference in self-confidence about doing well in university, and only a slight difference in favour of girls for self-confidence with respect to their academic ability to do well in college (91.0% versus 88.3%, respectively). It is interesting to note that although girls are no more confident than boys with respect to their ability to do well in university, they are nevertheless more likely to aspire to at least one university degree (see earlier Figure 1). Hence the greater university aspirations of girls is not due to greater confidence in their ability to do well in university. It may nevertheless be the case that the lower percentage of girls who do not desire any post-secondary education is to a small extent influenced by their greater confidence about doing well at a college level. For both boys and girls, academic self-confidence (see the appendix for details on this measure) is strongly related to their educational aspirations (see Figure 10).

Figure 10
Educational aspirations and academic self-confidence



2.5 Job relevance of education

Canadian youth see a very close link between education and getting good jobs. About nine in ten (90.7%) agree or strongly agree that getting a good job later depends on their success in school now. Almost as many (85.6%) believe they will need to go to college or university to achieve what they want in life, and, fortunately, just about the same percent think they would enjoy going to college or university. Looking at the opposite end of the continuum, only 11.9% of youth feel that no matter how much education they

get, they will most likely end up with a low-paying job. Substantially more (28.7%) are pessimistic about their chances of finding a good job after completing all their schooling.

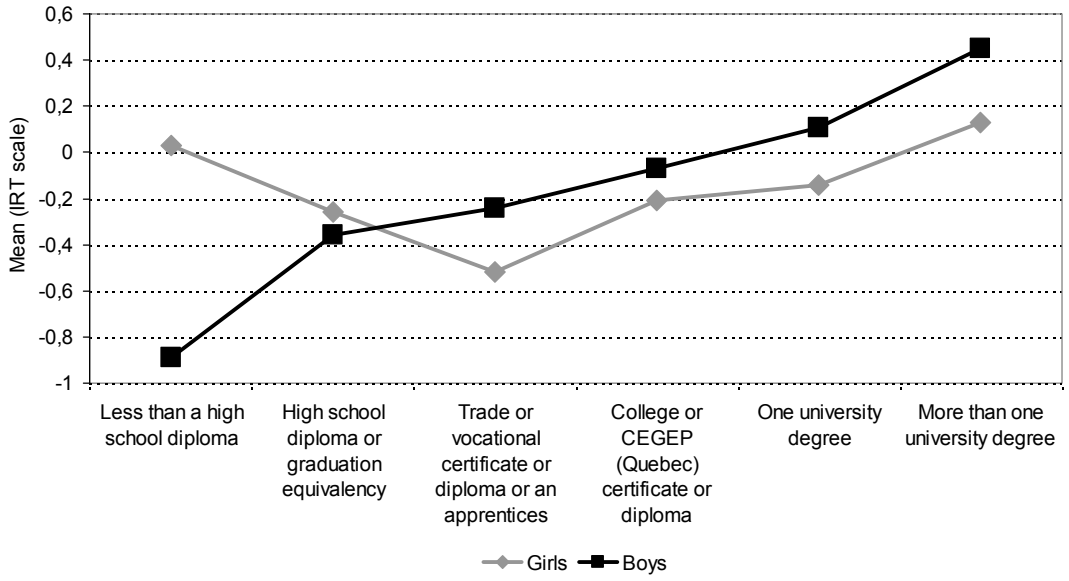
The link between education and future work opportunities is stronger for girls than for boys, with between about 5% and 8% more girls than boys endorsing the positively-worded—and rejecting the negatively-worded—points of view described above. The source of this gender difference remains unclear, but similar results are reported in another Canadian survey (Lowe, Krahn, and Bowlby 1997: 33). Since we have already established that girls have higher educational aspirations than boys, it seems likely on the basis of these results that one of the reasons for their higher educational aspirations is their greater awareness or belief that higher educational achievement is an essential ingredient for the type of work they envision for their future. Such beliefs in the importance of education vitally affect their anticipated educational pathways: the higher the level of education desired, the greater the perceived job relevance of education.

2.6 Information technology

An examination of Information Technology (IT) as it relates to educational aspirations is important because of the major investments made by governments to provide IT to communities and schools (Industry Canada 1996; Information Highway Advisory Council 1997). It is also important because of the equity issues raised in terms of differential access to, use of, and facility with IT by sub-groups of youth (Looker and Thiessen 2002).

The PISA section of the survey includes a number of questions that probe specifically with access to and use of Information Technology (IT). A composite index that captures the relative frequency of using computers for educational purposes shows that the higher the educational aspirations, the more frequently computers are used for such purposes (see Figure 11).

Figure 11
Educational aspirations by frequency of computer use, by gender



The multivariate analysis reported later in this paper will help identify how much of this effect is due to the influence of parental socio-economic status.

2.7 Role of parents and peers

Earlier we documented that the educational level of the parents, as well as an indirect indicator of financial resources, have strong bearings on the aspirations of their children. We now focus on additional ways in which parents influence their children's aspirations, followed by an examination of the role of peers in this process.

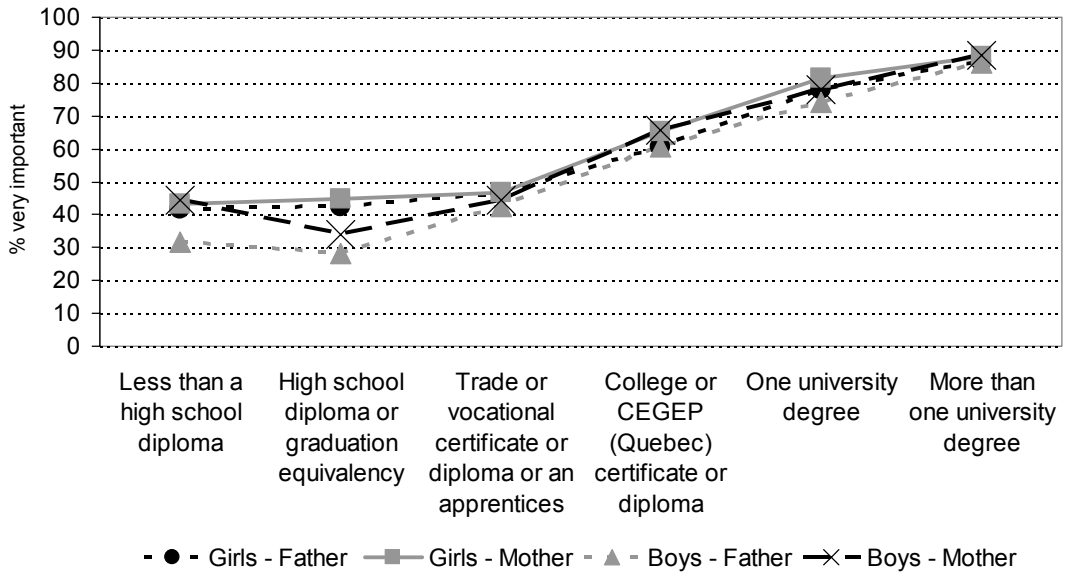
2.7.1 Parental encouragement of educational pursuits

Students were asked how important it was to each of their parents (or the person who was like a mother or father to them) that they graduate from high school, and that they pursue their education after high school. Both mothers and fathers are seen as strongly endorsing the importance of their children's education. Teenagers are somewhat more likely to believe that it is very important to their mothers than to their fathers that they complete high school (90.7% and 86.0%, respectively). Not unexpectedly, somewhat fewer parents are thought to consider it very important that their child participate in post-secondary education. Yet even here, upwards of seven in ten parents are believed to consider post-secondary education to be very important for their children.

Interestingly, somewhat more girls than boys hold these views about their parents. This is interesting since we have already documented that boys have lower aspirations than girls. This raises the possibility of selective perception operating here. Perhaps

boys believe that their parents do not consider educational attainment to be quite as important for them precisely because these boys themselves on average have lower educational aspirations.[13] In any event, youth's aspirations are intimately tied to how important they think their education is to their parents. Figure 12 shows the relationship of aspirations to youth's perception of how important their post-secondary education is to each of their parents.

Figure 12
Educational aspirations by perceived importance of post-secondary education to parents, by gender



Returning again to the possibility of selective perception, it is not possible with the currently available data to determine whether young people with lower aspirations selectively perceive that their educational attainment is less important to their parents, or whether it is indeed the case that parents are crucial socializing agents for instilling the value of education into their children. Suffice it to say that the more education young people desire, the more important they believe it is to their parents that they attend a post-secondary educational institution.

