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"What About the Boys?"

An Overview of Gender Trends in Education and the Labour Market in Ontario

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Introduction

Ontario's educational sector has experienced numerous changes in recent years, with increasing rates of participation in postsecondary education (PSE), declining secondary school drop-out rates, and strong performance by Ontario students on international academic assessments. Within these signs of progress, however, are indications that all students are not advancing equally (McMullen, 2004). The example that has attracted attention from the media as well as from educators and policy makers is the male population. Males have been referred to as the "new, disadvantaged minority" (Millar, 2008) and the "second sex" (Conlin, 2003). In the United States, a male high school student sued his school district, claiming that schools routinely discriminate against males (Jan, 2006). More recently, the Toronto District School Board, the largest in Canada, proposed the development of a single-gender school, boys-only classes and "boy-friendly" instruction (Wingrove & Reinhart, 2009). The concept of affirmative action on behalf of males has been raised and opposed at Canadian universities (Millar, 2008; Coates & Keen, 2007). Is the male population becoming an under-represented group in postsecondary education, as some reports in the media seem to suggest?

Great strides forward have clearly been taken in improving outcomes for females in both education and the labour market over the past generation. In 1971, 63% of undergraduate students enrolled in Ontario universities were male (Statistics Canada, 1999: 42), but parity was achieved a decade later. In 2006, females made up the majority, accounting for 58% of undergraduate university students (Figure 1). The participation of females in the workforce has also increased, and the earnings gap between males and females has narrowed, although in earnings males continue to have the advantage.

In the current knowledge-based economy, success in the workplace usually demands more than a secondary school diploma. Employers are actively seeking workers with high levels of educational attainment and industry-specific skills. Higher education can provide not only a gateway to higher earnings, but may also enhance such non-economic returns as enjoyment of learning, exposure to knowledge, and the formation of social networks. Consequently, any group that is under-represented in the PSE sector may miss out on these opportunities and benefits. Exploring and understanding the sources of the gender gap in education and its evolution may assist policy makers in discerning whether or not a gender issue actually exists.

To that end, this research paper provides an overview of gender patterns in educational participation, performance, and attainment in PSE within the Ontario context, and examines what implications these patterns have for labour market choices and outcomes. In addition, the note explores how gender patterns in students' early educational experiences at both elementary and secondary levels may affect their decisions to participate and succeed in PSE.

Gender Patterns in Postsecondary Education

Applying to enrol in PSE institutions is a decisive step that students take on the path from secondary to postsecondary education, and in the past three decades the gender shift in the number of students applying has been clear. An Ontario study in 1973 profiled university-bound students in grade 12 as typically male, urban, and predominantly from an upper or upper-middle class background and/or having high academic achievement (Anisef, 1973: 141); in 2007-2008, more females than males applied for admission to Ontario universities (55% vs. 45% in 2007) and colleges (54% vs. 46% in 2008). Studies also show that females appear more likely than males to apply directly from secondary school for admission to university and college, while males tend to take longer to graduate from high school and are more likely to take a "gap year" before pursuing a postsecondary program (Council of Ontario Universities, 2008: 34; Colleges Ontario, 2009: 29). Another Ontario study of postsecondary pathways (Academica, 2008: 78) found several gender differences in motivations, communications, and pathways chosen. Males were more motivated by employment, gave greater consideration to alternatives to PSE, and were influenced less than females by various methods of communicating information about educational choices. The same study found that females were more concerned about financing further education and less sure of their decision to attend; yet, they were more likely to pursue participation in some form of PSE.

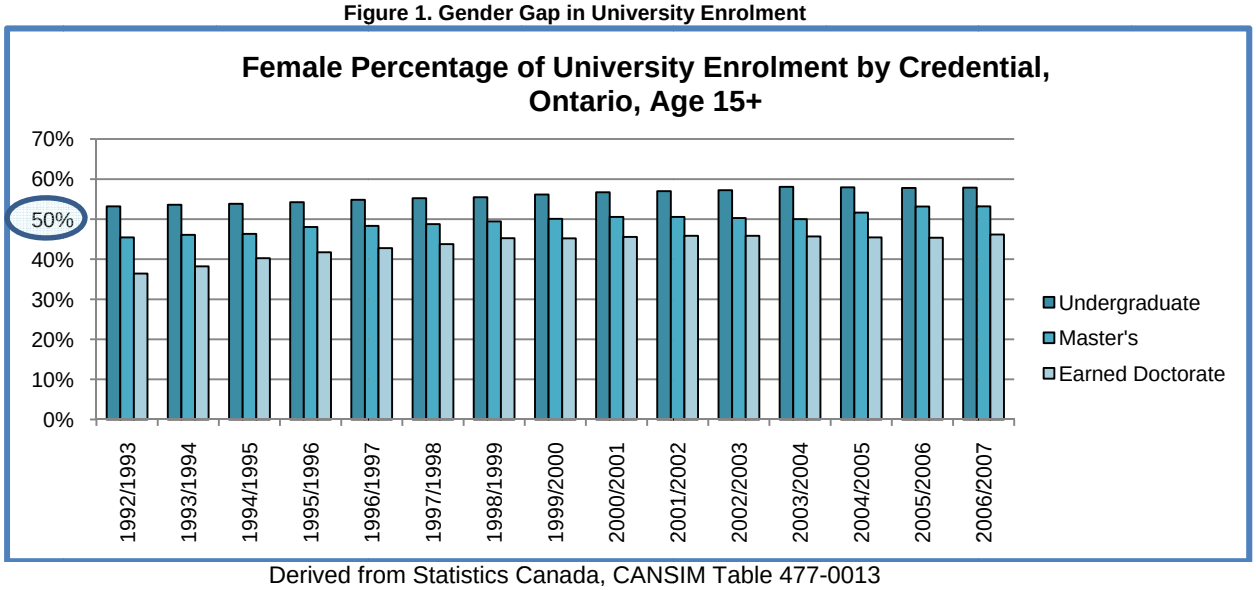
The potential financial returns from possessing one or more levels of PSE would also be expected to influence decisions made by students to participate in PSE since acquiring a degree, particularly at the bachelor's level, generally offers significant financial rewards to students. Research indicates that by investing in a university undergraduate degree, female graduates earn a higher annual return than male graduates (Moussaly-Sergieh & Vaillancourt, 2009: 1). The earnings premia for college graduates, while lower than that for a bachelor's degree, are similar for males and females; for trades' graduates, the earnings premia are higher for male graduates than for female graduates, with additional differences observed by field of study (Boothby and Drewes, 2006: 7-10). However, little is known about the overall earnings outcomes of apprenticeships, or about the effect of earnings premia and potential financial returns on PSE participation. Some existing research indicates that the gender balance in university participation does reflect higher rates of return for a university education (Christofides, Hoy, & Yang, 2006), while other studies found that the higher premium for a university graduate relative to a secondary school graduate is positively associated with PSE participation for males, but not for females (Frenette & Zeman, 2007, 14).

