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Education Matters: Insights on Education, Learning and Training in Canada

Why are the majority of university students women?

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^{r} revised
x suppressed to meet the confidentiality requirements of the *Statistics Act*
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Why are the majority of university students women?

Over the last 30 years or so, a dramatic reversal has taken place on Canadian university campuses. According to the 1971 Census, 68% of 25 to 29 year-old university graduates were male. Ten years later, women had more or less caught up to men, as only 54% of graduates were male. By 1991, women had become the slight majority, comprising 51% of graduates. In the 2001 Census, universities had clearly become the domain of women, as they made up 58% of all graduates. And according to the 2006 Census, women accounted for 60% of university graduates between the ages of 25 and 29.

A recent study by Statistics Canada researchers, Marc Frenette and Klarka Zeman, set out to explain the large gender gap in university participation.[1] The authors first provide a profile of girls and boys from birth to age 15. They note that, in general, boys begin life lagging behind girls on a number of physical, cognitive and emotional dimensions. As they progress through the school system, the gender differences tend to increase even more. By age 15, when many youth begin to think about life after high school, girls outperform boys in school by a large margin.

The authors examine the extent to which the advantages held by girls at age 15 account for the large gender gap in university participation at age 19. The results of their analysis suggest that more than three quarters (76.8%) of the gender gap in the university participation rate can be accounted for by differences in observable characteristics between boys and girls. In order of importance, the main factors are differences in: school marks at age 15; standardized test scores in reading at age 15; study habits; parental expectations; and the earnings advantage of university graduates over those with no more than a high school education.

The data for the study were drawn from the Youth in Transition Survey (YITS), Cycle 3 which collected information from YITS participants in 2003, when they were 19 years old.

Gender differences in early childhood

Frenette and Zeman cite a variety of sources to draw a portrait of boys and girls during the early childhood years. From birth, it would seem that boys generally face more challenges than girls. For example, out of every 1,000 live births, 5.8 boys die in the first year of life, compared with 4.7 girls. From the ages of one to four, boys are considerably more likely to be hospitalized than girls (7,793 out of 100,000 boys compared to 5,726 out of 100,000 girls). According to the National Longitudinal Survey of Children and Youth (NLSCY), Cycle 4 (2000/2001), boys are also more likely to be categorized as having activity limitations (15%) than girls (11%).

Boys also lag behind girls on the developmental side of things in the early years. For example, from birth to three years, only 12% of boys are categorized as having advanced motor and social development, compared with 21% of girls. On average, five year-old boys score 97.2 on a test of copying and symbol use compared with 104.3 for girls. Some 78 % of five year-old boys often display independence in dressing compared with 87% of girls.

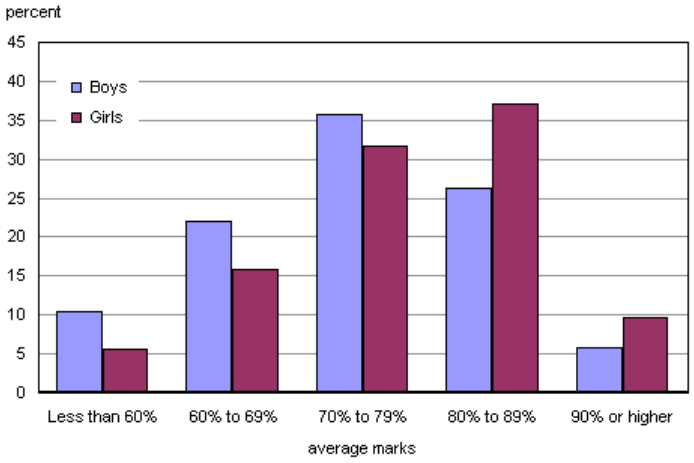
Finally, boys have more behavioural problems than girls in the early years. For example, five year-old boys display less attention (a score of 8.5) than girls (a score of 9.3). Some 16 % of 4 to 11 year-old boys display aggressive behaviour compared with only 9% of girls and 14% of 4 to 11 year-old boys display hyperactivity compared with only 6% of girls.

Gender differences at age 15

By age 15, boys and girls have very different characteristics. On the academic stage, boys trail behind girls on several fronts. For example, boys have weaker performances on standardized reading tests. While 20.4% of boys score in the top 25% of the reading distribution, 30.1% of girls do so. In contrast, 30.3% of boys score in the bottom 25%, compared to 19.5% of girls.

There is an equally large gender divide in terms of overall school marks. While only 31.9% of boys report marks of at least 80%, almost half of girls fall in the same category (46.3%) (Chart 1). At the opposite end of the spectrum, 8.4% of boys report overall marks below 60%, compared with only 2.5% of girls.

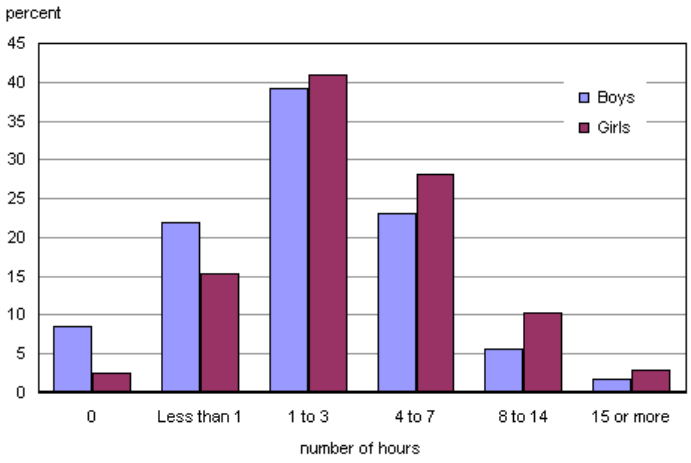
Chart 1
Distribution of average overall marks, 15 year-olds, by sex, 1999



Source: Statistics Canada. Youth in Transition Survey, Cohort A.

