Measuring Readiness to Learn in Niagara Falls

The Early Development Instrument Findings from 2001

Lori Walker and Todd Guindon

Preface

Canada's long-term prosperity depends upon the diversity and competitiveness of its industries and businesses. As citizens, we are not only dependent upon prosperity for our quality of life, but also responsible for creating and sustaining it by preparing our children to meet whatever challenges lie ahead. Continually maintaining and enhancing our school system is a key part of the equation, but so is ensuring that our children enter school ready to take full advantage of all that it has to offer.

Democratic nations around the world have come to acknowledge that preparing children to succeed in school is a matter of both parental and public concern. In 1990, our neighbours to the south introduced a range of new policies and programs in support of the goal that "by the year 2000 all children in America will start school ready to learn."

Australia and the United Kingdom have also taken steps in this direction. The World Bank has even noted that investments in early learning and care programs allow school dollars to be more effectively spent, as they reduce the need for remedial interventions once children are in school.

Here in Canada, the 1997 Throne Speech committed the federal government to measure and report on the readiness to learn of Canadian children. As part of the Understanding the Early Years Project (UEY) - a national research initiative of Human Resources Development Canada (HRDC) - the Early Development Instrument (EDI) was implemented in Niagara Falls in February 2001. Originally developed by Dr. Dan Offord and Dr. Magdalena Janus at McMaster University's Canadian Centre for Studies of Children at Risk (CCSCR), the EDI is a population level assessment of children's readiness to learn at school.

Given that this is the first time the EDI has been administered in Niagara Falls, it is important not to jump to conclusions about what, if any, interventions might be necessary at this time. Rather, the findings of the EDI in Niagara Falls, as well as the process by which the information was gathered, analyzed and communicated should be seen as laying the framework for further research in this area. Niagara Falls was one of just 13 Canadian communities selected by HRDC to participate in UEY and while we have now established a process for the efficient and timely collection of data, it may be some time before these data can be put into context relative to other communities across the country, or even earlier EDI findings in our own community. Clearly, however, we have made measurable progress toward the goal of giving local children the community-based supports they need to get the most out of their school experiences.

In terms of methodology, the EDI is a population-level assessment consisting of 120 core questions designed to measure readiness to learn at school - conceptualized as a child's ability to meet the task demands and benefit from the educational activities of school. It is a teacher-completed checklist that focuses on five developmental domains relevant to children's readiness to learn at school:

- Physical Health and Well-Being;
- Social Competence;
- Emotional Maturity;
- Language and Cognitive Development; and
- Communication Skills and General Knowledge.

Teachers are asked to describe children's observable performance or behaviour in kindergarten. There is no direct assessment involving child participation. Instead, teachers complete the EDI using their knowledge and observations of the children in their class. The average completion time is twenty minutes per child. As the EDI is not a diagnostic tool, the results are interpreted solely at a group level. Individual results are kept absolutely confidential.

The 2001 Niagara Falls EDI measure was implemented in February, which gave teachers five months to get to know the children in their class. Before completing the instrument, the teachers attended a half-day training session developed by HRDC and CCSCR. As part of this training, teachers were given an EDI Guide that helped clarify questionnaire items and facilitate uniform interpretation of the instrument. Teachers also watched a video produced by HRDC entitled "The Early Development Instrument" which provided further background information and instructions. Once completed, all of the questionnaires were sent to CCSCR for analysis at the group level. Children's data for each domain were scored on a scale of 0 – 10 where higher scores indicated better readiness to learn skills.

While CCSCR is working toward a national standard against which scores can be compared, at present, no such benchmark exists. Instead, population results for each domain were divided into percentiles to facilitate interpretation. The percentile thresholds used for the city of Niagara Falls were relative and based on the distribution of all of the scores encountered within the city. This is in keeping with the methodology that CCSCR currently uses to determine percentile thresholds for populations.

When interpreting the EDI, children with scores in the lowest 10% of data (below the tenth percentile) in one or more domains are considered to be vulnerable in terms of readiness to learn skills. Thus, the percentage of children in a population who score below the 10th percentile in one or more domains can be interpreted as an indication of how many children are "not ready to learn at school" or have "increased needs" in comparison with the rest of the population.

To date, the EDI data collected across Canada by the CCSCR has not shown much variation in this

percentage among various communities - it usually ranges between 21% and 26% with an average of 24.5%. However, the percentage of children with "increased needs" does vary from 0 to as much as 75% among various school populations within communities and provides a reliable indicator of areas where children are at risk for social and academic problems.

CCSCR prepared community and school population reports. These were sent to the UEY Project Coordinator along with the raw data file for interpretation at the local level. EDI data is collected within the context of schools, as kindergarten is the first organized educational step accessible to all children and kindergarten teachers have training and expertise in assessment. It is important to note however, that the EDI is designed to measure the outcomes of children's early years, not school performance. In light of the sensitivity and possible misinterpretation of school results, CCSCR suggested, and UEY Project partners in Niagara Falls agreed, that the findings would be more informative and fair if the means were presented in the neighbourhood context rather than school by school. UEY researchers sought specific consultation from Dr. Janus at CCSCR regarding the manipulation of data for Niagara Falls to take EDI results out of the school context and re-present them according to neighbourhoods.

Neighbourhoods were determined in consultation with the Planning and Development Department of the City of Niagara Falls and the UEY Communication Committee. While the population size of senior kindergarten children varied among neighbourhoods, all populations exceeded 20 children - the number deemed acceptable for study by the CCSCR.

The EDI is a population measure; rather than making inferences based on a sample of children, it gathers information and creates descriptive profiles based on a defined population. On a macro-level, the population of the Niagara Falls' study consisted of all senior kindergarten children attending District School Board of Niagara (DSBN) or Niagara Catholic District School Board (NCDSB) schools within the city of Niagara Falls in the 2000/2001 academic school year.