The current gender gap in favour of females rises from 55% of applicants to 58% of actual undergraduate enrolments at Ontario universities (Ontario Ministry of Training, Colleges and Universities (MTCU) 2008–2009 enrolment data). Although this gender gap has provoked broad discussion in recent years, the following points should be kept in mind:

- The percentages of both males and females attending university as a proportion of the population have continued to grow over the past few decades.
- Females have formed a majority of the undergraduate student population since the 1980s.
- In the past five years, the growth of the gender gap in undergraduate university enrolment has actually slowed (Figure 1), implying that the trend may be stabilizing.[1]

At the master's level, enrolment reached gender parity in 1999–2000, while at the doctoral level males outnumber females, although the gap has narrowed (Figure 1). Only two major Ontario universities currently enrol more than 50% male undergraduate students — the University of Ontario Institute of Technology at 58% male and the University of Waterloo at 55% male (MTCU 2008–2009 enrolment data) — but both offer a high number of science and technology programs which disproportionately attract male students.

Figure 1. Gender Gap in University Enrolment



Derived from Statistics Canada, CANSIM Table 477-0013

[1] It is also important to note that examining data at this broad level does not tell the whole story. National U.S. studies disaggregating enrolment data by gender, race, and socioeconomic status exhibit varying gender patterns for different groups (King, 2000: 10) and attribute the growing gender gap in PSE to increases in attendance among females from traditionally under-represented groups (Sax, Linda, 2007). In Ontario, enrolment patterns have been found to vary by geographic region (Calvert & Smith, 2009).

The enrolment picture for other forms of PSE is similar. Overall enrolment in college programs in 2008–2009 stood at 53% female and 47% male, proportions that have remained relatively consistent for the past decade (Colleges Ontario, 2009: 29; 2001: 61). Enrolments in professional programs such as medicine and law have also seen changes in traditional gender patterns. In 1968–1969, 14% of undergraduate the students enrolled in Ontario's faculties of medicine were female, but by 2007–2008 the proportion had more than quadrupled to 58% (Association of Faculties of Medicine of Canada (AFMC), 2008: 11). Enrolment by females in Ontario's undergraduate law schools has remained fairly consistent over the past decade, increasing from 54% in 1999–2000 to 56% in 2008–2009 (MTCU enrolment data). The only avenues to postsecondary education and training in which females continue to be under-represented are apprenticeships, where females comprised around 19% of registrations in 2007 (Statistics Canada, 2009a).

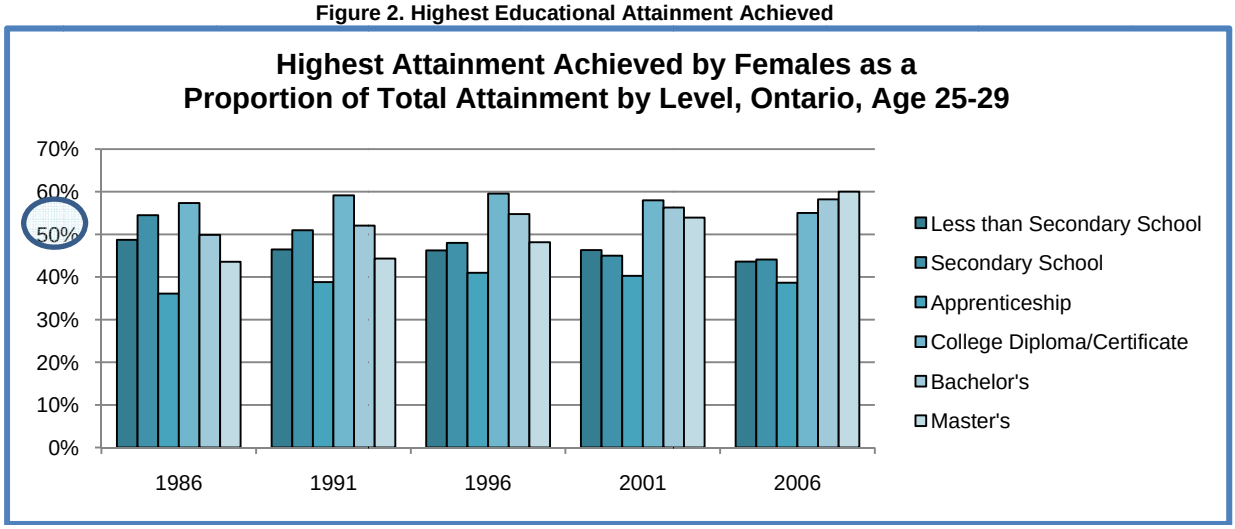
Gender differences are also apparent within the PSE experience itself. A national study examining persistence in PSE found that "not only do women enter university at higher rates than men, they are also more likely to continue in their studies" (Finnie & Qiu, 2008: 32). Males tend to have higher leaving rates than females during the first year at university (9.7% vs. 6.5%) and at college (13.5% vs. 11.7%). Even within apprenticeships, where females are under-represented, females tend to have higher rates of persistence relative to males (Ménard, Chan, & Walker, 2008: 15). Persistence in and completion of postsecondary programs are related not only to pre-entry characteristics, such as grades achieved in secondary school and students' engagement in education, but also to their application of strong learning strategies during their first year of PSE; those who chose to leave were already struggling with poor academic performance and study behaviour during their first year and having difficulty meeting deadlines (Finnie & Qiu, 2008: 69, 72, 75; Shaienks & Gluszynski, 2007: 20, 23–24). Interestingly, the findings of a study undertaken at an Ontario university to address academic performance suggested that while female students responded positively to a combination of financial incentives and counselling, the program had no effect on males (Angrist, Lang, & Oreopoulos, 2007: 30–31).

Not surprisingly, the consequences of higher enrolment and persistence to completion have resulted in higher PSE attainment rates for females. According to census data (Figure 2), among Ontarians aged 25 to 29 years the proportion of bachelor degree holders who are female has grown to 58% over the past 20 years and the proportion of master's degree holders who are female increased from 44% to 60%.[2] In Ontario colleges, the proportion of students attaining a college certificate who are female has fluctuated between 55% and 57% during the same 20-year period and between 36% and 41% for those obtaining apprenticeships. For those attaining a doctorate, the

[2] In Canada, the gender gap in university attainment has also been shown to vary by race and ethnicity, as measured by visible minority status (Abada & Tenkorang, 2009: 601) and by Aboriginal status (2006 Census data).

number of males among those aged 30 to 34 has declined from 79% in 1986 to 60% in 2006. Although the percentages of both males and females have increased for all forms of PSE (except apprenticeships), the rate of increase has simply been greater for females.

