

# Introduction

In 1982, a small group of researchers from three countries, England, Finland and Norway, administered the first Health Behaviours in School-Aged Children (HBSC) survey. By 1985-86, 11 countries were involved in the survey and the World Health Organization, Regional Office for Europe had taken on a coordinating role. During the same time, Health Canada had also undertaken similar research regarding the health knowledge, attitudes and behaviours of young Canadians. Under the auspices of Health Canada, the European HBSC research team invited Canada to participate in the 1989-90 survey as an associate member. Since then, Canada has participated as a full member in two subsequent HBSC surveys conducted in 1993-94 and 1997-98. The HBSC surveys are now administered every four years to a representative sample of 11, 13 and 15 year olds in the participating countries. Three countries participated in the first survey and 28 in the 1997-98 survey. Since the core questions on the HBSC survey have remained essentially the same, this seemed to be an opportune time to examine trends in the health of Canadian youth over three surveys conducted between 1990 and 1998. The next HBSC survey is planned for the 2001-02 school year.

The HBSC survey effectively represents “the population health” approach taken by Health Canada in its efforts to integrate all factors and resources associated with health. The “determinants of health” incorporated in “the population health” and the HBSC research group’s perspective include factors outside the health care system that affect the health of youth. These include the home, the school, the social environment, individual health practices and gender. A full range of individual, social and environmental factors are considered both in defining population health status and in developing programming and policies to improve health (Health Canada, 1994, 1996).

Another important dimension of both Health Canada's "population health" approach and the theoretical framework that guides the design of the HBSC questionnaires is that both view adolescence as a developmental process. Ideally then, the research should follow a sample of young adolescents as they mature through their teen years; however, for both financial and logistical reasons, this was impossible. In order to simulate this developmental process a quasi-longitudinal study was implemented. Three age groups were identified (11, 13 and 15 year olds) as representative of critical periods of adolescent development and samples of these age groups were surveyed every four years.

There have been numerous initiatives undertaken in Canada over the past few years designed to promote the health and well-being of young people, for example, anti-smoking, active lifestyle and healthy eating programs. The findings in this report provide a very general indication of the success of some of these initiatives.

The main purpose of this report is to examine change and stability in the health of Canadian youth between 1990 and 1998. Our social fabric continues to shift as gender roles evolve and the makeup and structure of the family changes. More women have become full participants in the labour market with increasing responsibility and careers, creating both role models and expectations for young women. Single-parent and blended families have become more common with complications for parent-child relationships.

Unemployment has been particularly high for youth during this decade creating uncertainty and confusion around school and career choices. The gap between the well-off and the poor has grown and poverty and homelessness have become increasingly urgent social problems. Challenges associated with the assimilation of immigrant families have increased: over one quarter of youth aged 15 to 24 in Toronto and Vancouver were born outside Canada. All these

factors produce strains on our youth as they go through the critical teen years. These findings are not designed to assess the impact of specific social changes on the health of youth but only to note whether changes in the outcomes and determinants of their health have taken place.

One of the great strengths of the HBSC cross-country collaboration is the opportunity it provides to compare and contrast youth responses to the same questions from country to country. To take advantage of this opportunity, we have compared Canadian findings to the findings of ten countries on selected items. The countries compared have similar political or social systems and comparable data files. They were also selected based on the presence or absence of certain health and social policies. Poland was selected to represent those Eastern European countries that are undergoing rapid social and political changes. Selected age/grade findings from the following countries have been incorporated into the report: the United States, England, France, Germany, Sweden, Denmark, Norway, Greece, Poland and Switzerland.

The Canadian findings for the first two surveys have been released in two reports; both compare Canadian results with those obtained from other countries. The first of these reports—*The Health of Canada's Youth* (King & Coles, 1992)—was published by Health Canada and focussed on Canadian findings compared with those from ten other countries and their relevance for Canadian policies and programs. The second report, *The Health of Youth* (King et al., 1996), was published by WHO-Europe. This report took a much more general orientation to the findings from 23 countries. Subsequent to the release of this report the Canadian findings for the third survey will be included in a comparative format with those from more than 25 countries. The report will be coordinated through the University of Bielefeld and published by WHO-Europe.

## The Questionnaire

The HBSC basic questionnaire is administered to students aged 11, 13 and 15 in school classrooms. In Canada most of these students are in Grades 6, 8 and 10 and their equivalents in Quebec. The basic questionnaire may be augmented to include groups of questions focussed on particular issues (used by some but not all countries) and country-specific questions. The questionnaire is developed in a collaborative fashion by HBSC researchers and then ratified at biannual meetings. A strong effort has been made to retain a core of items on each survey from 1990 to 1998 to facilitate the monitoring of trends. The HBSC researchers come from a variety of disciplines and theoretical perspectives, but they have developed a consensus around the two main components of the research orientation. The first is to incorporate a developmental perspective in order to examine the changes in health attitudes and behaviours from the onset of puberty to the middle years of adolescence.