Results of a second population - the 2001 Cohort - were provided by CCSCR. This population is comprised of all of the senior kindergarten children in various communities across Canada who participated in the EDI during the 2000/2001 school year. While CCSCR provided this population's data as a means of comparing children in Niagara Falls to other 5 and 6 year olds across Canada, they stress that the 2001

Cohort population is neither truly national, nor representative.

On a micro level, each neighbourhood within Niagara Falls represents a population on its own – the population of children studied who live in that defined geographical area or neighbourhood.

Since the EDI was collected for all of Niagara Falls' senior kindergarten children in the DSBN and NCDSB, the Niagara Falls results represent the whole population and not a sample. Therefore, the average scores reported are the actual real averages – not estimates, as they would have been, if a sample was collected. This feature of the EDI implementation supersedes a need for statistical comparisons within the group.

While there is no need for between neighbourhood statistical tests, the CCSCR does recommend that statistical comparisons be used when examining the results of the city of Niagara Falls as a whole against the 2001 Cohort. This provides an informative piece of analysis showing, in the absence of norms, where the strengths and needs of children in Niagara Falls are.

The EDI provides a snapshot - a descriptive profile of a defined population of children at a given point in time. When creating this profile, scores across all five domains of the EDI need to be considered. The goal of a community should be a pragmatic one - to have all children achieve a score of ten in each of the five domains, indicating that they are ready to learn before they enter grade one.

CCSCR is carrying out ongoing validation studies of the EDI. Preliminary testing of the EDI has demonstrated very good internal and test-retest reliability as well as cultural validity. EDI scales are positively correlated when compared to direct cognitive measures and data collected independently from parents.

Niagara Nurtures

a *Good Life* Needs a *Good Start*
The Early Years Action Group-Niagara Region

Early Childhood
COMMUNITY
Development Centre
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Community Representative
Mary Burnett
Early Years Program Consultant, Ministry of Community, Family and Children's Services
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Brock University, Community University Research Alliance
William Charron
Executive Director, Family & Children's Services Niagara
Karen Chudzik
Director, Population Health, Regional Niagara Public Health Dept.
Connie Costanzo
Executive Director, Niagara Child Development Centre
Donna Dalgleish
Coordinator, Ontario Early Years Centre, Niagara Falls
Mary Lou Decou
Medical Epidemiologist, Regional Niagara Public Health Dept.
Tammy M. Ferguson
Executive Director, Early Childhood Community Development Centre
Pat Heidebrecht
Director, Children's Services Division, Community Services Dept., Regional Municipality of Niagara
Ken Janzen
Manager, Commercial Services, Niagara Credit Union Commercial Business Centre
Margaret Jarrell
Executive Director, Adolescent's Family Support Services Niagara
Janet Killins
Research Evaluation and Assessment, District School Board of Niagara
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Early Years Steering Committee

Executive Summary

Research in early child development and neurobiology provides evidence that the first six years of life lay the foundation for much of the knowledge and skills required for successful school adjustment and later adult competence. In addition to this, studies have shown that readiness to learn at age six can predict a child's ability to benefit from academic instruction.

The Early Development Instrument (EDI) is a population based measure that profiles early child development outcomes, or "readiness to learn", in terms of children's preparedness for school, by reporting on populations of children at the community level, based on five domains:

- Physical Health and Well-being;
- Emotional Maturity;
- Social Competence;
- Language and Cognitive Development; and
- Communication Skills and General Knowledge.

This report highlights key findings from information collected through the 2001 implementation of the EDI to assess children's "readiness to learn" in the city of Niagara Falls, Ontario.

Note:

The 2001 Cohort is comprised of 25,487 children in various communities across Canada who participated in the EDI during the 2000/2001 school year. While the 2001 Cohort provides a means of comparing children in Niagara Falls to other 5-6 year old children across Canada, it should be noted that this population is not truly national, nor is it representative.

Percentile thresholds are relative and are based on the distribution of scores for their respective population (e.g. the city of Niagara Falls and the 2001 Cohort).

Key findings:

Generally, compared with the five-scale averages of the EDI in participating communities across
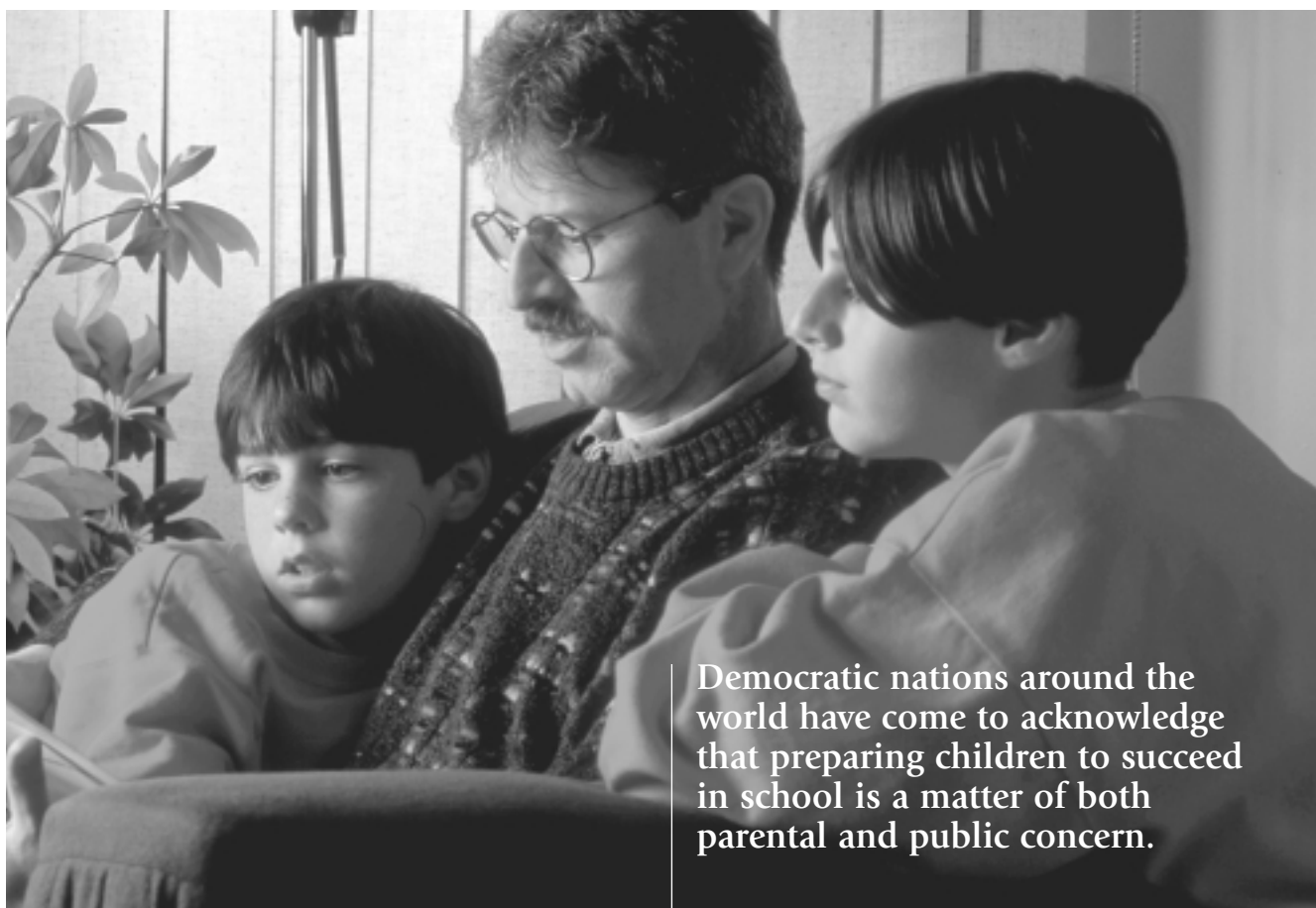
> **Democratic nations around the world have come to acknowledge that preparing children to succeed in school is a matter of both parental and public concern.**

Canada, children in Niagara Falls scored either slightly better, or as well as, children in the 2001 Cohort with the exception of the Social Competence and Emotional Maturity domains, where Niagara Falls scored lower. A statistically significant difference in scores was found in the Emotional Maturity domain where the mean scores for Niagara Falls and the 2001 Cohort were 7.72 and 8.04 respectively.

Children who scored in the lowest (poorest) 10% of scores encountered in a population are said to have scored "below the 10th percentile" Scores this low indicate that children are vulnerable in terms of readiness to learn skills and may have difficulties that could later affect their experience at school.

- 28.5% of children in Niagara Falls scored below the 10th percentile on one or more domains, compared to 26.3% of children in the 2001 Cohort.

While children who score in the lowest 10% on one domain will not necessarily have difficulty at school, scoring "below the 10th percentile" on two or more EDI domains puts a child at increased risk.

- 11.2% of children in Niagara Falls scored below the 10th percentile on one readiness to learn domain, compared to 13.2% of children in the 2001 Cohort.

- 17.3% of children in Niagara Falls scored below the 10th percentile in two or more readiness to learn domains, compared to 13.1% of children in the 2001 Cohort.

Within the city of Niagara Falls, the proportion of children who scored in the lowest 10% on one or more domains varied across neighbourhoods from 12% (Beaverdams), to 39.7% (Drummond/Victoria).

One half (3 out of 6) of the neighbourhood study areas demonstrated increased needs (a greater proportion of children scoring in the lowest 10% on one or more domains) when compared to both the 2001 Cohort (26.3%), and the city of Niagara Falls as a whole (28.5%). These were Drummond/ Victoria (39.7%), Elgin (30.9%), and Westlane (29.3%).

In contrast, three out of the six neighbourhood study areas had a relatively low proportion of

vulnerable children when compared to the 2001 Cohort and the city of Niagara Falls. These were Stamford (23%), Chippawa/Rural (20.4%), and Beaverdams (12%).

Comparisons based on demographics and/or program attendance were carried out for the Niagara Falls population of five year olds. The results showed similar patterns as in the rest of the 2001 Cohort.

The purpose of the EDI is to profile early development by reporting on populations of children at the community level. Community agencies and schools in Niagara Falls have the opportunity to use the EDI findings to assist in resource planning to improve the developmental and learning outcomes of children. While this report provides a sense, both developmentally and geographically, of children's readiness to learn in terms of their preparedness for school, it raises questions with regards to why some neighbourhood populations appeared better prepared for school than others.

Two forthcoming companion reports will examine this question by linking the EDI results with community and family characteristics in Niagara Falls, in an attempt to better understand community factors that impact children's readiness to learn:

- the Community Mapping Study will look at neighbourhood characteristics, services, and demographics; and

- the Integrated Report will highlight information about readiness to learn in relation to family and social variables, as well as presenting sample data from cognitive measures conducted as part of the National Longitudinal Survey of Children and Youth (NLSCY) Community Study.

Results from the EDI will be compared with data from the CMS and NLSCY Community Study to determine if any patterns exist between child development outcomes and family and community characteristics in Niagara Falls. Combined, these reports will provide information to develop effective community-based responses in support of child development and readiness to learn in Niagara Falls.