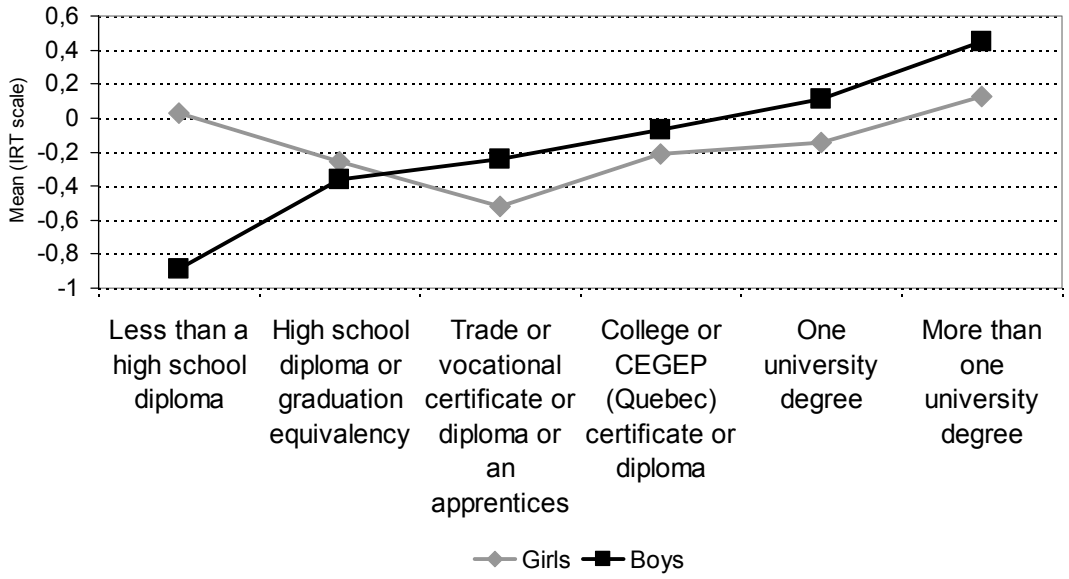
2.7.2 Household resources

A second role of parents in the educational pursuit of their children is to provide resources and supports to enhance their educational achievement. The PISA questionnaire inquired about the availability of educational resources in the home, such as dictionaries and a quiet place to study. Second, it inquired about educationally-relevant cultural possessions in the home: classic literature, books of poetry and works of

[13] To test this possibility of selective perception requires independent information from the parents; such information, although collected in the YITS survey, was not available at the time this paper was written.

art. Third, students reported on the frequency of discussions/activities that might enhance their cultural knowledge (cultural communication), or simply be expressions of parental interest and involvement in the lives of their children (social communication). Figure 13 shows the relationship of cultural possessions to their children's educational aspirations. The other aspects of household resources show a similar positive relationship with educational aspirations.

Figure 13
Educational aspirations and cultural possessions, by gender



2.7.3 Peer influences

The YITS questionnaire asked students about educational and social behaviours and orientations of their closest friends. Two aspects of the perceived orientations of peers are thought to be of special relevance to the educational aspirations of young people: their academic orientation, and their engagement in delinquent or disruptive behaviours. Academic orientation of peers is tapped by how many of them:

- think completing high school is very important;
- are planning to further their education or training after leaving high school, and;
- think it's okay to work hard at school.

The analyses reveal two consistent patterns (data not shown). First, girls are substantially more likely than boys to have close friends who value education and academic behaviours. For example, 51.5% of the girls, but only 38.4% of the boys report that all of their closest friends think completing high school is very important. Likewise, 36.5% of the girls compared to 25.8% of the boys believe all of their friends are planning to participate in post-secondary education. The second pattern is that the perceived orientation of peers has a bearing on their own educational aspirations. Specifically,

the more academic the perceived orientation of their peers, the higher are their own aspirations. It appears then, that the friendship networks of girls are in general more academic than the friendship networks of boys, and that teenagers either choose friends whose academic orientation is compatible with their own, or who influence their educational aspirations. Taken together, the two patterns could be part of the explanation for the higher educational aspirations of girls.

Neither the YITS nor the PISA questionnaire contains questions specifically about delinquency. However, respondents were asked how many of their closest friends:

- have skipped classes;
- have dropped out of high school without graduating;
- have a reputation for causing trouble;
- push them to do things that they feel are wrong or that make them uncomfortable, and;
- smoke cigarettes.

Negative peer influences form mirror opposite images to those found for academic orientation of peers in three respects (data not shown). First, overall the friendship networks are much less likely to engage in any of the negative behaviours than to act as positive academic influences. Second, the networks of girls are consistently less likely than those of boys to comprise close friends who have dropped out of school, skipped classes, have a reputation for causing trouble, or push them to do things that make them feel uncomfortable. Third, the higher the educational aspirations of students, the less likely that their friendship network engages in undesirable behaviours. That is, teenagers who have the lowest educational aspirations are most likely to report having close friends who have dropped out of high school, skip classes, or are reputed to cause trouble. Vice versa, those who desire two or more university degrees are least likely to have close friends who engage in these behaviours. Those with aspirations in between these two likewise exhibit patterns of decreasing likelihood of having such friends with increasing aspirations.

2.7.4 Summary – parents and peers

Parents provide a number of resources to their children that have an impact on their educational plans. Particularly important are the levels of encouragement parents provide for further education and the importance they are believed to place on higher education. As has been found in other studies, other aspects of parental status also have an impact, so that those with more access to cultural and educational resources at home have higher aspirations. Peers also have an impact, as indicated by some indirect measures available in this data set. Those whose friends have positive attitudes towards schooling and plan to pursue further education are themselves more likely to have high aspirations. Those who report their friends have participated in various deviant acts tend to be those with lower aspirations.

2.8 Work and volunteer experiences

The effects of work experiences on youth who are still in school have been extensively debated. On the basis of the empirical literature, it is reasonably safe to say that working while in school has no large negative effects on school performance except if such work experience is intensive, i.e., if it involves more than about 10 hours per week (Mortimer and Johnson 1998).

2.8.1 Paid work during the school year

A large majority (71.5%) of youth have at least one job during the school year. Consistent gender differences mark the work experiences during the school year. On all measures, girls work more during the school year than do boys: only about one quarter of the girls did not work during the school year compared to almost two in five boys. Additionally, girls work during more months of the school year (4.8 versus 3.4 months, respectively), work more hours during school days as well as on weekends, and consequently have worked more hours altogether during the school year (245.7 versus 195.4 total hours, respectively). Many of the jobs reported by girls were "odd jobs", which included baby-sitting.

Those who were working during the current school year were asked why they worked, and those who said they were not working were asked their reasons for not working. Turning to reasons for not working during the school term, the most important reason students cite is that they prefer to focus on schoolwork and activities. Girls were especially likely to mention this (45.8%), but at 36.0% it is also the most frequently cited reason among the boys.

Two of the reasons (I am looking for work but have not found any; My parent(s) will not allow me to have jobs or an odd job) are such that it can reasonably be inferred that the respondent would rather be working. About 5% more girls than boys cited each of these reasons, suggesting that they are experiencing somewhat greater difficulties obtaining work during the school year. In short, a solid minority of students who are not working have chosen not to work, primarily because of their decision to focus on school work (this is especially true for girls). Nevertheless a substantial minority would rather be working but either can't find work or their parents won't allow them to work (again, this is especially so for girls).

Youth were asked to rate whether working during the school year decreased, had no effect, or increased their overall marks, the amount of studying or school work they did, and their interest in school. Responses to these questions were combined into a composite school effects variable. Two similar questions regarding work effects on spending time with their friends and on the number of hours of sleep were combined into a personal effects variable.

