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# Education Quarterly Review

2000, Vol.6, no.2

- Diversity in the classroom
- Children's school experiences
- Parental involvement
- From home to school

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# Table of contents



# Symbols

The following standard symbols are used in Statistics Canada publications:

.. figures not available.

... figures not appropriate or not applicable.

– nil or zero.

-- amount too small to be expressed.

p preliminary figures.

e estimate.

r revised figures.

x confidential to meet secrecy requirements of the Statistics Act.

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## Mission

*Education Quarterly Review* analyses and reports on current issues and trends in education using information from a variety of statistical sources. It serves as a focal point for education statistics and provides a forum for communication with stakeholders and the public. Our goal is to present information and analysis that are relevant, authoritative, timely and accessible.

This first issue of 2000 is devoted entirely to the analysis of data from the National Longitudinal Survey of Children and Youth. Of the four papers, three use data from the first cycle of NLSCY, which took place in 1994–1995 and collected information on 23,000 children aged 11 years and under. The fourth paper, *From home to school*, examines data from the second cycle of the Survey, which occurred in 1996–1997 and collected information on about 20,000 children aged 13 and under. These analytical papers, authored by analysts from the Centre for Education Statistics, make a significant contribution to our understanding of special needs children and their families; the role of parents in the child's learning environment; and the impact of early childhood education programs and household income on children's achievement in the early years of schooling.

In addition to these papers, we list in the **Cumulative Index** at the back of the report, the approximately 85 articles that have appeared in *EQR* over its six years of production. These articles are grouped under 11 categories, including funding, technology and learning, and accessibility. These categories are based on education policy issues that were identified in the report *Strategic Plan (1997)*, released in November 1997, one year after the creation of the Centre for Education Statistics. The *Strategic Plan* reviews the Centre's statistical program and identifies objectives and priorities required to strengthen the program to better address information needs. *Strategic Plan (1997)* is available free of charge on the Internet at address http://www.statcan.ca/cgi-bin/downpub/freepub.cgi.

As you see, we start the new millenium with a new look to *Education Quarterly Review*. Our readers have told us that the material under the old format was difficult to read – text too compressed, print size too small, too much information on each page, and little space breaking up the contents. We think you will like the new format. Tell us what you think and let us know if you would like to see other changes to *EQR* that you feel would improve not only the presentation but also the contents of the publication.

# Highlights

## Diversity in the classroom: Characteristics of elementary students receiving special education

- Males account for almost two-thirds of all elementary special needs students.
- The most common conditions for which children receive special education are learning disabilities, followed by emotional and behavioural problems.
- Most children who receive special needs education are taught within a regular classroom with only part of their instruction given within a special education classroom or resource room.
- Many special education students have above-average scores on measures of behaviour problems and have below-average scores on measures of work skills.
- Teachers rate special education students as being near the bottom of their classrooms across all areas of academic achievement.
- Children from low socio-economic status families or from single parent families are more likely to receive special education.
- Most special education students looked forward to attending school.

## Children's school experiences: Findings from the National Longitudinal Survey of Children and Youth, 1994–1995

- This profile is one in a series of articles highlighting results from the first cycle of the National Longitudinal Survey of Children and Youth (NLSCY) School Component. Data are drawn from the teacher and household questionnaires, as well as from questionnaires completed by 10- and 11-year-olds, providing a rich 'snapshot' of children's school experiences, classroom environment, academic achievement and behaviour. The findings reveal that most children attending school during 1994–1995 were growing up in happy and healthy school environments.

- Most 10- and 11-year-olds had positive perceptions about school: 69% reported liking school very much or quite a bit; 78% reported doing well or very well in school, and 92% thought it was important or very important to do well in school. Five percent of children reported feelings of exclusion at school, all or most of the time.

- Girls were evaluated as being near the top of their class in reading (32%) and writing (28%) more often than boys (22% and 16%, respectively). Roughly equal percentages of boys and girls were evaluated as near the top of their class in mathematics (27% of girls and 28% of boys). On ratings of overall ability, 28% of girls and 18% of boys were ranked near the top of their class.

- Grade 2 students in Quebec and British Columbia had the highest average math test scores (326 and 329, respectively), while the lowest average score was observed in Ontario (302). Quebec's score of 469 was the highest average test score for Grade 4 students; Manitoba's was the lowest (410). Average scores for Grade 6 students ranged from a high of 550 in Quebec to a low of 485 in Ontario.

- A relatively small percentage of NLSCY children exhibited symptoms related to various behaviour problems, including: conduct disorder and physical aggression; indirect aggression; hyperactivity and inattention; and anxiety and emotional disorder. Average behaviour scores indicate that there were no substantial differences between boys' and girls' behaviours.

- Teachers expected that over half of their students would graduate from a postsecondary institution: they predicted that 25% of students would obtain a certificate or diploma from a college, business school or CEGEP, and 37% would obtain a university degree. Girls were expected to go somewhat further than boys; teachers expected that 40% of girls would obtain a university degree as compared with 33% of boys.

## Parental involvement and children's academic achievement in the National Longitudinal Survey of Children and Youth, 1994–1995

- Using results from the first cycle of the National Longitudinal Survey of Children and Youth (NLSCY), the role of the parent in the child's learning environment is examined. Included is a study of the relationship between parental involvement strategies and children's academic achievement.

- Teacher's perceptions of parental involvement and attitudes were generally related to teacher perceptions of children's academic achievement: 29% of children whose parents were perceived to be very involved, but only 2% of children whose parents were not involved, were ranked near the top of the class.

- Children who participated in daily reading and homework activities with parents were more likely to be ranked near the bottom of their class than children who were never or rarely engaged in these home learning activities. These results lend support to the complex and potentially bidirectional relationship between involvement and achievement.

- Students in grades 2, 4, and 6 whose parents were perceived by teachers to be very involved received significantly higher average math test scores than students whose parents were not involved.

## From home to school: How Canadian children cope

- Children who attend early childhood care and education are more likely to be from households with high income and to have mothers who have completed a high school education or higher.

- Children who were in an early childhood program at the age of 2 and 3 were judged by their teachers as being near the top of their kindergarten class in communication skills and learning skills.

- Higher proportions of children who attended early childhood care and education services at the age of 2 and 3 years were able to write a simple sentence, compare numbers and understand simple concepts of time, such as 'today,' 'summer' and 'bedtime,' when in kindergarten. EQR

# Articles

## Diversity in the classroom: Characteristics of elementary students receiving special education

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### Introduction

Children in Canadian classrooms have a diversity of skills and needs, especially those children who have some type of limitation. Regular methods of instruction do not work with every child; some require special educational services. "Special education" was founded on the belief that every child can reach her or his full potential given the opportunity, effective teaching and proper resources (Winzer 1990). Recognizing this, the Canadian Charter of Rights and Freedoms, Section 15, guarantees a public education to all children regardless of their disabilities (Klassen 1994; Porter and Richler 1991).

Given the increased attention being paid to education by parents, business and government (Ross, Scott and Kelly 1996), there is surprisingly little national information on special needs children. What are the characteristics of special needs children across Canada? What types of families do they live in? What kinds of experiences do they have at school?

This paper attempts to shed some light on these and other questions using data from the first cycle of the National Longitudinal Survey of Children and Youth, 1994–1995 (see box on the National Longitudinal Survey of Children and Youth for more information). It focuses on those children who were identified by teachers as receiving special education because of a physical, emotional, behavioural or other problem that limited the kind or amount of school work they could do.[1] Elementary students who were part of gifted programs are not discussed in this paper.

#### Special needs children

First of all, what do we mean by special needs children? There are a variety of reasons why children require special needs education; these include intellectual limitations, sensory handicaps, communication disorders, behaviour disorders, physical handicaps, and other problems that limit their ability to learn. Limitations may range from mild to severe and children may have special needs in one area but not in another, or at one time and not at another. These special needs may

## The National Longitudinal Survey of Children and Youth

The National Longitudinal Survey of Children and Youth (NLSCY) is conducted by Statistics Canada on behalf of Human Resources Development Canada. Its primary objective is to monitor the development and well-being of Canada's children as they grow from infancy to adulthood. Starting in 1994–1995, the NLSCY collects information every two years on children, as well as on the environments in which they live, learn and play.

A nationally representative sample of 13,439 households containing just under 23,000 children participated in the first cycle of the NLSCY, 1994–1995. These children ranged in age from newborn to 11 years of age. The sample excluded children living in institutions (e.g., hospitals) for more than six months and Aboriginal children living on reserves. Although information was collected on households in the Yukon and Northwest Territories, these data are not included in this paper.

The NLSCY collects information on demographics, socio-economic background, child health and development, behaviour, relationships, education, literacy, leisure activities, family functioning and parenting, child care arrangements and family custody history.

In addition to a household-based interview with the person most knowledgeable about the child (most often the mother), the NLSCY uses a variety of methods to collect information on child development and functioning. These include tests of mathematics computation and vocabulary, self-completed questionnaires (children aged 10 and 11 years only) and questionnaires completed by the child's school teacher and principal.

Data are available on the educational functioning of 7,000 of the 12,500 eligible school-aged children (from the teacher's questionnaire) and on school characteristics for about 6,900 children attending approximately 2,700 schools (from the principal's questionnaire).

Children 4 to 11 years of age who were attending elementary school between the fall of 1994 and spring of 1995 are examined in this paper. Information from both the household and school components of the NLSCY is used in this report.

Given the small number of children who received special education, some of the results have been collapsed to eliminate problems with confidentiality or sampling variability.

Teachers' and parents' reports of children's receipt of special education are not in perfect agreement. Just over 60% of those children identified by their teacher as receiving special education were not reported as doing so by their parents. It is possible that some parents were unaware of the special needs education that their children were receiving. In the vast majority of such disagreements between teachers and parents (79%), the special needs education that the child received was delivered either exclusively in the regular classroom or within a separate special education class or resource room for a small duration of the school day.

For more information please refer to Statistics Canada Catalogue no. 89F0077XPE: *National Longitudinal Survey on Children, Survey Instruments for 1994–1995, Data Collection, Cycle 1*.

result in intellectual, emotional, physical and/or social performances that fall below those of other children. Research suggests that families and schools may influence the development of these children's abilities (Hallahan and Kauffman 1991).

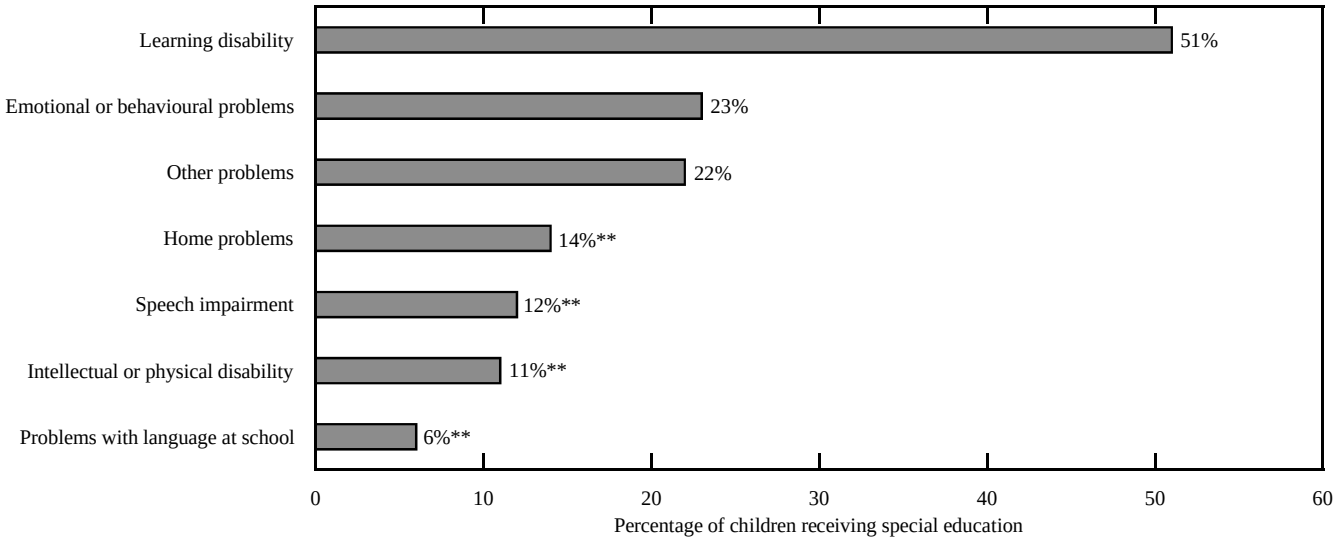
### *Teachers reported that just over 10% of children received special education[2]*

During the 1994–1995 school term, teachers reported that 1 in every 10 school-aged children received some form of special education because of a problem that limited their ability to do schoolwork.

### *Learning disabilities were the most common reason for receiving special education*

Special education can be provided for a number of reasons. According to elementary school teachers, one-half of all children who received special education had a learning disability (see Chart 1). The next most frequently cited reason that children received special education was because they experienced emotional or behavioural problems; almost one in every four children (23%) received special education for this reason. Approximately 6%*[3] of all children had problems with the language spoken at school.

Chart 1
**Reasons why children receive special education***




* *Respondents may belong to more than one category.*
** *Co-efficients of variation for these percentages are between 17% and 33% and should be interpreted with caution due to the higher levels of error associated with these estimates.*
***Source:*** *National Longitudinal Survey of Children and Youth, School Component, 1994–1995.*

***Most special needs students received the bulk of their education in regular classrooms***

In recent years, there has been a move to integrate more special needs students into regular classrooms. In 1994–1995, elementary teachers reported that the majority of special education students (59%) were taught primarily in a regular classroom and given additional instruction in a separate special education class or resource room. Just over 16%* of all special education students received their instruction exclusively in a regular classroom.

It was less common for special needs students to be segregated into specialized classrooms. Roughly 1 in every 10* special needs children received most of their instruction in a separate special education class or resource room with the remaining schoolwork provided in a regular classroom. Eight percent* of special needs children were taught exclusively in a special education classroom located in a regular school. An additional 8%* were educated through some other arrangement such as a special residential school.

***Two-thirds of special needs children were male***

In 1994–1995, two-thirds of all children receiving special education were male.[4] Since special education is delivered for a variety of reasons, it is useful to know whether there is a relationship between gender and the specific reasons that children receive special education. According to teachers, males accounted for 65% of all children receiving special education because of a learning disability, 83% of all children receiving special education for an emotional or behavioural problem, and 76% of all children receiving special education because of problems at home.[5]

***Some children receiving special education had high levels of problem behaviours***

One of the principal reasons children require special education is because they have an emotional or behavioural problem. It would be helpful to know the prevalence and extent of behavioural and emotional problems among children receiving special education. Are these children less co-operative and less focused in school when compared with students who do not receive special education?

The education component of the NLSCY can help us begin to answer such questions. It includes items that can be used to create measures of hyperactivity, pro-social behaviour, emotional disorder, physical aggression, indirect aggression, co-operative learning skills and work habits. (The box entitled "Measures of children's positive and maladaptive behaviours" describes the content and meaning of these measures.)

In general, special education students have above-average scores on measures of hyperactivity, emotional disorder and physical aggression compared with non-special education students, who have average scores. These results suggest that children receiving special education

## Measures of children's positive and maladaptive behaviours

Previous analyses[6] conducted on the entire sample of children 4 to 11 years of age suggest that several measures of positive and maladaptive or problematic behaviours can be created using items from the Teacher's Questionnaire (see Appendix A for these items). Identification of items forming each of these measures was based on statistical analyses (principal components analysis) designed to identify clusters of items that maximally correlate with each other but minimally correlate with other items. Scores on these measures were created in this project by summing teachers' ratings of a child on each item.

**Hyperactivity:** This measure examines symptoms of attention-deficit/hyperactivity disorder such as inattentiveness, distractibility, restlessness, and impulsivity. (See Appendix A for the specific items).

**Emotional disorders:** This scale assesses symptoms of both depression and anxiety, including fear, worry, nervousness, sadness, crying, and unhappiness. (See Appendix A for the specific items.)

**Physical aggression:** The physical aggression scale examines behaviours that involve threatening or actually causing direct physical harm to other children. Included are behaviours such as fighting, attacking people, threatening, bullying, and physical attacks (kicking, biting and hitting other children). (See Appendix A for the specific items.)

**Indirect aggression:** Items included in the indirect aggression scale assess children's attempts to use social interactions or statements to turn children against a person with whom the child is angry. Many of the behaviours assessed serve to isolate a child, to embarrass him/her, or to produce anger. (See Appendix A for the specific items.)

**Pro-social behaviour:** The pro-social behaviour scale assesses behaviours that are meant to help other children who need assistance, to comfort sick or unhappy children, to maintain peace in a group, or to include others in activities. It reflects an ability to care and be concerned about others' welfare and happiness. (See Appendix A for the specific items.)

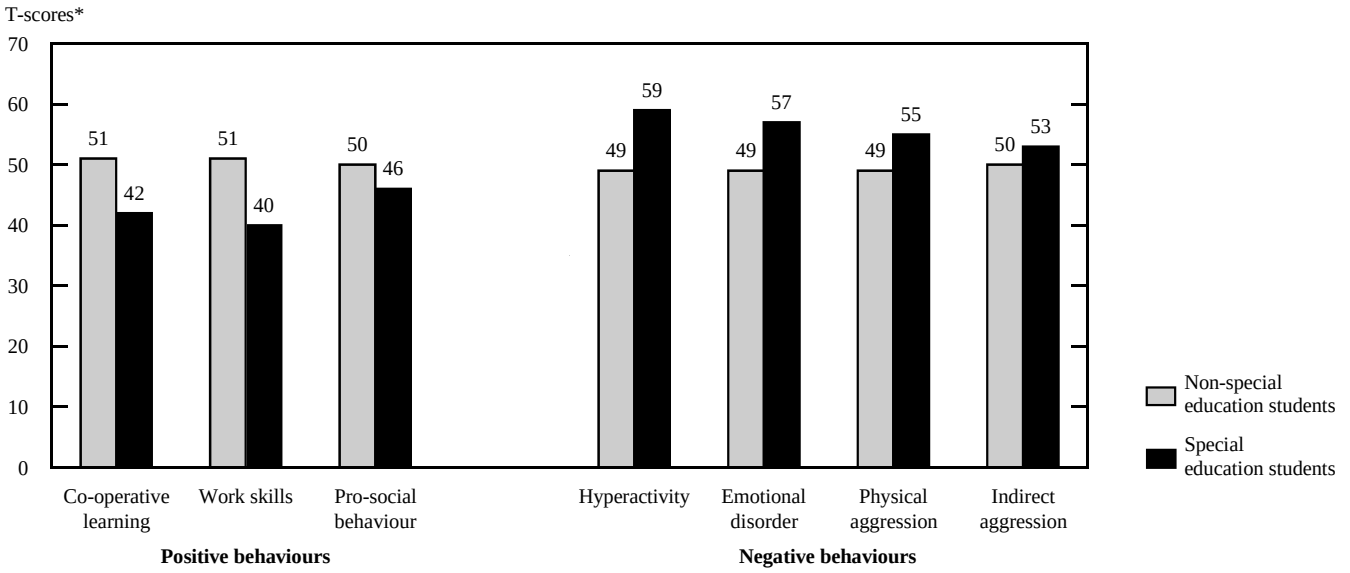
**Co-operative learning skills:** The co-operative learning skills measure examines children's self-confidence, their ability to co-operate, to show respect for other children, adults, and property, and their ability to follow rules and directions. This reflects the skill(s) children need to get along with others and to successfully adapt to the school situation. Items on this scale were derived from statements commonly listed on children's report cards. (See Appendix A for the specific items.)

**Work skills:** The work skills measure examines children's ability to pay attention to directions and to work carefully and independently. These behaviours help children successfully complete their work. Items that make up this measure were derived from statements commonly listed on children's report cards. (See Appendix A for the specific items.)

To simplify interpretation, as these measures contain different numbers of items and use different response scales, scores on the measures have been transformed to the T-score metric.[7] T-scores have a mean value of 50 and a standard deviation of 10. Thus, scores of 50 represent average levels of the behaviour or trait being examined while scores which are 10 points above or below 50 represent noteworthy differences. Once transformed to T-scores, the scores on measures of positive and negative behaviours are placed on a common, uniform metric. Thus, across measures of both positive and negative behaviours, high scores indicate a larger amount of the underlying behavioural tendency. For example, a score of 70 on the measure of hyperactivity represents a very high level of hyperactive behaviour. As well, a score of 70 on the co-operative work skills measure indicates a very high level of co-operative work skills.[8] T-Scores that are above 60 and below 40 on any of the behaviour measures imply problems. For example, a child who has a very low score (30) on the physical aggression scale may be a target for bullying by other children, rarely defending him/herself when attacked by other children. Similarly, a child who has a very high score (70) on the physical aggression scale may be a bully, often hitting and fighting with other children.

may have a higher number of behavioural and emotional problems than children who do not receive special education, and that these problems may be of greater intensity. Further, it appears that special education students have below-average scores on measures of work skills and co-operative learning skills and slightly lower than average scores on measures of pro-social behaviour. In contrast, non-special education students have average scores on these same measures. Thus, according to teachers, children who received special education appear to be less co-operative and have poorer work skills at school than children who did not receive special education (see Chart 2).

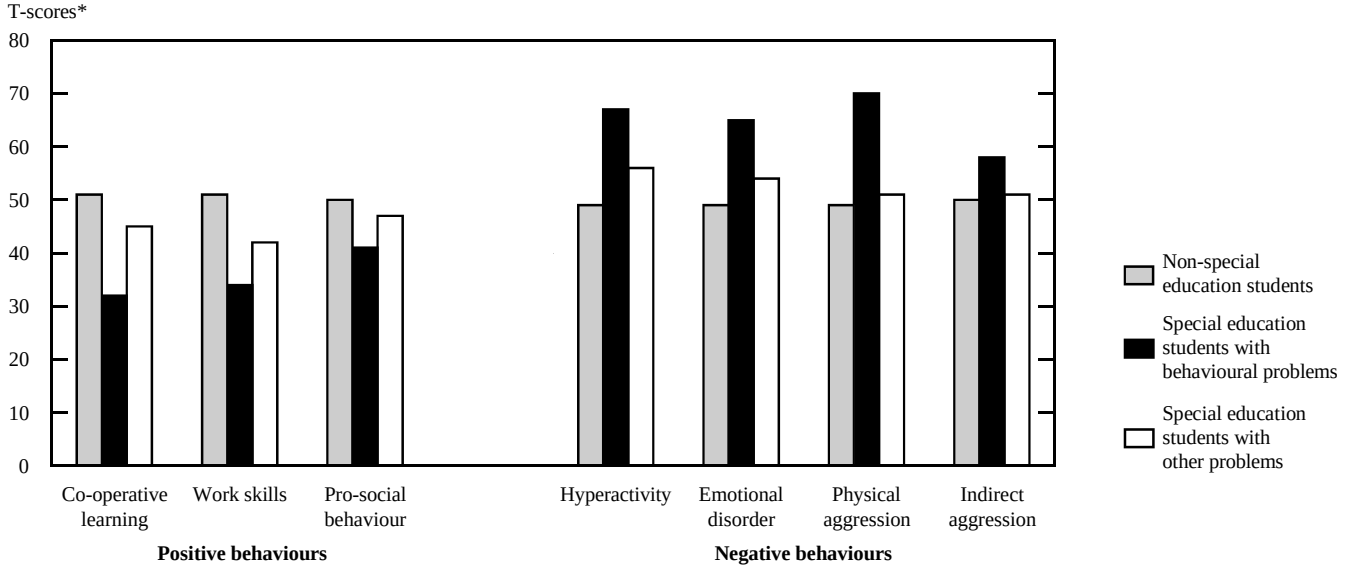
Chart 2
**Children in special education have higher levels of negative behaviours**




* *T-scores have a mean of 50 and a standard deviation of 10.*
***Source:*** *National Longitudinal Survey of Children and Youth, School Component, 1994–1995.*

The picture becomes more distinct, however, when children who received special education for a behavioural or emotional problem are separated from those who were given special education for another reason (for example, learning disabilities, problems with the language spoken at school, or problems at home). The data indicate that children who receive special education for other than behavioural and emotional problems were not rated as having difficulties with emotional upset, physical aggression, or interpersonal aggression. As well, these children were not rated as lacking in altruism, but they were rated as having some trouble with work skills and co-operation.

Chart 3
**Higher negative behaviour scores for some special education students**




* *T-scores have a mean of 50 and a standard deviation of 10.*
***Source:*** *National Longitudinal Survey of Children and Youth, School Component, 1994–1995.*

In contrast, children who receive special education for a behavioural or emotional problem had substantially higher than average scores on measures of hyperactivity, emotional disorder, physical aggression and indirect aggression. Further, these children had substantially lower than average scores on the measures of work skills, co-operative learning skills, and pro-social behaviour (see Chart 3).

It is unclear how the behavioural differences that exist between the children who receive special education and the children who do not have developed. Data from future cycles of the NLSCY may help to identify the sequence of events that underlies this correlational finding.

***Special needs children had many friends[9]***

Providing children with different types of educational instruction has the potential to create barriers between classmates. Children who receive special education may be labelled as different from peers who do not. Is there evidence that receiving special education affects the number of close relationships that students have? Are special education students more socially isolated? According to parents, the answer is no. Parents reported that children who received special education had roughly the same number of friends as children who did not. Over half the children receiving special education (56%) had one to three close friends, 27% had between four and five close friends, and 15%* had six or more friends. An unreportably small percentage of special needs children had no friends at all.

## The family

The family environment plays an important role in the lives of all children. The family setting can be a secure base from which children venture out to explore the world or it can be a source of stress. This section explores two key elements of the family setting and their relationship to special education children: the socio-economic status of the child's family and the number of parents[10] in the home.