The second is to identify health indicators and the factors that may influence them. Indicators include behaviours such as smoking, alcohol use, and level of physical activity; psychosocial states such as happiness and loneliness; and physical problems such as headaches and backaches. Influencing factors or determinants include the school, parents, peers and individual characteristics. Indicators and determinants may interact and therefore be interchangeable in analyses.

For each of the three Canadian surveys, additional items were added to the survey. Items related to self-esteem and relationships with parents were added to the Grade 6, 8 and 10 surveys, and items on drug use were added to the Grade 10 survey. Additional items on bullying behaviour were added to the 1998 survey.

The surveys were administered to school classes identified through systematic sampling procedures

and were designed to be administered during one 40-minute class. While there were one or two open-ended questions, almost all of the questions could be answered by checking off a response alternative. The respondents were guaranteed anonymity and the teacher administrators were asked to closely follow a specific set of instructions regarding administration.

It must be remembered that there are fundamental differences among HBSC countries both with regard to language and other aspects of culture. While this is most obviously manifested in dietary practices, it also has implications for concepts such as bullying, where it is difficult to find equivalent terminology. Therefore, compromises were required that influenced the appropriateness of some items for all countries. There were also compromises required to balance the importance of using the same items in each survey to enable the monitoring of change, and the need to improve the quality of certain core items. Wording has been changed on certain core items to improve their validity and reliability. Such instances are noted in the text.

## The Sample

The sampling procedure employed for the first two Canadian surveys was based on a systematic single cluster procedure with the cluster being the school class. The number of Grade 6, 8 and 10 classes was estimated for Canadian schools and a list was prepared. The list was systematically sampled assuming 25 students per class. Approximately 80 classes per grade were selected to reach the targeted sample size of 2000 students per grade level.

There were differences in the sampling procedures employed across countries reflecting differences in school structure and financial resources. However, the basic purpose was essentially the same: that is, to target an age group that could be compared within and across countries. For some countries, where age at first entry into school and grade promotion were

standardized, almost all the targeted age groups could be found in the same grades; for others, where substantial numbers of students were held back for academic reasons, the targeted age groups could be spread over two or even three grades. The Canadian samples for the first two surveys were drawn from Grades 6, 8 and 10 (6<sup>e</sup> année, 2<sup>e</sup> secondaire and 4<sup>e</sup> secondaire in Quebec) to approximate the age requirements. The older and younger subjects were removed from each grade sample to produce approximate mean ages of 11.5, 13.5 and 15.5 with a range of six months for 90 percent of the sample (the other 10%,  $\pm 9$  mos). The optimum time of the year to obtain the appropriate mean age to sample in most Canadian schools was December/January. For the 1990 and 1994 surveys this approach to the sampling meant that students who were age eligible but not in the appropriate grade were not included in the sampling framework.

For the 1998 Canadian survey the same systematic cluster sampling procedure was used, but five grades were surveyed to more accurately represent the three age groups. Only those students born between January 1 and December 31 in 1982, 1984 and 1986 were selected to be part of the HBSC database. In order to standardize the sampling procedure used for the three surveys, a special sub-sample was drawn from the 1998 data file employing the same criteria used for the 1990 and 1994 samples.

Ideally the surveys should have been conducted at the same time in the school year for maximum comparability, but unfortunately, the 1990 survey was conducted later in the school year than the other two. Therefore, although the students in the 1990 survey were in the equivalent grade to those from the other two surveys, they were two to three months older at the time the survey was administered. This difference in administration time influences certain behaviours such as smoking and drug use, and leisure time activities (i.e., in winter versus spring) and must be acknowledged when interpreting the findings.

In 1998 the sample was drawn to represent students from Grades 6, 7, 8, 9 and 10 (and the Quebec equivalents). Students who had been held back could then be represented in the basic HBSC data file (except for the Grade 5 students, of course). The 1998 sampling procedures were agreed upon by all the participating countries (but not necessarily implemented) in order to make the data files age specific. In this report this grade-based data file is employed to simulate longitudinal patterns through Grades 6, 7, 8, 9 and 10 on selected measures.