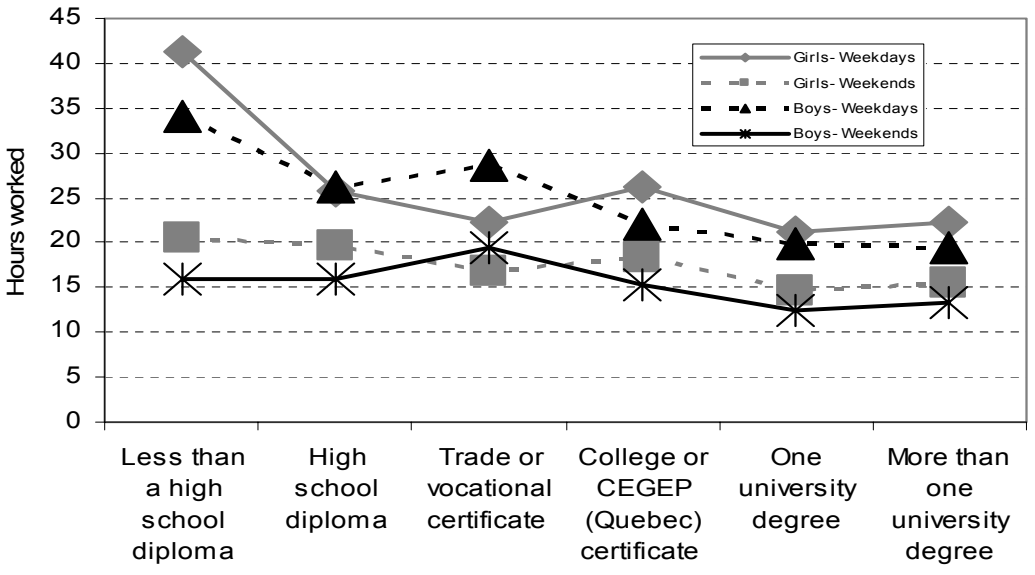
Two thirds of youth (67.1%) felt that on balance the effect of their work during the school year was neutral, while somewhat over one fifth (22.0%) believed it had adverse school effects and just over one in ten (10.9%) reported it actually had positive educational effects. Gender differences in these respects are both small and inconsistent.

The connection between work during the school year and educational aspirations is quite complex, and frequently differs by gender. Some of the largest gender differences concern those who desire to attend a trade or vocational school. It is among boys with such aspirations that we find the most intensive (an average of 45.4 work hours per month), the most extensive (working on average 3.7 months of the school year) and the highest total work experience (total number of hours worked during the school year averaged 258.8 hours). This high concentration of work experience among boys who feel a trade or vocational educational pathway is in their future suggests that they envision a specific trade for their future.

The situation is quite different for girls who aspire to a trade or vocational school. First of all, remember that this educational pathway is a much less popular one for them than it is for boys (3.3% versus 9.3%, respectively). Further, those who desire this educational pathway have very different work experiences from their male counterparts. Most dramatic is that they have the least intensive work experience during school days of all (an average of 127.7 total hours of work during school days during the school year). On most other measures of work during the school year, these girls lie in between those who don't plan on any post-secondary education and those who do. From these gender differences, it seems likely that the connections between work during the school year and occupational plans is more tenuous among girls than it is among boys. This could be one of the reasons why the trade and vocational educational pathway is not popular among girls.

Canadian young people who plan to attend college have distinctly different patterns of work during the school year than do those who have university in mind: they work more hours both during school days, and on weekends, and consequently, they have more total hours of work experience during the school year (see Figure 14).

Figure 14
Educational aspirations and work experience, by gender

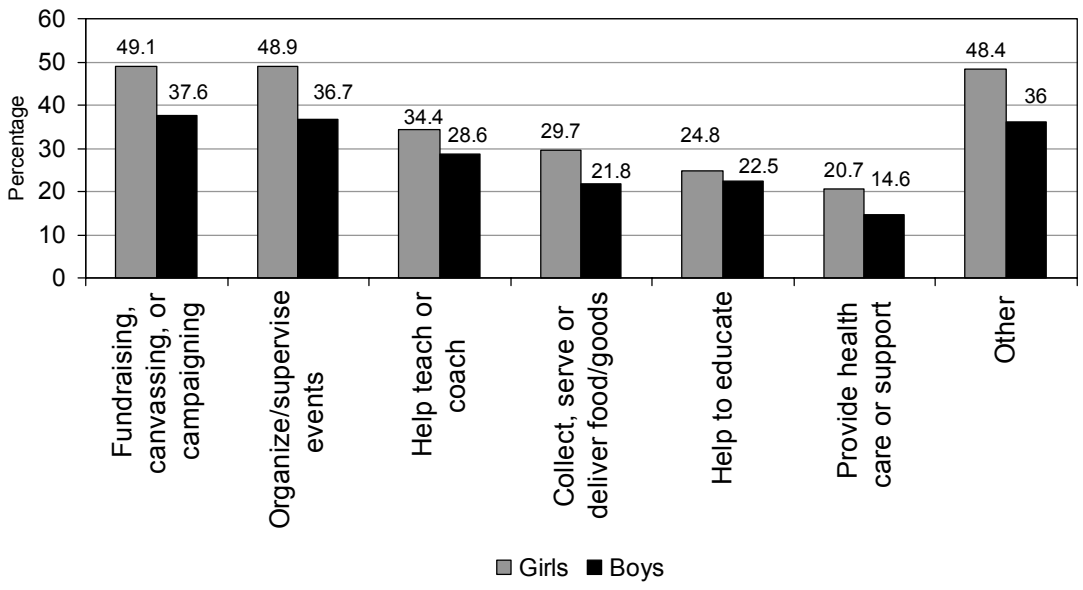


There are clear signs that the patterns of work experience among youth who would rather not complete high school are different from all other groups (data not shown). Youth (both males and females) who say they desire less than a high school diploma are particularly likely to work intensively during school days: in a typical month they average about ten hours more work during school days than those who would like to complete their high school but not participate in any post secondary education (36.8 hours versus 26.0 hours, respectively). However, the boys in this group have the least regular work experience. That is, they worked for fewer months of the school year than any other group (2.3 months), and consequently have the fewest total hours of work experience during the school year (146.2 hours). The combination of intensive hours of work on school days together with non-steady employment characterizes boys at risk of not completing high school. The relatively small group of girls at risk of not completing high school work more intensively and regularly both during school days and on weekends; i.e., they are simply heavily involved in work (287.7 total hours of work during the school year).

2.8.2 Volunteer work

Volunteer activity forms a part of many young people's lives. As Figure 15 shows, substantial numbers of young people are involved in a variety of volunteer activities. Indeed, only 36.3% did not participate in any type of volunteer work in the previous 12 months. It also shows that more girls than boys perform voluntary work of every type.

Figure 15
Participation in volunteer work, by gender



Volunteer activity has a modest connection with educational aspirations (data not shown). Among both boys and girls, the lowest number of volunteer activities is found among those who desire to attend a trade or vocational school; those who desire to obtain at least two university degrees participate in the largest number of volunteer activities.

2.8.3 Summary – work and volunteer experiences

Two thirds of youth worked during the school year. Girls reported somewhat more work than boys, often in the form of odd jobs. Most of the students felt this employment had little or no effect on their school performance, although some felt it had a negative impact (and a few felt it had a positive effect. The impact of work on educational aspirations is complex and varies by gender. Further analyses are needed to help identify the extent to which educational plans affect work patterns rather than vice versa. Volunteer work has much less of an effect on aspirations; the overall pattern is that those who aspire to higher levels of education tend to report more volunteer work, with girls being more likely than boys to report volunteer activities.

3. Multivariate analysis of educational aspirations

The analyses of educational aspirations conducted for this report indicate that, to a large extent, it is reasonable to interpret 15-year-olds reported educational aspirations as reflecting primarily their desired *amount* of education. The different educational pathways, from this point of view, are not so much differences in kind of education as differences in the number of years that youth imagine spending on formal education. Only for trade/vocational school is there some reason to believe that this educational pathway differs qualitatively from the others. Specifically, those aspiring to trade or vocational school frequently have characteristics in common with those who don't desire any post-secondary education, and indeed in some instances they were shown to share characteristics typical of those who would rather not even complete high school. However, this is the only exception to the general pattern, and holds only for those few (mostly boys) who aspire to a trade/vocational path.

In light of the overall patterns, in this section we will translate educational aspirations into the approximate number of years of education such aspirations imply.[14] This conversion has two benefits. First, it gives the resulting numbers an easily understood meaning, namely number of years of education desired. Second, the resulting measure conforms more closely to a metric level of measurement, permitting the application of regression analysis techniques.