Figure 2. Highest Educational Attainment Achieved

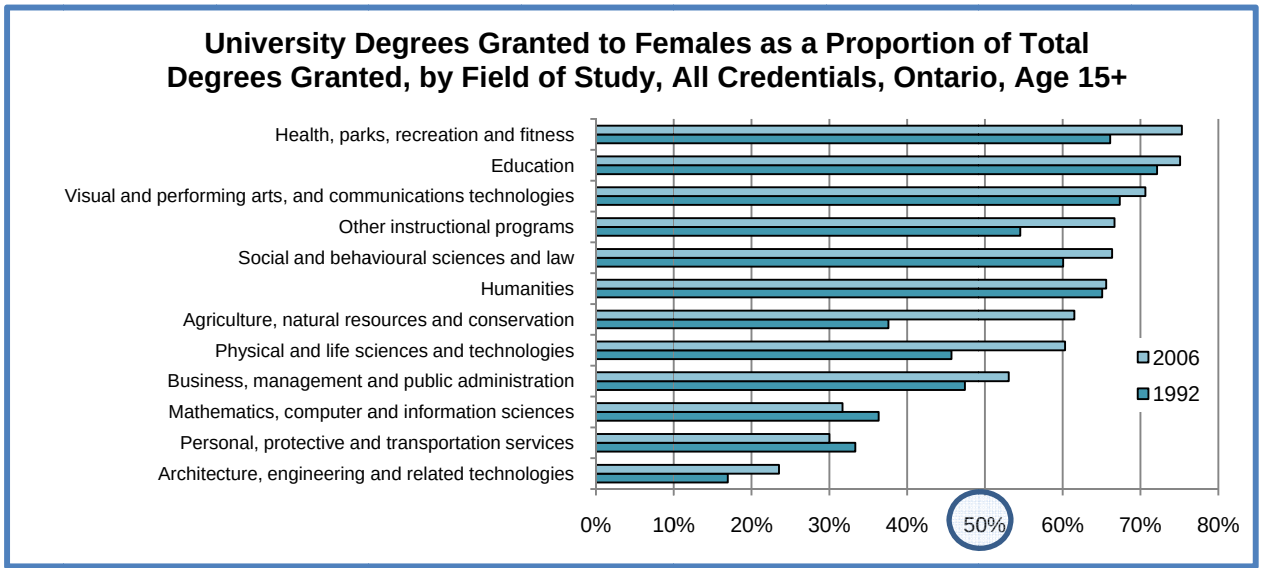


Derived from Statistics Canada Catalogue Numbers 97-559-XCB2006020 and 97F0017XCB2001006

Figure 3 shows attainment by field of study at the university level, and females currently predominate in more than half of the disciplines, even in such traditionally male-dominated fields as agriculture and natural resources, the sciences, and business. However, examining the fields of study at such broad levels does not tell the entire story. Within the sciences, most of the increase in female participation is in the life sciences, not in the sciences of physics and chemistry in which males continue to outnumber females. Although the number of females in the grouped disciplines of architecture, engineering, and technology has increased, the number of females specifically in engineering has been dropping for the last decade while the number of males has increased (MTCU enrolment data).

With respect to professional programs, 57% of the medical degrees awarded in 2007 from Ontario's faculties of medicine were to females compared to 4.9% in 1940 (AFMC, 2008: 39–42). In 2006, 52% of all graduating law students admitted to the bar in Ontario were females compared to 48% in 1995 (Federation of Law Societies of Canada, 2009: 7, 15). Within the trades in which learners begin as apprentices, however, the majority who complete their training in such areas as food and services and early childhood education typically are females, while males dominate other trades such as those in the construction and electrical industries and fields involving heavy equipment (Statistics Canada, 2009b).

Figure 3. University Degrees Granted by Field of Study



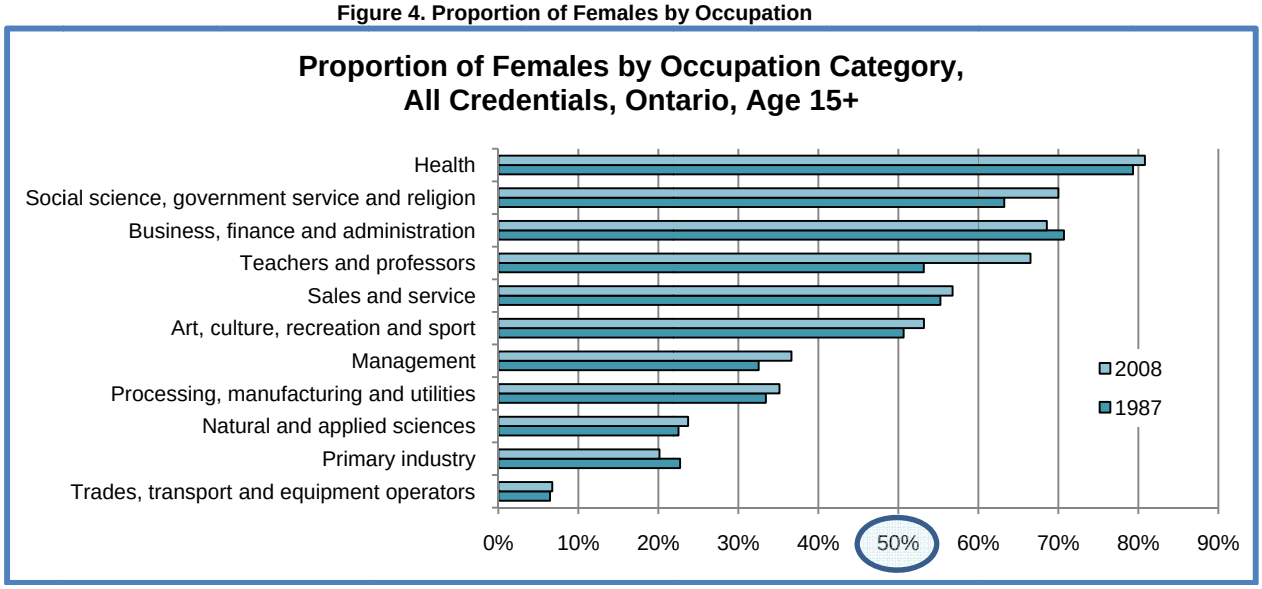
Derived from Statistics Canada, CANSIM Table 477-0014

Overall, since 1979, the proportion of females at most program levels on many campuses has grown from parity to a clear majority. Moreover, females now make up the greater proportion of the enrolment in many fields of study and within some professional programs, although some long-established gender patterns persist.