In summary then, the 1998 data file has been adjusted to make it age-grade compatible with the 1990 and 1994 survey data files. Therefore, Canadian figures from the 1998 file in this trends analysis report may differ from figures from the 1998 Canadian files used in international comparisons. The 1998 Grade 6, 8 and 10 numbers for the three survey comparisons may differ slightly from the 1998 Grade 6, 8 and 10 figures used in the Grade 6, 7, 8, 9 and 10 1998 comparisons. Tables and figures containing only Canadian data compare students by grade and use grade designations (Grades 6, 8 and 10). International comparisons from the 1998 survey compare students by age and use age designations (11, 13 and 15). Table 1.1 presents the numbers of students on which each of the three sets of analyses is based.

**Table 1.1**

Sample sizes (Canadian data files)

Grade/Age	Canadian Trends Data			Five-Grade Analysis (by grade)	International Data Set (by age)
	1990	1994	1998		
Grade 6/ 11 year olds	1939	2289	1963	2109	1856
Grade 7				2057	
Grade 8 / 13 year olds	1743	2250	2041	2227	2308
Grade 9				2363	
Grade 10/ 15 year olds	1883	2219	2255	2524	2403

Ten countries were selected from the 28 that were involved in the 1998 HBSC survey to compare with Canada. Countries were selected because they had a number of structural factors in common with Canada or had policies and programs in place that are of interest. It is difficult to make the samples of students comparable from country to country. Not only are there structural differences in the school systems, but the age and time of entry into school can differ. For example, in some countries the age and time of entry into school is based on an age definition of January to December, while in other countries it may be from August to July. This means that it is impossible to pick one point in the school year when surveys could be administered to insure that the mean age of students from each country is essentially the same. Details on the sampling procedures employed in each of the ten countries we have selected for comparative purposes follows. Table 1.2 indicates the sample size for each of these countries and Figure 1.2 outlines the general systems and indicates the grades from which their samples were drawn.

*Denmark:* The sample was selected from those grades where students born in 1982, 1984 and 1986 were present. Since the survey was conducted in the Spring, the average age of the respondents was slightly higher than the optimum.

*England:* Since there is very little repeating of grades in the English school system, it was decided to draw the 11-year-old sample from those in year 7 of school,

the 13-year-old sample from those in year 9, and the 15-year-old sample from year 11. The survey was administered early in the school year to produce the optimum average of ages.

*France:* The French sample was drawn from the regions of Toulouse Midi-Pyrénées (in the Southwest) and Nancy-Lorraine (in the Northeast). The sample was selected from those grades where students born in 1982, 1984 and 1986 were present. Since the survey was administered just prior to and after January 1st, the average age of the sample was optimum, that is, 11.5, 13.5 and 15.5.

*Germany:* The German sample was drawn from one large region of Germany, Nordrhein-Westfalen. The sample was drawn from the three appropriate grades; the first, third and fifth years of secondary stage one. The survey was conducted just before and after January 1st and should have produced the optimum average ages. However, because the age at school entry differs from the norm, the average age of the German sample is slightly less than optimum. The combination of age of entry, that is, students were a little older at entry to school in comparison with equivalent grades in most other countries, and the time of administration of the instruments required that the German sample be drawn from a grade earlier than those drawn from the other selected countries.

*Greece:* The students for the Greek sample were drawn from three distinct grades, primary 2,

**Table 1.2**

Number of respondents by grade and country, 1998

	CAN	DEN	ENG	FRA	GER	GRE	NOR	POL	SWE	SWI	USA
Grade 6*	1856	1713	2279	1467	1580	1662	1733	1627	1294	1668	1558
Grade 8*	2308	1807	2222	1421	1613	1315	1623	1598	1357	2020	1803
Grade 10*	2403	1546	1872	1245	1599	1322	1670	1636	1151	1832	1808

\* These grade categories will vary across countries. See Figure 1.1 for details.

Figure 1.1

Characteristics of education systems in comparison countries and grades/forms from which samples were drawn

HBSC sample

AGE	Denmark	England	France	Germany	Greece	Norway	Poland	Sweden	Switzerland	USA
18	Upper Secondary	Upper and lower 6th form	Secondary 2nd cycle	Secondary Stage II	Upper Secondary	Upper Secondary	Upper Secondary	Secondary 13	Gymnasium	14 University
17	General Technical Vocational	upper and lower 6th form	T	part-time vocational full-time vocational gymnasium	12	General Technical Vocational	General Technical Vocational	General Vocational Technical	12 academic programs 14 vocational programs	13 Secondary 2nd cycle
16	10	11	1	10	11	11	11	10	10	12
15	Lower Secondary (Basic or Advanced)	11	2	9	10	10	9	9	9	10
14	8	10	3	8	9	9	8	8	8	9
13	7	9	4	7	8	8	7	7	7	8 Jr. High
12	6	8	5	6	7	7	6	6	6	7
11	5	7	6	5	6	6	5	5	5	6
10	4	6	5	4	5	5	4	4	4	5
9	3	5	4	3	4	4	3	3	3	4
8	2	4	3	2	3	3	2	2	2	3
7	1	3	2	1	2	2	1	1	1	2
6	Pre-school	2	1		1	1	Pre-liminary	Pre-liminary	Pre-school	1
5		1		Pre-school	Pre-liminary	Kinder-garten	Pre-school	Pre-school		Kinder-garten
4		Nursery school	Pre-school							Nursery school
3										