Socio-economic status is a complex, multifaceted concept. In the NLSCY, socio-economic status was assessed using household income, as well as the level of education and occupation of each of the child's parents. These factors are interrelated; in general, higher parental education leads to more prestigious and well-paying occupations and greater household income. These, in turn, give the family a higher socio-economic status. Single-parent families generally have lower socio-economic status scores than two-parent families largely because they tend to have lower household incomes.[11] Some research suggests that belonging to a single-parent family and coming from a low socio-economic status family are associated with problems at school (Entwisle and Alexander 1992, 1993).

When considering the information presented here, it should not be assumed that children from low socio-economic status families will automatically require special education. Indeed, one model of the child–family–school linkage (Ryan and Adams 1995; see also *EQR*, Vol. 6, No. 1) suggests that while the family environment does have an impact on children's outcomes at school, the influence of family environment is weaker than that of the child's own personal characteristics.

***Family status appeared to be associated with some of the reasons for which children received special education***

Families headed by a single parent make up a growing segment of the Canadian population. Children who grow up in single-parent families frequently encounter stresses, such as poverty, that are not faced as often by children in two-parent families (Lipman, Offord and Dooley 1996). Reflecting the greater stress, children from single-parent families are roughly twice as likely to receive special education as children from two-parent families. Of the total NLSCY population, approximately 17% of children from single-parent families received special education while only 9% of children from two-parent families did so. Despite the disadvantages faced by some children from single-parent families, of the total number of children that received special education, the majority came from two-parent families. Indeed, approximately 70% of children who received special education lived in two-parent families while 30% lived in single-parent families.

Family status appears to be associated with some of the reasons for which children were given special education. Of all students receiving special education, approximately two-thirds (63%*) who received it because of problems at home were from single-parent families, while only one-third (37%*) were from two-parent families. However, family status does not seem to be associated with receiving special education for emotional or behavioural problems. Approximately 47%* of children who received special education because of emotional or behavioural problems were from single-parent families, while 53%* of children who received special education for this reason were from two-parent families.

***Household income was a determinant of child well-being***

Previous analyses of NLSCY data suggest that household income is a key determinant of children's health and success in the educational system (for example, Ross, Scott and Kelly 1996).[12] Lower levels of family income have been associated with lower levels of educational

qualifications and entry into less prestigious occupations (Ross, Scott and Kelly 1996). Children from low-income families may experience problems with nutrition, stress and health. Adding to their difficulties, these children may experience more frequent changes of address and schools as their families attempt to adjust to fluctuations in family income (Ross, Scott and Kelly 1996).

Does family income influence who will need special education? Are children who live in low-income families more likely to receive special education? Parents' estimates of the total income[13] from all household members for the previous 12 months may help address these questions. Information has been grouped into three household-income categories:[14] $29,999 and below, $30,000 to $39,999, and $40,000 or more.

In general, there appears to be a relationship between household income and the receipt of special education. As Table 1 illustrates, the majority of all children (64%) lived in families with incomes of $40,000 or more, the highest income category. Just over half (53%) of all children who received special education lived in households with incomes of $40,000 or more, compared with 65% of children who did not receive special education. Similarly, a higher percentage of special needs children resided in families having incomes of $29,999 or less compared with non-special needs children. Over one-third of children (34%) who received special education lived in households with incomes of $29,999 or less, compared with slightly more than one-fifth (21%) of children who did not receive special education.

Table 1
**Children living in low-income families are more likely to receive special education**

| | Level of household income | | |
|---|---|---|---|
| | $29,999 or less | $30,000 to $39,999 | $40,000 or more |
| Children receiving special education | 34% | 13%* | 53% |
| Children not receiving special education | 21% | 14% | 65% |
| **Total children** | **22%** | **14%** | **64%** |

* *Asterisked values have co-efficients of variation greater than 17% and should be interpreted with caution because of the higher level of error associated with these estimates.*

***Source:*** *National Longitudinal Survey of Children and Youth, Household Component, 1994–1995.*

When examining the types of conditions for which children received special education, lower family incomes appear to be more strongly associated with specific learning problems. While only 34% of all children lived in households with incomes of $29,999 or less, three-quarters of all children receiving special education because of home problems and more than one-half (53%*) of all children receiving special education because of emotional or behavioural problems lived in households with incomes of $29,999 or less.

Low household income is a factor that is often associated with single-parent families. What are the relationships between the type of family unit, level of household income and children's receipt of special education? Some partial insight can be found by comparing the percentages of children who received special education by income groupings and by family structure (Table 2).

Table 2
**Income and family structure are associated with children's receipt of special education**

| | Level of household income | | | |
|---|---|---|---|---|
| | $29,999 or less | | $30,000 or more | |
| | Two-parent families | Single-parent families | Two-parent families | Single-parent families |
| Children receiving special education | 18%* | 77% | 82% | 23%* |
| Children not receiving special education | 12% | 66% | 88% | 34% |
| **Total children** | **13%** | **68%** | **87%** | **32%** |

* *Asterisked values have co-efficients of variation greater than 17% and should be interpreted with caution because of the higher level of error associated with these estimates.*

***Source:*** *National Longitudinal Survey of Children and Youth, Household Component, 1994–1995.*

Table 2 shows that incomes are distributed differently for children living in one- and two-parent families. Most children living in two-parent families fall into the highest income grouping (87%) while more than two-thirds (68%) of all children living in single-parent families are in the lowest income grouping ($29,999 or less).

Within a family type (one- or two-parent family), low income is associated with a higher percentage of children receiving special education (Table 2). Roughly 18%* of children from households with incomes of $29,000 or less lived in two-parent families and received special education while only 13% of all children who lived in households with incomes of $29,999 or less came from families having two parents. In contrast, 77% of children from households with incomes of $29,999 or less lived in single-parent families and received special education. Together, these results suggest that low income may be associated with higher percentages of children receiving special education. A definitive answer to this question, however, will require additional analysis.

### *A slightly higher percentage of children who received special education had a parent who was not working*

The employment status of parents plays an important role in families. Being employed and receiving a regular income can give a family financial and emotional security. Is there a relationship between the receipt of special education by the child and the employment status of parents? A slightly higher percentage of children receiving special education had one parent who was not working. Of children who had a parent who was not in the labour force, approximately 40% received special education, compared with 35% who did not.

Is the relationship between a parent's work status and a child's receipt of special education similar for both one- and two-parent families? For children living in two-parent households there was little or no difference. However, this was not the case for children living in single-parent households. As illustrated in Table 3, approximately 56% of children from single-parent families who received special education had a parent who was not in the labour force, compared with only 44% of children from single-parent families who did not receive special education.

Table 3
**A higher percentage of children who received special education and lived in single-parent families had a parent who was not in the labour force**

| | Parent's work status | | | |
|---|---|---|---|---|
| | Not working | | Working | |
| | Two-parent households | Single-parent households | Two-parent households | Single-parent households |
| Children receiving special education | 34% | 56% | 66% | 44% |
| Children not receiving special education | 33% | 44% | 67% | 56% |
| **Total children** | **33%** | **46%** | **67%** | **54%** |

***Source:*** *National Longitudinal Survey of Children and Youth, Household and School Component, 1994–1995.*

### *Parents' education was lowest among children who received special education for/because of problems at home*

Parents' education has been associated with children's outcomes such as academic achievement. It is also linked to household income in that parent(s) with higher educational credentials are more likely to hold higher-paying jobs (Ross, Scott and Kelly 1996).

Is the receipt of special education associated with the level of parental education? As shown in Table 4, approximately 24% of children who received special education had a parent who had not completed high school, in contrast with only 14% of children who did not receive special education. At the other end of the educational continuum, 27% of children who received special education had a parent who held a college diploma or university degree, compared with 37% of the children who did not receive special education.

Parents' education was lowest among children who received special education because of problems at home; 41%* of these parents had not completed high school. In contrast, only 14% of non-special needs children's parents and 17% of the spouses of non-special needs children's parents had not graduated from high school.

Table 4
**Children who received special education were more likely to have a parent who had not finished high school**

| | Parent's education | | | |
|---|---|---|---|---|
| | Less than high school | High school graduate | Some education beyond high school | Postsecondary diploma/degree |
| Children receiving special education | 24% | 19%* | 30% | 27% |
| Children not receiving special education | 14% | 19% | 30% | 37% |
| **Total children** | **15%** | **19%** | **30%** | **36%** |

** Asterisked values have co-efficients of variation greater than 17% and should be interpreted with caution because of the higher level of error associated with these estimates.*
***Source:*** *National Longitudinal Survey of Children and Youth, Household Component, 1994–1995.*

## The school

Children spend a substantial portion of their day in school. Indeed, from kindergarten to the end of high school, children and youth spend approximately 15,000 hours in school.[15] Given this significant portion of time, how does the school experience of students who receive special education compare with that of students who do not? In the following section we examine three aspects of children's school experience: rates of repeating grades, rates of changing schools, and class ranking in several areas of academic achievement.

### *Children who received special education had more often repeated one or more grades*

Repeating a grade is a relatively rare event. The fact of having repeated one or more grades suggests that a child has experienced substantial difficulties in school. Given that children who receive special education are recognized as having problems at school, do these students have a higher frequency of repeating one or more grades?

Just 2%* of all children aged 6 to 11 who did not receive special education had repeated at least one grade during their school careers. In contrast, eight times as many children who received special education had repeated one or more grades (17%*). Further, close to one of every four children (24%*) who received special education for a learning disability had repeated one or more grades. Despite the higher percentages of special education students who had repeated one or more grades, it should be recognized that the majority of children who received special education (83%) had not repeated a grade.

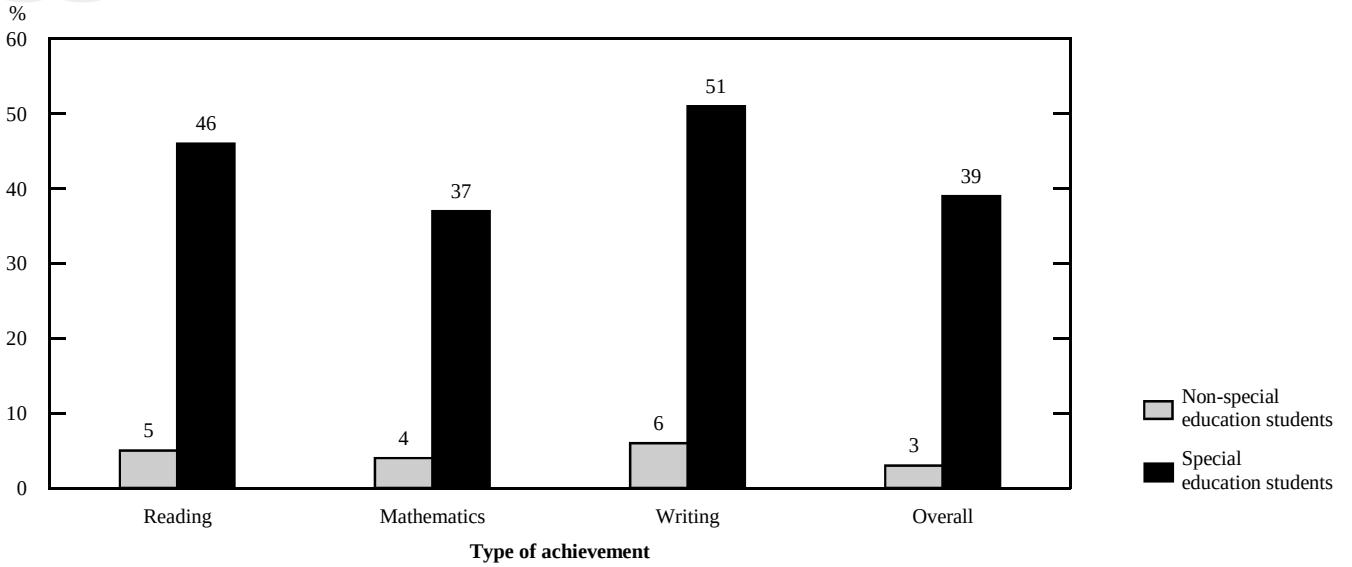
### *Special needs children were more often rated near the bottom of their class*

Doing well academically is important not only to parents and teachers, but also to children themselves. With this in mind, do children who receive special education have the same levels of achievement as those who do not? Furthermore, given that children can receive special education for a variety of problems, does the reason for receiving special education make a difference in a child's level of academic achievement?

Only a small proportion of children who did not receive special education were rated by their teachers as being near the bottom of the class in reading (5%), mathematics (4%), written work (6%), and overall academic achievement (3%). In sharp contrast, more than 3 in every 10 children who received special education were rated by their teachers as being near the bottom of the class in reading (46%), mathematics (37%), written work (51%) and overall achievement (39%) (see Chart 4).

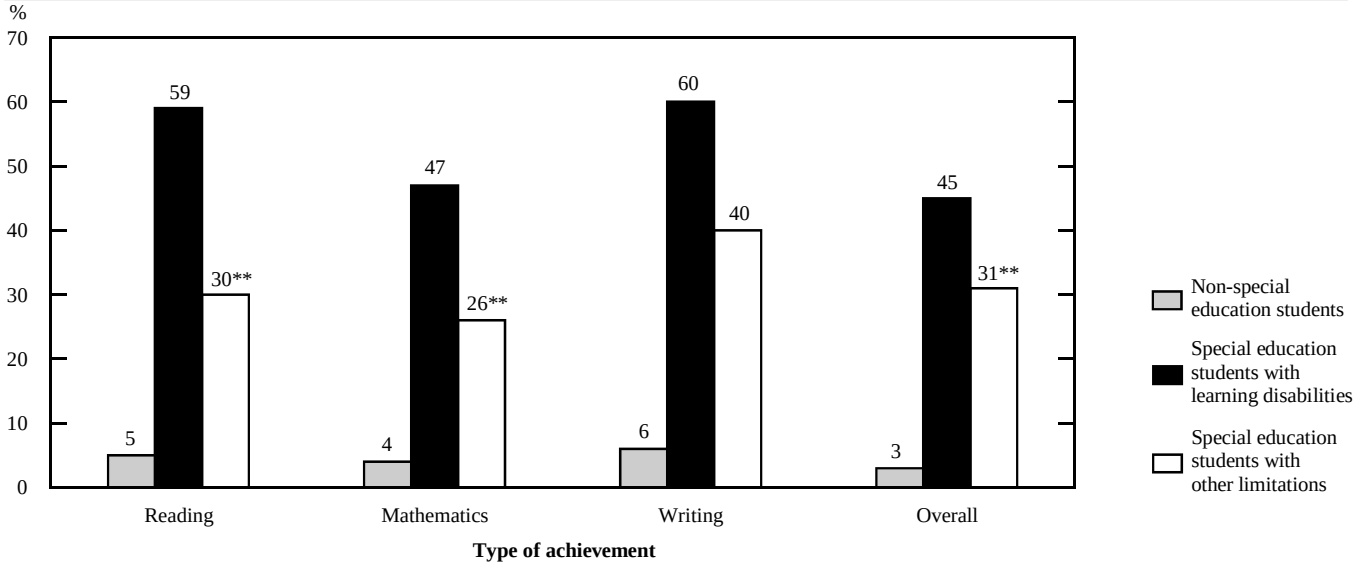
Special education students do not all have the same level of academic achievement. The reasons children receive special education appear to be associated with small differences in teacher's ratings of achievement. Children who received special education because of a learning disability were more likely to be rated as being near the bottom of their class in overall achievement. Indeed, children who received special education for this reason were nearly twice as likely as other special education students to be rated near the bottom of their class in reading and mathematics achievement (see Chart 5).

Chart 4
**Many special education students were rated near the bottom of their class in achievement***




* *Children are rated by their teachers in each of these areas of academic achievement. Thus it is possible that children may be at the bottom or top of their classroom across each of these areas of academic achievement.*
***Source:*** *National Longitudinal Survey of Children and Youth, School Component, 1994–1995.*

Chart 5
**Many children receiving special education for learning disabilities were rated near the bottom of their class in achievement***




* *Children are rated by their teachers in each of these areas of academic achievement. Thus it is possible that children may be at the bottom or top of their classroom across each of these areas of academic achievement.*
** *Co-efficients of variation for these percentages are between 17% and 33% and should be interpreted with caution because of the higher levels of error associated with these estimates.*
***Source:*** *National Longitudinal Survey of Children and Youth, School Component, 1994–1995.*

***Many special needs children had changed schools***

Changing schools can be a disruptive experience for many children. It can create many challenges for students, including developing new friendships, leaving old friendships behind, and adjusting to a new set of physical surroundings. Given the stresses involved, does changing schools have an impact on whether or not a child requires special education? The first phase of the NLSCY cannot answer this question definitively. Information from future cycles of this survey is needed to provide a clearer picture. However, results from the 1994–1995 cycle suggest that there may be an association between the receipt of special education and children who have changed schools. Just over 40% of all children who received special education had changed schools at least once, compared with only 26% of children who did not receive special education. Children receiving special education for an emotional or behavioural problem had a particularly high level of school changes; 56% of children in this group had changed schools. However, the reasons non-special needs and special needs children changed schools were not notably different. The most common reason for both groups was a move by the family or the child to another residence (close to 70% for each).

***Special needs children looked forward to school***

Despite the difficulties they may face, most children who received special education looked forward to going to school. An overwhelming percentage (81%) of parents of children who received special education reported that their child often or almost always looked forward to going to school. These results are only moderately lower than those reported by parents whose children who did not receive special education (88%).

**Summary**

Using data from the first cycle of the National Longitudinal Survey of Children and Youth, 1994–1995, this paper describes the characteristics and school experiences of special needs children across Canada. Several findings stand out from our examination. Males account for roughly two-thirds of all special needs students. The most common condition for which children receive special education is learning disabilities, followed by emotional and behavioural problems. Most children who receive special needs education are taught in their own classroom with only part of their instruction given in a special education classroom or resource room. In general, special education students have above-average scores on measures of hyperactivity, emotional disorder and physical aggression. As well, they have below-average scores on measures of work skills and co-operative learning skills. These differences in rated behaviour are particularly large for children who receive special education because of an emotional or behavioural condition.

Most special education students have not repeated a grade during their educational career, but their teachers rate them as achieving near the bottom of the class across all areas of academic achievement. The majority of these students live with two parents in households with incomes of $40,000 or more. However, a greater proportion of children from low socio-economic status families or from single-parent families receive special education. The parents of special education students are reasonably well educated with the majority having either some education beyond high school or a postsecondary diploma or degree. Despite the problems they face at school, most special education students look forward to attending school and, on average, have as many friends as other students. EQR

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## Appendix A

Behaviour scale items from the Teacher's Questionnaire

**Hyperactivity**

| | |
|---|---|
| AETCQ27B | Can't sit still, is restless or hyperactive |
| AETCQ27I | Is distractible, has trouble sticking to any activity |
| AETCQ27N | Fidgets |
| AETCQ27P | Can't concentrate, can't pay attention for long |
| AETCQ27S | Is impulsive, acts without thinking |
| AETCQ27W | Has difficulty awaiting turn in games or groups |
| AETCQ27HH | Cannot settle to anything for more than a few moments |
| AETCQ27PP | Is inattentive |

**Emotional disorder**

| | |
|---|---|
| AETCQ27F | Seems to be unhappy, sad or depressed |
| AETCQ27K | Is not as happy as other children |
| AETCQ27Q | Is too fearful or anxious |
| AETCQ27V | Is worried |
| AETCQ27CC | Cries a lot |
| AETCQ27II | Appears miserable, unhappy, tearful or distressed |
| AETCQ27MM | Is nervous, high-strung, or tense |
| AETCQ27QQ | Has trouble enjoying self |

**Physical aggression**

| | |
|---|---|
| AETCQ27G | Gets into many fights |
| AETCQ27X | When another child accidentally hurts him/her (such as by bumping into her or him) assumes that the other child meant to do it, and then reacts with anger and fighting |
| AETCQ27AA | Physically attacks people |
| AETCQ27FF | Threatens people |
| AETCQ27JJ | Is cruel, bullies or is mean to others |
| AETCQ27NN | Kicks, bites, hits other children |

**Indirect aggression**

| | |
|---|---|
| AETCQ27J | When mad at someone tries to get others to dislike her/him |
| AETCQ27R | When mad at someone, becomes friends with another as revenge |
| AETCQ27Z | When mad at someone, says bad things behind the other's back |
| AETCQ27LL | When mad at someone, says to others: let's not be with her/him |
| AETCQ27SS | When mad at someone, tells the other one's secrets to a third person |

**Pro-social behaviours (Altruism)**

| | |
|---|---|
| AETCQ27A | Shows sympathy to someone who has made a mistake |
| AETCQ27D | Will try to help someone who has been hurt |
| AETCQ27H | Volunteers to help clear up a mess someone else has made |
| AETCQ27M | If there is a quarrel or dispute will try to stop it |
| AETCQ27U | Offers to help other children (friend, brother or sister) who are having difficulty with a task |
| AETCQ27BB | Comforts a child (friend, brother or sister) who is crying or upset |
| AETCQ27GG | Spontaneously helps to pick up objects which another child has dropped (e.g., pencils, books) |
| AETCQ27OO | Will invite bystanders to join in a game |
| AETCQ27RR | Helps other children (friends, brother or sister) who are feeling sick |
| AETCQ27TT | Takes the opportunity to praise the work of less able children |

**Co-operative learning skills**

| | |
|---|---|
| AETCQ17A | Works co-operatively with other students |
| AETCQ17B | Plays co-operatively with other students |
| AETCQ17C | Follows rules |
| AETCQ17D | Follows instructions |
| AETCQ17E | Respects the property of others |
| AETCQ17F | Demonstrates self-control |
| AETCQ17G | Shows self-confidence |
| AETCQ17H | Demonstrates respect for adults |
| AETCQ17I | Demonstrates respect for other children |
| AETCQ17J | Accepts responsibility for actions |

**Work skills**

| | |
|---|---|
| AETCQ18A | Listens attentively |
| AETCQ18B | Follows directions |
| AETCQ18C | Completes work on time |
| AETCQ18D | Works independently |
| AETCQ18E | Takes care of materials |
| AETCQ18F | Works neatly and carefully |

**Notes**

1. Children who do not understand the language spoken at school, such as those who are enrolled in English as a Second Language or French as a Second Language, are included in this definition.

2. Includes public and private schools only. Federal institutions and schools for the visually and hearing impaired are excluded.

3. Asterisked values have co-efficients of variation greater than 17% and should be interpreted with caution because of the higher level of error associated with these estimates.

4. In general, the distribution of male and female children in the school component was roughly similar across age groups. While the genders differed by up to 10% within any specific age group, there did not appear to be a consistent pattern to these differences.

5. Because children can receive special education for more than one reason, these percentages will not add to 100%.

6. Statistics Canada (1996). *National Longitudinal Survey of Children and Youth: User's handbook and microdata guide*, pp. 84-88.

7. Traditionally, T-scores are calculated by normalizing the distribution of scores via percentile rankings, converting percentile rankings to Z-scores (standard normal deviate scores) and then using the formula Y = 10 (Z) + 50. However, if the distribution of scores is highly skewed or if the underlying characteristic is not normally distributed then the normalization process will produce transformed scores (Z scores and T-scores) which do not have the intended properties. As many of the measures, especially the negative behaviour scales, are highly skewed, the process of normalization was not conducted. Instead, scores on all of the behaviour scales were directly transformed to Z-scores and the formula Y = 10 (Z) + 50 used to create T-scores. For more information on T-scores please see Allen, M. J., & Yen, W. M. (1979). *Introduction to Measurement Theory*. Brooks/Cole Publishing Company: Monterey, CA.

8. Scores on the measures of positive behaviours could have been reversed prior to transformation to Z-scores and T-scores. This would have created problems with interpretation of scores as high scores on the measures of positive behaviour would indicate low levels of positive behaviours. Alternatively, scores on the negative behaviour measures could have been reversed prior to transformation to Z-scores and T-scores. However, this would have produced measures where high scores on the measures of negative behaviours indicate low levels of negative behaviour.

9. Data on social relationships are available only for children 6 to 11 years of age.

10. For ease of reading, the term 'parent(s)' is used in this paper to refer to the person most knowledgeable (PMK) about the child and the spouse of this person. The majority of PMKs were the mother (89.9%), of which 88.5% were the biological mother and 1.4% were the step-, adoptive or foster mother. The remaining PMKs include the father (9.5%) and other relatives or guardians (0.5%).

    'Spouse' includes both married and common-law partners. Just over three-quarters of the spouses were the father (71.1% biological father and 4.9% the step-, adoptive or foster father), 8.4% were the mother, 0.3% was a non-parent and 15.7% was not a spouse.

11. Statistics Canada (1996). *National Longitudinal Survey of Children and Youth: User's handbook and microdata guide*, pp. 60-66).

12. Ontario Ministry of Community and Social Services, 1986 study cited by Ross, Scott and Kelly, 1996: 22.

13. Total income includes the income before taxes and deductions, as well as government transfers such as social assistance and child benefits, of all individuals normally living in the same household as the child. If the parent was unable or unwilling to estimate household income, an attempt was made to obtain a range within which the household income fell.

14. Household income was grouped into three categories to provide a simplified overview of the distribution of children by level of household income.

15. Based on the following assumptions: a child spends six hours each day in school; the school year is 200 days in length and a child attends school full time for 12 years plus half time for one year.

# Children's school experiences in the NLSCY, 1994–1995 [1]

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## Introduction

Gaining a better understanding of the social environments in which children live, learn and play is one of the most valuable investments societies can make. The neighbourhoods we live in, the way we raise our children and the schools to which we send them help to determine whether children are on successful pathways to positive outcomes. One of the best ways to assess the impact of a child's environment is through a longitudinal survey that tracks children through the life stages (see box on page 21).

The findings discussed here cover children aged 4 to 11 who were attending school during 1994–1995, when the first cycle of the National Longitudinal Survey of Children and Youth (NLSCY) was administered. Data drawn from the teacher and household questionnaires, as well as questionnaires completed by 10- and 11-year-olds captured information about the child's classroom environment, academic achievement, behaviour and activities at school.