Boys and girls are also quite different in terms of the amount of time they spend on homework – 8.5% of boys reported spending no time on homework, compared to 2.5% of girls. By contrast, only 30.3% of boys spent at least four hours per week on homework, compared to 41.2% of girls (Chart 2). Finally, almost 1 in 10 boys (9.9%) repeated a grade in school, compared to 6.5% of girls.

Chart 2
Distribution of hours spent doing homework per week, 15 year-olds, by sex, 1999



Source: Statistics Canada. Youth in Transition Survey, Cohort A.

Explaining the gender gap in university participation rates

Performance on standardized reading tests, overall marks, and time spent doing homework are all positively associated with university participation. This is largely true for both boys and girls to the same extent. Not surprisingly, students who repeat a grade are less likely to attend university four years later, although the difference is not statistically significant, once factors such as overall marks and performance on the standardized reading test are taken into account. Girls and boys who grew up with two birth parents present are more likely to attend university than those who grew up with a lone parent.

The sex of the parent most knowledgeable of the youth is positively associated with university participation for girls only. For boys, there is no significant association. In fact, the parent most knowledgeable of girls is far more often a parent of the same sex (79.8%) than in the case of boys (23.5%).

As countless studies have found, parental education is positively associated with university participation. This is true for both girls and boys to the same extent. Parental income, on the other hand, is very weakly associated with university participation once other socioeconomic characteristics are taken into account. However, the association is slightly stronger for girls than for boys. Boys in families's in the second, third and fourth income quartiles are no more likely to attend university than boys in families in the first quartile of income. However, girls in families in the fourth income quartile enjoy an 8.2 percentage-point advantage over girls in the bottom income quartile, after accounting for differences in other socioeconomic characteristics. Even girls in the third quartile enjoy a 3.3 percentage-point advantage over girls in the bottom family-income quartile.

Another channel of influence of the parents is through their expectations of the child. Although increased parental expectations are positively associated with increased university participation, the relationship is stronger for girls. By contrast, the evidence on the influence of peers is much weaker. In fact, there is no significant statistical relationship between the future plans of peers and the probability of attending university.

Finally, a larger earnings advantage of university graduates over high school graduates is associated with a greater probability of attending university for boys, but not for girls. In other words, while the relative economic benefits to a university degree are greater for girls, girls generally do not respond to these signals, suggesting that the higher university participation rate of girls is the result of other factors.

In 2003, 38.8% of 19 year-old women had attended university, compared to 25.7% of men – a gap of 13.1 percentage points. The main factor, accounting for close to one third of this gap in university participation, consisted of differences in overall marks. Differences in performance on standardized reading tests accounted for 14.6% of the gap. The third important factor, accounting for 11.1% of the gap in university participation, consisted of the gender difference in the amount of time spent on homework. Altogether, then, these three academic factors accounted for almost 60% of the gender gap in university participation in 2003. Finally, differences in parental educational expectations for boys and girls accounted for 8.5% of the gap.

Conclusion

In interpreting their results, Frenette and Zeman provide a number of interesting insights. First, they note that performance on standardized tests can be regarded as an indicator of cognitive abilities. Overall marks and study habits, on the other hand, have been treated as non-cognitive abilities, once cognitive abilities are taken into account. In other words, overall marks may reflect one's ability to capitalize on cognitive abilities. Marks may also reflect one's level of motivation or maturity, as indeed, can time spent on homework.

Frenette and Zeman note that, according to some experts, cognitive abilities are only malleable in the early years, while non-cognitive abilities are malleable well into the teenage years. If this is the case, the results of the analysis reported here suggest that a very large proportion of the gender gap in university participation relates to non-cognitive abilities displayed at school, an important element of which relates to motivation to work hard in school and to seek to achieve high overall marks.

Finally, another important difference between boys and girls concerns their response to signals from the labour market with respect to the earnings advantage of university graduates over those with only a high school education. Frenette and Zeman find that the university premium was positively associated with university participation among boys, but among girls there was no statistical association. Furthermore, girls reported about the same level of importance of education in shaping their future career success as boys.

It is important to distinguish between the absolute and the relative advantage in the labour market associated with having a university degree. In terms of relative earnings, women stand to gain more from having a university degree compared to having only high school than do men. However, in absolute terms, men actually gain more from a university degree compared to a high school diploma. The absolute gap for men is $22,766, while for women it is only $18,490. If youth are responding to absolute, rather than relative benefits, this would explain why the relative earnings premium does not account for a large portion of the gender gap in university participation. The analysis finds that it is the absolute premium that is important and that, in fact, the difference in the absolute earnings premium between boys and girls acts to reduce the gender gap in university attendance.

Frenette and Zeman note that these results cast some doubt on the notion that women are more likely to attend university because of the greater economic benefits of doing so, though further research is needed to be more conclusive on the issue. That raises another question, however. If not motivated by extrinsic rewards, like young men, what is it that motivates young women to do well in school and to pursue a university education at higher rates than young men?

Reference

1. Frenette, Marc and Klarka Zeman. 2007. Why Are Most University Students Women? Evidence Based on Academic Performance, Study Habits and Parental Influences. Analytical Studies Branch Research Paper Series. Statistics Canada Catalogue Number 11F0019MIE – Number 303.