Improving our understanding of factors that impact child development and increasing community tracking of how well children are developing is crucial to ensuring the best possible start for children.

Introduction

This report is the first in a series of papers produced by the Niagara Falls Understanding the Early Years research project. The purpose of this report is to profile children's readiness to learn in terms of how prepared they are for school entry, and to highlight key findings from information collected using the Early Development Instrument (EDI) questionnaire. The children studied were enrolled in senior kindergarten classes within the District School Board of Niagara and the Niagara Catholic District School Board, in the city of Niagara Falls, during the 2000/2001 school year. The results presented in this report are descriptive in nature and based solely on the application of the EDI.

Background

The importance of studying children's early years

The kind of nurturing and stimulation that children receive in their early years can have a major impact on the rest of their lives. New research in the areas of neuroscience and early child development indicates that our ability to relate to others in positive ways, to achieve academic and career success, and to maintain physical and emotional health, is shaped by what happens to us before age six.[1] Furthermore, increasing evidence supports the importance of investing in children's early development, not only to improve outcomes for children and families, but also to ensure the future prosperity of Canadian society.[1] Providing appropriate developmental support in the early years increases the likelihood that children will reach their full potential and enter adulthood with a strong sense of self-respect; a healthy concern for others; suitable literacy, numerical, and problem-solving skills; effective people skills; and an interest in lifelong learning. We need adults with these qualities in order to sustain an innovative and competitive Canadian workforce, and to create caring and supportive communities. Figure 1 illustrates how fostering optimal child development is essential to encouraging both economic growth and social stability.[2]

The relationship between the early years and the subsequent health and well-being of society is clear. Therefore, it is important that communities have

Figure 1:

The Importance of Optimal Child Development to a Prosperous Society
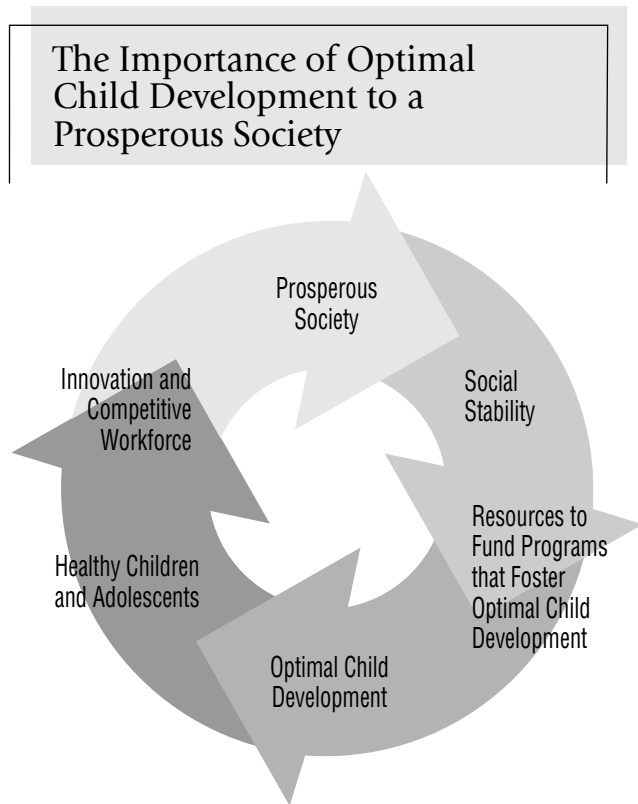
Source: Adapted from a presentation by Dr. Dan Offord at the symposium, Children in a Changing Socio-economic Environment, Ottawa, October 1, 1994.

the ability to gauge how well they support optimal child development.[1] The Understanding the Early Years research project is working with selected communities across Canada to increase their capacity to gather information on community factors that may impact child developmental outcomes.

Understanding the Early Years (UEY)

Understanding the Early Years (UEY) is a national initiative that provides research information to community leaders so that they may make informed decisions about the best policies and most appropriate programs to serve families with young children. Developed by the Applied Research Branch of Human Resources Development Canada (HRDC), UEY builds on the National Longitudinal Survey of Children and Youth (NLSCY) - a joint HRDC and Statistics Canada research program. The NLSCY is the definitive source of national data for research on child development in Canada. Its

purpose is to increase our knowledge about factors affecting child development and well-being. Initial NLSCY research has shown that community factors impact child outcomes, but further research is needed to show the magnitude of this impact and the mechanisms through which it occurs.[3] The purpose of UEY is to help determine the extent and nature of community influences on child development and to enhance community capacity to use this data to create effective, community-based responses.

The UEY initiative uses three research components to profile child development within communities:

- the National Longitudinal Survey of Children and Youth (NLSCY) Community Study;
- the Community Mapping Study (CMS); and
- the Early Development Instrument (EDI).

The NLSCY Community Study

The NLSCY Community Study collects detailed information from families about the use of community resources and the impact of these resources on early child development.

A random sample of families was selected to take part in the NLSCY in Niagara Falls. Selection was based on participation in the EDI. Families provided information about their social and economic backgrounds; their child's health, social, emotional, and behavioural development; and their participation in activities and involvement in the community. Children in this sample group also took part in a direct assessment of cognitive and language ability.[4]

For more information on the NLSCY Community Study, contact the Applied Research Branch of HRDC.[5]

The NLSCY Community Study was administered in Niagara Falls in spring, 2001. The information gathered will be analyzed to determine the relative importance of community factors compared to individual and family factors on child development. A comprehensive UEY report, including NLSCY results, is anticipated from HRDC in spring, 2003.