This section presents several progressively more inclusive analyses to account for young people's educational aspirations. The logic behind these models is that they represent what we believe are increasingly distant determinants of youth aspirations. Accordingly, our first, or base, model is premised on the assumption that teenagers' aspirations are most immediately a function of their academic performance. The marks they have obtained in language, math, and science, and the school program they are in, for example, are included in this model. Our second model adds young people's school experiences, self-confidence, and beliefs about the job relevance of their education, as well as how positive or negative their school experiences have been to the set of explanatory factors. These perceptions and experiences are of course closely interwoven with their academic performance, but nevertheless clearly represent a different set of factors. The third model introduces the role of household resources and parental attributes, such as their social and cultural capital, thought to enhance their children's educational achievement and aspirations. The final model incorporates additional background factors (such as

[14] The conversion of educational aspirations to a scale of approximate number of years of education used is as follows: less than high school completion = 11; high school graduation = 12; trade or vocational school certificate = 13; community college diploma = 14; one university degree = 16; two or more university degrees = 18. This specific conversion is of course arbitrary, and to justify it, we replicated the analyses reported in this section with two different conversion algorithms. In the first, we relaxed the assumption that trade and vocational school represents one more year of education than does high school completion. The second conversion keeps the original ordinal numbers, ranging from 1 (less than high school completion) to 6 (desires two or more university degrees). If, as was the case, the three different numeric assignments to educational aspirations lead to the same conclusions, then the conclusions are not an artefact of the specific conversions used.

community size) that were featured in the profiles presented earlier. This model answers the question of whether any of these background characteristics continue to be a source of variation in educational aspiration after adjusting for the more immediate factors that are known to influence aspirations. Vice versa, this final model helps answer the question whether certain more proximate factors, such as breaking school and home rules, have an independent effect on aspirations once prior factors, such as parental socio-economic status, have been taken into account.

These models are developed separately for males and females, but in parallel fashion, to assess in what ways the process of educational aspirations is a gendered phenomenon. Before doing that, these models are estimated for the total sample, with gender added as a variable to the base model. The reason for introducing gender into the base model is that it permits us to assess how much of the gender difference in educational aspirations is attributable to gender differences in academic performance, effort, school experiences, and attitudes, values, and beliefs.

To keep the analyses from becoming too complex, we excluded any variable which failed to have a significant *independent* effect in the full model on educational aspirations in any of the three samples (total, boys only, girls only). On this basis, province (other than Quebec/non-Quebec in conjunction with language), family structure, mother's work status, number of siblings, birth order, bending or breaking of school rules, home problems, remedial classes of any kind, being below grade for age, academic orientation of peers, negative peer influences, household educational resources, school estrangement, volunteer work, were excluded.[15] Table 1 provides a brief description of the variables used in this and subsequent multivariate analyses.

[15] Some additional variables (achievement press, disciplinary climate, student relations, and teacher support - variables not discussed in detail in the bi-variate analyses, above) were initially included in multivariate analysis but then excluded either because they had no direct effect on educational aspirations after controls, or because the apparent direction of their effect switched from positive to negative after controls.

Table 1
Descriptive information for multivariate measures

Variable	Meaning of a score of 0	Mean	SD
Marks	At the pass mark	0.62	0.558
Training in study skills	No training in study skills in the last 3 years	0.28	0.450
Advanced classes	No enriched or advanced classes in the last 3 years	0.35	0.477
School program	High school terminal program	1.64	0.676
Hours of extracurricular school activities	None per week	1.81	2.490
Hours of non-school extracurricular activities	None per week	2.59	2.930
Homework hours	International mean	0.09	1.05
School disinterest	Did not endorse any negative school sentiments	15.24	18.937
Academic self-confidence	Canadian mean	0.00	0.669
Job relevance of education	Canadian mean	0.00	0.644
Frequency of educational computer use	International mean	0.02	1.002
Mother's education	Canadian mean	0.00	1.129
Father's education	Canadian mean	0.00	1.239
Parental socio-economic status	Canadian mean	0.00	16.093
Household possessions	International mean	0.41	0.880
Cultural activities	International mean	0.12	0.948
Cultural possessions	International mean	-0.12	1.004
Importance of post-secondary education to parents	Canadian mean	0.00	0.637
Familial homework support	International mean	-0.07	0.915
Weekend work hours	No hours of paid work	14.88	21.621
School day work hours	No hours of paid work	22.29	26.524

3.1 Analysis of total sample

3.1.1 Academic performance

Among these immediate factors of educational aspiration, the most important ingredient is the school program in which young people find themselves, followed by their score on the

reading test and the amount of time spent on homework.[16] The academic factors included in the base model account for 29.9% of the variation in years of education desired.[17] We must keep in mind that girls, on average, desire about a half year (0.49) more education than boys. Table 2 shows that about four-fifths of that gender difference is directly attributable to girls performing better academically and spending more time on homework, since the estimated gender difference in educational aspirations after controlling just for the academic performance variables reduces to less than a tenth of a year (b=0.09).

3.1.2 School experiences

The second model documents the importance of students' academic self-confidence and of their beliefs about the relevance of education to their jobs and careers. Each of these has an independent effect on their educational aspirations that is exceeded only by the school program in which they are placed (ß=0.16 for both of the former and 0.22 for the latter). Further, students with high aspirations are especially likely to frequently use computers for educational purposes. Finally, students who spend more time in extracurricular activities, both within and outside of school, have higher aspirations, and conversely working long hours on weekends appears to have a dampening effect on aspirations, as does school disengagement.

The fact that the effects of all indicators of academic performance are reduced relative to the first model testifies to the close connection between how well one does academically and one's beliefs and school experiences. As indicated previously, with cross-sectional data it is not possible to test whether, for example, those with more confidence subsequently perform better academically, or whether students who do well academically simply become more confident. Given this, the significance of the second model is that it documents that the one set of factors is not reducible to the other. That is, regardless of the actual dynamics, both academic performance and non-academic experiences during the school year, although affecting each other, nevertheless also independently influence aspirations. Indeed, all variables for both sets of indicators remain statistically significantly related to educational aspirations even in the full equation.

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[16] In the multiple regression tables, the columns labelled *b* are the unstandardized regression coefficients or slopes. These represent how many years more (or less, if the coefficient is negative) desired education is associated with one unit change in the independent variable (the variables listed in the left hand column), holding constant all other variables included in that column. The column labelled *s.e.* contains the standard errors of the unstandardized regression coefficients (using a variant of the Balanced Repeated Replications—BRR, known as Fay's replicates to take into account the complex and nested sampling design). The 95% confidence interval for any *b* is obtained by adding and subtracting twice (more precisely, 1.96) the standard error to the corresponding *b*. If this confidence interval does not include the value of 0, then the effect of the corresponding variable is statistically significant at the conventional 0.05 level (i.e., we can be 95% certain that there is an effect). The column labelled ß is the standardized regression coefficient, which expresses all the slopes in a common metric, namely standard deviation units. It represents how many standard deviations change in the dependent variable (desired education in this report) is associated with one standard deviation change in a given independent variable, again after controlling for all other variables included in that equation. The relative importance of any factor can, with some caution, be inferred from the absolute magnitude of the standardized regression coefficient (often symbolized as ß—a convention also followed here). For example, since academic stream has the largest coefficient, it has the largest effect within that model.

[17] The proportion of variance in the dependent variable that is jointly determined by all the independent variables included in a given equation is given by R^2.

TABLE2

3.1.3 Parental roles

As shown in the third model, parents play an important role in shaping the aspirations of their children. This role has several components. First, and most important, is parental encouragement of post-secondary education: students who believe it is important to their parents that they participate in post-secondary education have higher aspirations (ß=0.15). Second, advantages accruing to children from their parents' financial resources appear to influence their aspirations, since both household possessions and parental socio-economic status have independent effects. Third, in addition to any financial advantage, parents with more education have children who desire more education, suggesting that parents act as role models for their children's educational plans. Finally, cultural capital, in the form of possessions of works of art and other culturally-prized objects exerts an effect on youth's aspirations, as does participation in cultural activities, net of all other effects, even though the net effect of each is fairly small.