junior 2 and the first year of high school. The survey was conducted in the early Spring and, therefore, the students are slightly older than average.

*Poland:* The sample was selected from those grades where students born in 1982, 1984 and 1986 were present. Since the survey was conducted in the Spring, the average age of the respondents was slightly higher than the optimum.

The *Swedish* and *Norwegian* samples were drawn from the three grades where the appropriate age groups were present. There is virtually no grade repetition in Sweden and Norway and school entry is based on the January to December year and, therefore, the December administration of the surveys produced optimum mean ages.

*Switzerland:* The sample was selected from those grades where students born in 1982, 1984 and 1986 were present. The survey was conducted in Spring and, therefore, the students are a little older than average.

*The United States of America:* The sample was selected from those grades where students born in 1982, 1984 and 1986 were present. Since the study was conducted in the Spring the students were a little older than average.

## Presentation of Findings

Most of the findings are presented in bar graphs according to grade group, gender and survey year. It was not possible to present all the survey findings in this report; therefore, it was necessary to select only one response alternative or combination of response alternatives to represent a theme. The response alternative could be the proportion of respondents who agreed with a particular statement, such as “Have you ever tasted an alcoholic drink such as beer, wine, or liquor?” or who stated, “often” or “always” to a question such as “How often do you feel left out of things?” or “most” or “all” to a question such as “My friends smoke cigarettes”. As a result a great deal of important data has had to be excluded. Where appropriate these missing data are noted; however, the tables including all the responses are available from the Health Canada website: <http://www.hc-sc.gc.ca/hppb/childhood-youth/spsc.html>.

The findings are typically introduced with a brief review of relevant literature. Since it is possible to confirm findings from previous research with further analysis of findings from this study, additional information is provided regarding the relationship between the variable in question, for example, marijuana use, and other factors. This information is provided in the form of Spearman Coefficient Correlations. The actual correlation is usually presented if it is above 0.15 in magnitude.

The correlations are based on the 1998 survey data file.

## Composite Measures

Five composite measures or scales have been developed to facilitate examination of relationships between broad concepts such as students’ relationship with their parents and variables such as depression, drug use and bullying behaviour. Each of the measures and the items that make them up are presented below.

1) *Relationship with Parents:* My parent(s) understand me; I have a happy home life; My parent(s) expect too much of me; My parent(s) trust me; I have a lot of arguments with my parent(s); There are times I would like to leave home; What my parent(s) think of me is important.

2) *Adjustment to School:* In our school the students take part in making rules; The rules in this school are fair; Our school is a nice place to be; I feel I belong in this school; I am encouraged to express my views in my class(es); Our teachers treat us fairly; When I need extra help, I can get it; My teachers are interested in me as a person; The students in my class(es) enjoy being together; Most of the students in my classes are kind and helpful; Other students accept me as I am.

3) *Self-Esteem:* I like myself; I have trouble making decisions; I am often sorry for the things I do; I have confidence in myself (am sure of myself); I often wish I were someone else; I would change how I look if I could.

4) *Social Integration:* How easy is it for you to talk about things that really bother you with friend(s) of the same sex?; How easy is it for you to talk about things that really bother you with friend(s) of the opposite sex?; At present, how many close friends do you have?; Is it easy or difficult for you to make new friends?; How often do you spend time with friends right after school?

5) *Diet:* frequency of eating fruit, raw vegetables, cooked vegetables, whole wheat or rye bread, low

fat milk, soft drinks, candy/ chocolate bars, potato chips and french fries.

The scales are designed to be relative measures and not tools to definitively measure all aspects of the concept. For example, an individual who has a low score on the diet measure has a generally poorer diet compared with an individual who has a higher score. A low score does not necessarily indicate that the individual has a poor diet.

As previously stated, it was not possible to present the vast array of findings from all the countries that participated in the three HBSC surveys and ten countries were selected to compare with Canada on the 1998 survey findings. Seventeen comparative figures have been produced for this report, in which one of the three grade groups was selected for each cross-country comparison. In doing this an effort was made to represent the three age groups as well as significant themes.