The Community Mapping Study (CMS)

The CMS gathers information on:
- the physical and socio-economic characteristics of the neighbourhoods in which children live;
- the kinds of programs and services available within a community to children 6 years of age or younger and their parents; and
- the location of these programs in relation to where children live.

The CMS was conducted in Niagara Falls during the spring and summer of 2001. The information gathered will be geographically mapped to provide a visual representation of the city's socio-economic and physical environments. Results will help to determine if resources are distributed close to where children live and if key resources are available to all children. This information is designed to help community leaders plan, prioritize, and allocate efforts so that they can make the best use of their early child development resources. The CMS report is anticipated in spring, 2003.

The Early Development Instrument (EDI)

The EDI was developed by the Canadian Centre for Studies of Children at Risk at McMaster University, and the Hamilton Health Sciences Corporation. The EDI is a checklist of behaviour and development indicators designed to measure the outcomes of children's early years as they influence their readiness to learn at school. The EDI is completed by teachers who use their knowledge and observations of the children in their class to fill out a questionnaire based on five areas, or domains, of child development:

- Physical Health and Well-being;
- Emotional Maturity;
- Social Competence;
- Language and Cognitive Development; and
- Communication Skills and General Knowledge.

The EDI was implemented in all Niagara Falls senior kindergarten classes, within the District School Board of Niagara (DSBN) and the Niagara Catholic District School Board (NCDSB), in February 2001. Results are presented in this report.

Putting it all together

The purpose of UEY is to help communities understand how their children are doing and how best to respond to their needs. When combined, data collected from the EDI, NLSCY and CMS will provide information about how children's family, friends, and community influence their development in terms of their readiness to learn at school. This information will be available to communities and government so that programs, services and policies, that best promote the well-being of children, can be developed.

For more information on the theoretical framework underlying the UEY project and research tools refer to Connor & Brink, 1999.[6]

Understanding the Early Years across Canada

The following communities are sites for UEY research:

- British Columbia: Fraser North, Abbotsford

- Saskatchewan: Prince Albert, Saskatoon

- Manitoba: Winnipeg, South Eastman

- Ontario: Niagara Falls, North York (pilot site), Mississauga

- Quebec: Montreal

- New Brunswick: Hampton

- Prince Edward Island

- Southwestern Newfoundland
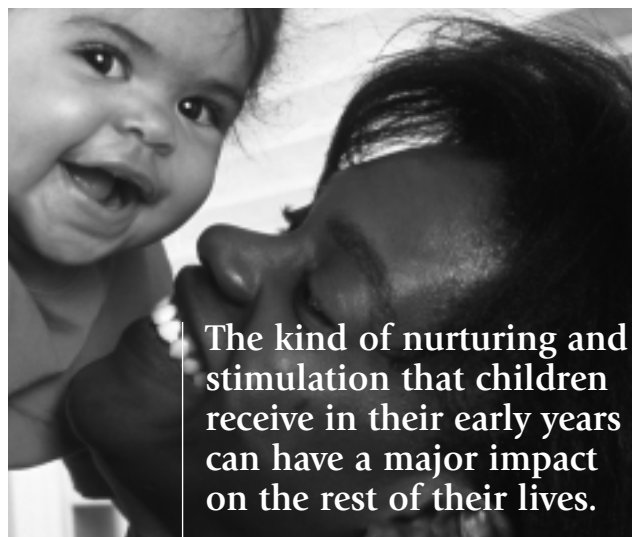
The kind of nurturing and stimulation that children receive in their early years can have a major impact on the rest of their lives.

Readiness to Learn

Children are born ready to learn; their neurosystems are prepared to develop various skills and neuropathways based on the experiences that they receive. Research in early child development and neurobiology provides evidence that the first six years of life lay the foundation for much of the knowledge and skills required for successful school adjustment and later adult competence. This report focuses on specific aspects of child development, or "readiness to learn", as reflected in a child's preparedness for school. Assessing children's readiness to learn upon school entry gives a useful estimate of brain development during the early years and has value in relation to subsequent learning, behaviour, and health[1].

A child's readiness, or developmental status, at the time of transition from home to school, is the result of complex interactions between genetics and environmental factors. While physiological maturation is one aspect of readiness to learn at school, other factors include a child's early experiences, innate abilities and temperament. To be ready to learn at school, children must be able to meet the task demands of a classroom situation such as sitting quietly, listening to the teacher, and assimilating curriculum content. Children who enter the first grade with adequate social and communication skills, the ability to cope with frustration and stress, and age-appropriate motor, language, and cognitive development levels are able to take advantage of learning opportunities offered by school.[2]

Preparing our children for life.

Researchers have found that the early years of development (before birth to age six) set the foundation for competence and coping skills that will affect learning, behaviours, and health throughout life. In fact, children who are "ready to learn" from their first day of school have a greater chance of doing well in school and later in life.[1] When we hear the term "readiness to learn", what often comes to mind is a child's ability to learn to read, write, and do math. These skills are important, but readiness to learn includes much more. Children who enter school ready to learn have developed the ability to get along with others, use basic coping strategies, and are open to new experiences. In short, they are prepared to take advantage of the academic and social opportunities that school presents.

The importance of being ready to learn at school

Research in Canada[7] and the United States[8] has shown that readiness to learn at age six can predict a child's ability to benefit from academic instruction. Academic performance in the early grades is a significant predictor of whether or not a child completes high school.[9] The curriculum in primary school is designed to provide the building blocks for later learning. As a result, children who fail to master basic concepts in the early grades can experience gaps in understanding that prevent them from grasping more advanced concepts later on.[2] It is typical for children who eventually drop out of high school to show academic difficulties and perform poorly on achievement tests as early as grade three.[10]

The consequences of a lack of school readiness extend beyond academic performance. The behavioural expectations of school require that children cooperate with others and communicate their wants, needs, and feelings appropriately. Children who lack these skills at school entry can be disruptive and may resort to behaviours such as physical aggression and bullying.[2] Research has shown that children who behave in this manner run the risk of being rejected by their peers and excluded from group activities.[11] Peer rejection is thought to contribute to low self-esteem and a lack of engagement in school culture and process. Furthermore, Canadian[12] and American[13] studies indicate that a lack of appropriate social skills at the time of school entry is one of the most accurate predictors of delinquent behaviour in early adolescence.