Employment and the Labour Market

Given the rising educational attainment of females, gender patterns in employment and pay equity concerns continue to be important issues, as they have been over the past three decades. Has the increase in female attainment of PSE credentials improved their experiences in the labour market? Regrettably, despite their overall advances in PSE attainment, some traditional gender patterns persist in choice of occupation. Not surprisingly, choices made in the programs of study offered in different disciplines are reflected in choices of occupation. Females continue to outnumber males employed in service and nurturing fields such as health and education as well as in the humanities, the social sciences, and culture and the arts, while males continue to outnumber females in technical fields such as trades, industry, natural and applied sciences, in fields requiring physical strength, as well as in management occupations (Figure 4), patterns that have remained fairly consistent over the past two decades. Traditional societal and cultural beliefs about gender differences in abilities and interests may be factors that continue to constrain the early choices of career direction made by youths, both male and female (Correll, 2001: 20–21).

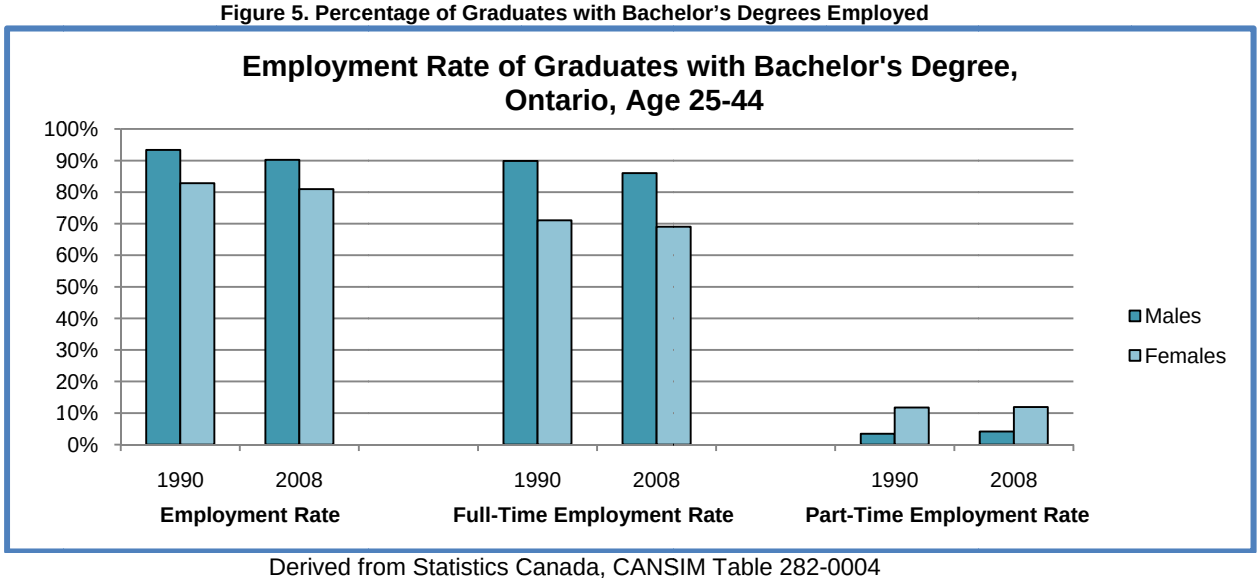
Figure 4. Proportion of Females by Occupation



Derived from Statistics Canada, CANSIM Table 282-0010

Of those aged 25 to 44 (most likely to have been affected by recent trends in education) with a bachelor's degree, males continue to experience higher employment rates (90% male vs. 81% female in 2008), and the same is true when all PSE credentials are combined (87% male vs. 78% female in 2008). The gender gap in full-time employment (86% male vs. 69% female in 2008) is even higher in favour of males, whereas females have a higher rate of part-time employment (4% male vs. 12% female) (Figure 5).

Figure 5. Percentage of Graduates with Bachelor's Degrees Employed



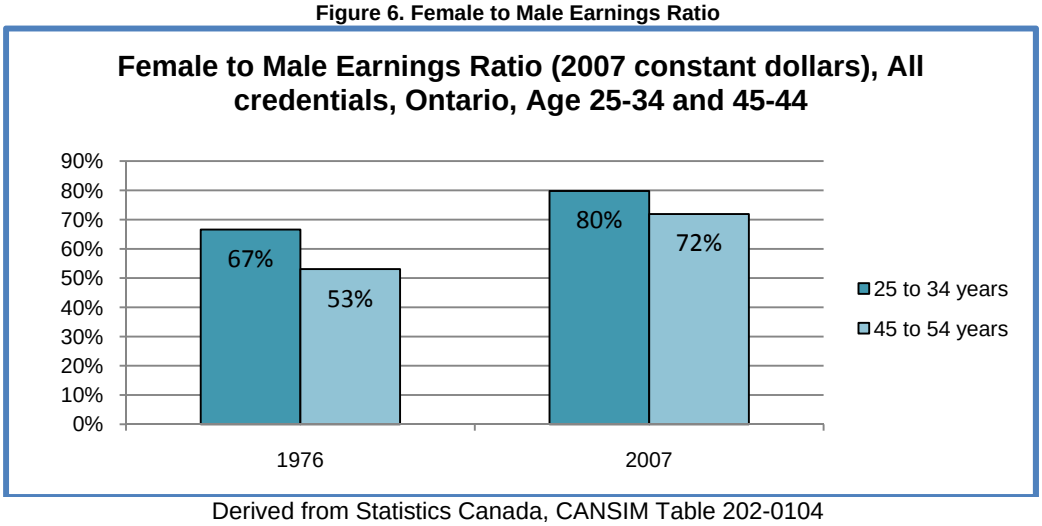
Derived from Statistics Canada, CANSIM Table 282-0004

Although differences between male's and female's earnings have narrowed since the 1970s, they continue to favour males. Over the past three decades in Ontario, the female to male average earnings ratio increased from 67% to 80% in the 25 to 34 age group and from 53% to 72% for the 45 to 54 age group (Figure 6). The level of education attainment has been found to play a partial role in this reduction of the earnings gender gap, at least for younger workers (Frenette & Coulombe, 2007: 24). Although the higher rate of participation in PSE by females appears to redress the imbalance in male to female earnings to some extent, projections indicate that the imbalance may not be eliminated in the near future (Shannon & Kidd, 2001: 462).

Several studies have found that the number of hours an employee actually works is an important determinant of the earnings gap for recent university graduates, becoming even more important after the graduates have spent some time in the workforce (Finnie & Wannell, 2004: 16). In Ontario, the average number of hours a male works at a primary job has been higher than for females over the past three decades, although the gap has narrowed— from 41.8 hours for males and 33.4 hours for females in 1976 to 40.7 hours for males and 34.9 hours for females in 2007 (Statistics Canada, 2009d). Males and females also differ in their continuity of employment. Females are more likely than males to combine periods of employment and intervals of withdrawal from the labour force, usually for family related reasons. The length, frequency, and timing of these withdrawals may have an impact on job tenure as well as skill development or depreciation, all of which may also affect earnings (Drolet, 2001: 7).