Although an attempt was made to select items that deal with concepts equivalent across countries, it was also necessary to incorporate concepts that may not have the same cultural and linguistic interpretation. Concepts such as bullying, depression and loneliness were selected because they are important health issues and it is possible to learn much from how these issues are manifested in other cultures. Some items, such as those about eating patterns, of necessity had to be modified across countries to reflect fundamental cultural differences.

The reader must be cautious when comparing data across countries and across time periods. The sampling procedure was designed to produce confidence limits of plus or minus three at a 95 percent probability level; that is to say, when the sample size was 1536 students 19 out of 20 times the percent presented in a figure or table will fall plus or minus 3 percentage points around the number presented. However, several design factors including the cluster sampling procedure, difference in school

systems, and cultural and language differences must also be considered in any comparative analysis. Since the school class was the cluster employed in the sampling procedure, it is possible that those who make up a cluster may have a similar set of behaviours or attitudes; for example, they may have access to the same cafeteria food or share a view about a teacher or their school. This is called the design effect (DE). On the other hand, smoking behaviour or patterns of headaches or medication use are less likely to be shared by classmates. Therefore, one can give greater weight to smaller differences on certain measures that are not likely to be influenced by students being drawn from the same class. The confidence limits were based on a maximum DE of 1.44 and almost all the Canadian survey items had a DE of less than 1.44. School-related and time-spent-with-friends items were the most likely to exceed this DE figure. When comparing countries across age groups and gender, not much weight should be attached to differences of 5 percentage points or less. Since the Canadian sample was relatively large, a difference of 4 percent is probably a safe basis for comparisons over time and between genders. However, small differences that are clearly part of a trend are noted. While a five-point differential is a useful guideline when considering cross-country comparisons, the same caution regarding the influence of the cluster must be maintained.

Tables 1.3 and 1.4 are designed to help the reader interpret the correlations that appear in the text. The correlations (Spearman rank-order correlations) are represented by symbols (○ = .15 to .24; ◐ = .25 to .34; ◑ = .35 to .44, and ● = .45 or greater). Table 1.3 indicates the actual responses that produced the correlation of .53 (●) that is shown in Figure 10.10. It can be seen that 82 percent of the daily smokers had used marijuana three or more times compared with only 18 percent of the non-smokers. This correlation can be viewed as moderately strong. A perfect correlation (+1.00) on this item would have all the daily smokers using marijuana three or more



times and none of the non-smokers using marijuana. The numbers in the other cells would be in proportion. None of the correlations presented in the report is over 0.7.

Table 1.4 indicates the actual responses that produced the correlation of .22 (○) that is shown in Figure 10.10. It can be seen that 57 percent of those who did not like school had smoked marijuana three or more times compared with only 22 percent of those who liked school a lot. This can be viewed as a moderate correlation. The age differences of the samples and the time of the year at which the surveys were administered also should have some bearing on how the findings are interpreted. In the section on sampling, some important differences across countries that cannot be satisfactorily adjusted for

were noted. In the case of the Canadian surveys, the first survey was conducted a little later in the year than the other two. It is expected that this would influence seasonal activity and behaviour such as smoking and drug use that proportionately increase through the school year.

## Organization of the Report

The report is organized around the broad themes that are part of the population health perspective. The first three chapters deal with the social determinants of youth health—the school, the home and the peer group—and are designed to illustrate the importance of positive relationships to both physical and mental health. Chapter 5 introduces factors that enable young people to cope with the strains of adolescence, such as high self-esteem, as well as noting the problems that arise when effective coping skills are not present. Chapter 6 deals with general health concerns and it is followed by four chapters that present findings on behavioural risks—eating patterns and dental care, physical and leisure activity, injuries and substance use. The report concludes with a brief chapter on the implications of the findings.

**Table 1.3**

Relationship between smoking and marijuana use, Grade 10 boys

		Smoking			
		Do not smoke	Less than weekly	Every week	Daily
Marijuana use	Never	526 71%	24 33%	8 20%	11 7%
	Once or twice	85 11%	14 19%	12 30%	17 11%
	Three or more times	133 18%	35 48%	20 50%	129 82%

**Table 1.4**

Relationship between attitude toward school and marijuana use, Grade 10 boys

		How do you feel about school			
		Like a lot	Like a bit	Don't like very much	Don't like at all
Marijuana use	Never	113 68%	319 61%	9 7%	38 37%
	Once or twice	17 10%	69 13%	36 27%	6 6%
	Three or more times	37 22%	132 25%	90 67%	59 57%