The impact of readiness to learn at school on society

Children who are ready to learn at school are more likely to complete high school, find employment, and become adults who contribute to society as caring citizens, parents, and taxpayers. Children who lack school readiness are more likely to repeat a grade, receive special education services, and leave school before completing their secondary education. A lack of readiness can result in serious consequences and costs to society, including:

- **Increased cost of schooling.** Grade repetition results in increased costs to society.
- **Lost government revenue due to students leaving high school without a diploma**. Lack of secondary education increases the probability of being unemployed. The unemployed do not contribute employment insurance premiums, pay little or no income tax, and tend to pay lower consumption taxes than those who are employed, because they purchase less.
- **Reduced national capacity for global competitiveness.** Economic competitiveness in a global market requires a sufficiently large pool of workers with the appropriate level of knowledge and skills.
- **Limited public access to the necessities of life such as health care, education, and housing.** An important determinant of social stability is whether or not a society has enough suitably qualified workers (i.e. doctors, nurses, teachers, builders, engineers, traders, etc.) to provide essential functions. These jobs require special skills and knowledge that children who are not ready to learn when they start school may never be able to develop, if they don't have the basic skills and behaviours necessary for further education. In most cases, employers now require a minimum of 12 years formal education, and a high school diploma is a necessary prerequisite for further professional training.[2]

The Early Development Instrument (EDI)

Measuring readiness to learn at school

The EDI is a population-based "readiness to learn" measure that assesses children's development at the time they enter the school system, using five developmental domains:

- Physical Health and Well-being;
- Emotional Maturity;
- Social Competence;
- Language and Cognitive Development; and
- Communication Skills and General Knowledge.

The EDI questionnaire is based on a checklist of behaviour and development indicators, as opposed to a particular school curriculum. It looks at a child's ability to meet the task demands of school (being cooperative, sitting quietly, and listening to the teacher), and benefit from the social and educational opportunities provided by school. In doing so, the EDI considers the whole child and reflects the growing recognition of the importance of components that are not always obviously related to academic success, for example, the importance of emotional maturity and of social competence.[2]

Teachers complete the EDI using their knowledge and observations of the children in their class. Although questionnaires are completed for individual children, the data collected is interpreted at a group level. The EDI does not provide diagnostic information on individual children, nor is it designed to measure school or teacher performance. The EDI is a population-based measure that describes how children are developing relative to their peers (other children of the same age in their community) and to their cohorts (other children of the same age in other communities across the country.)

Results for each domain are scored on a scale of zero to ten. Higher scores suggest better outcomes, and a score of ten indicates readiness to learn at school. Ideally, all children should score ten in each of the five domains. This would indicate that they are ready to learn at school before they enter grade one. Realistically, children's scores are more varied and require interpretation at the group level in order to provide community information on child development.

Interpreting EDI results

The EDI is a population measure; rather than making inferences based on a sample of children, it gathers information and creates descriptive profiles based on a defined population. The term population refers to the entire collection or group of subjects that is the focus of a study. The population for this study is comprised of all senior kindergarten children within the District School Board of Niagara (DSBN) and the Niagara Catholic District School Board (NCDSB), in the city of Niagara Falls, in the 2000/2001 school year.

Descriptive statistics examine the characteristics of a given population by measuring each of its subjects and then summarizing the set of measures in various ways. Results of the EDI are descriptive in nature. They summarize children's developmental outcomes in terms of their readiness to learn at school on two levels: macro; and micro.

The **macro** level looks at the average results for a population as a whole (e.g. all children participating in the EDI in the city of Niagara Falls). As the EDI is descriptive rather than inferential, macro level results for Niagara Falls can be compared to macro level results for other populations (e.g. city, region, province, or country). As such, results for the EDI 2001 Cohort (25,487 children in various communities across Canada who participated in the EDI during the 2000/2001 school year) have been included. In the absense of norms, these scores were analyzed using t-tests to determine the statistical significance of differences in the means for the 2001 Cohort and the city of Niagara Falls. Results presented at this level help to develop a broad picture of children's readiness to learn at school, however, they are often too general to create a profile accurate enough to enable specific responses within a community.

The **micro** level of analysis is like taking a magnifying glass to macro level results; it looks at differences within the population being studied. In this report, micro analyses provide a profile of results by neighbourhood study area and examine the distribution of children's scores within the city of Niagara Falls. Again, as the EDI provides a descriptive profile, average results for neighbourhood study areas can be compared to average results for the city, allowing us to see how population scores were distributed and where

EDI Implementation and Analyses In Niagara Falls

Teachers received training on the EDI before completing the tool for each of the senior kindergarten children in their classes – a total of 920 students. The EDI was implemented in February 2001, giving teachers several months of prior observations and classroom interactions on which to base responses to the questionnaire. Parents/guardians of the children studied were informed by letter, and passive consent was exercised.

Once completed, questionnaires were sent to the Canadian Centre for Studies of Children at Risk, McMaster University, for analysis. Results for each of the five EDI domains were scored on a scale ranging from zero to ten, with higher scores suggesting better outcomes, and a score of ten indicating readiness to learn at school. Allowances were made for 25% of the questions, per domain, to be left blank or answered "don't know". Anything over 25% was considered invalid for that domain and the domain was excluded. Questionnaires with two or more invalid domains were excluded. As a result, the total number of valid scores for participants may vary across domains.