### Most children attended preschool programs

School participation for most children begins before the first grade. With the exception of Prince Edward Island, all provinces offer kindergarten programs (one year preceding Grade 1) for 5-year-old children. In addition, in 1994–1995, Manitoba, Ontario and Quebec offered junior kindergarten programs (generally two years preceding grade one) for 4-year-olds. Since enrolment for children in these age groups is voluntary, it is not uncommon to observe differences in the 4- and 5-year-old school participation rates.

The majority of 5-year-old children in Canada (89%) were attending school. Provincial school participation figures varied from a high of 97% of 5-year-olds in Ontario to 80% in Quebec. Similarly, 71% of 4-year-olds in Ontario, 32% in Quebec and 8% in Manitoba were enrolled in school programs.

Overall, 38% of all 4- and 5-year-olds were not attending school during the reference year. Of these, 86% were 4 years old and 14% were 5 years old. In addition, nearly one-half of these 4-year-olds (48%) and 38% of these 5-year-olds participated in other preschool programs.

## The National Longitudinal Survey of Children and Youth (NLSCY), Human Resources Development Canada and Statistics Canada

The National Longitudinal Survey of Children and Youth (NLSCY) is a long-term initiative that follows the life conditions and developmental experiences of a large sample of children. Conducted by Statistics Canada on behalf of Human Resources Development Canada, the NLSCY was developed to provide high-quality longitudinal information on a range of factors thought to influence children's behaviours, interactions and outcomes. Results from this project will produce a comprehensive database of the characteristics and life experiences of a nationally representative sample of children, as they grow from infancy to adulthood. Cycle 1, conducted in 1994–1995 collected information on nearly 23,000 children, from newborn to 11 years of age. The same panel of children will be followed every two years until they reach adulthood.

Questions were asked of the person most knowledgeable about the child, in relation to such issues as socio-economic background, health, behaviour, relationships, education, parenting style, and home environment. Additional information on children's classroom and school environment, behaviour at school, and academic achievement was collected from teachers and principals. A number of alternative methods were used to further investigate the child's development and functioning, including mathematics computation tests, vocabulary tests, and questionnaires completed by 10- and 11-year-olds themselves.

Data are available from the teacher's questionnaire on the behaviour and educational functioning of 6,978 of the 12,500 eligible school-age children. All of the findings discussed here are based on weighted population estimates.

Some socio-demographic characteristics were also examined to compare distributions for cases with and without school information.

### School sample verification

The sample of children for whom we have school information from the teacher's questionnaire was compared with the sample of all eligible school-age children in the survey to verify the validity of the findings. The samples were compared across a number of characteristics:

- province
- urban/rural area
- socio-economic status
- family type
- income

For the observed characteristics, there were no pronounced differences between the whole sample and the sample for which we had school information. For urban/rural area, for instance, 18.9% of the eligible school-age children and 19.3% of the school-age children with school information were from rural areas.

In comparing family characteristics with the findings reported in *Growing Up in Canada*, it is important to remember that this profile focuses only on children *who were attending school* during the reference year, as opposed to all eligible school-age children. Consider the employment of parents in one-parent households, for example; adult employment for the group attending school is higher since the child's school enrolment may facilitate labour market participation for the parent.

### Family characteristics

The group of children for whom we have school information is similar to the overall sample of eligible school-age children (see box above). The findings highlighted here refer to the sample of children with school information.

In 1994–1995, most children (84%) were living in two-parent families, while 16% were living with one parent, or did not live with a parent. Moreover, 59% of children were living in households where all parents were in the paid labour market: over half (59%) of the two-parent households had two earners (full-time, part-time or combination), and in 58% of one-parent households, the parent was a full-time or part-time earner.

Children from rural areas accounted for 19% of the school children, compared with 42% from urban areas of more than 500,000 people and 39% from urban areas with up to 499,999 people.[2] The distribution of children by rural and urban area varied significantly by province (Table 1).

### Language

Teachers reported that the main language of instruction for over two-thirds of students (70%) was English, compared with close to one-quarter for whom it was French (28%). Two percent of the students received instruction in both official languages.

English was the main language of classroom instruction for 9 out of 10 children in Newfoundland, Saskatchewan, Alberta and British Columbia; French was the main language for 94% of children in Quebec. The main language of classroom instruction was most evenly

Table 1
**A large majority of children were living in urban areas**

| | % of children in each type of area | | |
|---|---|---|---|
| | Urban (500,000 or more) | Urban (up to 499,999) | Rural |
| **Canada** | 42 | 39 | 19 |
| Newfoundland | - | 64 | 36 |
| Prince Edward Island | - | 31 | 69 |
| Nova Scotia | - | 64 | 36 |
| New Brunswick | - | 56 | 44 |
| Quebec | 49 | 30 | 21 |
| Ontario | 45 | 40 | 15 |
| Manitoba | 66 | 15 | 19 |
| Saskatchewan | - | 64 | 36 |
| Alberta | 63 | 21 | 16 |
| British Columbia | 40 | 49 | 11 |

***Source**: National Longitudinal Survey of Children and Youth, 1994–1995.*

Table 2
**English was the main language of classroom instruction for over 90% of children in Newfoundland, Saskatchewan, Alberta and British Columbia**

| | % of children for whom English or French was the main language of classroom instruction | |
|---|---|---|
| | English | French |
| **Canada** | 70 | 28 |
| Newfoundland | 93 | 7 |
| Prince Edward Island | 81 | 17 |
| Nova Scotia | 88 | 11 |
| New Brunswick | 65 | 35 |
| Quebec | 2 | 94 |
| Ontario | 85 | 12 |
| Manitoba | 80 | 17 |
| Saskatchewan | 92 | 7 |
| Alberta | 93 | 7 |
| British Columbia | 93 | 6 |

*Note: Provincial totals may not add up to 100 since some language categories were not included.*
***Source**: National Longitudinal Survey of Children and Youth, 1994–1995.*

split in New Brunswick, with 35% of children studying in French and 65% studying in English (Table 2). The proportion of children whose main language of instruction was an equal combination of French and English was highest in Ontario (4%) and Quebec (3%).

Teachers of NLSCY children in the Atlantic provinces reported the highest proportions (over 80%) of classrooms where the first language of all students was either English or French. In Ontario, Alberta and British Columbia, approximately 60% of the teachers reported that their classrooms included at least one student with a first language other than English or French.

### Attendance and participation

Parents and teachers were asked a number of questions relating to the children's school attendance, their degree of preparation for the school day, and their feelings about going to school. As reported in the initial highlights of the school component results, most children aged 4 to 11 attended school regularly. Just over two-thirds (67%) were absent five days or fewer, and a further 20% missed between 6 and 10 days. Only a small proportion of children (4%) were absent for 20 days or more, the equivalent of about one month of instruction. Skipping school without permission was not a common occurrence among 4- to 11-year-olds: teachers reported that 99% of children had not skipped a single day of school.

Children were generally ready to participate in school activities. Using the categories "never," "rarely," "sometimes," "usually," and "always," teachers indicated each child's level of preparation for various school-related activities. The majority of students (92%) never or rarely arrived at school inadequately clothed for activities such as gym class, sports, field trips and recess or for the weather conditions. Moreover, 90% of students never or rarely arrived late for school, while 87% never or rarely arrived too tired to do school work.

Teachers evaluated students as somewhat less prepared when it came to school materials. Nineteen percent of students sometimes, usually or always arrived without the appropriate materials (81% never or rarely arrived without materials) and 23% arrived without having completed their homework (77% of students never or rarely arrived without their homework completed). According to children's teachers, girls were more likely than boys to have arrived with the appropriate materials for school (86% of girls versus 76% of boys) and with their homework completed (83% of girls versus 72% of boys).

The nature of the relationship between socio-economic status and children's academic performance and behaviour is complex. By identifying the NLSCY measure of socio-economic status (SES) for each child's family, it is possible to explore the teacher assessments of preparedness for school by SES group (see box on page 23). Children from the lowest SES families were less likely to be prepared for school than their counterparts from the highest SES families. These differences were most apparent

in the responses to questions about adequate clothing: children from families in the lowest socio-economic group were less likely to be appropriately dressed for school activities or for the weather than those in the highest group (84% versus 97% rarely or never arrived poorly clothed for the activities; 85% versus 97%, respectively, rarely or never dressed poorly for the weather). As future cycles of the survey become available, researchers can begin to examine the influences of socio-economic background on the academic development of Canadian children.

Children's early attitudes toward school may act as important indicators for future outcomes. Parents reported that the majority of children (71%) almost always looked forward to going to school and that an additional 17% of children often looked forward to going to school.

With respect to children's feelings about going to school, parents were more likely to indicate that children almost always looked forward to going to school in their early school years: over 80% of children in junior kindergarten and kindergarten programs, 78% of Grade 1 students and only 65% of children in Grade 6 almost always looked forward to going to school (Table 3). A slightly higher percentage of girls (91%) than boys (84%) looked forward to going to school, almost always or often.

Table 3
**Children in lower grade levels were more likely to look forward to going to school**

| | % of students who looked forward to going to school | | |
|---|---|---|---|
| | Almost always | Often | Sometimes, rarely or almost never |
| Junior kindergarten | 80 | 14 | 6 |
| Kindergarten | 83 | 11 | 6 |
| Grade 1 | 78 | 14 | 8 |
| Grade 2 | 69 | 18 | 13 |
| Grade 3 | 66 | 19 | 15 |
| Grade 4 | 66 | 18 | 16 |
| Grade 5 | 65 | 17 | 18 |
| Grade 6 | 65 | 20 | 15 |

*Source: National Longitudinal Survey of Children and Youth, 1994–1995.*

**Homework assignment**

Homework is a regular part of most children's school experience, particularly as they progress to higher grades. Parents, teachers and 10- and 11-year-old children were asked about the frequency of assigned and completed homework.

NLSCY teachers were asked how often they assigned homework to their class. Across all grades, more than half the teachers (55%) reported that they usually or always assigned homework. The frequency with which teachers assigned homework increased by grade level: just under half of Grade 1 to 3 teachers usually or always assigned homework, as did 57% of Grade 4 teachers, 64% of Grade 5 teachers and 66% of Grade 6 teachers. Grade 1 and 2 teachers were more than four times as likely as Grade 6 teachers to have never or rarely assigned homework (35% of Grade 1 and 2 teachers versus 8% of Grade 6 teachers never or rarely assigned homework).

As the likelihood and frequency of assigned homework increased, the proportion of children failing to complete their homework also increased. With respect to students' preparedness for class, [3] teachers reported that 85% of Grade 1 students never or rarely came to class without their homework completed, compared with close to 70% of students in grades 5 and 6.

The frequency with which homework was assigned varied substantially among the provinces. Children in grades 1 to 6 in Quebec were most likely to be assigned homework, with 60% of the teachers reporting that they always assigned homework to their class (Table 4). In Saskatchewan and Manitoba, however, only 9% of the teachers reported that they always assigned homework. It is interesting to note that, in general, the proportion of teachers never or rarely assigning homework was highest in the western provinces and Ontario; beginning in Quebec and moving east, most teachers usually or always assigned homework.

Parents' reports on how frequently their children were assigned homework were consistent with the reports of their children's teachers at the lower grades, but there were some discrepancies in the higher grades.[4] Most

## Measuring socio-economic status

The NLSCY includes a measure of socio-economic status (SES), providing an opportunity to explore the influence of socio-economic background on the development of Canadian children and youth. This measure combines family income, parents' occupations, and parents' education, to arrive at an overall indicator of SES. For this analysis, five equal groups (quintiles) were created, each containing 20% of the children according to their ranking in terms of family SES scores. Children whose families are in the top 20% of SES scores are considered to be in the highest SES group, while those in the bottom 20% are in the lowest SES group.

Table 4
**Frequency of homework assigned varied by province**

| | % of teachers who assigned homework | | | |
|---|---|---|---|---|
| | Never/ rarely | Sometimes | Usually | Always |
| Canada | 21 | 24 | 28 | 27 |
| Newfoundland | 6 | 16 | 47 | 31 |
| Prince Edward Island | 1 | 12 | 47 | 40 |
| Nova Scotia | 6 | 20 | 45 | 29 |
| New Brunswick | 2 | 6 | 56 | 36 |
| Quebec | 1 | 5 | 34 | 60 |
| Ontario | 33 | 30 | 21 | 16 |
| Manitoba | 39 | 28 | 24 | 9 |
| Saskatchewan | 38 | 37 | 16 | 9 |
| Alberta | 23 | 33 | 25 | 19 |
| British Columbia | 21 | 28 | 28 | 23 |

***Source**: National Longitudinal Survey of Children and Youth, 1994–1995.*

parents reported that their children were assigned homework either a few times a week (25%) or daily (43%). Homework appeared to become a regular activity in Grade 1, as 49% of children were reportedly assigned homework a few times a week or daily. This is consistent with the teachers' reports; 48% of Grade 1 teachers usually or always assigned homework. According to parents, 87% of children in Grade 6 were assigned homework a few times a week or daily; however, only two-thirds of the teachers (66%) at this grade level reported usually or always assigning homework.

Parents and teachers reported similar patterns of homework by province: 82% of parents in New Brunswick and Quebec responded that their children were assigned homework daily. In Manitoba and Saskatchewan, fewer than one in five children were assigned homework on a daily basis.

NLSCY children aged 10 and 11 were also asked to evaluate a series of statements about their school experiences in the self-completed questionnaire. To the question,"When my teacher gives me homework, I do it," 67% of the students responded that they did this homework all the time, and 28%, most of the time.[5]

### *School was a positive experience for 10- and 11-year-olds*

Most 10- and 11-year-olds had positive perceptions about school: 69% reported liking school very much or quite a bit; 78% reported doing well or very well in school; and 92% thought it was important or very important to do well in school. Five percent of children reported feelings of exclusion at school, admitting to feeling left out at school all or most of the time.

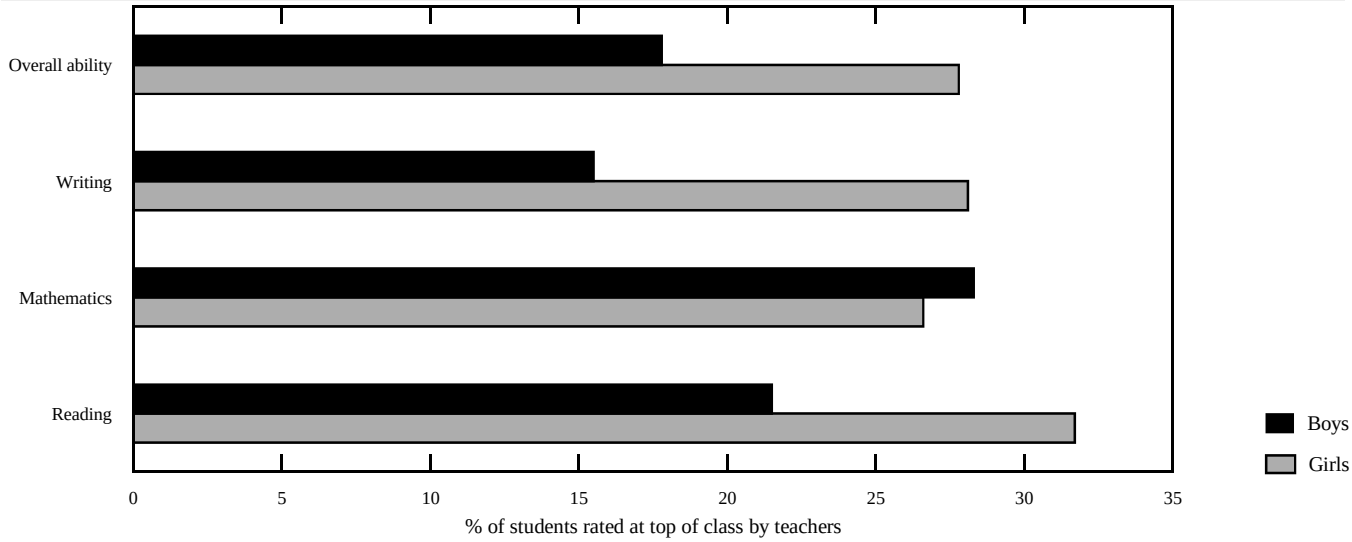
The 10- and 11-year-olds in the NLSCY were also asked if they felt supported by teachers and parents in their school participation and experiences. The majority of these children (89%) reported that their teachers treated them fairly, all or most of the time, while 68% reported that they got extra help from their teachers when they needed it, all or most of the time (12% reported that they did not need extra help). This age group also felt supported in their school efforts at home: 87% reported that their parents were ready to help all or most of the time if they had problems at school (7% reported that they didn't have problems at school). A large majority of children (90%) had a place to study or do homework at home, all or most of the time.

### *Academic achievement varied by sex*

One measure of academic achievement for NLSCY students enrolled in Grade 1 and above was the teacher's assessment of the students' abilities in various subjects, relative to others in the class. Girls were evaluated as being near the top of their class in reading (32%) and writing (28%) more often than boys (22% and 16%, respectively). Roughly equal percentages of boys and girls were evaluated as near the top of their class in mathematics (27% of girls and 28% of boys). On ratings of overall ability, 28% of girls and 18% of boys were ranked near the top of their class (Chart 1).

A smaller proportion of the students from the lowest SES families than from the highest was assessed as being near the top of their class across all subject areas. According to the teachers' evaluations, only 30% of children from the lowest SES families were rated above the middle of

Chart 1
**Teachers rated girls, more often than boys, near the top of the class**




***Source**: National Longitudinal Survey of Children and Youth, 1994-1995.*

the class (where "middle of the class" includes the categories "near the top of the class" and "above the middle but not at the top") on overall ability, compared with 60% of children from the highest SES families. The effects of SES on variables related to academic achievement will be the subject of future research.

### *Mathematical achievement varied by province*

A standardized test of mathematics computation was administered to students in Grade 2 and above. Because of the brevity of the test, a "ceiling effect" was noted for particular combinations of grade level and level of difficulty, indicating that an unusually high number of students were receiving perfect scores. The test could not differentiate between the highest-achieving students in Grades 3 and 5; consequently, only results for students in grades 2, 4 and 6 will be reported here.

The mathematics test was scored on a continuous scale; children's scores are expected to increase over time as they progress through school. The standard scale contains scores ranging from 1 to 999.[6] Average test scores for children in grades 2, 4 and 6 are presented in Table 5. Within each grade level, there were variations across the provinces. Grade 2 students in Quebec and British Columbia had the highest average math test scores (326 and 329, respectively), while the lowest average score for this grade level was observed in Ontario (302). The higher scores for students in Quebec and British Columbia are consistent with results from the School Achievement Indicators Project (SAIP).[7]

Table 5
**Average math test scores for Quebec students were the highest in the country for grades 4 and 6**

| | Average test scores | | |
|---|---|---|---|
| | Grade 2 | Grade 4 | Grade 6 |
| **Canada** | 312 | 433 | 506 |
| Newfoundland | 307 | 422 | 494 |
| Prince Edward Island | 305 | 416 | 504 |
| Nova Scotia | 318 | 415 | 507 |
| New Brunswick | 318 | 424 | 488 |
| Quebec | 326 | 469 | 550 |
| Ontario | 302 | 426 | 485 |
| Manitoba | 315 | 410 | 496 |
| Saskatchewan | 307 | 430 | 507 |
| Alberta | 309 | 425 | 515 |
| British Columbia | 329 | 439 | 522 |

***Source**: National Longitudinal Survey of Children and Youth, 1994–1995.*

Quebec's score of 469 was the highest average test score for Grade 4 students; Manitoba's was the lowest (410). Average scores for Grade 6 students ranged from a high of 550 in Quebec to a low of 485 in Ontario.

### *Students in grades 1 to 6 displayed good work habits*

Teachers were also asked about the work habits of the NLSCY children. The majority of children were evaluated

as having always or usually displayed good work habits, including listening attentively (74%), following directions (83%), completing work on time (77%), working independently (77%), taking care of materials (85%), and working neatly and carefully (72%). Chart 2 suggests that girls were more likely than boys to always or usually have exhibited good work habits.

Teacher assessments of students' work habits were fairly consistent across the provinces and across levels of SES, although students from the lowest SES families were usually or always less likely to have displayed good work habits than children in the highest SES families. The proportion of children who never demonstrated good work habits was fairly consistent across SES groups.

### *Few children had behaviour problems*

Recognizing behaviour problems early in a child's life often leads to better monitoring and intervention strategies throughout the school years. Teachers were asked to assess a series of behaviours at school for each NLSCY child. Questions were grouped in order to explore the children's behaviour on four different dimensions: conduct disorder and physical aggression; indirect aggression; hyperactivity and inattention; and anxiety and emotional disorder. Results for the pro-social behaviour assessments are also presented here.

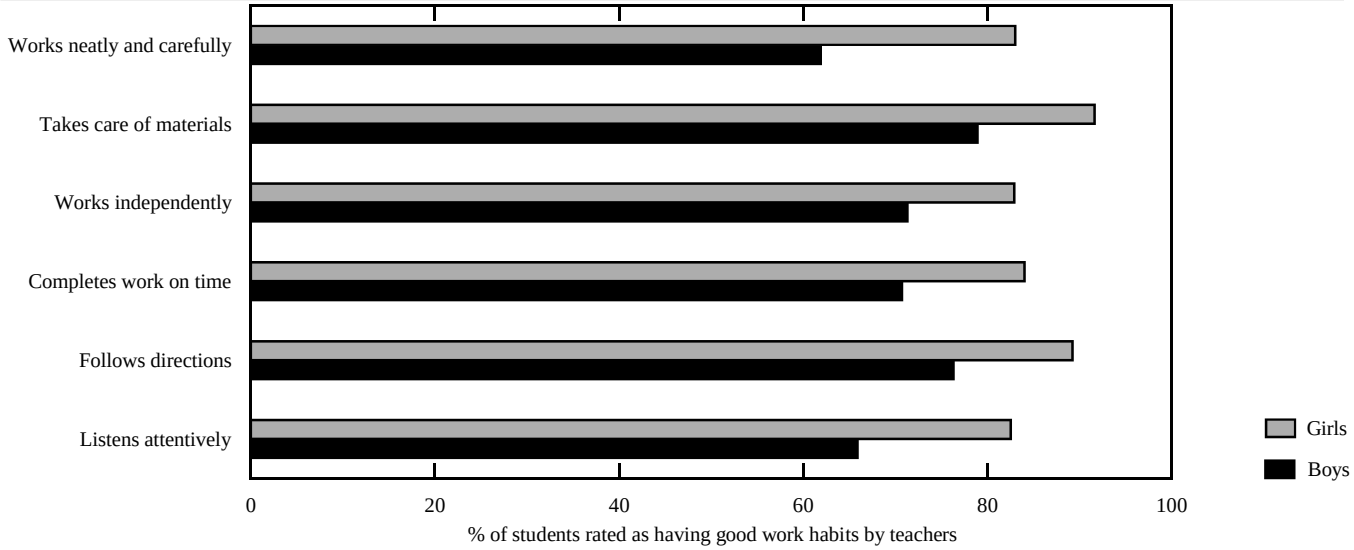
Tables 6 through 10 present figures for the various behaviours of children who were attending school and for whom we have a teacher's questionnaire. The first four tables include those children about whom the statements describing the behaviour problems were "sometimes/somewhat true" and "often/very true." For pro-social behaviour, only the "often/very true" category is reported.

Table 6 displays figures for symptoms related to conduct disorder and physical aggression. At least twice as many boys as girls were reported as having engaged in all but one of the aggressive behaviours, the exception being "is cruel, bullies or is mean to others." More than three times as many boys as girls were reported to have physically attacked people.

The pattern is reversed for indirect aggression. A higher percentage of girls exhibited indirect aggression-related behaviours. The one exception was "when mad at someone, says bad things behind the other's back," where about the same percentage of boys and girls reportedly engaged in the behaviour (Table 7). The magnitude of the differences for boys and girls, however, was not as great for indirect aggression when compared with the conduct disorder–physical aggression figures.

Responses were combined into a scale for each child and for each problem type. Scores for conduct disorder–physical aggression and for indirect aggression range from a low of 0 to a high of 12 and from 0 to 10, respectively.[8] A higher score here suggests the presence of symptoms for the behavioural problem; a low score suggests there is no behavioural problem. Girls (74%) were more likely than boys (51%) to have a score of 0 ("never or not true" assessment for the symptoms) for conduct disorder–

Chart 2
**Girls, more often than boys, always or usually displayed good work habits**




***Source**: National Longitudinal Survey of Children and Youth, 1994-1995.*

Table 6
**Boys were at least twice as likely as girls to display most conduct disorder–physical aggression behaviours**

| | Occurrence of behaviour was "sometimes/somewhat true" or "often/very true" (%) as rated by teachers | | |
|---|---|---|---|
| | Girls | Boys | Total |
| Gets into many fights | 13 | 35 | 24 |
| When another child accidentally hurts him/her (such as by bumping into her or him), assumes that the other child meant to do it, and then reacts with anger and fighting | 20 | 41 | 31 |
| Physically attacks people | 7 | 25 | 16 |
| Threatens people | 7 | 16 | 11 |
| Is cruel, bullies or is mean to others | 9 | 16 | 12 |
| Kicks, bites, hits other children | 4 | 15 | 10 |

***Source**: National Longitudinal Survey of Children and Youth, 1994–1995.*

Table 7
**More children displayed indirect aggression behaviours than conduct disorder–physical aggression**

| | Occurrence of behaviour was "sometimes/somewhat true" or "often/very true" (%) as rated by teachers | | |
|---|---|---|---|
| | Girls | Boys | Total |
| When mad at someone, tries to get others to dislike her/him | 26 | 23 | 25 |
| When mad at someone, becomes friends with another as revenge | 29 | 17 | 23 |
| When mad at someone, says bad things behind the other's back | 32 | 33 | 33 |
| When mad at someone, says to others: let's not be with her/him | 34 | 27 | 30 |
| When mad at someone, tells the other one's secrets to a third person | 31 | 21 | 26 |

***Source**: National Longitudinal Survey of Children and Youth, 1994–1995.*

physical aggression behaviours; however, boys (56%) were somewhat more likely than girls (52%) to score 0 on the indirect aggression measure (Charts 3 and 4).