The negative association between familial homework support and educational aspirations is, at first glance, counter-intuitive. A possible reason for the negative relationship is the complex ways in which parental help with homework is related to academic performance. A familial dynamic that could make sense of these patterns is as follows. The stimulus for family members to help a student with his/her homework is when the family members perceive the student's academic performance to be problematic; that is, when the student is perceived as not working to their potential. Under these problematic conditions, family members, especially parents, spend time with their child on homework, resulting in the student doing more homework (additional analyses, not shown, indicates a positive correlation between parental educational support and amount of time spent on homework). Similar relationships have been documented in other data. Using the first wave of the NLSCY, Ertl (:39), for example, found that children whose parents checked their homework on a daily basis, as well as those who frequently read with their child actually scored lower on a mathematics achievement test than those who less frequently were involved in these ways. It would be unwarranted to conclude that parental support is counter-productive. Rather, the apparent negative effect may be nothing more than the manifestation of selection effects.

Although the effect of any one of the parental factors is relatively small, together they have direct effects on educational aspirations that increase the explained variance by four percentage points. This is in addition to the indirect effects parents have through their influence on the factors included in the first two models.

3.1.4 Background factors

The final model in Table 2 shows that youth from larger communities have significantly higher aspirations than others, and that such higher aspirations cannot be attributed to community size differences included in any of the previous analyses, such as academic performance, self-confidence, or parental influences. This may indicate that the additional cost of attending university may act as a sufficient barrier to youth living in smaller communities to make them hold lower aspirations. Also, after adjusting for all relevant

factors, French-speaking students in Quebec aspire on average to about half a year less education than their English-speaking counterparts (b=-0.48[18]). This most inclusive model accounts for a respectable 42.3% of the variance in educational aspirations.

3.2 Analyses by gender

To what extent do processes that determine educational aspirations differ by gender? One way to tackle this question is to perform the multivariate regression analyses separately for boys and girls. The results of such analyses lead to the conclusion that the processes that underlie the educational aspirations of boys and girls seem remarkably similar. This conclusion is based on the finding that, by and large, factors that significantly affect the aspirations of boys also affect the aspirations of girls, and do so in the same manner; i.e., if a given factor is positively related to educational aspirations of boys, it is also positively related to the educational aspirations of girls. Vice versa, if a given factor is negatively related to such aspirations for one gender, it is also negatively related for the other gender. Although the same factors are at play for boys and girls, their relative importance differs. These gender differences in relative importance suggest that the actual dynamics by which girls and boys develop their educational aspirations differ in some significant ways. These differences will now be detailed (see Tables 3 and 4).

It should first be noted, that in all the models the intercept for girls is significantly higher than the corresponding intercept for boys. This indicates that girls with identical baseline characteristics as boys nevertheless have higher educational aspirations than their male counterparts. That is, when setting all explanatory variables at 0 (the meaning of which is given in Table 1) girls are predicted on average to desire approximately a half year more education than boys (15.1 years versus 14.6 years, respectively). This gender difference in educational aspirations remains approximately the same regardless of which particular model (i.e., which sets of variables) is being considered. In other words, comparing boys with girls of identical characteristics, girls are estimated to desire about a half year more education than boys. This suggests that girls simply have higher aspirations than comparably situated boys. Second, the effects of all academic performance measures are consistently stronger among boys than girls.[19] Although girls tend to score higher on academic achievement, the effect that academic achievement has on educational aspirations is stronger among the boys than the girls. In other words, academic performance is more determinative of aspirations for boys, a result that has been found in other studies (Furlong, Kasurinen, Biggart, and Sinisalo 1998). Third, effort in school work, as measured by the amount of homework done, plays a bigger role among girls than among boys. It seems that girls who have high aspirations put in greater effort than boys as the means to achieve their goals.

[18] In order to introduce a multiple category nominal variable (such as our province/culture variable) in a multiple regression equation a set of "dummy" or stand-in variables are created. One of the set is omitted from the regression in order to act as the reference category. In this instance, it is the unstandardized coefficients (the "b's") that are relevant.

[19] To make gender comparisons about the relative magnitude of various factors, it is important to contrast the unstandardized—rather than the standardized—regression coefficients, since the latter coefficients include the ratio of the standard deviation of the independent variable to the dependent variable. This ratio may differ between boys and girls.

TABLE3

TABLE4

Likewise, beliefs about the job relevance of education are more important for girls than for boys. That is, girls are somewhat more likely than boys to have their aspirations guided by how relevant they believe their education is for their future jobs (see Feldhous 2002). Interestingly, weekend work hours have a dampening effect on boys' aspirations (ß = -0.03); among girls, working more hours on weekends is associated with a modest but statistically significant positive effect (ß = +0.03). This suggests that among boys, heavy involvement in paid work is a symptom of withdrawal from academic pursuits but a facilitator of high aspirations among girls. Finally, only among girls does mother's education have an effect independent of father's education on their aspirations.

In summary, the factors that determine the educational aspirations of boys and girls are quite similar. Nevertheless, it seems that for boys academic achievement is a more decisive factor in their aspirations than it is for girls. In contrast, belief in the job relevance of education in conjunction with personal efforts to perform better academically, are more important for girls than for boys. In addition, mothers appear to act as role models for their daughters, but not for their sons.

3.3 Summary – multivariate analysis of educational aspirations

This section looks at the predictors of the youth's level of educational aspiration, treating these aspirations as a linear hierarchy, by translating them into number of years of education. One of the important findings consists of identifying those variables which had an effect at the bivariate level, but which have no direct effect on educational aspirations after controls in a multivariate regression equation. These include: province (other than Quebec/non-Quebec in conjunction with language), family structure, mother's work status, number of siblings, birth order, bending or breaking of school rules, home problems, remedial classes of any kind, being below grade for age, academic orientation of peers, negative peer influences, household educational resources, school estrangement, volunteer work.

In this context, academic performance, particularly as indicated by the student's program of study, comes through as one of the most important predictors of educational aspirations. School experiences also have an impact, particularly as these affect their academic self-confidence and their beliefs about the relevance of education to their future careers.

While one's socio-economic background has an effect, net of these other factors, parental encouragement has even more of an effect, for both males and females. Differences based on community size and cultural differences among Francophones and Anglophones also persist, even after controls on the student's background and their academic performance.

As indicated above, while the patterns of influence are similar for boys as for girls, there is a tendency for academic performance to have more of an impact on the educational aspirations of young males. For girls, on the other hand, effort and belief in the importance of education are more likely to have an impact on their educational plans.

4. Policy Issues

A number of policy relevant recommendations can be developed on the basis of the analyses in this report. While a number of variables have been shown to be related to educational aspirations, many of them (such as parental background characteristics) are not amenable to modification through policy initiatives. In this section we will focus on the results that suggest actions that can be taken.

The first important point to note is there seems to have been some success with past initiatives which encourage Canadian youth to stay in school with the message that "high school may not be enough" (Human Resources Development Canada and Statistics Canada 1998), given the high number of youth who not only plan to pursue some post-secondary education, but to get one if not two university degrees. There seems to have been less success, except in Quebec among the Francophones there, in casting college and other post-secondary paths as viable alternatives to university.

It is also apparent that university is seen as "more" education than college or trade/vocational school (a message which is exacerbated by research which asks about "highest level" of education – with university at the top). Given the current limited capacity of universities to absorb additional students, encouraging more students to pursue a postsecondary education will require either a concerted effort to encourage a wider diversity of post-high school paths or considerable investment and long term planning to expand the capacity of universities in terms of both physical and faculty resources. Another alternative would be to put in place incentives for Canadian youth to pursue a university education outside Canada, although that is not likely to be a viable alternative for many youth. Access and opportunity obviously play a role in making non-university post-secondary studies more attractive – as is evidenced by the preference for CEGEP and colleges by Quebec youth and those from smaller communities, respectively. If more colleges and other non-university options were made available, made visible and defined by counsellors and teachers as desirable, our results suggest that more Canadian youth would take those paths after high school. On the other hand, if one wants to make access to the different forms of higher education more equitably available to all Canadians – in small as well as larger communities, then increased access to university level programs in smaller communities may be necessary. This access could take the form of subsidies to youth from smaller communities, increased transfer of credits between colleges and universities and/or access via distance education, taping into the potential of some of the new communication tools.[20] If the barriers to youth from smaller communities are those associated with having to move from their home town and