To uphold student confidentiality, EDI forms were coded and children's names were not included on questionnaires. However, students' postal codes were included in the EDI database. This enabled results to be summarized by neighbourhood. UEY research is focused on community factors that impact on child development. Examining EDI results by neighbourhood provides a more accurate picture of child development by relevant geographic area, as well as information to assist communities in the mobilization of resources.

In order to define the geographic area, Niagara Falls was initially divided into eleven neighbourhood study areas that corresponded to the divisions used by the Planning and Development Department of the City of Niagara Falls. Due to the low population of children aged 0-6 in several areas, the initial divisions were

Assessing "readiness to learn" gives a useful estimate of brain development during the early years and has value in relation to subsequent learning, behaviour, and health[1].

children in particular neighbourhoods appeared ready to learn while others seemed to be experiencing difficulty in relation to their peers.

At both the macro and micro levels, the purpose of the EDI is to profile early development by reporting on populations of children at the community level. EDI findings are intended to:

- help communities assess how well they are supporting young children and their families;
- assist community agencies with the mobilization of resources to improve the developmental outcomes of children in their first five years of life, so that they will be able to enter school ready to learn, benefit from education, and participate in activities offered in the school environment;
- help schools with resource planning by indicating areas of strengths to be cultivated, and pointing to areas of difficulty that need to be addressed in order to support the learning outcomes of children entering grade one; and
- assist communities in monitoring change and outcomes in terms of early child development.

collapsed, resulting in six (6) neighbourhood study areas (see Appendix A for map):

- Beaverdams;
- Chippawa/Rural;
- Drummond/Victoria;
- Elgin;
- Stamford; and,
- Westlane.

Neighbourhood study area results

EDI domain results for the city of Niagara Falls were scored on a scale of zero to ten, with higher scores indicating better readiness to learn skills. Each domain scale was then divided into percentiles, based on the distribution of city scores. Postal codes were used to take results out of the school context in which they were gathered, and examine them according to the neighbourhoods in which children lived. Neighbourhood mean scores were determined by consolidating the domain scores of children living in each of the study areas. The percentile thresholds for the city of Niagara Falls were applied to the neighbourhood study areas. This redistribution was designed to help with interpretation of the EDI at the neighbourhood level.

Comparing city and neighbourhood means

Neighbourhood means provide a first-glance indication of general development across domains; where the overall strengths of specific neighbourhoods lie, as well as areas for improvement. Looking at neighbourhood means alongside city means provides an indication of how children in a particular neighbourhood are doing in comparison to the city as a whole. If a neighbourhood average is higher than, or close to, the Niagara Falls average on a particular domain, children in that neighbourhood are, on average, doing well in relation to their peers. If a neighbourhood average on a particular domain is lower than that of Niagara Falls, there are a number of children in that neighbourhood who are lagging behind their peers. Similar comparisons can be made between the city of Niagara Falls as a whole, and the 2001 Cohort.

Interpreting Percentile Scores

"Below the 10th percentile – Vulnerable"

Children who scored in the lowest (poorest) 10% of scores encountered in Niagara Falls are said to have scored "below the 10th percentile". Scores this low indicate that children may have difficulties that could affect their experiences at school. Children who scored in the lowest 10% on one domain will not necessarily have difficulty, but they are considered to be vulnerable in terms of readiness to learn skills. The risk of future difficulty is increased for children who scored "below the 10th percentile" on two or more EDI domains.

"Between the 10th and 25th percentile – Poor"

While these scores are not the lowest encountered in Niagara Falls, they are still poor in terms of readiness to learn skills, positioned only one percentile division above vulnerability.

"Above the 75th percentile – Excellent"

Children who scored in the top 25% of scores for the city are referred to as being "above the 75th percentile". Scores this high are considered to be excellent, and indicate strong readiness to learn skills.

The Niagara Falls EDI Study

Niagara Falls Macro Level Results

Data for the 2001 Cohort were supplied by McMaster University. Children classified as having special needs were excluded. While the 2001 Cohort provides a means of comparing children in Niagara Falls to other 5-6 year old children across Canada, it should be noted that this population is not truly national, nor is it representative.

(See Appendix B for background information on the Niagara Falls and 2001 Cohort populations).

Percentile thresholds, or cut-off points, are relative and based on the distribution of scores for the population being assessed. This means that the 10th percentile threshold for Niagara Falls is based on all scores encountered within the city of Niagara Falls; similarly, the 10th percentile threshold for the 2001 Cohort is based on all scores encountered in the 2001 Cohort (see Table 1 and Table 2 for percentile threshold scores). While this means that thresholds may vary across populations, the important thing to keep in mind is that if the distribution of scores were even within populations, regardless of their respective threshold score, we would expect 10% of children to score below the 10th percentile on each EDI domain.

Overall, children in Niagara Falls scored either slightly better, or as well, children in the 2001 Cohort with the exception of the Social Competence and Emotional Maturity domains, where Niagara Falls children scored lower. A statistically significant ($p<0.05$) difference in scores was found in the Emotional Maturity domain.

Closer examination of results shows that 28.5% of children in Niagara Falls were vulnerable in terms of readiness to learn skills (compared to 26.3% of children in the 2001 Cohort).

- 11.2% of children in Niagara Falls scored below the 10th percentile on one readiness to learn domain (compared to 13.2% of children in the 2001 Cohort); while

- 17.3% of children in Niagara Falls scored below the 10th percentile on two or more readiness to learn domains (compared to 13.1% of children in the 2001 Cohort).