To evaluate the level of a child's hyperactivity and inattention, the teacher assessed the behaviours included in Table 8. A higher percentage of children displayed hyperactivity and inattention behaviours than both conduct disorder–physical aggression and indirect aggression behaviours. Teachers reported that almost one-third of all girls displayed hyperactivity and inattention symptoms, ranging from "is inattentive" (40%) to "not being able to settle to anything for more than a few moments" (18%). However, boys were more likely than girls to have engaged in all of the hyperactivity and inattention behaviours.

Scale scores for boys and girls confirm this pattern, as shown in Chart 5. The proportion of girls (39%) displaying no characteristics of hyperactivity/inattention (score of 0) was more than twice that of boys (18%); the proportion of boys achieving a score of 7 or over was more than twice as high as the proportion of girls with the same scores.

Chart 3
**Boys were more likely than girls to exhibit conduct disorder–physical aggression behaviours**

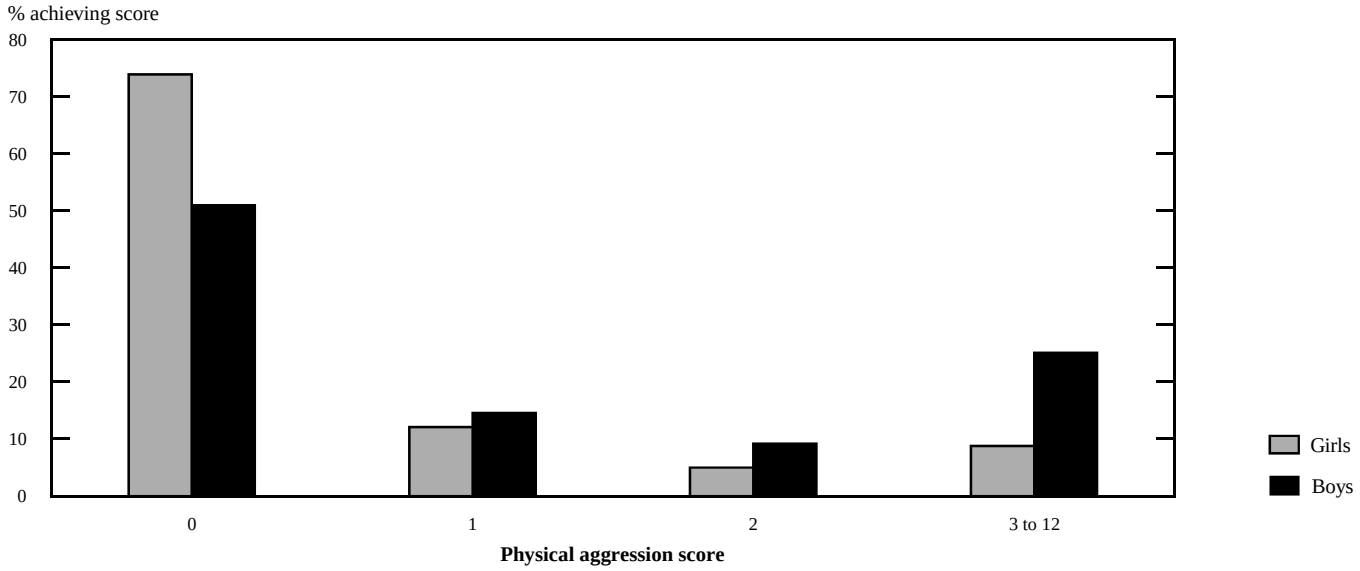



Chart 4
**Girls were more likely than boys to use indirect aggression**

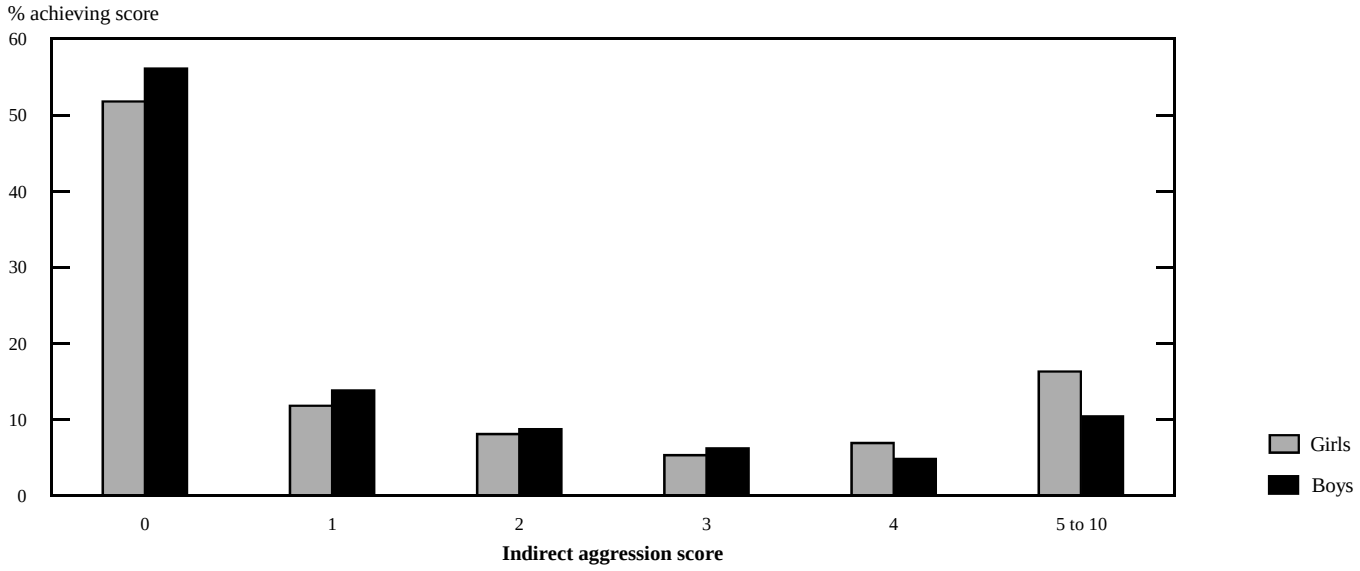
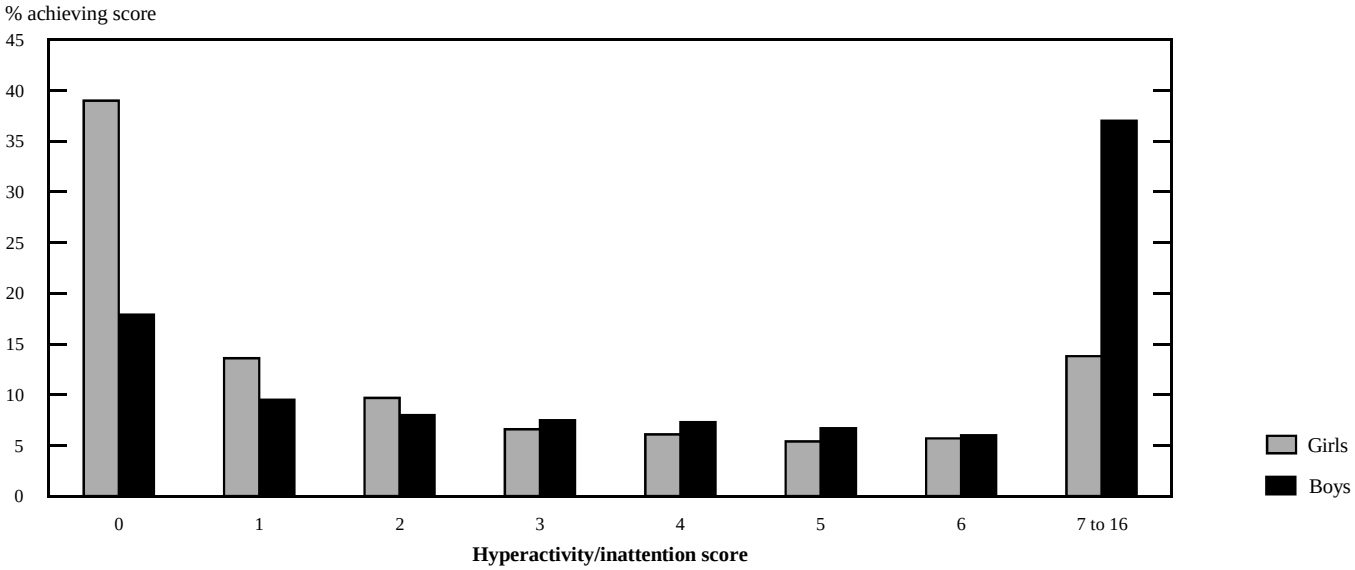


Table 8
**Hyperactivity and inattention behaviours more common among boys than girls**

| | Occurrence of behaviour was "sometimes/somewhat true" or "often/very true" (%) as rated by teachers | | |
|---|---|---|---|
| | Girls | Boys | Total |
| Can't sit still, is restless or hyperactive | 23 | 49 | 36 |
| Is distractable, has trouble sticking to any activity | 39 | 62 | 50 |
| Fidgets | 33 | 57 | 45 |
| Can't concentrate, can't pay attention for long | 33 | 53 | 43 |
| Is impulsive, acts without thinking | 25 | 49 | 37 |
| Has difficulty awaiting turn in games or groups | 21 | 44 | 32 |
| Cannot settle to anything for more than a few moments | 18 | 38 | 28 |
| Is inattentive | 40 | 61 | 51 |

***Source**: National Longitudinal Survey of Children and Youth, 1994–1995.*

Chart 5
**Boys scored higher than girls on scale of hyperactivity and inattention**




***Source**: National Longitudinal Survey of Children and Youth, 1994–1995.*

Teachers also assessed children on a number of symptoms related to anxiety and emotional disorder (Table 9). The percentages of children displaying anxiety and emotional disorder behaviours were again higher than for conduct disorder–physical aggression; however, there was not as wide a gap between the figures for girls and boys. The largest difference was observed for "is nervous, high strung, or tense," where 34% of boys and only 25% of girls displayed the behaviour.

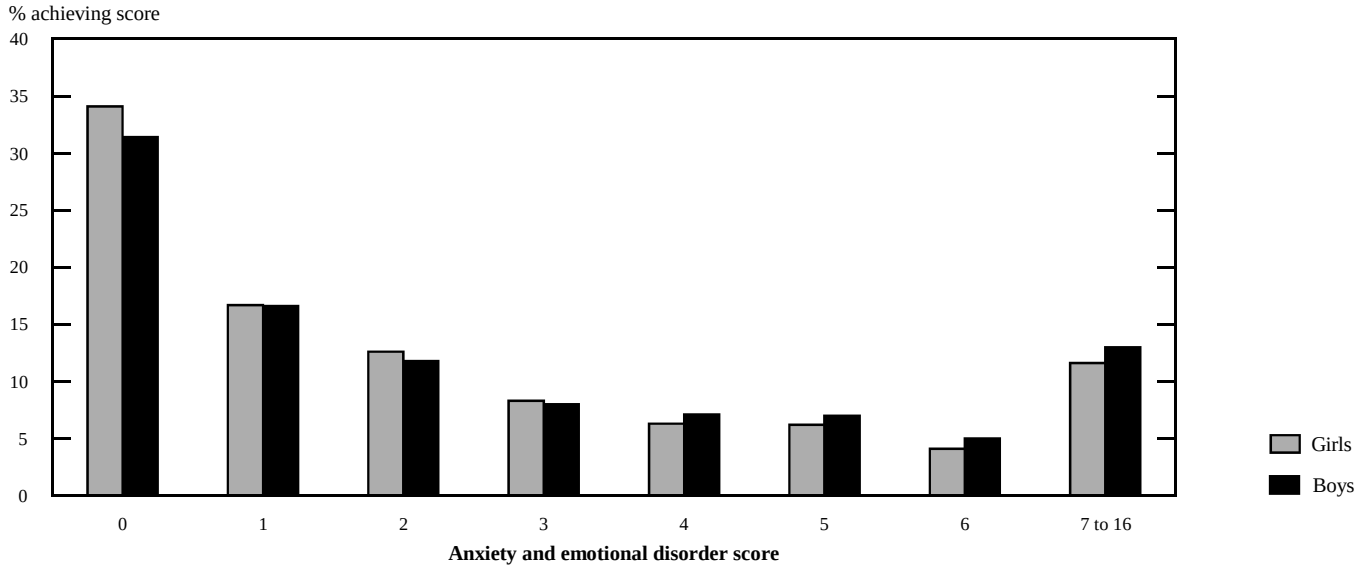
Overall, the majority of children (62%) had a low scale score—2 or less—for anxiety and emotional disorder (Chart 6).

Table 9
**Similar patterns observed among boys and girls for anxiety and emotional disorder behaviours**

| | Occurrence of behaviour was "sometimes/somewhat true" or "often/very true" (%) as rated by teachers | | |
|---|---|---|---|
| | Girls | Boys | Total |
| Seems to be unhappy, sad or depressed | 34 | 36 | 35 |
| Is not as happy as other children | 26 | 28 | 27 |
| Is too fearful or anxious | 30 | 29 | 29 |
| Is worried | 53 | 51 | 52 |
| Cries a lot | 17 | 17 | 17 |
| Appears miserable, unhappy, tearful or distressed | 21 | 23 | 22 |
| Is nervous, high strung, or tense | 25 | 34 | 29 |
| Has trouble enjoying self | 22 | 27 | 25 |

***Source**: National Longitudinal Survey of Children and Youth, 1994–1995.*

Chart 6
**Patterns of anxiety and emotional disorder related behaviours were similar for boys and girls**




***Source**: National Longitudinal Survey of Children and Youth, 1994–1995.*

Finally, teachers also assessed the children's degree of pro-social behaviour (Table 10). Both boys and girls demonstrated a wide distribution across the range of possible scores for this type of behaviour, with somewhat greater proportions of girls receiving high scores on this measure. Higher scores here represent a higher degree of pro-social behaviour (Chart 7).

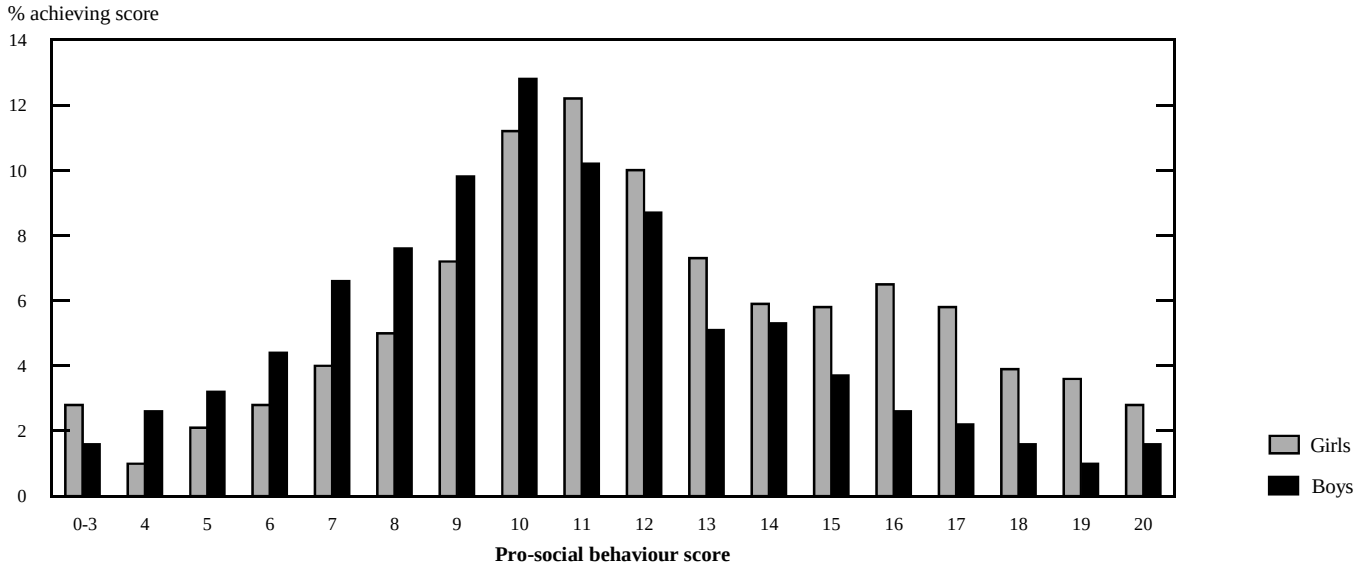
Average behaviour scores for boys and girls are displayed in Table 11. To simplify interpretation, as these behaviour measures contain different numbers of items and use different response scales, average scores on the measures have been transformed to T-scores, which have a mean value of 50 and a standard deviation of 10. Thus scores of 50 represent average levels of the behaviour being

Table 10
**Girls more often than boys assessed as displaying pro-social behaviour**

| | Occurrence of behaviour was "sometimes/somewhat true" or "often/very true" (%) as rated by teachers | | |
|---|---|---|---|
| | Girls | Boys | Total |
| Shows sympathy to someone who has made a mistake | 49 | 32 | 41 |
| Will try to help someone who has been hurt | 58 | 39 | 48 |
| Volunteers to help clear up a mess someone else has made | 29 | 15 | 22 |
| If there is a quarrel or dispute, will try to stop it | 13 | 7 | 10 |
| Offers to help other children (friend, brother or sister) who are having difficulty with a task | 36 | 21 | 29 |
| Comforts a child (friend, brother or sister) who is crying or upset | 36 | 17 | 26 |
| Spontaneously helps to pick up objects which another child has dropped (e.g., pencils, books) | 26 | 16 | 21 |
| Will invite bystanders to join in a game | 12 | 8 | 10 |
| Helps other children (friends, brother or sister) who are feeling sick | 30 | 13 | 21 |
| Takes the opportunity to praise the work of less able children | 14 | 8 | 11 |

***Source**: National Longitudinal Survey of Children and Youth, 1994–1995.*

Chart 7
**Girls received higher scores than boys on pro-social behaviour scale**




***Source**: National Longitudinal Survey of Children and Youth, 1994–1995.*

Table 11
**No substantial differences between boys' and girls' behaviours, based on average T-scores**

| | Average T-scores | |
|---|---|---|
| | Girls | Boys |
| Conduct disorder and physical aggression | 47.6 | 52.4 |
| Indirect aggression | 50.9 | 49.1 |
| Hyperactivity and inattention | 46.9 | 53.1 |
| Anxiety and emotional disorder | 49.5 | 50.5 |
| Pro-social behaviour | 52.5 | 47.4 |

***Source**: National Longitudinal Survey of Children and Youth, 1994–1995.*

examined, while scores which are 10 points above or below 50 represent noteworthy differences.[9] This transformation allows for meaningful comparisons of the five behaviour traits. Although Table 11 displays higher pro-social and indirect aggression behaviour average scores for girls, and higher average scores for hyperactivity and inattention, as well as conduct disorder–physical aggression behaviours for boys, there were no *substantial* differences between boys' and girls' behaviours.

The effects of children's behaviour on their development are complex. This section presented only the figures based on the teacher's evaluations of behaviours and conditions, indicating that a relatively small percentage of children exhibited symptoms related to the various behaviour problems. Further analysis will enable researchers to learn more about the nature of these relationships.

## Class size

Class size continues to be an area of concern for parents, teachers and administrators. Children's class sizes varied from fewer than five to more than 40 students per class. Most NLSCY children in grades 1 to 6 (77%) were typically in classes of between 21 and 30 students.

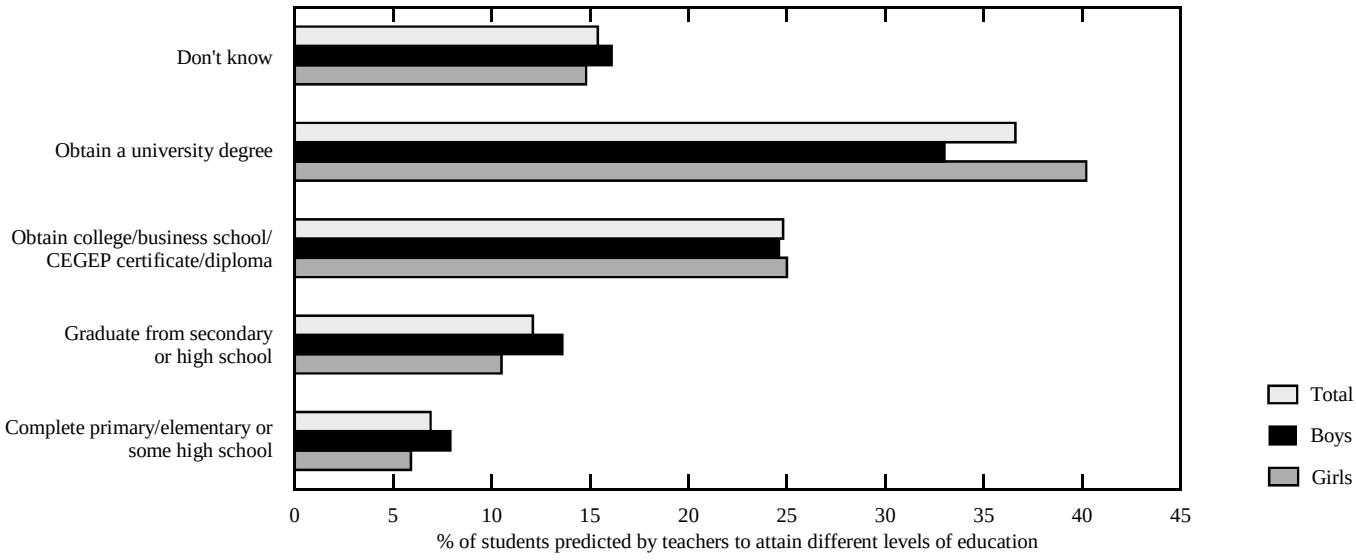
Provincial differences in class sizes were also observed. In Newfoundland, New Brunswick, Manitoba, Saskatchewan and British Columbia, most classes ranged from 21 to 25 students. In Prince Edward Island, Nova Scotia, Quebec, Ontario and Alberta, there were about equal numbers of classes with 21 to 25 students and with 26 to 30 students. The largest classes were found in Ontario, which had the highest proportion of children in classes of 30 or more students.

Larger class sizes were also more common at higher grade levels. Teachers reported that approximately half of Grade 4, 5 and 6 students were in classes of between 26 and 30 students, while the highest proportion of Grade 1 (60%), 2 (54%) and 3 (45%) students were in classes of between 21 and 25 students.

### *Teachers predicted postsecondary graduation for most students*

Teachers were questioned as to how far they thought their students would go in school. Teachers expected that over half of students would graduate from a postsecondary institution: 25% of students would obtain a certificate or diploma from a college, business school or CEGEP and 37% would obtain a university degree. Girls were expected to go somewhat further than boys; teachers expected that 40% of girls would obtain a university degree as compared with 33% of boys (Chart 8).

Chart 8
**Teachers' predictions of future educational attainment were higher for girls than for boys**



## Future study and research

This profile only begins to illuminate the possible areas of research from the findings of the survey's school component. Also of importance are the relationships between the teacher/classroom environment and children's education outcomes, and between the home environment and children's academic achievement. How do these environments affect children's ability to grow and develop into healthy, happy members of society? Some further issues to consider include:

- How are teacher expectations, assessments of academic performance and education outcomes related?
- Are parent and teacher evaluations of children's behaviour consistent? How do those evaluations influence student achievement?
- What is the nature of the relationship between children's behaviour and achievement?
- Can the school environment serve as a protective factor for at-risk children? Can high teacher expectations, for example, lead low SES children to high levels of academic achievement?

Future cycles of the NLSCY will enable us to map the paths taken by students through their school years. What can we learn from the nature of the school experience of children who do well in school? Do certain events tend to lead to specific outcomes? Does this happen all the time, or only in concert with other events? These and other explorations of the data can lead us to program and policy interventions that are responsive to the diversity of the life experiences of all Canadian children and youth. EQR

## Notes

1. This profile is one in a series of articles highlighting results from the first cycle of the National Longitudinal Survey of Children and Youth (NLSCY) School Component. These articles complement previous studies of Canadian children, released in the joint Human Resources Development Canada/Statistics Canada publication *Growing Up in Canada* (1996). Building on the findings reported in 'Initial Results of the School Component,' published in the Summer 1997 issue of *Education Quarterly Review*, this profile provides a rich 'snapshot' of children's school experiences in 1994–1995.

2. Statistics Canada defines 'urban' as a settlement of at least 1,000 persons with a population density of at least 400 persons per $km^2$. All land outside such areas is defined as 'rural'.

3. Care must be taken in comparing these numbers, given that the information on failing to complete homework was for the NLSCY child in particular, whereas the information about how often the teacher assigned homework was for the entire class.

4. Some variation between the parent and teacher reports may be the result of different response options used in the questions regarding homework. Teachers were asked to indicate the frequency with which they assigned homework across 5-point scale, from 'never' to 'always;' parents were asked how often their child received homework across a 7-point scale—'never,' 'less than once a month,' 'once a month,' 'a few times a month,' 'once a week,' 'a few times a week' or "daily." Different interpretations of the categories—for example, parents may not distinguish unfinished classroom work from homework—may lead to a higher proportion of children receiving homework on the parent reports. The difference may also result from varying levels of parental involvement with homework (parents tend to be more involved with younger children). As well, it may be more difficult to assess the amount of time it takes to do homework as the tasks become less structured (projects as opposed to worksheets, for example). Finally, there is a different point of reference: teachers are assigning homework to the class, while parents are describing their own children's homework.

5. Data for 10- and 11-year-olds are based on all the children in this age group for whom we have self-completed questionnaires, not only on those children with teacher questionnaires.