A recent Ontario study examining the profile of postsecondary educated workers who are in a low-earnings situation indicated that these workers include a greater proportion of females whose earnings are at or below the national median employment income. This gender effect remains constant even when demographic factors, education, and field of study are taken into account, but it is weaker when work schedule is accounted for (McMullen, report forthcoming).

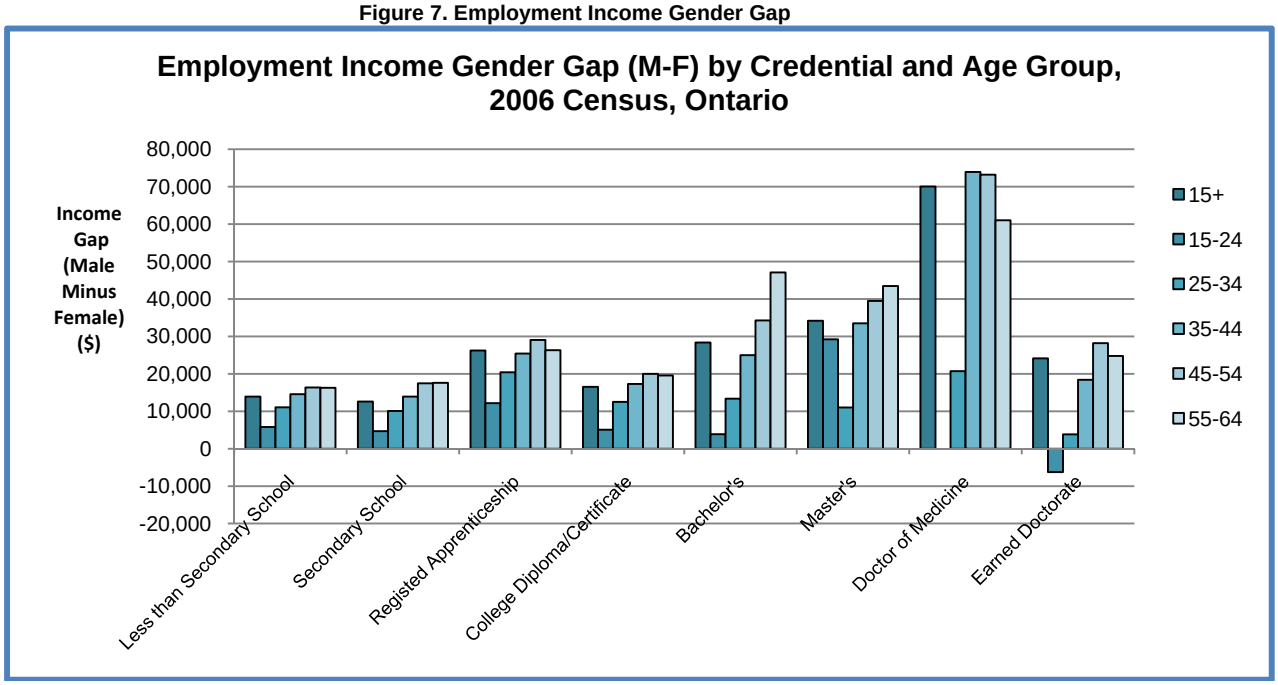
Figure 6. Female to Male Earnings Ratio



Derived from Statistics Canada, CANSIM Table 202-0104

Figure 7 exhibits the gender gap in full-time employment income by highest educational attainment and by age group and indicates that, for the most part, the gap is smaller for younger age groups. The larger earnings gap between older males and females may reflect past employment practices and societal customs, which may have limited the starting wages and earnings growth of females at that time. Because the earnings for the younger age groups reflect entry-level earnings, these may be more affected by such factors as employment equity laws, shifting educational and career choices, and changes to minimum wages. Entry-level earnings have also not yet been affected by withdrawals from the labour force for family or other reasons, or by differences in job tenure and work experience (Frenette & Coulombe, 2007: 7). It is interesting to note that the gender gap in overall income is lower for college graduates than for university graduates and those who have completed apprenticeships.

Figure 7. Employment Income Gender Gap

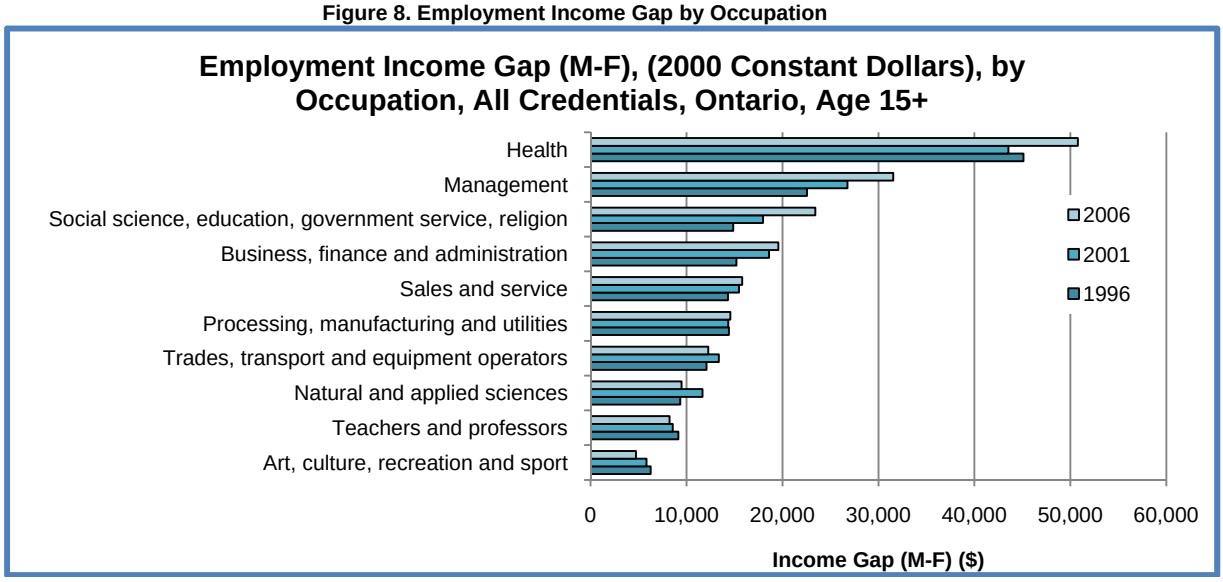


2006 Census Data

Employment earnings differ according to the discipline of study, and the patterns are similar for males and females. For university graduates, the highest earnings continue to be in the fields of health, engineering, computer science, commerce, and mathematics/physics. The low earning fields are in the arts and humanities, agricultural and biological sciences, and the social sciences (other than economics) (Finnie & Frenette, April 2003: 182–83).