[20] But see Dickinson and EllisonDickinsin, P. and J. Ellison. 1999. "Getting Connected or Staying Unplugged: The Growing Use of Communication Services." Statistics Canada, Ottawa.; Looker and ThiessenLooker, E. Dianne and Victor Thiessen. 2002. "The digital divide in Canadian schools: factors affecting student access to and use of information technology. ." Council of Ministers of Education, Canada, Ottawa.; Reddick et al. Reddick, A., C. Boucher, and M. Groseilliers. 2000. "The Dual Digital Divide: The Information Highway in Canada." Public Interest Advocacy Centre, Ottawa.; Rideout Rideout, V. 2000. "Public access to the Internet and the Canadian digital divide." Canadian Journal of Information and Library Science 25:1-21.; Thompson-Jones Thompson-Jones, M. 1999. "Computer use and Internet use by members of rural households." Statistics Canada, Rural and Small Towns Bulletin, Ottawa. for discussions of the rural-urban digital divide.

having to adjust to a new, unfamiliar environment (see also the British Columbia Ministry of Education 1998; as is suggested by Looker and Dwyer 1998), transition programs in universities and colleges which target rural (and other migrant) youth might help mitigate these effects.[21]

Throughout our analysis, the importance of parents comes through. What is intriguing, particularly in the multivariate analysis, is that parental encouragement has an effect separate from the effects of parental education, income, status and household cultural capital. Indeed, the effect of parental encouragement for further education is stronger than the effect of these types of capital. This suggests that those who are disadvantaged in terms of material and cultural resources can compensate for this lack through encouragement. While we cannot directly test this with the available data, it also suggests that other forms of encouragement might have a similar effect. In other words, those who do not receive encouragement at home may be convinced to continue their education by others. The fact that those with more academically oriented peers have higher educational aspirations is consistent with this argument. While one cannot create policies to have a student's friends or parents encourage them to continue beyond high school, one can create in-school and community based supports which do just that (The Rural Education Advisory Committee 1995).

There are other, more direct effects of school experiences evident in many of the analyses. Doing well in school has the predictable positive effect of wanting to stay longer in an educational setting. More interesting perhaps are the effects of streaming and of attachment to school. The existence of university versus non-university preparatory classes sends two messages to students. First of all it reinforces the idea that university is better and "higher" than any non-university options. Secondly, since university preparatory classes tend to be defined as more difficult than the other classes, those in the non-university courses tend to see themselves as less capable academically. This lower level of self-confidence is itself a predictor of lower aspirations (Cowley, Meehan, Whittaker, and Carey 2002). Students who take these non-university preparatory courses have also, in many instances, cut off a number of future options. That many students do this before the end of grade 10 suggests that more needs to be done to ensure that students and their parents are made aware of the implications of these course choices.

The effect of attachment to school, in the various forms that it takes, on educational aspirations is particularly important in light of the clear and consistent gender differences that we have explored in some detail. Boys are more likely to have lower levels of attachment to school on the one hand and lower educational aspirations on the other. Boys are known to drop out of school in greater numbers and at a younger age than girls. Perhaps little can be done to balance the somewhat lower academic performance of boys, but programs can be instituted which recognise the different issues facing teenage boys and girls in the classroom (Thiessen and Nickerson 1999). One can devise programs that increase the engagement of young men with the education system. The Nova Scotia

[21] Striplin Striplin, J.J. 1999. "Facilitating Transfer for First-Generation Community College Students." ERIC Digest, ERIC Clearinghouse for Community Colleges, Los Angeles. documents some programs that are designed to ease this transition for first generation college students.

School-to-Work Transition (NSSWT) Program is an example of a program which had that effect for some of the young men leaving high school (see Thiessen and Looker 1999). The current research suggests a number of potential components to such a program, including emphasizing the link between education and future occupations for young men. The positive impact of participation in enriched classes on educational aspirations indicates a potential for introducing additional such courses – assuming those most in need of them could be enticed into taking them. The hope is that as young men (and those young women who are disengaged from school) become more involved and engaged, this will affect other important aspects of their school experiences, such as the time they spend on homework and their academic performance.

The negative effects of working long weekend hours (in terms of later educational aspirations) may suggest that those who are disillusioned with school see work in a more positive light than others. Closer ties to the school may mitigate some of these effects. Again, these effects are stronger for males than for females, suggesting that those designing an intervention should pay particular attention to attracting young men.[22] Since most of the youth respondents said that the main motivation for working was to earn money to buy things they wanted (rather than to gain experience or to save money for the future), incorporating paid work into the school experience might increase the attachment of these young men. Co-operative programs often have a component with paid employment, but in many jurisdictions such programs are restricted to those in honours courses – i.e. not those who need incentives to define school in a positive way. Despite the interest in volunteer work as a means of obtaining work experience, this experience seems to have little impact on the youth's educational aspirations. It may be that the advantages that accrue to those who undertake volunteer activities are indirect, with possible effects on self-confidence or clarity of expectations. Exploring such possibilities are beyond the scope of this paper. Minimally we can say if the goal of a particular policy is to modify the educational aspirations of a sub-group of youth, actions which target school based experiences or those that involve paid work are likely to have more effect than those which focus on volunteer work.

The impact of IT on educational aspirations, even after controlling for a range of school performance and background variables suggests that there may be potential in exploring this dynamic more. Males have traditionally dominated computers in the classroom. Other analyses from this same data set (see Looker and Thiessen 2002) indicate that they are more likely than females to use the computer for a number of different tasks, to feel more comfortable with computers and to see themselves as more competent with various forms of IT (see also Bimber 2000; Bolan 2000; Chan, Stafford, Klawe, and Chen 2000; Hanson 1994; Oberg and Gibson 1999; Pritchard 1998; Withers 2000). These results suggest that IT may be a way of increasing the engagement of young men with their school.

There was some indication that non-school extra-curricular activities, in particular, encouraged youth to aspire to higher levels of education after high school. This finding suggests an important role for community groups in encouraging youth to extend their education.

[22] For example, although the NSSWT program was particularly beneficial to some boys, twice as many girls as boys applied to that program (Thiessen and Looker, 1999: 57).

The area where more attention needs to be given to the paths taken by the young women is in the areas of trades and vocational training. The fact that so few girls opt for this post-secondary path – and the skilled crafts and trades occupations they lead to – is not new (Butlin 1999). These data confirm that little has changed in this regard. This tends to be an educational path dominated by men – and the aspirations of the fifteen year olds in the YITS survey suggest that it is likely to stay that way unless specific measures are taken to change it. Students from larger communities are also less likely than others to list a trade/vocational school as their desired post high school path. It is not clear if this simply reflects the other options available to them – which many define as "higher" options - or whether the trades can be promoted among these students as well.

5. Conclusion

As indicated in the Introduction, Canada is seen as having a relatively open system of education. As Buchman and Dalton (2002:102) note, in such systems "nearly all children are encouraged to compete for higher education with little concern for early differences in ability or achievement. " A second consequence, and one that is considered a distinct advantage, is that open educational systems "delay the final award as long as practicable to permit a fair race" (Turner 1960:858). That is, due to a commitment to equal access opportunity, such systems should minimize the effect of parental socio-economic resources and other sources of disadvantage. A third consequence is that parental and peer encouragement is thought to play a much bigger part in young people's educational aspirations in such systems—an effect recently documented in comparative research based on the Third International Math and Science Study (Buchman and Dalton 2002).

To what extent do our findings resonate with these expectations? Certainly young people in Canada today have remarkably high educational aspirations. It would not be far-fetched to conclude, as Davies (2003) does, that Canada has entered an era of universal post-secondary education. Are such high aspirations to be welcomed? Although negative consequences, such as dashed hopes for some, are inevitable, on balance these high aspirations represent something of which Canadians can be justly proud. This conclusion is based on two main findings. First, there is little evidence of deep dissatisfaction among youth concerning their educational experience; by and large they find it to be a rewarding one. Secondly, by the age of 15, young people's academic performance to date has already been instrumental in channeling young people's educational aspirations into pathways that are to some extent congruent with their abilities and accomplishments. At this age, it is still the case that some young people have aspirations that arguably exceed their talents. This is primarily due to their high value that Canadian society places on a university education. Students' academic performance in the final two years of high school will in all likelihood further refine the appropriate educational pathways for them.