6. Standard scores were developed across all 10 provinces. Children in grades 2 and 3 were assigned standard scores in the 200 to 400 range, based on the number of correct responses to the test; children in grades 4 and 5 were assigned standard scores in the 264 to 550 range, and children in grades 6 and 7 were assigned scores ranging from 314 to 624. The advantage of using the standard score is that it will be possible to track a child's progress over time by comparing his or her standard score to the average score for the grade level.

7. The purpose of SAIP is to collect information on student

performance that will assist each province and territory in setting educational priorities and planning program improvements. The assessments measure the achievements of a sample of 13- and 16-year-old students in mathematics (content and problem solving), language skills (reading and writing), and science. A mathematics assessment was administered in 1993, and a science assessment in 1996. Other assessments include mathematics in 1997, reading and writing in 1998, and science in 1999 (Canadian Education Statistics Council. 1996. *Education Indicators in Canada: Pan-Canadian Education Indicators Program.* Toronto, Ontario).

8. Scores were computed by assigning values of 0 to "never/not true," 1 to "sometimes/somewhat true," and 2 to "often/very true," and then summing the values across the characteristics in a particular behavioural dimension.

9. Traditionally, T-scores are calculated by normalizing the distribution of scores via percentile rankings, converting percentile rankings to Z-scores (standard normal deviate scores) and then using the formula Y = 10 (Z) + 50. However, if the distribution of scores is highly skewed or if the underlying characteristic is not normally distributed, the normalization process will produce transformed scores—Z-scores and T-scores—which do not have the intended properties. As many of the behaviour characteristics, especially the negative behaviour scales, are highly skewed, the process of normalization was not conducted. Instead, scores on all of the behaviour scales were directly transformed to Z-scores and the formula Y = 10 (Z) + 50 used to create T-scores. Once transformed to T-scores, the scores on the measures of positive and negative behaviours are placed on a common, uniform scale. Thus, across measures of positive and negative behaviours, high scores indicate a larger amount of the underlying behavioural tendency: a score of 70 on the measure of hyperactivity would represent a very high level of hyperactive behaviour. Furthermore, T-scores which are above 60 and below 40 on any of the behaviour measures imply problems: a very low score (30) on the physical aggression scale would indicate that a child rarely defends him/herself when attacked by other children and therefore may be a target for bullying by other children. Similarly, a child who has a very high score (70) on the physical aggression scale may be a bully, often hitting and fighting with other children. (Bohatyretz, Sandra and Garth Lipps. *2000. Diversity in the Classroom: Characteristics of elementary students receiving special education.* Ottawa: Statistics Canada.) For more information on T-scores please see Allen, M.J., & W.M. Yen. 1979. *Introduction to Measurement Theory*. Monterey, Ca.: Brooks/Cole Publishing Company.

# Parental involvement and children's academic achievement in the National Longitudinal Survey of Children and Youth, 1994–1995

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## Introduction

The belief that parents are a child's most influential teachers is widely accepted (Skau 1996). Understanding how parents and schools can become knowledgeable and successful partners in children's education is a valuable investment for all members of society.

Researchers and educators have long argued the benefits of parents' involvement in children's educational experiences. If parental involvement can make a difference in children's academic achievement, then knowing which involvement strategies are most effective and how to measure and monitor this involvement will increase children's chances of succeeding in school.

This article explores the role of the parent in the child's learning environment, using results from the first cycle of the National Longitudinal Survey of Children and Youth (NLSCY).[2] The findings discussed here cover children aged 6 to 11 years. The first part of this article highlights the relationship between parental involvement and academic achievement in the NLSCY. The second part focuses on how factor analysis can be used to interpret and measure parental involvement in the NLSCY. (See box on page 36 for information on the methodology and data used in this study).

### What the literature says

Researchers and educators generally agree that parental involvement in children's learning contributes to successful academic achievement. A number of large-scale studies suggest that parental involvement fosters positive attitudes and behaviours, and positively influences grades, test scores and school attendance (Berla and Henderson 1994). How parents should be involved, however, is much debated.

## The National Longitudinal Survey of Children and Youth (NLSCY)

The National Longitudinal Survey of Children and Youth (NLSCY), a joint project of Human Resources Development Canada and Statistics Canada, explores a wide range of specific factors thought to influence children's development and well-being. The first cycle was conducted in 1994–1995, collecting information on just under 23,000 children, from newborn to 11 years of age. Data will be collected on this same group of children every two years until they reach adulthood.

Questions were asked of the person most knowledgeable about the child (most often the child's mother), concerning such issues as parenting style, home environment, child health, behaviour and education. Additional information on children's classes, academic achievement, and school environment was collected from teachers and principals. A number of alternative methods were used to further investigate child development and functioning, including math computation and vocabulary tests, and self-completed questionnaires for 10- and 11-year-olds.

This article examines results for the 5,822 children aged 6 to 11 years who were attending school during 1994–1995, when the first cycle of the NLSCY was administered. Data are drawn from the teacher and household questionnaires, capturing information about the child's school behaviour and achievement, as well as parental involvement activities and attitudes. Mathematics computation test scores are also included as a measure of children's academic achievement.

The first half of the article uses weighted population estimates to examine the relationship between parental involvement and children's academic achievement in the survey. T-tests and Pearson chi-square tests of significance were also conducted. A non-response to any of the relevant items ('don't know,' 'not stated' or 'not applicable') was coded as a missing value, and was not included in the analysis.

The second half of the article explores the issue of interpreting and measuring parental involvement in the NLSCY. The sample of 6- to 11-year-olds was split in half, by selecting first odd, and then even numbered cases. Using sample weights, factor analysis techniques were applied to the first half of the sample, in order to identify which dimensions or areas of parental involvement have the strongest influence in the survey (see Appendix B). This process was repeated using the second half of the sample to ensure that the results were consistent. Scales were created based on the dimensions identified, and were used in correlation analysis exercises to further investigate the strength of the relationship between parental involvement and children's academic achievement. A similar approach to item non-response was applied to the factor analysis and scale development exercises.

Parental involvement consists of a wide range of activities, attitudes and behaviours. Moreover, a definition of effective parental involvement is not the same for every parent and child. This complexity poses difficulties in the measurement and interpretation of both parental involvement as a concept and its link to children's academic achievement (Sui-Chu and Willms 1996; Trusty 1998; Watkins 1997).

Several studies have examined the multidimensional aspects of parental involvement using factor analysis techniques. Sui-Chu and Willms (1996) describe parental involvement as having four dimensions: home discussion, school communication, home supervision, and school participation. The three-dimensional structure of Grolnick and Slowiaczek (1994) includes parent behaviour, child perceptions of parents' affective and personal availability, and intellectual and cognitive activities. Factor analysis is used in Appendix B of this article to determine which dimensions of parental involvement can be extracted from the NLSCY.

## Parental involvement and children's academic achievement in the NLSCY

The wide range of questions covered by the NLSCY provides a rich 'snapshot' of parental involvement and children's school performance and experiences. Eleven parental involvement questions, from both the teacher and the household questionnaires, are included in this study. These questions cover the various dimensions identified by the literature: parental behaviours, home environment and parenting style, and teacher perceptions of parental involvement and attitudes.

Similarly, eleven NLSCY variables were chosen to measure children's academic achievement. These include a mathematics computation test and the teacher's evaluation of overall academic achievement, as well as performance in reading, composition, and mathematics. The following variables relating to the general work habits of the child were also assessed by the teacher and included in the second part of this analysis: listening attentively; following directions; completing work on time; working

independently; taking care of materials; and working neatly and carefully.

### *Teacher perceptions of parental involvement and attitudes were generally related to teacher perceptions of children's academic achievement*

Research has suggested that teacher perceptions of parental involvement correlate highly with academic achievement: teachers may hold higher expectations of students whose parents they see involved at school, and those students tend to have higher grades and test scores (Berla and Henderson 1994).

Teachers were asked to assess both direct parental participation, including parent–teacher interaction through meetings and phone calls, as well as more general parental involvement such as parental support for the teacher, for each NLSCY child. Children whose parents were more involved, as perceived by the teachers, generally received better teacher assessments of overall ability.

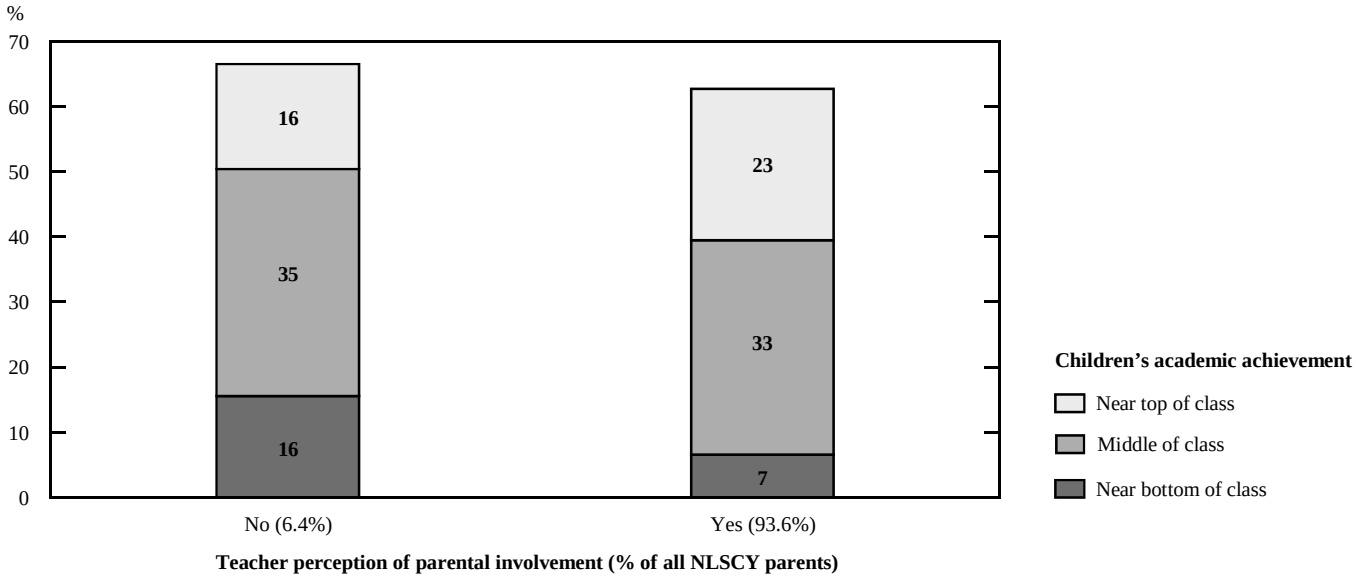
## Direct participation

According to the teachers' reports, 23% of children whose parents participated in parent–teacher conferences (either in person or on the telephone) were ranked near the top of their class, as compared with 16% of children whose parents did not participate in parent–teacher conferences (Figure 1). Children were more than twice as likely to be near the bottom of their class when teachers reported that their parents did not participate in parent–teacher conferences (16% vs. 7%; $p < 0.01$).

For students near the top of their class, whether or not parents contacted the teacher to discuss students' academic performance or behaviour did not seem to be closely related to the overall assessment of the student's abilities (Figure 2). Twenty-two percent of children whose parents did contact the teacher to discuss their performance or behaviour, and 20% of children whose parents did not, were ranked near the top of their class. However, children whose parents did not contact the teacher to discuss their performance or behaviour were almost twice as likely to be ranked near the bottom of their class as those whose parents did (11% compared with 6%; $p < 0.01$).

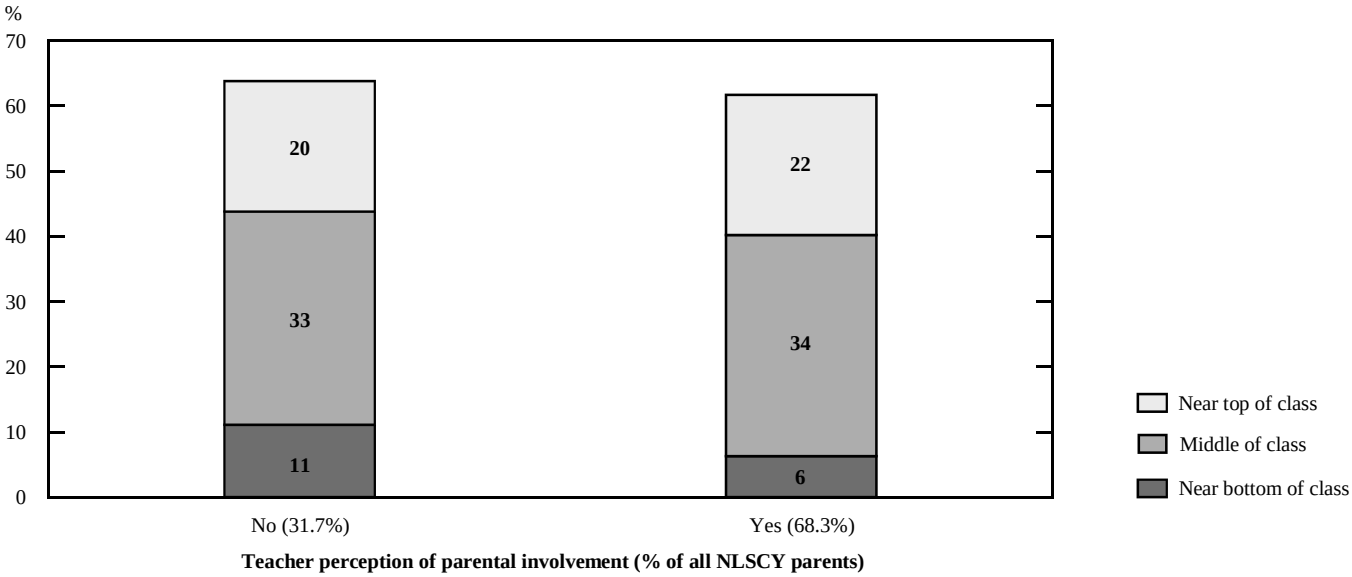
Teachers were also asked to report whether parents had returned their phone calls to talk about the students' academic performance or behaviour. Overall, 90.4% of parents did return the teacher's call. Again, whether parents returned the teacher's phone calls had no bearing on those students near the top of the class, but it was related to the proportion of students near the bottom. Fourteen percent of children whose parents did not return the teacher's calls, compared with 9% of children whose parents did, were ranked near the bottom of their class ($p < 0.01$). Only slight differences across these direct participation involvement activities were observed for children ranked in the middle of the class.

Figure 1
**Did parent participate in regularly scheduled parent-teacher conferences?**




***Source**: The National Longitudinal Survey of Children and Youth, 1994–1995.*

Figure 2
**Did parent contact teacher to discuss student's academic performance or behaviour?**

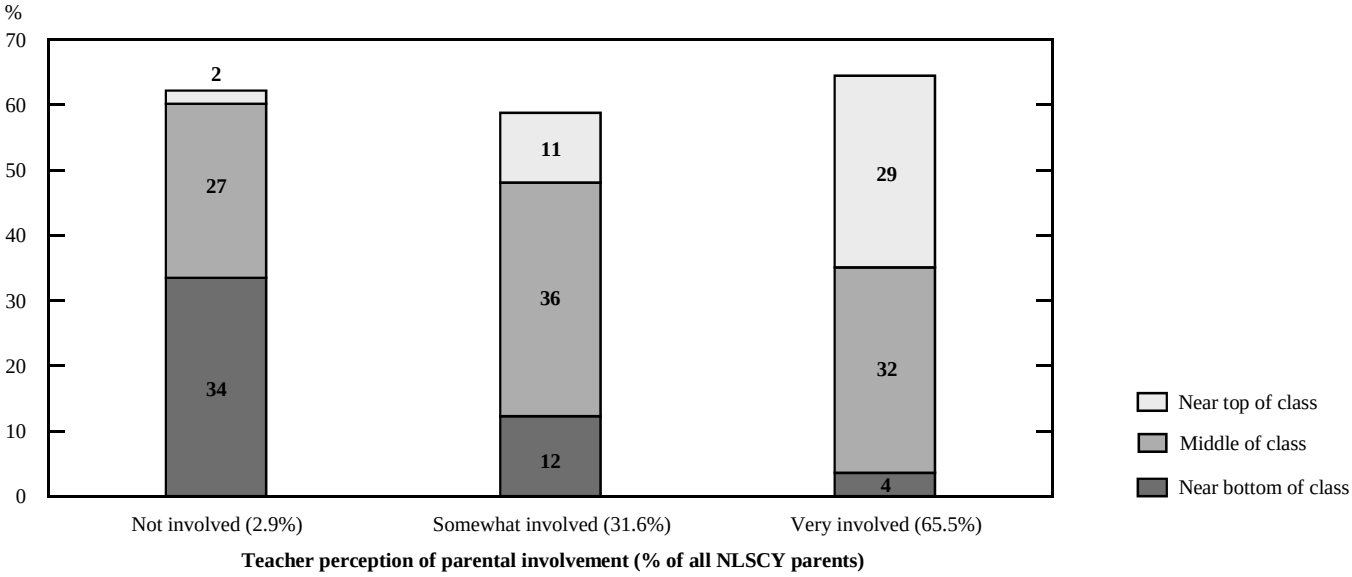



***Source**: The National Longitudinal Survey of Children and Youth, 1994–1995.*

## General involvement

Teacher perceptions of the general extent of parental involvement in the NLSCY child's education were noticeably linked to the teacher's perceptions of the child's overall level of ability (Figure 3). Twenty-nine percent of children whose parents were perceived to be very involved, but only 2% of children whose parents were perceived to be not involved, ranked near the top of their class. In contrast, 34% of children whose parents were perceived to be not involved, and only 4% of children whose parents were perceived to be very involved, were ranked near the bottom of their class ($p < 0.01$).

Figure 3
**Extent of parental involvement, as perceived by the teacher, is related to overall ability of the child, also as perceived by the teacher**

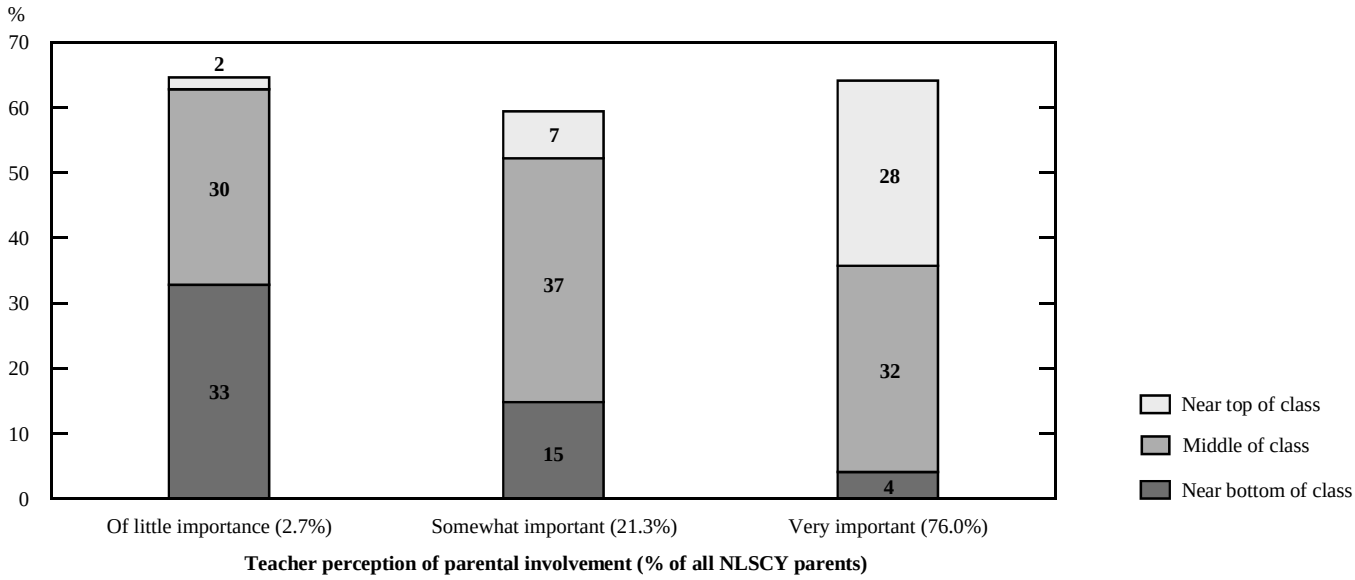



***Source**: The National Longitudinal Survey of Children and Youth, 1994–1995.*

Teachers also assessed how important school is considered to be to children's parents (Figure 4). Children whose parents were perceived as considering school to be very important were at least four times as likely to be near the top of the class (28%) than those whose parents were perceived as considering school to be only somewhat important (7%) or of little importance (2%) ($p < 0.01$).

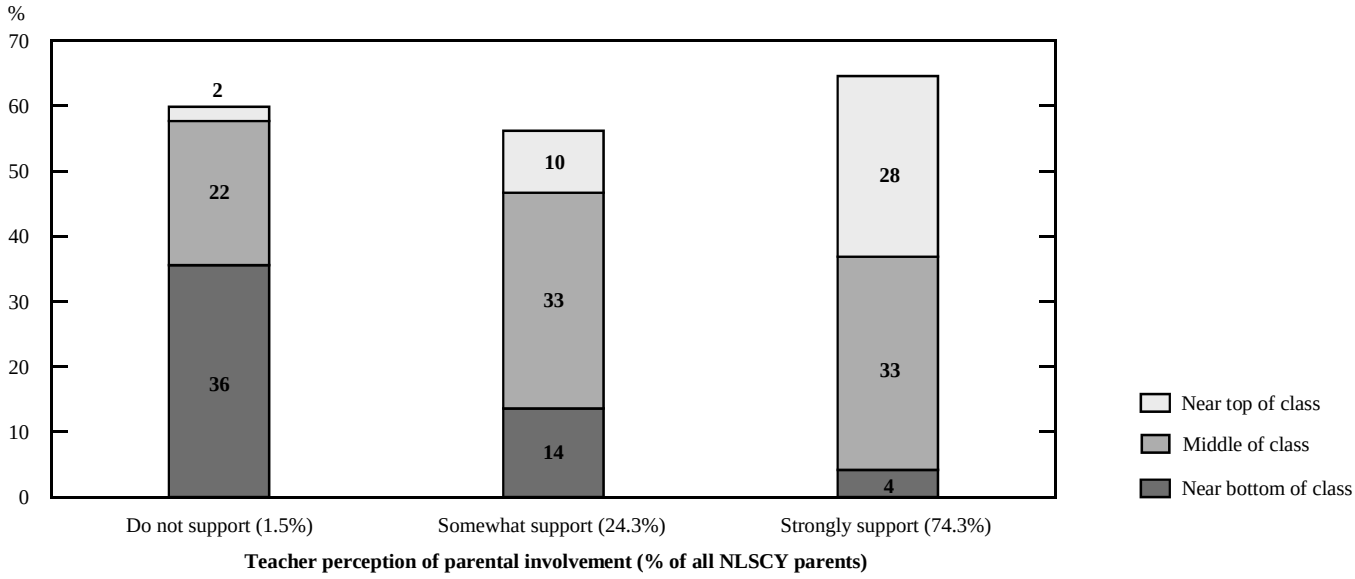
Similarly, only 2% of children whose parents were perceived to be not supportive of teaching efforts, compared with 28% of children whose parents were perceived to be strongly supportive of the teacher's efforts, were ranked near the top of the class. Moreover, children whose parents were perceived to be not supportive of the teacher were substantially more likely to be ranked near the bottom of the class (36%) than children whose parents did show strong support for the teacher (4%) (Figure 5). For those children ranked in the middle of the class, observed differences between the parents' perceived degree of involvement for the general involvement activities were also relatively small ($p < 0.01$).

Figure 4
**How important is school considered to be to student's parent?**




***Source**: The National Longitudinal Survey of Children and Youth, 1994–1995.*

Figure 5
**To what extent does parent support teaching efforts?**




***Source**: The National Longitudinal Survey of Children and Youth, 1994–1995.*

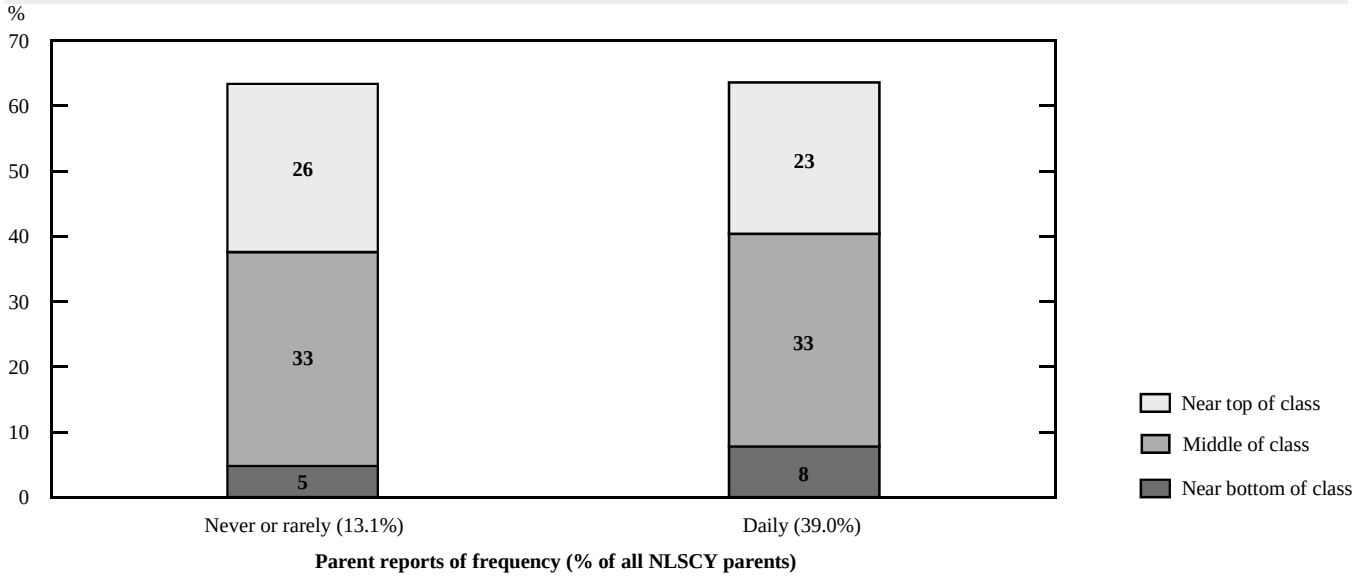
***Reading with children and helping with homework were common parental involvement activities for children with lower academic achievement***

The extent to which parents create a stimulating learning environment at home is another important aspect of parental involvement. The findings presented here lend support to the notion that child achievement is recognized as a key factor that may actually encourage parental involvement in the home: as children's academic performance declines, parents may increase involvement activities, such as reading and homework checks.