The gender earnings gap also persists within occupational fields (Figure 8). The greatest gap appears in the healthcare fields where females tend to outnumber males in the lower-paying occupations, although trends have been changing. According to the Canadian Medical Association (CMA), in January 2009, 32% of Ontario physicians of all ages were female, but for female medical doctors in the under-35 age group, the figure was 52%. Parity has been achieved in all age groups across Canada in such specialties as family medicine, paediatrics, and geriatric medicine (CMA,2009); however, it may be some time before the effect of these changes are observed on the overall earnings gap within healthcare occupations. A large gender gap in earnings also persists at management occupations where males predominate overall; females are particularly under-represented in the higher-paid senior management positions. It is interesting to note that in the past decade, the gender gap in income has remained relatively stable and, in some fields where the gap was already large, has actually increased.

Figure 8. Employment Income Gap by Occupation



1996, 2001, 2006 Census Data

In sum, with the rising educational attainment of females, there have been some improvements in what they experience in the labour market. However, there continue to be additional influencing factors because the income gap between genders has yet to be closed. Females tend to have a looser attachment to the labour market in that they are more likely than males to withdraw from the labour market, to work fewer hours, or to work part-time, which affects their tenure, their experience and, ultimately, their earnings. Additionally, females tend to predominate in lower-paying occupations.

Primary and Secondary Education

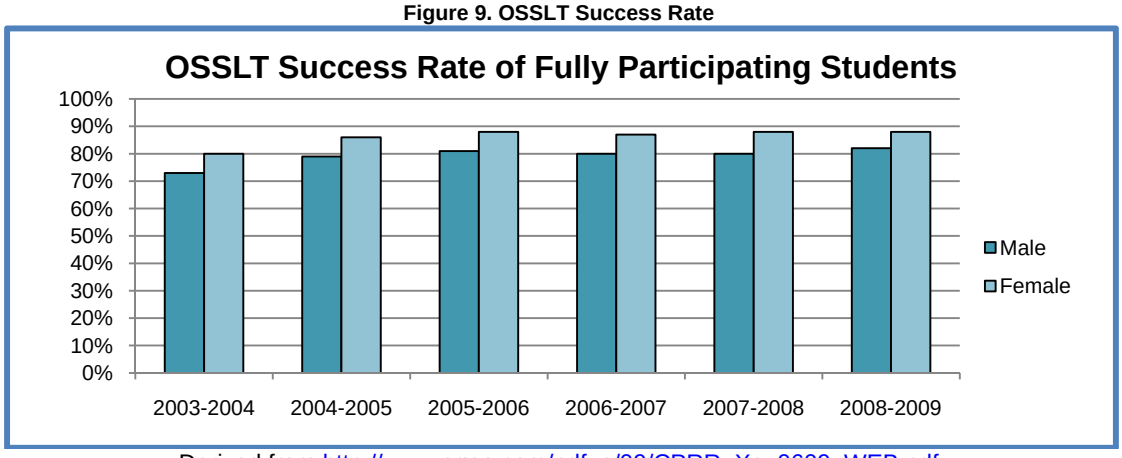
Over the last three decades, females have become the majority of students on the campuses of most postsecondary institutions, which has had generally positive consequences for females in the labour market. Understanding the trends in postsecondary participation by gender requires an examination of the factors that affect decision making, access, and persistence, and of whether or not these factors themselves exhibit differences by gender. Students' early educational environment and experiences have been the focus of recent research and media attention, and the following portion of this report explores these characteristics and their effects on PSE.

Examining gender factors from birth in Ontario, out of every 1,000 live births, 5.6 males die in the first year of life compared with 4.3 females (Statistics Canada, 2009c). At age 5, children display gender differences in their readiness to learn at school. According to one national study (Thomas, 2006: 6–9), females scored higher than males in their ability to communicate, in copying and symbol use, as well as in their ability to

control impulsive behaviour. With respect to self-regulation in learning, which is considered important for success in the early school years, females earned higher scores in paying attention, but males received higher scores in their curiosity level. These early measures of preparedness for school have been linked to learning and academic performance in later years (Thomas, 2009, pp. 42-43).

Ontario has been measuring academic performance annually for the past decade using standardized assessments at the primary, junior, and secondary levels. According to the Education Quality and Accountability Office (EQAO), although gains are being made by both genders at the primary and junior levels, a larger percentage of female than male students perform at or above the provincial standards in each of the three subject areas tested — reading, writing, and mathematics (EQAO, 2008a: 7). Figure 9, showing recent results of the Ontario Secondary School Literacy Test (OSSLT), indicates that although scores for both genders have improved, the success rate for students who fully participated in the OSSLT and received a score that met the expected standard is consistently higher for female students than for male students, and the gap in favour of females has remained virtually unchanged over the past five years (EQAO, 2008b: 10–13). Research studies have associated both reading ability in secondary school and performance on standardized reading tests with participation in PSE (Knighton & Bussière, 2006: 18; Bussière, Hébert & Knighton, 2009: 3; Frenette & Zeman, 2007: 17). Strong literacy skills are essential for success in secondary school and affect the options available to students after secondary school, including access to PSE. The continued existence of a gap in reading ability between males and females has fuelled much of the concern over the literacy achievement of males in early education, and raised equal concern about the impact of low levels of achievement on possible later participation in PSE.

Figure 9. OSSLT Success Rate

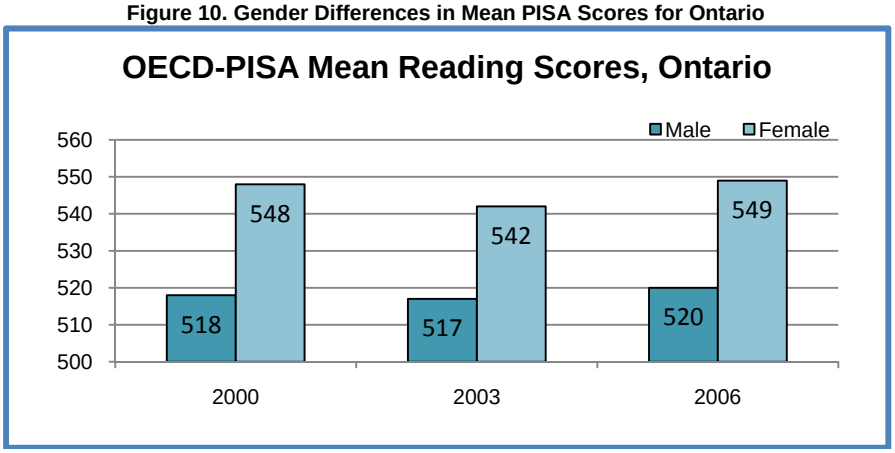


Derived from http://www.eqao.com/pdf_e/09/CPRR_Xe_0609_WEB.pdf

Similar patterns emerge when examining the results of the Programme for International Student Assessment (PISA) from the Organisation for Economic Co-operation and Development (OECD), administered internationally every three years since 2000 to

students at age 15. Results from the three available assessments indicate that females achieved significantly better reading scores than males both across Canada, and in Ontario (PISA 2000, 2003, 2006; Figure 10).