With respect to equitable access, the results show that parental socio-economic position plays a decidedly limited role. None of the parental socio-economic indicators available for this report have large direct effects on their children's aspirations. This is not to deny the salience of parents in the dynamics that shape their children's aspirations. Of primary importance is parental encouragement of post-secondary education. Although better-educated parents are somewhat more likely to be perceived as valuing their children's post-secondary participation, such parental encouragement seems to apply to children regardless of their parental socio-economic status. Hence, parents are important but the reason for their importance may not be in the first instance due to their socio-economic status or the access to financial resources. Rather, it may be due to the clear messages they give to their children that post-secondary education is important for them. This greater role of parental encouragement compared to socio-economic status is precisely what one would expect in open educational systems such as the ones that characterize Canada.

Scholars have argued that peers should also be a crucial factor influencing young people's aspirations. Our analyses show that young people form friendship networks among those whose academic orientations are similar to their own. However, in sharp contrast to parental influence, there is no sign in the data that peers have an independent effect on young people's aspirations. Other studies of open educational systems have similarly reported that peers have a smaller effect than parents (Buchman and Dalton 2002).

The findings reported in this paper are based on phase one of the YITS/PISA survey. Many important questions about causal ordering of variables and of the ways in which youth aspirations change over time cannot be answered until the follow-up data from later phases are available. Nevertheless, this detailed analysis of a recent, nationally representative data set gives us some important, new information on factors affecting the educational aspirations of these youth.

6. Methodological Appendix

6.1 The data

This paper is based on Cycle 1 of the YITS/PISA survey of 15-year-olds. The target population were youth born in 1984 attending a school. A two-stage sampling design was used, with the first stage being schools (a total of 1,200 were selected) and the second stage being students within schools. Only schools in the ten provinces were selected. Excluded also were schools located on Indian Reserves and various types of schools where administration of the survey would be difficult, such as schools for children with severe learning disabilities, schools for the blind and deaf students and home schooling. Altogether, less than 2% of Canadian 15-year-olds were excluded. Provincial Ministries and Departments of Education provided lists of schools serving 15-year-olds and these were used to create the school sampling frame. Within schools, a minimum of 35 students per school were selected to participate; all students aged 15 were selected in those schools with fewer than 35 students of that age. The provinces of Nova Scotia, New Brunswick, Quebec, Ontario and Manitoba required separate PISA assessments by whether English or French was the language of instruction of the school. This meant that in some provinces where there was a small population of students aged 15, or small populations of such students in a particular language group, samples of more than 35 students per school were necessary. Information from the students was collected from April to May 2000. The total sample size was 29,687.

Age 15 was chosen to capture the school leaving process of all youth, since with some exceptions young people are legally required to be enrolled in school until age 16. It is difficult to determine exactly when a young person has left school, since this is more a process than an event. Using self-reported recall data from the School Leavers Survey, it is estimated that 14% of youth left school at age 15 (cited in Human Resources Development Canada, Canada., Council of Ministers of Education Canada, and Provincial ministries and departments of labour and education 2000:18). To reduce the numbers of youth who might have left prior to the PISA assessment, school records from the fall term were used.

6.2 Indices created for this report

6.2.1 Marks

An index of marks was obtained from PISA Question 41: "On your last school report card, how did your mark compare with the pass mark in each subject area:

- English language and literature
- Mathematics
- Science (e.g., chemistry, physics and biology)?"

The three available response options were recoded so that:

-1 = "below the pass mark"

0 = "at the pass mark"

1 = "above the pass mark".

The index consists of the mean of these recoded values over the three subject areas. Hence a score of 1 on the index, for example, implies that the student performed above the pass mark in all three subjects.

6.2.2 Special courses

Several indices for having attended special study courses were created from responses to PISA Question 23 and 24. Question 23 asked: "During the last three years, have you attended any of these special courses *at your school* to improve your results?

- Enriched or additional courses
- Remedial or make-up courses in English language and literature
- Remedial or make-up courses in other subjects
- Training to improve your study skills."

Question 24 asked a parallel question with identical topic areas, but with respect to courses "outside of your school". It also inquired about one additional study component:

- "Private tutoring".

Response options to all these sub-questions were "no, never"; "yes, sometimes"; and "yes, regularly". These were dichotomized into: never took such a course (0) and took such a course (1).

6.2.3 Advanced classes

0 = checked "no, never" to both Question 23a and Question 24a; otherwise = 1.

6.2.4 Remedial classes

0 = checked "no, never" to Questions 23b, 24b, 23c, and 24c; otherwise = 1.

6.2.5 Training in study skills

0 = checked "no, never" to both Question 23d and Question 24d; otherwise = 1.

6.2.6 School program (stream)

Question 25 in PISA asked students: "What program are you in at school?" The available response options were recoded so that:

0 = "A program that prepares you for a job (no further education required)."

1 = "A program that prepares you for further trade or technical education at a college or CEGEP."

2 = "A program that prepares you for further education at a university, college or CEGEP."

6.2.7 Hours of extracurricular school activities

This is based on YITS Question C3: "Since September, how many TOTAL HOURS EACH WEEK do you usually spend participating in SCHOOL clubs, teams or other school-based extracurricular activities?" The response options were recoded to make them interpretable as hours:

0 = "None"

0.5 = "Less than 1 hour a week"

2 = "1 to 3 hours a week"

5.5 = "4 to 7 hours a week"

8.5 = "8 or more hours a week".

6.2.8 Hours of non-school extracurricular activities

An identical question, with identical response categories, to the previous one (C3) was asked with respect to non-school extracurricular activities, and the responses were recoded in an identical manner.

6.2.9 Personal effects of working

(See immediately below)

6.2.10 Schools effects of working

Question G17 of the YITS questionnaire asked: "This school year, how has working at a job or odd job affected …"

YSG17A "Your overall marks? "

YSG17B "The amount of studying or school work you do? "

YSG17C "Your interest in school? "

YSG17D "The time you spend with your friends? "

YSG17E "The number of hours of sleep you get? "

Three response alternatives (decreased, stayed the same, increased) were provided. These were recoded to –1, 0, and +1, respectively, so that a score of 0 means it was thought to have had no effect. A principal components analysis (PCA) of these five variables extracted two factors that clearly differentiated the first three variables (**school effects of working**) from the last two (**personal effects of working**). After varimax rotation, the factor loadings of the five items on their respective factors exceeded 0.7, and the loadings on the other factor were always less than 0.25. These results indicate two relatively "clean" concepts: school effects and personal effects. They consist of the sums of the (recoded) scores of the first three and the last two items. A score of '0' indicates that a respondent felt that, on balance, work experience had no effect. The Pearson correlation between these two composites is 0.25, indicating that collinearity between these two indices is not a problem. It further suggests that youth who work during the school year to a large extent organize their life so that it limits the effect of work to either their personal life or to their academic life.

6.2.11 School disinterest

The YITS questionnaire (Section A8) asked students to respond to 14 items concerning their classroom experiences. Various attempts through PCA to obtain conceptually distinct and meaningful components of feelings about their classroom experiences failed to produce totally satisfactory results. Inevitably, most items had substantial loadings on one factor, although often the highest loading was on a different factor. This suggested that although there were several distinguishable factors, a common factor ran through all of the items, and that this common factor had to do with generally negative experiences. Items in this battery were classified as either positive or negative sentiments. The following were classified as positive feelings:

- I pay attention to the teacher;
- I complete my assignments;
- I participate actively in class discussions;
- When I don't understand something, I ask the teacher to explain it;
- For my courses, I do more than just the required work;
- I get along well with teachers;
- I am interested in what I am learning in class;
- I'm certain I can understand the most difficult material presented in texts;

- I'm confident I can do an excellent job on assignments and tests;
- I'm confident I can understand the most complex material presented by the teacher;
- I'm certain I can master the skills being taught.

For any of these items, if a student stated that it was "never" or "rarely" true about their classes during the current school year, then the student was judged to be disengaged in that respect.

The following items were classified as negative:

- When school work is very difficult, I stop trying;
- I do as little work as possible; I just want to get by;
- I have trouble keeping up with the amount of homework I am given.

A student who responded that the item in question was "often" or "always" true was similarly judged as being disengaged in that aspect of their classroom experience.

To obtain an index with a meaningful zero score, the percentage of items on which the student was disinterested was calculated. Students classified as disinterested on all 14 items obtained a score of 100; those classified as interested on all 14 obtained a score of 0; and those who were classified as disinterested on 7 of the items obtained a score of 50, for example.