Five percent of NLSCY children whose parents reported never or rarely reading with or to their child were ranked near the bottom of their class, and 26% were ranked near the top of their class (Figure 6). Children who participated in daily reading activities with parents were actually less likely to be ranked near the top of the class[3] (23%) ($p < 0.01$).

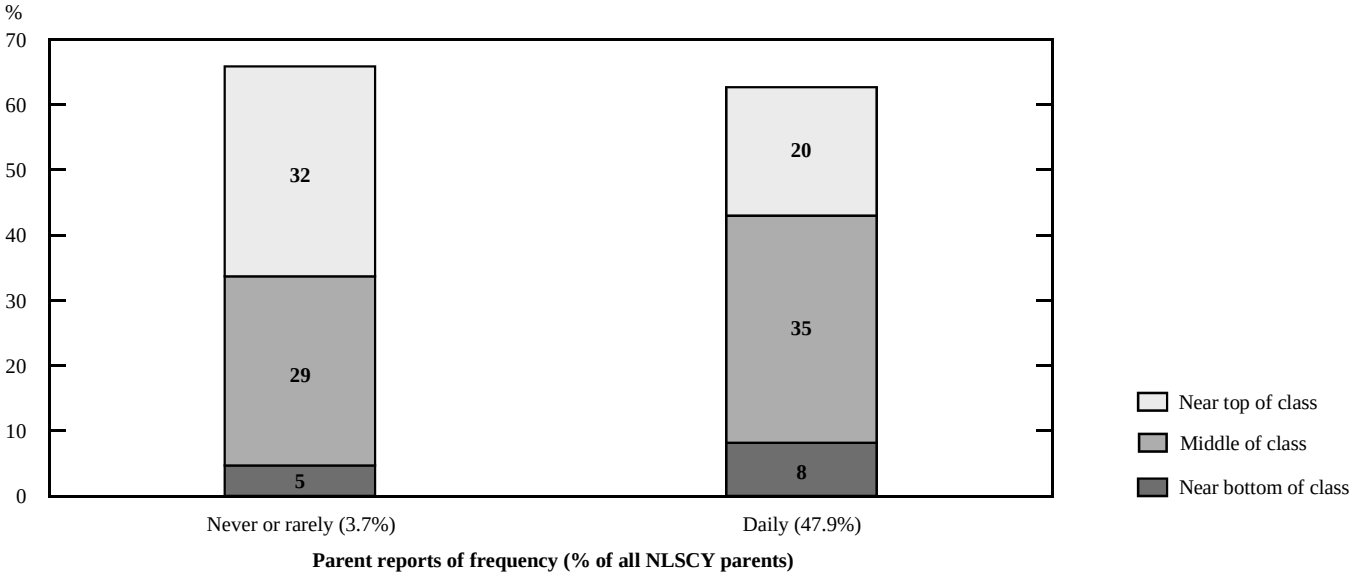
Similarly, as seen in Figure 7, 5% of children who never or rarely received parental homework checks were ranked near the bottom of their class, compared with 32% near the top. Children with daily homework checks were more likely to be near the bottom of their class (8%), and

Figure 6
**How often does parent read with child?**




***Source**: The National Longitudinal Survey of Children and Youth, 1994–1995.*

Figure 7
**How often does parent check or help with child's homework?**




***Source**: The National Longitudinal Survey of Children and Youth, 1994–1995.*

less likely to be ranked near the top of the class (20%) ($p < 0.01$).

Without information about the motivation for involvement activities, it is difficult to come to conclusions about the cause-and-effect nature of the relationship between parental involvement and child achievement. Some parental involvement activities may both stimulate, and be stimulated by, children's academic achievement.

### *General parental involvement, as perceived by the teacher, was related to achievement in mathematics*

Teacher perceptions of general parental involvement were related to children's average math test scores, while only one direct participation activity was associated with ability in mathematics.[4] Children in Grade 2 and above were tested on a shortened version of the standardized Canadian Achievement Test in Mathematics. It should be noted that a "ceiling effect" was observed for certain combinations of grade and level of difficulty, since tests with the same level of difficulty were used for two grades. This ceiling effect indicated that an unusually high number of students were receiving perfect scores, particularly in grades 3 and 5. Consequently, only results for students in grades 2, 4 and 6 are discussed here.

Table 1 displays the average math test scores, by grade level, of students whose parents did and did not participate directly, as perceived by the teacher, in certain involvement activities. Average test scores were significantly higher for Grade 2 children whose parents had participated in parent–teacher conferences, according to the teacher's perceptions (314 vs. 282; $p<0.01$). Results for grades 4 and 6 were not statistically significant.

General parental involvement and attitude assessments were significantly related to average math test scores, as displayed in Table 2. Students in grades 2, 4 and 6 whose parents were perceived by teachers to be very involved in their child's education received significantly higher average test scores than students whose parents were perceived to be not involved. The largest difference between high and low average scores was observed for "To what extent is parent involved in student's education?" for Grade 4 students, where the average scores ranged from a high of 442 for children whose parents were very involved, to a low of 371 for children whose parents were not involved.

Table 1
**Mean math test scores were higher for Grade 2 students whose parents attended school meetings**

| Teacher perceptions of direct parental participation in child's education | Grade 2 | Grade 4 | Grade 6 |
|---|---|---|---|
| | mean math scores | | |
| Did parent participate in regularly scheduled parent–teacher conferences (either in person or on the telephone)? | | | |
| Yes | 314* | 434 | 507 |
| No | 282* | 419 | 499 |
| Did parent contact teacher to discuss student's academic performance or behaviour? | | | |
| Yes | 312 | 433 | 501 |
| No | 309 | 428 | 506 |
| Did parent return teacher's call to talk about student's academic performance or behaviour? | | | |
| Yes | 310 | 430 | 496 |
| No | 301 | 431 | 516 |

* *$p<0.01$*

***Source**: The National Longitudinal Survey of Children and Youth, 1994–1995.*

Table 2
**Mean math test scores were higher for NLSCY children whose parents were more involved**

| Teacher perceptions of general parental involvement in child's education | Grade 2 | Grade 4 | Grade 6 |
|---|---|---|---|
| | | mean math scores | |
| To what extent is parent involved in student's education? | | | |
| Very involved | 318** | 442* | 517* |
| Somewhat involved | 307** | 425* | 486* |
| Not involved | 295** | 371* | 459* |
| How important is school considered to be to student's parent? | | | |
| Very important | 317* | 438* | 512* |
| Somewhat important | 305* | 424* | 489* |
| Little importance | 293* | 394* | 459* |
| To what extent does parent support teaching efforts? | | | |
| Strongly support | 319* | 440* | 515* |
| Somewhat support | 307* | 413* | 482* |
| Do not support | 292* | 392* | 460* |

* *p<0.01*
** *p<0.05*
***Source**: The National Longitudinal Survey of Children and Youth, 1994–1995.*

### *Reading and homework activities were associated with lower average math test scores*

As discussed earlier in this article, one motivation for parents to engage in home learning activities may be associated with lower academic achievement on the part of the child. As seen in Table 3, children who were exposed to daily reading and homework activities generally scored lower on the mathematics computation test. These results, however, did not apply to Grade 4 homework activities, where the test scores were about the same. Moreover, the results were not significant for reading activities for Grade 6 students. This lends support to the hypothesis that children of different ages and grade levels may respond differently to some involvement activities.

### Other involvement variables

The research on family processes reveals that the home environment has a powerful influence, not only on how well children do, but also on how far they go in school (Berla and Henderson 1994). Parenting practices and other aspects of family functioning are important factors that can encourage child learning. The NLSCY parenting and home environment scale scores, which include positive interaction, parenting with consistency, and family functioning, are derived from questions asked of the person most knowledgeable about the child. Responses were totalled, creating the scale scores for each NLSCY child. Higher scores for positive interaction, consistent parenting, and family functioning reflect a more positive home

Table 3
**Mean math test scores increased as the frequency of reading and homework activities decreased**

| Parent assessment of parental behaviours | Grade 2 | Grade 4 | Grade 6 |
|---|---|---|---|
| | | mean math scores | |
| How often does parent read with child? | | | |
| Daily | 312* | 424* | 472 |
| Never/rarely | 331* | 449* | 518 |
| How often does parent check or help with child's homework? | | | |
| Daily | 313* | 433* | 501* |
| Never/rarely | 340* | 432* | 511* |

* *p<0.01*
***Source**: The National Longitudinal Survey of Children and Youth, 1994–1995.*

Table 4
**Mean math test scores for grades 2 and 6 increased with high levels of family functioning**

| Parent assessment of home environment and parenting style (% of all parents) | Grade 2 | Grade 4 | Grade 6 |
|---|---|---|---|
| | mean math scores | | |
| Positive interaction | | | |
| High (12.1%) | 316 | 416 | 492 |
| Low (0.7%) | 290 | 398 | 481 |
| Parenting with consistency | | | |
| High (49.0%) | 318 | 434 | 506 |
| Low (0.8%) | 365 | 415 | 462 |
| Family functioning | | | |
| High (44.4%) | 315* | 436 | 508** |
| Low (0.8%) | 267* | 414 | 455** |

* *p<0.01*
** *p<0.05*
***Source**: The National Longitudinal Survey of Children and Youth, 1994–1995.*

environment.[5] These variables are explained in further detail in Appendix A.

Children with the highest scores for positive interaction in the home were more likely to be near the top of their class (20%) than children with the lowest scores (14%). Moreover, children exposed to consistent parenting practices were more than twice as likely as children without consistent parenting to be ranked near the top of their class.

Parents were also asked a series of questions about the degree of family functioning in the home. Children with high family functioning scores were twice as likely to be near the top of their class (25%) than children with low levels of family functioning (12%).

Significant differences in average math test scores were observed only for the family functioning variable, and only for students in grades 2 and 6 (Table 4). For Grade 2 students, a mean score of 315 for high family functioning was observed, compared with a score of 267 for low levels of family functioning ($p < 0.01$). Similarly, average math scores ranged from 455 to 508 for Grade 6 children with low and high levels of family functioning, respectively ($p < 0.05$).

These results suggest that the relationship between parental involvement and child academic achievement varies with the type of involvement and the child's age and grade level, as did earlier results involving parental involvement and the math test scores.

## Parental involvement: measurement and analysis

To examine the structure of the 11 parental involvement variables in the survey, and to assess whether parental involvement scales can be constructed using these variables, factor analyses were performed (see Appendix B). This statistical technique is applied to assess the degree to which several variables are capturing the same concept. By summarizing the patterns of correlations among the variables, it becomes easy to identify the not-directly-observable 'factors' based on a set of observable variables. Identifying these underlying factors or dimensions of parental involvement simplifies the description and understanding of the concept, and allows the grouping of variables to create scales.[6] Children's academic achievement can then be linked to a *set* of parental involvement variables (a factor) rather than to each involvement variable on its own. The whole set of parental involvement variables can be referred to as 'parental involvement' and can be used in the form of a scale. Scales were also developed for children's academic achievement (see Appendix B).

## Parental Involvement Scale

Scale scores for parental involvement were based on teacher perceptions of the following variables:

- Did parent participate in regularly scheduled parent–teacher conferences?
- Did parent contact teacher to discuss student's performance?
- Did parent return teacher's call about student's academic performance or behaviour?
- To what extent is parent involved in student's education?
- How important is school considered to be to student's parent?
- To what extent does parent support teacher's efforts?

## Children's Academic Achievement Scales

Scale scores for work habits were based on teacher perceptions of the following variables:

- Does student listen attentively?
- Does student follow directions?
- Does student complete work on time?
- Does student work independently?
- Does student take care of materials?
- Does student work neatly and carefully?

Scale scores for academic performance were based on teacher perceptions of the following variables:

- What is student's reading ability?
- What is student's math ability?
- What is student's written ability?

### Parental involvement and children's academic achievement: what is the link?

We can now again examine whether the NLSCY data support the hypothesis that parental involvement and children's academic achievement are related, using the involvement and achievement scales that have been created based on the factor analysis. Correlation analyses were performed on the involvement and achievement scales to highlight the nature of the relationship between parental involvement and academic achievement. Some individual involvement items, such as reading and homework activities, were also included in this analysis. Correlation indicates only the strength of this relationship and does not infer causation.

As seen in Table 5, the Parental Involvement scale is positively correlated with the Work Habits scale (0.38) and the Academic Performance scale (0.25) for all students. This suggests a moderate positive relationship between parental involvement and children's academic achievement within the NLSCY. However, it must be stressed that correlation serves only to indicate the strength of this relationship, based on the teacher's perceptions—it does not presume causation.[7] Reading and homework activities are again negatively related to the achievement scales. This may reflect parents' increased involvement in these activities for children who are not doing as well in school.

Table 5
**Grades 2, 4 and 6 Correlation Matrix—Parental Involvement and Academic Achievement Scales**

| | Parental Involvement scale | Work Habits scale | Academic Performance scale | Read with child? | Check or help with child's homework? |
|---|---|---|---|---|---|
| Parental Involvement scale | 1.00 | | | | |
| Work Habits scale | 0.38* | 1.00 | | | |
| Academic Performance scale | 0.25* | 0.62* | 1.00 | | |
| Read with child? | 0.13* | -0.02 | -0.07* | 1.00 | |
| Check or help with child's homework? | 0.09* | -0.04* | -0.11* | 0.25* | 1.00 |

* *p<0.01 level*

Analysis of the mathematics computation test scores was again done by grade level, for grades 2, 4 and 6. Tables 6, 7 and 8 summarize the correlation coefficients for the scale variables, by grade level. The Parental Involvement scale is moderately related to the Work Habits scale (0.30), but weakly related to the Academic Performance scale (0.20) for Grade 2 students. Moreover, there is a weak association between the involvement scale and scores on the math test (0.11). Reading and homework activities are not significantly correlated with the achievement scales (Table 6).

For Grade 4 students, we observed a stronger relationship between parental involvement and academic achievement. The Parental Involvement and Work Habits scales are more closely associated here (0.45), as are the Parental Involvement and Academic Performance scales (0.26). Math test scores are still relatively weakly related to parental involvement (0.20). Reading with children and checking and helping with homework are negatively and weakly associated with academic performance (Table 7).

Parental involvement and work habits are also related for Grade 6 NLSCY students (0.40). The Parental Involvement scale is weakly related to academic performance (0.20) and math test scores (0.21). Involvement strategies, such as checking homework, are again negatively and weakly associated with the outcome measure scales (Table 8). These results for Grade 2, 4 and 6 students show that more study is needed to understand the effects of the child's age in connection with school results and parental involvement. It seems that children perform or respond differently to parental involvement at different ages.

Table 6
**Grade 2 Correlation Matrix—Parental Involvement and Academic Achievement Scales**

| | Parental Involvement scale | Work Habits scale | Academic Performance scale | Math test score | Read with child? | Check or help with child's homework? |
|---|---|---|---|---|---|---|
| Parental Involvement scale | 1.00 | | | | | |
| Work Habits scale | 0.30* | 1.00 | | | | |
| Academic Performance scale | 0.20* | 0.63* | 1.00 | | | |
| Math test score | 0.11** | 0.31* | 0.44* | 1.00 | | |
| Read with child? | 0.19* | 0.03 | 0.00 | -0.06 | 1.00 | |
| Check or help with child's homework? | 0.03 | -0.04 | -0.06 | 0.00 | 0.16* | 1.00 |

* *p<0.01*
***p<0.05*

Table 7
**Grade 4 Correlation Matrix—Parental Involvement and Academic Achievement Scales**

| | Parental Involvement scale | Work Habits scale | Academic Performance scale | Math test score | Read with child? | Check or help with child's homework? |
|---|---|---|---|---|---|---|
| Parental Involvement scale | 1.00 | | | | | |
| Work Habits scale | 0.45* | 1.00 | | | | |
| Academic Performance scale | 0.26* | 0.64* | 1.00 | | | |
| Math test score | 0.20* | 0.30* | 0.43* | 1.00 | | |
| Read with child? | 0.14* | -0.03 | -0.17* | -0.16* | 1.00 | |
| Check or help with child's homework? | 0.13* | -0.01 | -0.08** | 0.00 | 0.25* | 1.00 |

* *p<0.01*
***p<0.05*

Table 8
**Grade 6 Correlation Matrix—Parental Involvement and Academic Achievement Scales**

| | Parental Involvement scale | Work Habits scale | Academic Performance scale | Math test score | Read with child? | Check or help with child's homework? |
|---|---|---|---|---|---|---|
| Parental Involvement scale | 1.00 | | | | | |
| Work Habits scale | 0.40* | 1.00 | | | | |
| Academic Performance scale | 0.20* | 0.61* | 1.00 | | | |
| Math test score | 0.21* | 0.37* | 0.45* | 1.00 | | |
| Read with child? | 0.04 | -0.05 | -0.02 | -0.11* | 1.00 | |
| Check or help with child's homework? | 0.07 | -0.11* | -0.23* | -0.11* | 0.15* | 1.00 |

* *p<0.01*

Problems with the math test variable, including a 'ceiling effect,' may be contributing to the weak associations between the math scores and parental involvement. This result may also be explained by the fact that the math test measures a very specific ability—basic understanding of addition, subtraction, multiplication and division. Other achievement measures represent more general performance since the items have been combined to create scales. It may be that involvement is related to the teacher's evaluation of a list of work habits, or to the performance of the child in various areas of instruction, but that it is not related strongly to a one-time math test designed to measure very particular skills.

Within the NLSCY, the frequency of reading with the child is generally negatively related to academic achievement, as are checking and helping with the child's homework. This is again consistent with the findings discussed earlier. These results lend support to the complex and potentially bidirectional relationship between involvement and achievement—child achievement can both influence and be influenced by parental involvement (Watkins 1997). Children with difficulties at school often receive help with reading and schoolwork at home—as the child's school performance declines, parents may choose to increase the amount and frequency of these home activities.

## Limitations

The results presented here are not an answer to the problem of defining and interpreting parental involvement, nor do they explain the exact nature of the relationship between parental involvement and children's academic achievement. They do, however, show that the variability and complexity of this issue is real. Factor analyses on involvement variables from the NLSCY were not entirely consistent with previous parental involvement studies, such as Sui-Chu and Willms (1996) and Grolnick and Slowiaczek (1994), discussed earlier in this article. Strong conclusions are difficult to establish because of the wide variety of questions used to measure parental involvement among different surveys.

An important limitation to keep in mind is the heavy reliance on the accuracy of teachers' perceptions. This study is largely based on teachers' perceptions of parental involvement and children's academic achievement. There are also some limitations in the involvement variables included in this analysis, since not all questions were common to all age groups. For example, 10- and 11-year-olds also provided information about their parents' behaviours and practices. However, these variables were not available for children under 10 years and were excluded from this study.

A ceiling effect was noted in the results of the math test, indicating that an unusually high number of children had received perfect scores, particularly students in grades 3 and 5. In an effort to account for this, only results for students in grades 2, 4 and 6 were presented.

Finally, only cross-sectional data were available for this study. It will be important to revisit parental involvement and children's academic achievement in the NLSCY in order to clearly understand the nature of the relationship over time.

## Conclusions

This analysis provides a rich 'snapshot' of children, parents and teachers as they work towards higher academic achievement and effective involvement strategies. The findings discussed here only begin to address the issues of parental involvement and children's academic achievement. Initial findings indicate that there is a positive

relationship between certain involvement activities and children's academic achievement. Teacher's perceptions of general parental involvement were most noticeably linked to children's academic achievement. However, the exact nature of this relationship will be the subject of future research.

The article further demonstrates the difficulties in measuring and interpreting the broad concept of "parental involvement." Although common sense and previous research suggest the importance of parenting styles and of home activities such as reading with children and helping with homework, these dimensions were not strong in our factor analysis model of NLSCY variables. Teacher perceptions of parental involvement and attitude emerged as the most significant component. This suggests that working partnerships between parents and teachers are beneficial strategies for children's academic achievements.

The NLSCY captures only one aspect of parental involvement with the six questions on teacher perceptions of involvement. The Parental Involvement scale, consisting of these variables, has an acceptable degree of reliability and validity, as indicated by tests for those properties (see Appendix B). However, the scale may become even stronger with the addition of questions such as "Does the parent participate in school events and open houses?" and "Does the parent volunteer to help in the class?" (Grolnick and Slowiaczek 1996).

NLSCY content developers could also assess parental involvement by asking more questions of the parents themselves about the home learning environment, educational activities, and parental encouragement and support. For example, they may ask parents how often they review and discuss graded assignments or work their child brings home; how often they talk about current events; and how often they encourage their children to do extra work to learn new things, to accompany them to museums and concerts, or look up words in a dictionary; and how often they contact the teacher and attend school meetings or parent–teacher conferences (Grolnick and Slowiaczek 1996; Watkins 1997). These questions may bring strength to other important aspects of parental involvement, making for a comprehensive definition of parental involvement in the NLSCY.

### Future work

"A Study of Attitudes Among the Parents of Primary-School Children," completed by the National Parent Teacher Association in 1995, suggests that parents of older children are noticeably less involved in their children's education than are the parents of children in lower grades.[8] Extending the analysis to confirm whether the involvement scale holds across age group and grade level would add an important dimension to the parental involvement literature.

There remains a great deal of work in assessing the relationship between parental involvement and children's academic achievement. NLSCY longitudinal data will help to determine the exact nature and direction of this complex relationship. Moreover, factor analyses on future NLSCY cycle data may serve as a tool for content development relating to parental involvement and other issues of child development and education. EQR

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## Appendix A

**Family Functioning Score**

*This factor score was derived using the following items from the NLSCY parents' questionnaire:*

- Planning family activities is difficult because we misunderstand each other.
- In times of crisis we can turn to each other for support.
- We cannot talk to each other about sadness we feel.
- Individuals (in the family) are accepted for what they are.
- We avoid discussing our fears or concerns.
- We express feelings to each other.
- There are lots of bad feelings in our family.
- We feel accepted for what we are.
- Making decisions is a problem for our family.
- We are able to make decisions about how to solve problems.
- We don't get along well together.
- We confide in each other.

**Positive Interaction**

*This factor score was derived using the following items from the NLSCY parents' questionnaire:*

- How often do you praise child, by saying something like "Good for you!" or "What a nice thing you did!" or "That's good going!"?
- How often do you and child talk or play with each other, focusing attention on each other for five minutes or more, just for fun?
- How often do you and child laugh together?
- How often do you do something special with child that he/she enjoys?
- How often do you play sports, hobbies or games with him/her?

**Parenting with consistency**

*This factor score was derived using the following items from the NLSCY parents' questionnaire:*

- When you give child a command or order to do something, what proportion of the time do you make sure that he/she does it?
- If you tell child he/she will get punished if he/she doesn't stop doing something, and he/she keeps doing it, how often will you punish him/her?
- How often does child get away with things that you feel should have been punished?
- How often is child able to get out of a punishment when he/she really sets his/her mind to it?
- How often when you discipline child does he/she ignore the punishment?

## Appendix B

This section addresses the measurement and interpretation of parental involvement in the first cycle of the NLSCY, including the techniques of factor analysis and scale development, using the parental involvement and academic achievement variables that have already been introduced.

**Factor analyses identified teacher perceptions of parental involvement and parental attitudes as the strongest dimension in the NLSCY**

Factor analysis is applied to assess the degree to which several variables are capturing the same concept. By summarizing the patterns of correlations among the

variables, it becomes easy to identify the not-directly-observable 'factors' based on a set of observable variables. Identifying these underlying factors or dimensions of parental involvement simplifies the description and understanding of the concept, and allows the grouping of variables to create scales.

The specific form of factor analysis used, known as principal components analysis, supported only one factor or dimension of parental involvement in the survey. This dimension consisted of the six teacher perceptions of parental involvement and attitude variables: "Did parent participate in regularly scheduled parent–teacher conferences?" "Did parent contact teacher to discuss student's academic performance or behaviour?" "Did parent return teacher's call about student's academic performance or behaviour?" "To what extent is parent involved in child's education?" "How important is school considered to be to student's parent?" and "To what extent does parent support the teacher?" This dimension explained 52% of the total variance among the six items.[9] A parental involvement scale was created, based on these six teacher perceptions, by totalling the responses across each question.[10] This suggests that within the NLSCY, teacher perceptions of parents' involvement and attitudes provide the strongest measure of parental involvement.

It is important to note that the factor analysis model did not support the other involvement aspects, including parental behaviours (reading and helping with homework), and home environment and parenting style (positive interaction, parenting with consistency, and family functioning). These are undoubtedly important involvement strategies. However, results from the first cycle of the NLSCY do not effectively capture these dimensions.

**Parental Involvement and Academic Achievement scales: reliability and validity**

The Parental Involvement scale ranged from 0 to 9, with a higher score indicating a higher level of parental involvement, as perceived by the teacher. Using Cronbach's Alpha[11] the reliability of the scale was tested. The reliability coefficient was found to be 0.8.[12] A scale is given a high degree of validity when it is shown to correlate with items it should predict, and when it is shown not to correlate with similar but conceptually distinct concepts (Bryman and Cramer 1994). The involvement scale was moderately correlated with a school engagement scale for the child (0.48), but it was not correlated with a social support scale for the person most knowledgeable about the child (0.07). A reasonable degree of validity was observed.