Figure 10. Gender Differences in Mean PISA Scores for Ontario



http://www.pisa.gc.ca

EQAO assessment results in mathematics at the secondary level indicate that more male students than female students performed at or above the provincial standard and that, over the last four years, this gender gap has remained relatively consistent (EQAO, 2008a: 73). With respect to the PISA assessment for mathematics, males generally performed better than females in Canada and Ontario, but the differences were not large and not always significant. Few or no significant differences in science scores were observed between males and females for Canada and Ontario (PISA 2000: 58-60; 2003: 74, 81, 82; 2006: 81, 83).[3]

Course selection by students at secondary school appears to be another area where gender differences are apparent, and these early choices students make have consequences for later decisions to participate in postsecondary education or training. An Ontario study exploring the characteristics of youth who do not pursue PSE directly or shortly after secondary school (King, Warren, King, Brook, & Kocher, 2009) found that more females enrol in the university-preparation English courses offered in secondary school, a requirement for admission to all university programs. Females also tend to enrol in the university-preparation science courses (except for physics), reflecting their predominance in the health and life sciences both in postsecondary studies and in the workplace. More males enrol in geometry and algebra, which are prerequisites for

[3] Several researchers urge caution when reporting differences in large-scale assessment reports using overall averages based on findings of positive statistical significance and have concerns over treating males or females as a uniform demographic group without considering background characteristics such as socioeconomic status, ethnicity, or geographical location (American Association of University Women, 2001: 4; White, 2007: 560; Martino, 2008: 3; Johnson, 2009: 1-2).

university programs such as engineering and computer science. Males are also more likely to enrol in the college-preparation and workplace-preparation mathematics courses.

These trends in the selection of secondary school courses reflect the students' PSE aspirations. At age 15, females are more likely to hold positive aspirations for university than males, and the research confirms this gap at age 17. Their aspirations have been found to ultimately influence the decision to actually attend postsecondary, even when academic achievement, ability, and parental factors are taken into account (Christofides, Hoy, Li, & Stengos, 2008: 28). Those students more likely to consider entering into apprenticeships are male. The number of females and males with aspirations for college are similar (King, et al., 2009). Aspirations to participate in postsecondary education and training might also be related to students' effort and performance in secondary school (Drewes, 2009: 14). Students anticipating that they will participate in PSE may work harder to achieve the academic entry requirements, whereas those without PSE aspirations may be unwilling to exert the effort required for higher academic achievement in secondary school.

It has been found that non-cognitive skills influence secondary school performance and graduation rates, and may ultimately affect PSE participation as well. In comparing non-cognitive skills, some studies have found that males tend to have less ability to pay attention in class, prefer to work individually rather than with others or are less likely to seek help from others, and have lower ability to organize and keep track of homework or class materials (Jacob, 2000: 590). Researchers using data from the Youth in Transition Survey (YITS) found that gender differences in academic engagement in secondary school (school marks, time spent on homework, probability of repeating a grade) and social engagement (sense of belonging, ability to count on support of friends, parental or peer expectations) accounted for a portion of the gender gap in PSE participation, persistence, and achievement (Frenette & Zeman, 2007: 17; Shaienks & Gluszynski, 2007: 11; Finnie & Qiu, 2008: 45; Drewes, 2009: 14). Examining the Ontario sample of YITS data confirms these gender differences — males are almost twice as likely to repeat a grade as females; females are more likely than males to have parents who expect them to go to university or college (73% vs. 65%); females are more likely to state that all of their peers also plan to do so (40% vs. 28%). A higher proportion of females in Ontario are achieving top overall school marks (Figure 11), and females tend to spend more hours doing homework per week (Figure 12).

Figure 11. Distribution of Secondary School Marks

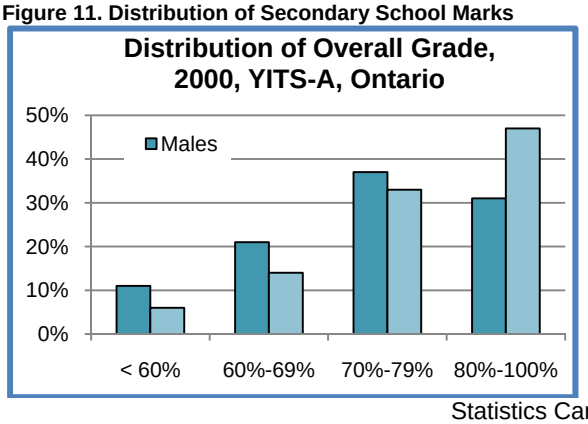
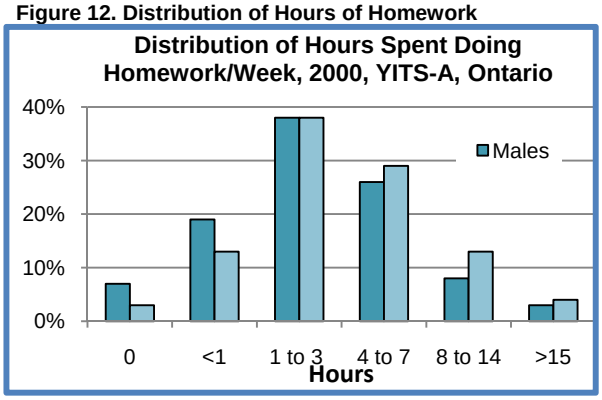


Figure 12. Distribution of Hours of Homework



Statistics Canada, 2009

For most students in Ontario, successful completion of secondary school provides entry to PSE. Although secondary school drop-out rates (the share of 20- to 24-year-olds who are not attending school and who have not graduated from secondary school) have been declining across Canada since 1990-1991, males continue to be more likely to drop out. Drop-out rates for Ontario in 2008-2009 were approximately 10% for males and 6% for females (Statistics Canada, Labour Force Survey Data). Results from YITS indicated that young males were less likely to be fully engaged in school, and were more likely to report a desire to work and earn money as a reason for dropping out of high school. For females, teenage pregnancy played a larger role in the decision to drop out (Bowlby, 2005: 6), while alcohol, drug abuse, and incarceration were additional risk factors for males (Hospital for Sick Children, 2005: 22–23).