6.2.12 School estrangement

An analogous procedure (and based on the same rationales) was constructed from the YITS questionnaire for items in section A9. Responses of "disagree" or "strongly disagree" on the following items were classified as indicating estrangement:

- I feel proud to be part of my school;
- I am treated with as much respect as other students in my class;
- I like to participate in many school activities (for example, sports, clubs, plays);
- School is one of the most important things in my life;
- There are teachers or other adults in my school whom I can talk to if I have a problem;
- Most of what I learn in school will be useful when I get a job;
- People at school are interested in what I have to say;
- School is more important than most people think;
- Most of my teachers do a good job of teaching;
- I have friends at school whom I can talk to about personal things;
- I have friends at school who can help me with school work, if needed.

Likewise, responses of "agree" or "strongly agree" to the following items were also classified as indicating disenchantment:

- The only time I get attention at school is when I cause trouble;
- Many of the things we learn in class are useless;
- Most of my teachers don't really care about me;
- Most of the time I would like to be any place other than in school;
- School is often a waste of time.

This index was standardized in the same way as the previous index: a score of 0 indicates that a student was not estranged from school on any of the items, and a score of 100 indicates that a student was classified as estranged from school on all 16 items.

6.2.13 Academic self-confidence

(See immediately below)

6.2.14 Job relevance of education

PCA revealed that the following items in Section K1 of the YITS questionnaire loaded on a common dimension:

- Getting a good job later in life depends on my success in school now;
- I will need to go to college or university to achieve what I want in life;
- I think I would enjoy going to college or university;
- I'm smart enough to do well in university;
- I'm smart enough to do well in college.

Despite the statistical indication that the five items could be considered to comprise a single concept, it was decided to create two separate indices from four of these five items (one assessing **academic self-confidence** and the other the perceived **job relevance of education**) for three reasons. First, at a conceptual level, issues of academic self-confidence are rather distinct from those of perceiving a link between education and future success in life. Second, statistical analyses showed that the two indices had independent effects on aspirations in addition to common effects. Finally, for certain outcomes—such as desiring an apprenticeship, trade, or vocational pathway—the two indices behaved differently, suggesting that they tap different underlying concepts.

The mean of the last two items constitutes the index of academic self-confidence. For multivariate analyses, this index was centered on the Canadian mean. The index of job relevance of education was constructed in an analogous manner on the basis of the first two items.

6.2.15 Bending school rules

A summary index of bending of school rules was constructed from YITS question A7 ("Think only about THIS school year. About how often have you cut or skipped a class without permission?") and PISA question 29 ("How many times in the previous two full school weeks did you a) miss school, b) skip classes, c) arrive late for school?"). The index of bending school rules is the mean score on these four items, adjusted so that a score of '0' indicates "never".

6.2.16 Breaking school rules

This is a Guttman-like index, where the values have the following meaning:

2 = Responded yes to YITS Question E3b: "Have you ever been kicked out of school?"

1 = Indicated at least once in response to YITS Question E1d: "In the past 12 months, have you caused trouble at school and had to talk with the school principal or other administrator?"

0 = Responded *never this year* to YITS Question E1d: "In the past 12 months, have you caused trouble at school and had to talk with the school principal or other administrator?"

Note that a score of 2 was assigned in all instances where a respondent indicated yes to YITS Question E3b, even if they reported they had not caused trouble at school. That is, this index should be interpreted as measuring the more severe rule violation.

6.2.17 Home problems

3 = Indicated at least once in response to YITS Question E1c: "In the past 12 months, have you run away from home?"

2 = Indicated at least once in response to YITS Question E1b: "In the past 12 months, have you stayed out all night without permission?"

1 = Indicated at least once in response to YITS Question E1a: "In the past 12 months, have you stayed out later than your parents or guardians said you could?"

0 = Responded *never this year* to YITS Question E1a: "In the past 12 months, have you stayed out later than your parents or guardians said you could?"

Like the previous index, there is an assumed hierarchy of seriousness, with running away from home constituting the most serious home problem.

6.2.18 Weekday work hours

Information from questions G14 and G15 from YITS were used to estimate the number of monthly hours worked at jobs and odd jobs. Question G14 asked: "This school year, in a TYPICAL MONTH that you worked, during how many WEEKS did you USUALLY work at any of your jobs or odd jobs?" Responses ranged from 1 to 4.

Question G15 asked "This school year, in a TYPICAL WEEK that you worked, how many HOURS IN TOTAL did you work at all your jobs and odd jobs…

- Monday through Friday?
- Saturday and Sunday?"

Respondents had to fill in the number of hours. Given that these were full-time students, it was decided to cap the number of hours of weekday work to 40. Once this was done, this number was multiplied by the usual number of weeks worked in a typical month (Question G14) so that students' work involvement was expressed in a common time frame of a typical month. To minimize the skew in this variable, the resulting number was capped at 80. Respondents who did not work during the school year, or who worked but not during the school week, were given a score of 0.

6.2.19 Weekend work hours

An analogous procedure as that for constructing the index of weekday work hours, using the same question, was used to estimate weekend work hours. The nature of the distribution was such that it was not felt to be necessary to cap weekend work hours.

6.2.20 Academic orientation of peers

To make the index of peer aspirations as parallel as possible to that of parental aspirations for their children, this index is composed of the mean of the two items that tap how important completing high school and participation in post-secondary education is to their closest friends (YITS questions D2a and D2d).

6.2.21 Negative peer influences

A principal components analysis of all of the YITS items from question D2 extracted two factors. The solution was not entirely satisfactory, since the two factors simply mirrored whether the item was positively or negatively-worded. After varimax rotation, four of the negatively-worded items made substantive sense as components of negative peer influences: skip classes once a week or more, have dropped out of high school without graduating, have a reputation for causing trouble, and smoke cigarettes. The index consists of the mean of these four items.

6.2.22 Importance of post-secondary education to parents

YITS Question K9 asked: "How important is it to your parent(s) that you get more education after high school?

- To your father or other male guardian?
- To your mother or other female guardian?"

Valid responses ranged from (1) "not important at all" to (4) "very important". The average of the responses to the two items was calculated. If a response of "I don't know" or "No such person" was given with respect to one parent but not the other, the valid response for the one parent became the index score.

6.3 Previously constructed item-response theory indices

For purposes of international comparison, a number of indices based on item-response theory (IRT) scaling procedures were made available. Except for reading achievement, the IRT scales were standardized to a mean of 0 and a standard deviation of one at the international level.

6.3.1 Reading achievement

Five plausible values for each student's reading test score was provided. The test scores were standardized to an international mean of 500, with a standard deviation of 100. In any analysis, the average of the five separate parameter estimates (one for each of the five plausible values) is better suited for estimating the population parameter than are the weighted likelihood estimates, and hence that is the procedure used in this report.

6.3.2 Frequency of educational computer use

Respondents were asked to indicate how often they used the computer for a number of different tasks. Tasks that might be thought of as being particularly relevant for educational purposes were used to create a scale of frequency of *computer use*. These included using the computer:

- to help learn school material;
- for programming;
- for word processing;
- for spreadsheets;

- for drawing, painting or graphics;
- for educational software.

The response options, on a five-point scale, ranged from "almost every day" to "never". A high score indicates frequent use.

6.3.3 Cultural activities

Students were asked to indicate on a four-point scale ranging from "never" to "more than four times a year" how often during the past year they had:

- visited a museum or art gallery;
- attended an opera, ballet or classical symphony concert;
- watched live theatre.

6.3.4 Cultural possessions

This is based on the presence in the student's home of:

- classic literature (e.g., Shakespeare);
- books of poetry;
- works of art (e.g., paintings).

6.3.5 Household possessions

Based on two questions:

PISA Question 21: "In your home, do you have:

- a dishwasher;
- a room of your own;
- educational software;
- a link to the internet?"

PISA Question 22: "How many of these do you have at your home:

- cellular phone;
- television;
- computer;
- motor vehicle (e.g., car, van);
- bathroom?"

For Question 22, the response categories ranged from “none” to “three or more”; the options for Question 21 were “yes”/”no”.

6.3.6 Familial homework support

This index is based on PISA Question 20: “How often do the following people work with you on your school work:

- your mother;
- your father;
- your brothers and sisters?”

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