Scales were also constructed for children's academic achievement, using teacher-evaluated work habits, and achievement in reading, writing and math. The highly reliable Work Habits and Academic Performance scales were created, ranging from 0 to 18 and 0 to 9, respectively. A higher score indicated better work habits and higher academic achievement. Cronbach's Alphas for the two outcome scales were quite high: 0.9 in both cases. Boxes 1 and 2 summarize the parental involvement and academic achievement factors (dimensions), with the individual variables contributing to each dimension.

**Notes**

1. The author gratefully acknowledges Raynald Lortie and Garth Lipps, Centre for Education Statistics, for their invaluable help with this work.

2. This article follows an earlier Statistics Canada study on parental involvement (Norris 1999).

3. It should be noted that these results are not comparable with the findings in the article "From Home to School: How Canadian Children Cope" (Lipps and Yiptong 2000), since that article, also released in this issue of *Education Quarterly Review*, relies on data from survey cycles 1 and 2 and includes more robust statistical techniques. In addition, the work by Lipps and Yiptong uses a different age cohort and is based upon a different outcome measure.

4. Standard scores for the math test were developed across the 10 provinces. Children in grades 2 and 3 were assigned standard scores in the 200 to 400 range, based on the number of correct responses to the test; children in grades 4 and 5 were assigned standard scores in the 264 to 550 range, and children in grades 6 and 7 were assigned scores ranging from 314 to 624. The advantage of using the standard score is that it will be possible to track a child's progress over time by comparing his or her standard score with the average score for the grade level.

5. Some recoding was necessary to ensure that the parenting and home environment scale scores moved in the same direction. The positive interaction scale ranges from 0 to 20; the parenting with consistency scale ranges from 0 to 20; the family functioning scale ranges from 0 to 36.

6. A scale can be defined as a group of questions that measure a certain concept when the answers to the questions are put together. Scales can be calculated based on the dimensions identified by factor analyses, by adding up the values for each of the variables that make up the dimension.

7. Correlation coefficients range between -1 and +1. Coefficients closer to +1 indicate a strong positive relationship, meaning that the parental involvement is closely associated with child education outcomes. Values closer to zero indicate a very weak association between parental involvement and child education outcomes.

8. This aspect of involvement is also addressed in Norris (1999).

9. When deciding how many components should be retained in order to represent the data, it is helpful to examine the percentage of total variance explained by each component, and the total variance explained by each component (eigenvalues). (Refer to Bryman and Cramer (1994) and Fidell and Tabachnick (1989) for further information about factor analyses.)

10. Scale scores were computed by recoding responses as 0 or 1 (0 = No; 1 = Yes) for the direct participation questions and 0, 1 or 2 (0 = Not involved; 1 = Somewhat involved; 2 = Very involved) for the general involvement questions, then totalling the 'points' across the involvement questions.

11. Cronbach's Alpha is a measure of the internal consistency of the items within the scale or factor. It is based on the average covariance of the items within the factor. It is assumed that items within a factor are positively correlated with each other because they are attempting to measure, to a certain extent, a common entity or construct. (NLSCY Record Layout 1, 1994–1995).

12. It is difficult to specify a single satisfactory level of reliability for all situations. Some researchers believe that reliabilities should not be below 0.8 for widely used scales. It has been shown that Alpha generally provides a conservative estimate of a scale's reliability (NLSCY Record Layout 1, 1994–1995).

# From home to school: How Canadian children cope[1]

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## Introduction

Nursery schools, kindergartens, mom and tot programs, play groups, and structured and unstructured day-care programs are all popular options available to Canadian parents for their young children. It is thought that such programs may enhance children's intellectual and social skills, and that they may help children with the transition into formal schooling.

Recent research suggests that early education programs do produce some lasting improvements in young children's academic achievement and social adjustment, and that they can produce short-term increases in IQ scores.[2] This same research also suggests that such programs are effective in preventing children from failing grades in school and from being assigned to special education programs.[3] The positive effects of early childhood education programs have been found to extend across nations and types of programs.[4] Furthermore, literature suggests that early childhood education programs can narrow the gap in achievement between advantaged and disadvantaged children but will not eliminate this gap.[5] Other research with severely disadvantaged children suggests that early childhood programs have a positive impact over and above that of nutritional supplementation.[6]

Researchers have suggested that the high quality of intellectual stimulation provided in early childhood programs encourages both the growth and overall integration of the brain, and that the influence of early intellectual stimulation on brain development is lasting.[7] They also strongly suggest that it is best to provide such stimulation before the age of six, preferably before the age of three.[8] However, other research has found that environmental stimulation, while best provided during the early years of development, can still produce positive effects on brain development regardless of age.[9]

Despite the benefits of early education and the availability of programs suggested by researchers, a national survey of kindergarten teachers in the United States found that nearly half (48%) of children have moderate to severe problems making the transition to school.[10] In particular, these teachers reported children had problems with directions, independent work, and communication, as well as with general academic skills. Other research has suggested that children's

## The National Longitudinal Survey of Children and Youth

The National Longitudinal Survey of Children and Youth, a joint project of Human Resources Development Canada and Statistics Canada, is a comprehensive survey examining a wide variety of important factors that influence children's development. The survey collects information every two years on children as they grow up, as well as on the environments in which they live, learn and play.

The second cycle of the survey took place in 1996–1997, collecting information on just under 20,000 children from newborn to age 13. It gathered information on various aspects of children's lives, such as demographics, socio-economic background, child health and development, behaviour, relationships, education, literacy, leisure activities, family functioning and parenting, child care arrangements and family custody history.

The NLSCY uses a variety of methods to collect information on children's development and functioning. The person most knowledgeable about the child (most often the child's mother) is interviewed within the child's household. Starting in the second grade, measures of mathematics and reading skills are administered to children in their schools. Preschool children are given a test of vocabulary skills in the household. All of these measures are administered with the informed consent of the person most knowledgeable about the child. Children 10 to 13 years of age complete questionnaires about themselves and their school experiences.

Questionnaires are also completed by the child's school teacher and principal. These school-based questionnaires provide unique information about the child's education, behaviour at school, and classroom and school environment. The second cycle provides information on the behaviour and educational functioning of a sample of 10,600 children of school age, with teachers providing information on 8,600 of these children.

After following children and youth in the NLSCY for over four years, we are now able to examine the influence of some factors on children's development, such as the influence of early childhood education and parental involvement on children's academic achievement. This release reports on the transition from home to kindergarten and Grade 1.

To facilitate the presentation of our findings, in this paper we use the term 'mother' to refer to person most knowledgeable (PMK) about the child. In the second cycle of the NLSCY, 90.3% of PMKs are the child's mother, 9.0% are the child's father, and 0.7% are some other person.

Estimates in this report marked with an asterisk (*) have a coefficient of variance between 16% and 33% and are less reliable than unmarked numbers.

early contact with the education system will establish a positive educational trajectory.[11] Consequently, poor preparation for school and low achievement once in school can have substantial negative impacts on children's future academic success.

Much of the research on early education programs and starting school has been conducted outside Canada. Consequently, the literature findings reported above may not extend to the Canadian context. However, research by Hertzman and Kohen[12] using the first cycle of NLSCY data appears to support these findings.

In the first of three projects Kohen and Hertzman[13] found that 4- and 5-year-olds who received some form of child care had significantly higher scores on a standardized measure of receptive vocabulary, the Peabody Picture Vocabulary Test—Revised (PPVT-R), than children who stayed at home with a caregiver. Furthermore, child care outside the home had the greatest impact on vocabulary scores for children from lower income households. This suggests that the benefits of child care provided outside the home may be especially large for children from lower income homes.

In a second project, Kohen and Hertzman[14] explored the influence of neighbourhoods on 4- and 5-year-olds' vocabulary skills. Results from this project suggested that children residing in affluent, socially cohesive, safe neighbourhoods with few female single parent households tended to have higher vocabulary scores. The effects of children's neighbourhoods on vocabulary scores appeared to be mediated by features of the child's household, such as household income and mother's level of education.

In a third study, Kohen and Hertzman[15] found evidence suggesting that changes in child care arrangements and frequent changes in residence negatively affect 4- and 5-year-old children's receptive vocabulary. Children who frequently moved or experienced changes in their child care arrangements in the previous 12 months were found to have lower receptive vocabulary scores.

Kohen and Hertzman's studies were conducted using the first cycle of NLSCY data, the only data available at the time. These analyses could only point to associations between early education programs and children's cognitive and behavioural outcomes. The present analyses have used data from both the first and second cycles of the NLSCY

and focus on the impact of early education programs on young children's academic and vocabulary skills shortly after entering the first year of school.

How many Canadian children attend early childhood education programs before entering school? Do these programs give children an academic advantage? How do the level of education of the mother and the household income influence the pathways through the education system? Are there educational activities shared by parents and children that can improve their children's achievement in kindergarten and the first grade at school? What variables are associated with improved academic performance in kindergarten? Data from the second cycle of the National Longitudinal Survey of Children and Youth (NLSCY) were analysed to shed light on these issues.

## Educational programs and types of schools available in Canada

For the purpose of this study, early childhood education/care services include such activities as nursery schools, play groups, day-care centres, and mom and tot programs. Also included in the early childhood education/care services is care provided by a paid worker such as a nanny, by a non-relative, or by a relative other than the mother or the father.

Kindergarten programs are provincially funded and attendance is optional. Publicly funded kindergarten programs are not available in all provinces and school boards across the country.

### Social factors influence the type of educational program attended by 4- and 5-year-old Canadian children

Parents have several options for the care and education of their 4- and 5-year-old children. In 1996–1997, 513,000 children 4 and 5 years of age were attending kindergarten (64%), 198,000 children were attending some form of early childhood education/care service (25%), and 85,000 remained at home with their mother (11%).

The NLSCY data suggest that parental choices appear to be influenced by social factors. Children who attend early childhood education/care are more likely to be from households with high income and to have mothers who have completed a high school education or higher (Table 1). Children whose mothers hold a postsecondary diploma or degree are nearly twice as likely to attend an early childhood education/care service, compared with those whose mothers did not graduate from high school, and one-third as likely to be at home. Similarly, children from households with incomes of $40,000 or more are one-third as likely to stay at home with their caregivers, compared with children from families with household incomes of less than $20,000.

Table 1
**Attendance in Early Childhood Education/Care Programs, by Mother's Education and Household Income, 1996–1997**

| Mother's education | Early childhood education[1] | At home with mother[2] |
|---|---|---|
| | % of all children in same category of mother's education | |
| Less than high school | 14* | 22* |
| High school graduate | 24 | 14* |
| Some postsecondary | 27 | 10* |
| Postsecondary diploma or degree | 27 | 7* |
| Household income | % of all children in same category of household income | |
| Less than $20,000 | 17* | 20* |
| $20,000 to $29,999 | 22* | 18* |
| $30,000 to $39,999 | 25* | 13* |
| $40,000 or more | 28 | 6* |

***Source**: National Longitudinal Survey of Children and Youth: Cycle 1, 1994–1995; Cycle 2, 1996–1997.*

* *Coefficients of variation are between 16.4% and 33.3%, suggesting that these estimates should be used with caution.*

1. *Includes early childhood education services such as nursery schools, mom and tot programs, infant stimulation programs, and any type of day-care arrangement.*
2. *The child is not enrolled in a kindergarten or any form of early childhood education program and is not participating in any type of day care, including day care provided in the child's home by relatives or paid workers.*

The following are results from analysis of the NLSCY data on the effect of early childhood education/care on young children as they start school.

## Analytic methods

This analysis was performed using ordered response logistic regression. Like regular logistic regression, it compares respondents who belong to one of a series of groups (e.g., children who attended early childhood education programs or children who attended kindergarten) with a specific reference group (e.g., children who stayed at home). But unlike regular logistic regression where there are only two possible outcomes (e.g., progressed to the next grade or retained in grade), there is a series of ordered ordinal outcomes (e.g., the letter grades A, B, C, D or F).

The technique examines the cumulative relative odds of a person who belongs to a specific group falling into a specific ordered category—for example, the odds of a child who attended kindergarten, compared with one who stayed at home, being ranked as near the top of his or her class in mathematics versus being ranked in any other ordered category. In all of the ordered response logistic regressions reported, either socio-economic status was included as a predictor variable, or the household income and the education of the child's mother were included as predictor variables.

Ordinary Least Squares multiple regression was also used to examine the influence of reading on PPVT-R scores.

### *Early childhood education/care programs improved children's performance in kindergarten*

Analyses using data from the first two cycles of the NLSCY suggest that early childhood education/care may improve children's later academic performance in kindergarten. Approximately 192,000 (39%) Canadian children 2 to 3 years of age in 1994–1995 attended some form of early childhood education/care program.

The analysis compared the level of performance in kindergarten of two groups of children. The first group included those who attended an early childhood program or day-care centre, or received care from a paid worker such as a nanny or a relative other than the mother or the father of the child. The second group of children were those who stayed at home with a parent, who in 90% of the cases was their mother. When followed up, the children in the first group were faring better at school.

Two years later about 40% of children who were in an early childhood program at the age of 2 and 3 were judged by their teachers as being near the top of their kindergarten class in communication skills, as opposed to only 25% who did not participate in such programs. Also, 38% of these children were rated by their teachers as being near the top of their kindergarten class in learning skills, compared with 24% of kindergarten children who did not attend an early childhood program.

Furthermore, higher proportions of children who attended early childhood education/care were able to write a simple sentence, compare numbers and understand simple concepts of time, such as 'today,' 'summer' and 'bedtime.'

These relationships hold true regardless of the education of the child's mother or the income of the household. In other words, the analysis showed that early childhood care programs had a positive effect on the performance of children in kindergarten, regardless of the economic situation of the household they belonged to or the level of education attained by their mother.

### *Early childhood education/care programs also improved children's performance in the first grade*

The study also found that 4- and 5-year-old children who in 1994–1995 were participating in an early childhood education/care service did better in Grade 1. These children were 1.4 times more likely to be rated by their teachers as being near the top of their class in mathematics achievement in Grade 1 in 1996–1997 than those who stayed at home with a parent (Table 2). As in the case of

Table 2
**Percentage of children near the top of their class, by type of program attended prior to Grade 1**

| Type of educational program | Number of NLSCY children attending in 1994–1995 | Percentage of children near the top of their Grade 1 class in 1996–1997 | | | |
|---|---|---|---|---|---|
| | | Reading | Written work | Mathematics | Overall achievement |
| Early childhood education/care | 202,300 | 27 | 24 | 34 | 26 |
| Kindergarten | 489,500 | 25 | 18 | 25 | 21 |
| At home | 85,700 | 25* | 16* | 18* | 16* |

* *Coefficients of variation are between 16.4% and 33.3%, suggesting that these estimates should be used with caution.*
***Source**: National Longitudinal Survey of Children and Youth: Cycle 1, 1994–1995; Cycle 2, 1996–1997.*

kindergarten achievement, these results hold true after statistically adjusting for the influence of the income of children's households and the education of the child's mother.

The NLSCY data also suggest that kindergarten programs did not have the same impact on later performance as participating in an early childhood education/care service. Youngsters who participated in such early childhood education services as nursery schools, play groups, mom and tot programs, or structured day-care centres in 1994–1995 showed better performance in mathematics, reading, writing and overall academic achievement in Grade 1 in 1996–1997 than those who were enrolled in kindergarten classes in 1994–1995.

### *Reading to children had a substantial positive impact on their academic skills*

Children at the age of 2 to 3 who had been read to several times a day did substantially better in kindergarten at the age of 4 and 5 than youngsters whose parents read to them a few times a week or less often. The group of children who were read to on a daily basis were 1.6 times as likely to be rated by their teachers as being near the top of their kindergarten class in learning skills, and 2.3 times as likely to be near the top of their class in communication skills. These relationships hold true regardless of the income of the child's household and the education of the child's mother.

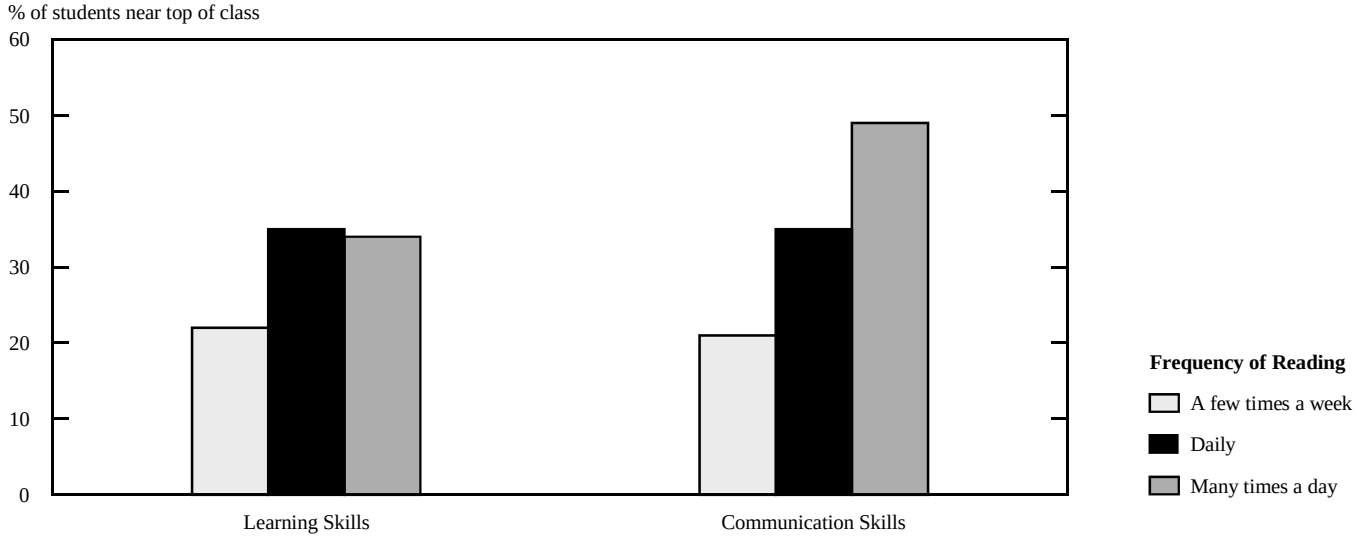
Furthermore, children who had early exposure to books and reading were also better at performing mathematical tasks. These children were twice as likely to be able to compare numbers, 2.6 times as likely to recognize geometric shapes, and twice as likely to know simple concepts of time when they were 4 and 5 years old and attending kindergarten, compared with those who were read to less often. Again, this relationship was observed regardless of the income of the child's household and the education of the child's mother.

### *"Social factors," early education and reading combined to improve children's future vocabulary skills*

Features of children's home environment and participation in easily implemented educational activities such as early education programs and daily reading can have substantial combined effects on children's future vocabulary skills.

Family characteristics such as household income and mother's level of education influenced children's receptive vocabulary skills two years later. When compared with young children who lived in low income families (less than $20,000) and whose mothers had not completed high school, 2- and 3-year-olds in 1994–1995 who lived in families with total household incomes of $40,000 or more and who had mothers with a postsecondary education scored 11 points higher on the PPVT-R two years later.

Figure 1
**Reading to children at home and teachers' classroom rankings of learning and communication skills**




***Source:*** *National Longitudinal Survey of Children and Youth: Cycle 1, 1994–1995; Cycle 2, 1996–1997.*

Early educational activities, such as reading to a child, also have notable future impacts on children's receptive vocabulary. Children 2 and 3 years of age who were read to several times a day in 1994–1995 scored higher on the PPVT-R two years later, regardless of the household income and the mother's level of education. The score of those children who were read to several times a day was about 5 points higher than those living in a household with an income of $40,000 or more, or living with a mother holding a postsecondary diploma or degree. For young children's future vocabulary skills, this represents an impact equal to having a mother who has a postsecondary education or living in a household with an income of $40,000 or more.

Attending some form of early childhood education/care program also affected children's vocabulary scores. Children 2 and 3 years of age who received early education programs in 1994–1995 scored 2 points higher on the PPVT-R when they were assessed two years later. Again, this increase in the scores of the children resulted regardless of the total household income and their mothers' education.

Hence, a child who in 1994–1995 was experiencing a more favourable home environment as a result of higher household income, had a mother with a high level of education, was read to several times a day and received early childhood care scored 18 points higher on the PPVT-R than less advantaged children.

It can be expected that such an increase in the PPVT-R score would promote a child from the below-normal range to the average or above-average range of vocabulary skills. Motivated children who were from higher socio-economic backgrounds and who had received both early childhood care and regular reading could have fewer difficulties with school and educational activities than children in less fortunate circumstances.

## Summary

This paper has presented results of the first longitudinal analysis using the education data from the second cycle of the NLSCY. The wealth of the NLSCY database for both Cycle 1 and Cycle 2 will allow for more studies. Readers of this paper will probably find that many of the questions regarding transitions in the education system have not been answered here. More analyses will be performed by Statistics Canada analysts and outside researchers in the coming months. Furthermore, future cycles of the NLSCY will continue to provide data that will help us better understand the factors that influence Canadian children at school.

Future cycles of the NLSCY will also allow us to observe whether the effects of early childhood education programs persist throughout children's educational careers. Analyses of data from future cycles may be able to show whether children who stayed at home with their mother at the age of three and four make the social adjustments to the structured school environment at a later stage or age compared with those children who attended early childhood education/care programs. EQR

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**Notes**

1. This report outlines some initial results from the School Component of the first and second cycles of the National Longitudinal Survey of Children and Youth (NLSCY). It examines the longitudinal influence of early childhood education/care and literacy activities on young children's future academic and cognitive outcomes. This overview highlights the information newly available from this component of the survey; it is not comprehensive in its coverage or its analysis. Indeed, the information collected by the NLSCY is so rich and detailed that researchers and analysts will be using it to address a variety of important questions concerning the education of children and youth in Canada for many years to come. Here then, we are merely 'scratching the surface,' to stimulate awareness of this rich new data source and to illustrate the kinds of analyses it makes possible.

   General information regarding the National Longitudinal Survey of Children and Youth may be obtained from Sylvie Michaud (sylvie.michaud@statcan.ca) at 613-951-9482, from the Special Surveys Division at Statistics Canada, or from Allen Zeesman (allen.zeesman@spg.org) at 613-946-5713, Human Resources Development Canada.

   Data are also available through custom tabulations. For more information about tabulations and other products and services, contact Tamara Knighton of the Special Surveys Division at Statistics Canada at 613-951-7326; fax 613-951-7333.

2. Barnett 1995; NCEDL 1999.

3. Barnett 1995.

4. Boocock 1995; McCain and Mustard 1999.

5. Boocock 1995; Grantham-McGregor et al. 1991.

6. Grantham-McGregor et al. 1991.

7. McCain and Mustard 1999; Carnegie Corporation 1994.

8. Cyander 1994.

9. Kempermann and Gage 1999.

10. NCEDL 1998.

11. Entwisle and Alexander 1993.

12. Kohen and Hertzman 1998; Kohen, Hertzman and Weins 1998; Kohen, Hertzman and Brooks-Gunn 1998.

13. Kohen and Hertzman 1998.

14. Kohen, Hertzman and Weins 1998.

15. Kohen, Hertzman and Brooks-Gunn 1998.

Data availability

# announcements

## Data releases

*The following are based on recent data releases from the Centre for Education Statistics. Additional statistical information from this release is available on a fee-for-service basis. Please contact Sharon-Anne Borde, Dissemination Officer, at (613) 951-1503, by fax at (613) 951-9040, or by e-mail at* ***sharon-anne.borde@statcan.ca****.*

**Providers of language training, 1998**

- English-language instruction dominated the nearly 500 public and private institutions in Canada that provided second language training in 1998, according to a new statistical profile of the industry.

- Four out of every five hours of instruction were spent teaching English as a second language, and one in five was spent providing French instruction. Of these second language training schools, the majority, about 61%, provided instruction in English, 12% provided instruction in French, and the remaining 27% provided both.

- These data came from the 1998 Survey of Providers of Training in English or French as a Second Language, conducted with the support of the department of Canadian Heritage, Industry Canada, Language Training Canada, the Canadian Tourism Commission, and the Canadian Education Centres Network. The survey gathered information on the size of the industry, its characteristics and the role played by foreign students.

- In total, about 290,000 participants were enrolled in classes in 331 private schools and 159 public institutions in 1998. The industry, which employed about 11,000 people, had estimated revenues of $300 million. One-third (33%) of these schools were in Quebec, 28% in Ontario and 23% in British Columbia.

- Foreign students, who comprised 39% of the total enrolment in second-language training, paid about $125 million in tuition fees in 1998. Overall, close to two-thirds of the foreign students were from Asian countries of origin. Between 1994 and 1998, total enrolment grew at an annual average pace of 22%.

- In addition to classroom instruction, 83% of the schools also offered supplemental services such as cultural visits, daily life activities and touring activities that extended language training beyond the classroom walls. Fully 57% of the schools offered accommodation services as well.

- The majority of the schools (52 %) were small businesses with annual second-language training revenues of less than $500,000. Nearly 23% were mid-sized schools with revenues between $500,000 and $2 million, about 10% had revenues of more than $2 million, and 15 % did not state their revenue.

- Almost one-third of the schools reported that they intend to add new markets to their current targets. About 30% cited Europe as an emerging market, 23% cited Mexico and South and Central America and 22% Asia. The United States ranked fourth at 17%. Only 8% named Africa as an emerging market.

- For more information about an analytic report, survey results and related products and services, or to inquire about the concepts, methods or data quality of this release, contact Client Services (613) 951-1503, Barbara Campbell (613) 951-9168; fax: (613) 951-9040 or Robert Couillard (613) 951-1519; robert.couillard@statcan.ca, Centre for Education Statistics.