School or classroom environments have been suggested as possible explanations for gender gaps in educational performance, particularly in the primary-elementary-secondary system. Much has been made in the media, for instance, about the declining number of male teachers and the lack of male role models in elementary and secondary schools (Belford, 2008). The proportion of male elementary and kindergarten teachers in Ontario has fallen from 19% in 1991 to 17% in 2006, the proportion of male secondary school teachers has declined from 51% to 43%, and the proportion of male principals has declined from 67% to 43% over the same time period (Statistics Canada, 2006; Statistics Canada, 2001).

To date, however, the evidence of whether and how the gender of teachers plays a role in affecting the differences in educational performance of students is inconclusive. A U.S. study indicated that assignment to a same-gender teacher improves the achievement of both males and females, and improves teacher perceptions of student performance and engagement with the subject taught by the teacher (Dee, 2008: 25). Research at the PSE level has revealed that assignment to a same-gender instructor did have small but positive effects on relative grade performance, the likelihood of completing a course, the choice of major, and course credits (Hoffman & Oreopoulos, 2009: 17; Bettinger & Long, 2005: 156). However, a Canadian study examining the

effect that the gender of reading tutors had on grade 3 and grade 4 boys who had been identified as struggling readers indicated that it had no effect (Sokal, Thiem, Crampton, & Katz, 2009: 263). Similar studies in Australia found little or no support for the contention that males were better motivated by male teachers than female teachers in selected secondary school subjects (Martin & Marsh, 2005: 93; Marsh, Martin, & Cheng, 2008: 331–332).

Providing single-gender classes has been advocated by some as an intervention that would alleviate the gender gap in academic performance. Proponents of such classes argue that males and females have variations in learning styles, interests, and abilities and that instructors in single-gender classes are better able to create gender-specific learning strategies for students (Gurian & Stevens, 2005; Sax, 2005). Cecil B. Stirling Elementary School in Hamilton, Ontario, (http://www.hwdsb.on.ca/schools/school_listing.aspx?school=cbstirling) has offered a choice of single-gender or coeducational classes in grades 7 and 8 for the last six years, and informal research conducted by the school board on students who graduated from the program indicated some positive results for both genders, but the study involved a small sample size and had other limitations (Author Unknown, 2007). In 2009–2010, two Peel County public schools began piloting single-gender classes in an attempt to address the different learning styles of students. More recently, in a report entitled "A Vision of Hope", the Toronto District School Board, Canada's largest, proposed the development of an all male elementary school, as well as male-only classes and "boy-friendly" instruction in order to address concerns about the achievement gap between males and females (Wingrove & Reinhart, 2009; http://www.tdsb.on.ca/wwwdocuments/Director/docs/TDSB-Vision%20of%20Hope-Final%20(3).ppt).

Critics, meanwhile, believe that single-gender classrooms perpetuate gender stereotypes and do not adequately prepare students for real life or the workplace (Cable & Spradlin, 2008: 7-8). Other studies show that females appear to benefit the most from the single-gender classroom structure (Demers & Bennett, 2007: 2), which might only exacerbate the current gender gap. Four decades ago, Windsor Elementary School attempted a single-gender format in an effort to address the educational needs of boys. The classes ended, in part, because of a widening gender gap in achievement that saw females advance even more rapidly than they would have in a coeducational class (Greig, 2009: 4–5). Still other researchers conclude that, when positive outcomes are seen in single-gender classrooms, they are more likely a result of effective pedagogical factors than gender segregation (Bracey, 2006: 4). Just as for the effects of teacher gender, the evidence regarding single-gender classes is inconclusive (Mael, Alonso, Gibson, Rogers, & Smith, 2005: 86–88).

It appears that gender differences in abilities and achievement exist well before females and males enter postsecondary systems. Females have been outperforming males in a

broad range of academic and non-cognitive characteristics at the primary and secondary levels for some time, and these characteristics exert an influence on students' access to and persistence in PSE. The implication is that, in order to address gender disparities in PSE participation, the differences in male and female student achievement at earlier stages of education require attention.

Summary and Conclusions

Trends in education attributed to gender differences appear to arise long before postsecondary decisions are made. In elementary and secondary schools, males are generally less ready to enter school and, in assessments, tend to have lower overall grades. Males do not perform as well on standardized tests in reading, are more likely to repeat a grade, have lower non-cognitive skills, are less engaged in learning, are more likely to drop out and ultimately take longer to graduate. These trends are not particularly recent, as interventions on behalf of males were being undertaken as early as four decades ago (Grieg, 2009).

With the onset of regular standardized testing of students in early education in Ontario over the past decade, these gender disparities have received increased public attention. The Ontario Ministry of Education is addressing the issue of gender equality in early education in part through its Equity and Inclusive Education Strategy, for which reducing gaps in student achievement is a priority (Ontario Ministry of Education, 2008). It is an issue that clearly deserves attention because these trends in early education have consequences for participation and success in PSE. The implication for PSE institutions may be in the direction of increased collaboration and consultation with the secondary education sector in an effort to address the determinants of students' decisions on whether or not to participate in PSE.

Until the late 1970s, males formed the majority of students on most postsecondary campuses in Ontario. By the 1980s, the proportions began to tip in favour of females, in part as a result of changing societal attitudes and educational equity policies. It is worth noting that the numbers of both males and females attending PSE have increased. However, the rate of increase among females has been greater and, consequently, PSE participation levels of males relative to females have been decreasing, although this pattern is not true of all credentials and in all fields of study. While the good news is that many of the patterns indicate a success story for females, the question remains: "what about the boys?" The university enrolment data over the past five years suggest that the growth of the gender gap may have reached its peak; following the trends over the next few years may clarify the issue. It may be premature to refer to the male PSE student as one who is in crisis or disadvantaged. In terms of the economic outcomes of higher education, although some improvements have been made, the gains made by females in educational attainment have not translated into full equality in occupational choices

and earnings. The findings suggest that, despite lagging behind academically, males are not at a disadvantage within the labour market.

Ontario's focus on PSE participation encompasses not only aggregate educational attainment, but also how attainment is equitably distributed among various groups within the population. The focus also includes equitable participation within varying programs and fields of study in order that PSE attainment levels might better meet the current and future human capital needs of the province (HEQCO, 2009: 19, 35). Males currently trail behind females in PSE participation and completion, yet females continue to be under-represented in certain higher paying fields; issues not only for each gender but also for society as a whole. It is encouraging to note that recent research approaches have been designed to identify and address gender differences in PSE by developing a better understanding of the determinants of PSE participation and performance for males and females. One important research direction for Ontario will be to further disaggregate gender data by characteristics such as socioeconomic status, ethnicity, and geography to provide more nuanced results in order to identify which males and which females may be at risk. The future ability of Ontario to affect PSE participation positively through policy for all qualified and interested students will be dependent to some extent upon what the research in these areas reveals.

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