**The Second Information Technology in Education Study**

International data for the Second Information Technology in Education Study (SITES) conducted under the auspices of the International Association for the Evaluation of Educational Achievement are available. These data include national results for Canada as well as results for the other 26 nations that participated in the study.

For further information on the Canadian results, please consult *The Daily* of October 12, 1999. An additional analysis with more detailed Canadian results and comparisons with international results will be released shortly. Information related to this release can be viewed at the following Internet address: www.mscp.edte.utwente.nl/sitesm1.

For more information, or to enquire about the concepts, methods or data quality for this release, contact Raynald Lortie (613) 951-1525; fax: (613) 951-4441; *raynald.lortie@statcan.ca* or Nanci Comtois (613) 951-1740; *nanci.comtois@statcan.ca*, Centre for Education Statistics. EQR

## Current data

| Data series | Most recent data | |
|---|---|---|
| | Final[1] | Preliminary or estimate [2] |
| **A. Elementary/secondary** | | |
| Enrolment in public schools | 1995–1996 | 1996–1997 [e]<br>1997–1998 [e] |
| Enrolment in private schools | 1995–1996 | 1996–1997 [e]<br>1997–1998 [e] |
| Enrolment in minority and second language education programs | 1995–1996 | |
| Secondary school graduation | 1995–1996 | |
| Educators in public schools | 1995–1996 | 1996–1997 [e]<br>1997–1998 [e] |
| Educators in private schools | 1995–1996 | 1996–1997 [e]<br>1997–1998 [e] |
| Elementary/secondary school characteristics | 1995–1996 | 1996–1997 [e]<br>1997–1998 [e] |
| Financial statistics of school boards | 1995 | |
| Financial statistics of private academic schools | 1994–1995 | 1995–1996 [p] |
| Federal government expenditures on elementary/secondary education | 1994–1995 | 1995–1996 [e]<br>1996–1997 [e] |
| Consolidated expenditures on elementary/secondary education | 1994–1995 | 1995–1996 [e]<br>1996–1997 [e]<br>1997–1998 [e] |
| Education price index | 1996 | |
| **B. Postsecondary** | | |
| University: enrolments | 1998–1999 | discontinued |
| University degrees granted | 1998 | discontinued |
| University continuing education enrolment (discontinued) | 1996–1997 | … |
| Educators in universities | 1997–1998 | 1998–1999 |
| Salaries and salary scales of full–time teaching staff at Canadian universities | 1997–1998 | 1998–1999 |
| Tuition and living accommodation costs at Canadian universities | 1999–2000 | |
| University finance | 1997–1998 | 1998–1999 [e] |
| College finance | 1996–1997 | 1998–1999 [e] |
| Federal government expenditures on postsecondary education | 1996–1997 | 1997–1998 [e]<br>1998–1999 [e] |
| Consolidated expenditures on postsecondary education | 1996–1997 | 1997–1998 [e]<br>1998–1999 [e] |

## Current data (Concluded)

| Data series | Most recent data | |
|---|---|---|
| | Final[1] | Preliminary or estimate [2] |
| Community colleges and related institutions: postsecondary enrolment and graduates | 1996–1997 | 1998–1999 [p] |
| Trade/vocational enrolment | 1996–1997 | 1997–1998 [e] |
| College/trade teaching staff | 1996–1997 | 1997–1998 [e] |
| International student participation in Canadian universities | 1998–1999 | |

**C. Publications[4]**

Education in Canada, 1996

South of the Border: Graduates from the class of '95 who moved to the United States (1999)

*Leaving school (1993)*

*After High School, the First Years (1996)*

*Adult education and training survey (1995)*

*International student participation in Canadian education (1993-1995)*

*Education price index – methodological report*

*Handbook of education terminology: elementary and secondary level (1994)*

*Guide to data on elementary secondary education in Canada (1995)*

*A Guide to Statistics Canada Information and Data Sources on Adult Education* and *Training (1996)*

*A Statistical Portrait of Elementary and Secondary Education in Canada – Third edition (1996)*

*A Statistical Portrait of Education at the University Level in Canada – First edition (1996)*

*The Class of '86 Revisited*

The Class of 90: A compendium of findings (1996)

*The Class of '90 Revisited (1997)*

Education indicators in Canada: Pan-Canadian Indicators Programme (1996)

Education at a Glance: OECD Indicators (1997)

Literacy, Economy and Society (1995)

*Growing Up in Canada: National Longitudinal Survey of Children and Youth (1996)*

1. *Indicates the most recent calendar year (e.g., 1993) or academic/fiscal year (e.g., 1993–1994) for which final data are available for all provinces and territories.*
2. *Indicates the most recent calendar year (e.g., 1995) or academic/fiscal year (e.g., 1995–1996) for which any data are available. The data may be preliminary (e.g., 1995[p]), estimated (e.g., 1995[e]) or partial (e.g., data not available for all provinces and territories).*
3. *Available for some provinces.*
4. *The year indicated in parenthesis denotes the year of publication. Some of these publications are prepared in cooperation with other departments or organizations. For information on acquiring copies of these reports, please contact the Planning and Client Services Section of the Centre for Education Statistics at Statistics Canada. Telephone: (613) 951-1503; fax: (613) 951-9040 or Internet: perrdan@statcan.ca.*

# Education at a glance

*This section provides a series of social, economic and education indicators for Canada, the provinces/ territories and the G-7 countries. Included are key statistics on the characteristics of the student and staff populations, educational attainment, public expenditures on education, labour force employed in education, and educational outcomes.*

Table 1
**Education indicators, Canada, 1976 to 1998**

| Indicator[1] | | 1976 | 1981 | 1986 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Social context** | | | | | | | | | | | | |
| Population aged 0-3 | ('000) | 1,403.6 | 1,448.7 | 1,475.0 | 1,573.4 | 1,601.7 | 1,610.6 | 1,596.1 | 1,595.1 | 1,578.6 | 1,560.7 | 1,550.7 |
| Population aged 4-17 | ('000) | 6,019.9 | 5,480.3 | 5,204.7 | 5,395.4 | 5,437.7 | 5,484.7 | 5,536.4 | 5,620.7 | 5,691.4 | 5,754.0 | 5,795.7 |
| Population aged 18-24 | ('000) | 3,214.6 | 3,493.1 | 3,286.3 | 2,886.1 | 2,869.2 | 2,869.6 | 2,852.0 | 2,823.4 | 2,816.8 | 2,833.0 | 2,865.4 |
| Total population | ('000) | 23,517.5 | 24,900.0 | 26,203.8 | 28,120.1 | 28,542.2 | 28,940.6 | 29,248.1 | 29,562.5 | 29,963.7 | 30,358.5 | 30,747.0 |
| Youth immigration[r] | | 61,504 | 42,826 | 25,861 | 61,239 | 61,178 | 73,098 | 68,257 | 65,878 | 66,339 | 70,355 | 61,214 |
| Lone-parent families | (%) | 14.0 | 16.6 | 18.8 | 15.3 | 14.4 | 14.8 | 14.9 | 15.1 | .. | .. | .. |
| **Economic context** | | | | | | | | | | | | |
| GDP: Real annual percentage change | | 6.0 | 4.0 | 3.1 | -1.8 | -0.6 | 2.2 | 4.1 | 2.3 | 1.5 | .. | .. |
| CPI: Annual percentage change | | 7.5 | 12.4 | 4.2 | 5.6 | 1.5 | 1.8 | 0.2 | 2.1 | 1.6 | .. | .. |
| Employment-population ratio | (%) | 57.1 | 60.4 | 59.9[2] | 59.8[2] | 58.4[2] | 58.2[2] | 58.5[2] | 58.6 | 58.6 | 59.2[3] | .. |
| Unemployment rate | (%) | 7.1 | 7.5 | 9.5[4] | 10.4[4] | 11.3[5] | 11.2[5] | 10.4[5] | 9.5 | 9.7 | 9.2 | 8.3 |
| Student employment rate | (%) | .. | .. | 34.4 | 38.0 | 35.1 | 34.0 | 34.2 | 33.3 | 34.8 | 32.5[6] | .. |
| Mothers' participation rate | (%) | 43.0 | 54.7 | 63.8 | 70.4 | 69.8 | 70.1 | 70.2 | 70.7 | 71.6 | .. | .. |
| Families below low income cut-offs: | | | | | | | | | | | | |
| Two-parent families | | .. | 10.2 | 10.9 | 10.8 | 10.6 | 12.2 | 11.5 | 12.8 | .. | .. | .. |
| Lone-parent families | (%) | .. | 48.4 | 52.5 | 55.4 | 52.3 | 55.0 | 53.0 | 53.0 | .. | .. | .. |
| **Enrolments** | **('000)** | | | | | | | | | | | |
| Elementary/secondary schools | | 5,513.6 | 5,024.2 | 4,938.0 | 5,218.2 | 5,284.1 | 5,327.8 | 5,362.8 | 5,441.4[r] | 5,414.6[r] | 5,459.5[r,e] | 5,497.0[r,e] |
| Percentage in private schools | | 3.4 | 4.3 | 4.6 | 4.7 | 4.9 | 5.0 | 5.1 | 5.1[r] | 5.2[r] | 5.3[r,e] | 5.3[r,e] |
| Public college/trade/vocational, full-time[7] | | 247.7 | .. | 238.1 | 275.9 | 266.7 | 306.5 | 298.5 | 269.1 | 266.4[e] | 264.5[e] | .. |
| College/postsecondary, full-time | | 226.2 | 273.4 | 321.5 | 349.1 | 364.6 | 369.1 | 377.9 | 389.5 | 395.3 | 398.8[r] | 409.8[p] |
| College/postsecondary, part-time[8] | | .. | .. | 96.4[r,e] | 125.7[r,e] | 106.6[r,e] | 103.9[r,e] | 95.1[r,e] | 91.9[r,e] | 89.1[r,e] | 91.1 | .. |
| Full-time university | | 376.4 | 401.9 | 475.4 | 554.0 | 569.5 | 574.3 | 575.7 | 573.2 | 573.6 | 573.0 | .. |
| Part-time university | | 190.8 | 251.9 | 287.5 | 313.3 | 316.2 | 300.3 | 283.3 | 273.2 | 256.1 | 249.7 | .. |
| Adult education and training | | .. | .. | .. | 5,504 | .. | 5,842 | .. | .. | .. | 6,069 | .. |
| — Participation rate | (%) | .. | .. | .. | 27 | .. | 28 | .. | .. | .. | 26 | .. |
| **Graduates** | **('000)** | | | | | | | | | | | |

Table 1
**Education indicators, Canada, 1976 to 1998 (Concluded)**

| Indicator[1] | 1976 | 1981 | 1986 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Secondary schools[9] | .. | .. | .. | 260.7 | 272.9 | 281.4 | 280.4 | 295.3 | 295.9 r | 295.9 | 300.8 e |
| Public college/trade/vocational[10] | 149.4 e | .. | 145.0 | 159.7 | 158.8 | 163.9 | 151.1 | 144.2 | 141.5 e | 138.7 e | .. |
| College/postsecondary | 60.7 | 71.8 | 82.4 | 85.9 | 92.5 | 95.2 | 97.2 | 100.9 | 105.0 r | 105.9 r,e | .. |
| University/Bachelor's | 83.3 | 84.9 | 101.7 | 114.8 | 120.7 | 123.2 | 126.5 | 127.3 | 128.0 | 124.0 | .. |
| University/Master's | 11.6 | 12.9 | 15.9 | 18.0 | 19.4 | 20.8 | 21.3 | 21.4 | 21.6 | 21.0 | .. |
| University/Doctorate | 1.7 | 1.8 | 2.2 | 2.9 | 3.1 | 3.4 e | 3.6 | 3.7 | 3.9 | 3.9 | .. |
| **Full-time educators ('000)** | | | | | | | | | | | |
| Elementary/secondary schools | 284.9 | 274.6 | 269.9 | 302.6 | 301.8 | 295.4 | 295.7 e,r | 298.7 e,r | 294.4 e | 294.3 r,e | 292.8 r,e |
| College/postsecondary/trade/ vocational | 18.8 | 24.1 | 25.0 | 30.9 | 32.7 | 28.1 r | 28.0 r | 24.4 e | 31.2 | 29.5 r | .. |
| University | 31.6 | 33.6 | 35.4 | 36.8 | 37.3 | 36.9 | 36.4 | 36.0 | 34.6 | 33.7 | .. |
| Elementary/secondary pupil-educator ratio | 18.1 | 17.0 | 16.5 | 15.5 | 15.7 e | 16.1 e | 16.1 e | 16.1 e,r | 16.9 e | 16.4 e | 16.5 e |
| **Education expenditures ($ millions)** | | | | | | | | | | | |
| Elementary/secondary | 10,070.9 | 16,703.2 | 22,968.0 | 33,444.9 | 34,774.5 r | 35,582.3 r | 35,936.0 | 36,424.7 | 36,735.8 p | 37,422.2 p | 37,736.2 p |
| Vocational | 959.9 | 1,601.2 | 3,275.1 | 4,573.8 | 5,380.9 | 5,631.2 | 6,559.0 | 6,185.2 | 5,333.0 p | 5,745.7 e | 6,297.9 e |
| College | 1,081.5 | 2,088.1 | 2,999.0 | 3,870.7 | 4,075.3 | 4,105.9 | 4,207.1 | 4,531.8 | 4,477.9 r | 4,642.0 p | 4,669.3 e |
| University | 2,987.5 | 4,980.7 | 7,368.7 | 11,254.8 | 11,569.8 | 11,736.8 | 11,857.9 | 11,802.0 | 11,600.7 r | 11,592.4 p | 11,788.7 e |
| Total education expenditures | 15,099.8 | 25,373.2 | 36,610.8 | 53,144.2 | 55,800.5 | 57,056.2 | 58,560.0 | 58,943.7 r | 58,251.9 p | 59,370.6 e | 60,492.1 e |
| — as a percentage of GDP | 7.6 | 7.1 | 7.3 | 7.9 | 8.1 | 8.0 | 7.8 | 7.6 | 7.1 | 6.9 | .. |

1. *See "Definitions" following Table 3.*
2. *Standard deviation 0.0% – 0.5%.*
3. *The figure is for May 1997.*
4. *Standard deviation 1.1% – 2.5%.*
5. *Standard deviation 0.6% – 1.0%.*
6. *The figure is for April 1997.*
7. *The enrolments have all been reported as full-time based on a"full-day" program, even though the duration of the programs varies from 1 to 48 weeks.*
8. *Excludes enrolments in continuing education courses, which had previously been included.*
9. *Source: Canadian Education Statistics Council. (Excludes adults for Quebec and Ontario and Alberta equivalencies.)*
10. *The majority of trade and vocational programs, unlike graduate diploma programs which are generally two or three years' duration, are short programs or single courses that may require only several weeks. A person successfully completing these short-duration programs or courses is considered a completer, not a graduate. These completers do not include persons in part-time programs.*

Table 2
**Education indicators, provinces and territories**

| Indicator[1] | | Canada | Newfound-land | Prince Edward Island | Nova Scotia | New Brunswick | Quebec | Ontario |
|---|---|---|---|---|---|---|---|---|
| **Social and economic context** | | | | | | | | |
| Educational attainment,[2] 1998: | (%) | | | | | | | |
| — Less than secondary | | 27.5 | 39.4 | 36.0 | 31.4 | 33.0 | 33.7 | 25.4 |
| — Graduated from high school | | 19.0 | 13.7 | 14.0 | 13.7 | 21.0 | 15.4 | 20.7 |
| — Some postsecondary | | 7.0 | 5.0 | 6.4 | 5.8 | 5.4 | 5.5 | 7.3 |
| — Postsecondary certificate, diploma or university degree | | 46.4 | 41.9 | 43.6 | 49.1 | 40.6 | 45.4 | 46.5 |
| Labour force participation rates by educational attainment, 1998: | (%) | | | | | | | |
| — Total | | 65.8 | 56.3 | 65.9 | 60.5 | 61.1 | 63.1 | 67.0 |
| — Less than secondary | | 40.0 | 32.8 | 47.3 | 37.8 | 36.3 | 37.9 | 40.8 |
| — Graduated from high school | | 68.9 | 60.6 | 73.7 | 64.0 | 68.9 | 68.6 | 68.6 |
| — Some postsecondary | | 72.3 | 62.1 | 69.2 | 66.8 | 67.6 | 69.5 | 73.6 |
| — Postsecondary certificate, diploma or university degree | | 78.8 | 76.2 | 78.2 | 73.4 | 76.3 | 79.2 | 79.5 |
| Unemployment rate, 1998 | (%) | 7.0 | 16.1 | 13.2 | 8.9 | 10.8 | 9.2 | 5.9 |
| **Costs and school processes** | | | | | | | | |
| Public and private expenditures on education as a percentage of GDP, 1994-95 | | 7.0 | 9.9 | 7.6 | 7.6 | 7.4 | 7.6 | 6.8 |
| Public expenditures on education as a percentage of total public expenditures, 1994-95 | | 13.6 | 16.9 | 10.8 | 9.7 | 11.2 | 13.8 | 14.2 |
| Elementary/secondary pupil-educator ratio, 1996-97[e] | | 16.9 | 14.4 | 17.1 | 17.7[r] | 17.4 | 15.2 | 17.7 |
| **Educational outcomes** | | | | | | | | |
| Secondary school graduation rates, 1996-97 | (%) | 73.4 | 80.2 | 85.6 | 80.7 | 86.0 | 75.9[5,6] | 72.0 |
| University graduation rate, 1994-95 | (%) | 37.0 | 23.5 | 28.1 | 48.8 | 29.8 | 52.0 | 36.2 |
| Unemployment rate by level of educational attainment, 1995 | (%) | | | | | | | |
| — Less than secondary | | 12.8 | 27.2 | 23.1 | 14.5 | 15.6 | 15.2 | 11.4 |
| — Graduated from high school | | 8.5 | 15.0 | 13.2 | 10.7 | 9.9 | 11.1 | 8.3 |
| — Some postsecondary | | 8.8 | 15.0 | 9.7 | 9.3 | 12.7 | 10.7 | 8.1 |
| — Postsecondary certificate, diploma or university degree | | 6.5 | 11.1 | 8.3 | 9.0 | 7.4 | 7.7 | 5.6 |

*See footnote(s) at end of this table.*

Table 2
**Education indicators, provinces and territories (Concluded)**

| Indicator[1] | | Manitoba | Saskatchewan | Alberta | British Columbia | Yukon | Northwest Territories |
|---|---|---|---|---|---|---|---|
| **Social and economic context** | | | | | | | |
| Educational attainment,[2] 1998: | (%) | | | | | | |
| — Less than secondary | | 30.9 | 31.5 | 21.2 | 20.7 | .. | .. |
| — Graduated from high school | | 18.9 | 18.6 | 19.9 | 22.3 | .. | .. |
| — Some postsecondary | | 6.8 | 8.0 | 8.1 | 8.8 | .. | .. |
| — Postsecondary certificate, diploma or university degree | | 43.4 | 41.8 | 50.9 | 48.1 | .. | .. |
| Labour force participation rates by educational attainment, 1998: | (%) | | | | | | |
| — Total | | 66.6 | 67.1 | 72.8 | 65.5 | .. | .. |
| — Less than secondary | | 43.9 | 43.2 | 49.5 | 38.3 | .. | .. |
| — Graduated from high school | | 73.5 | 78.2 | 75.5 | 64.4 | .. | .. |
| — Some postsecondary | | 73.4 | 76.0 | 78.0 | 70.2 | .. | .. |
| — Postsecondary certificate, diploma or university degree | | 78.7 | 78.5 | 80.6 | 76.9 | .. | .. |
| Unemployment rate, 1998 | (%) | 4.6 | 4.8 | 4.6 | 7.4 | .. | .. |
| **Costs and school processes** | | | | | | | |
| Public and private expenditures on education as a percentage of GDP, 1994-95 | | 7.8 | 7.4 | 5.4 | 6.5 | 11.3 | 16.6 |
| Public expenditures on education as a percentage of total public expenditures, 1994-95 | | 12.9 | 13.8 | 13.2 | 12.2 | 10.4 | 12.0 |
| Elementary/secondary pupil-educator ratio, 1996-97[e] | | 15.9 | 17.3[r] | 17.5[r] | 17.3[r] | 12.2 | 12.3 |
| **Educational outcomes** | | | | | | | |
| Secondary school graduation rates, 1996-97 | (%) | 78.1 | 78.8 | 64.7 | 70.5 | 37.3 | 24.6 |
| University graduation rate, 1994-95 | (%) | 34.4 | 36.0 | 26.1 | 23.9 | .. | .. |
| Unemployment rate by level of educational attainment, 1995 | (%) | | | | | | |
| — Less than secondary | | 8.8 | 7.5 | 9.4 | 13.2 | .. | .. |
| — Graduated from high school | | 5.3 | 5.1 | 6.6 | 7.3 | .. | .. |
| — Some postsecondary | | 8.6 | 6.4 | 8.1 | 8.4 | .. | .. |
| — Postsecondary certificate, diploma or university degree | | 5.0 | 4.9 | 5.8 | 6.4 | .. | .. |

*1. See "Definitions" following Table 3.*
*2. Parts may not sum to 100% due to rounding.*
*3. Data are based on the Finance Surveys of the Centre for Education Statistics and the System of National Accounts.*
*4. Data are based on the Finance Surveys of the Centre for Education Statistics.*
*5. Starting in 1995, Quebec graduate data for regular day programs include individuals over the age of 20 that graduated from regular day programs.*
*6. Graduates for Quebec excludes "Formation professionnelle".*

Table 3
**Education indicators, G-7 countries, 1996**

| Indicator[1] | | Canada | United States | France | United Kingdom | Germany | Italy | Japan |
|---|---|---|---|---|---|---|---|---|
| **Social and economic context** | | | | | | | | |
| Educational attainment: | (%) | | | | | | | |
| lower secondary or less | | 24 | 14 | 40 | 24 | 19 | 62 | .. |
| tertiary | | 48 | 34 | 19 | 22 | 22 | 8 | .. |
| Labour force participation by educational attainment: | (%) | | | | | | | |
| — upper secondary education | Men | 89 | 88 | 90 | 89 | 85 | 80 | .. |
| | Women | 72 | 72 | 76 | 74 | 69 | 61 | .. |
| — university education | Men | 92 | 93 | 92 | 94 | 93 | 92 | .. |
| | Women | 85 | 82 | 83 | 86 | 83 | 81 | .. |
| **Costs and school processes** | | | | | | | | |
| Public expenditure on education as a percentage of total public expenditures | | 13.6 | 14.4 | 11.1 | .. | 9.5 | 9.0 | 9.8 |
| Public expenditure on education as a percentage of GDP | | 5.8 | 5.0 | 5.8 | 4.6 | 4.5 | 4.5 | 3.6 |
| Participation rate in formal education | (%) | 68.2 | 68.8 | 64.5 | 66.8 | 61.8 | 53.8 | 57.0 |
| Net tertiary non-university enrolment rate | (%) | 17.3 | 12.9 | .. | 4.7 | 2.9 | .. | .. |
| Net university enrolment rate | (%) | 23.1 | 21.7 | .. | 22.2 | 7.9 | .. | .. |
| Educational outcomes | | | | | | | | |
| Ratio of upper secondary graduates to population | (%) | 73 | 72 | 85 | .. | 86 | 79 | 99 |
| Ratio of first university degree to population | (%) | 32 | 35 | .. | 34 | .. | 1 | 23 |
| Unemployment rate by level of educational attainment: | (%) | | | | | | | |
| — upper secondary education | Men | 9 | 6 | 8 | 8 | 8 | 6 | .. |
| | Women | 9 | 4 | 12 | 6 | 10 | 11 | .. |
| — university education | Men | 5 | 2 | 6 | 4 | 5 | 5 | .. |
| | Women | 6 | 2 | 9 | 3 | 5 | 10 | .. |

*1. See "Definitions" following Table 3.*
*Source: Education at a Glance: OECD Indicators, OECD, Paris, 1998.*

# In upcoming issues

*The following articles are scheduled to appear in upcoming issues of* Education Quarterly Review:

## Postsecondary graduates and the labour market: Job requirements relative to education level

An analysis of the fields of study at specific levels of education that are associated with jobs that have requirements below education.

## Brain drain or brain gain?

An examination of the brain-drain of professional and management workers out of Canada, and the gain of professional and management workers from the United States and the rest of the world.

## Holding their own: Employment and earnings of postsecondary graduates

An examination of the fortunes of younger workers based on the results of a longitudinal analysis of the early labour market outcomes of Canadian postsecondary graduates.

## Graduates' earnings and the job-education match

An examination of the two important issues relating to transition from school to the labour market – earnings and the education-job skills match.

## University education: Recent trends in participation, accessibility and returns

An analysis of important trends associated with participation in university education, including participation rates, tuition fees, prospects of finding a job and earnings.

## University and community college leavers

An examination of how social demographic and high school related variables impact the odds of postsecondary leaving.

## Factors influencing bachelors graduates pursuing further postsecondary education

An analysis, using data from the National Graduates Surveys, of the patterns associated with the pursuit of further education.

## Indicators of success for effective and efficient schools

An examination of how new initiatives from Statistics Canada's Centre for Education Statistics can be utilized to explore the efficiency and effectiveness of elementary and secondary schools. *EQR*

# Cumulative index

*This index lists all analytical articles published in* Education Quarterly Review. *Included are descriptions of education and education-related surveys conducted by Statistics Canada, provincial governments and institutions. The categories under which the articles appear are based on policy issues identified in the report* Strategic Plan (1997), *released by the Centre for Education Statistics in November 1997 and available on the Internet at address* ***http:/www.statcan.ca/cgi-bin/downpub/freepub.cgi.***

## Education funding



## Student flows, student mobility and transitions

## Relationships between education and the labour market



## Technology and learning

## Accessibility



## Alternative forms of education delivery



## Teacher issues



## Student participation and performance

## Foreign students and marketing of education internationally



## Satisfaction



## Education data sources