> **We need to answer the question "How are our children doing now?" before we know how to help them do better in the future.**

Table 1: EDI domain means and percentile thresholds for the 2001 Cohort

EDI Domain	Mean	Percentile Threshold Scores			
	N = 25487	75%	50%	25%	10%
Physical Health and Well-being	8.77	9.62	9.04	8.13	7.31
Social Competence	8.32	9.71	8.85	7.31	5.67
Emotional Maturity	8.04	9.07	8.33	7.17	6.00
Language and Cognitive Development	8.28	9.62	8.85	7.69	5.77
Communication Skills and General Knowledge	7.70	9.44	8.06	6.39	5.00

Note: Mean age of child 5.6 yrs. Age range 4.2 - 6.8 yrs. Children with known special needs excluded.

Table 2: EDI domain means and percentile thresholds for Niagara Falls

EDI Domain	Mean	Percentile Threshold Scores			
	N= 849	75%	50%	25%	10%
Physical Health and Well-being	8.78	9.61	9.04	8.18	7.31
Social Competence	8.14	9.61	8.65	7.06	5.58
Emotional Maturity	* 7.72	8.93	7.96	6.96	5.54
Language and Cognitive Development	8.29	9.61	8.84	7.69	5.77
Communication Skills and General Knowledge	7.78	9.44	8.06	6.67	5.28

Note: Mean age of child 5.6 yrs. Age range 4.6 - 6.6 yrs. Children with known special needs excluded.
       * Statistically significant difference when compared to 2001 Cohort; p<0.05

Figure 2: EDI mean scores by domain
2001 cohort (N=25487) and Niagara Falls (N=849)

■ Niagara Falls ☐ 2001 Cohort

* Statistically significant difference; p<0.05.
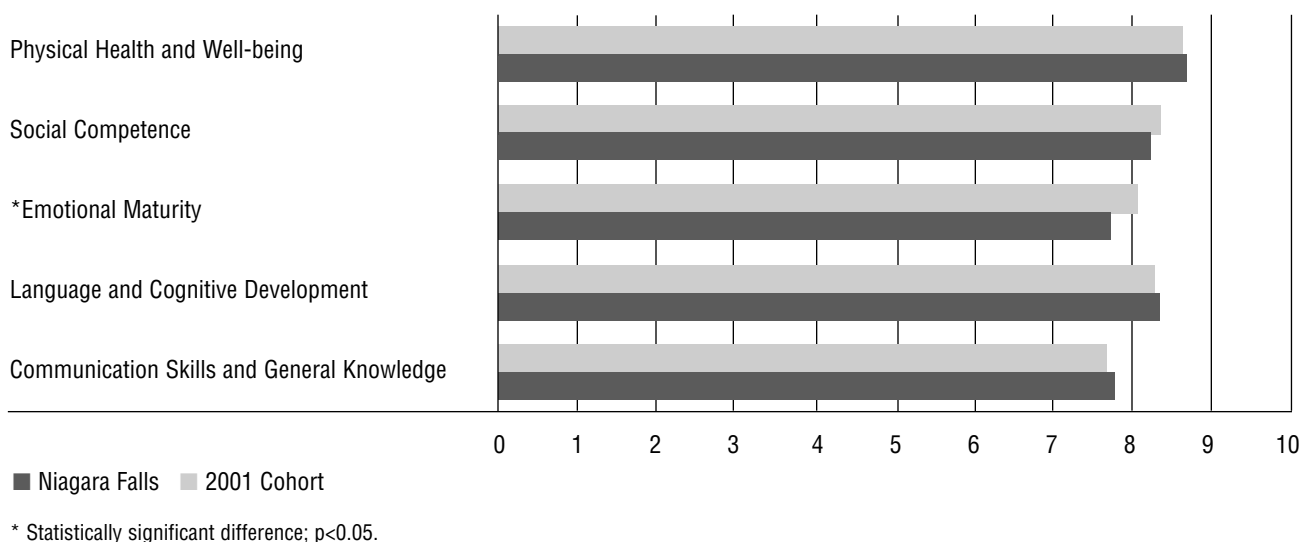
Niagara Falls Micro Level Results

Table 3: EDI means for the 2001 Cohort, Niagara Falls and Neighbourhood Study Areas

EDI Domain	2001 Cohort N=25487	Niagara Falls N=849	Beaverdams N=150	Chippawa/ Rural N=59	Drummond/ Victoria N=217	Elgin N=107	Stamford N=169	Westlane N=113
Physical Health and Well-being	8.77	8.78	9.05	8.88	8.64	8.69	8.8	8.54
Social Competence	8.32	8.14	8.51	8.24	7.80	8.40	8.03	7.96
Emotional Maturity	8.04	* 7.72	8.04	7.68	7.57	7.80	7.81	7.31
Language and Cognitive Development	8.28	8.29	8.73	8.78	7.61	8.21	8.21	8.82
Communication Skills and General Knowledge	7.70	7.78	7.99	8.21	7.46	7.92	7.96	7.36

Note: Average scores on scale of 0-10 with higher scores indicating better readiness to learn skills.
   * Statistically significant when compared to 2001 Cohort; p<0.05.

Domain scales

This section examines each of the five EDI domains separately. The number of children in each neighbourhood study area is listed as (N=). Neighbourhood scores for each domain were analyzed according to five percentile boundaries based on the distribution of scores for the city of Niagara Falls. These boundaries reflect children's levels of readiness to learn at school relative to their peers.

Table 4: EDI percentile boundaries

Percentile boundary	Level of readiness to learn at school
Above the 75th percentile	Excellent
Between the 51 – 75th percentile	Good
Between the 26 – 50th percentile	Satisfactory
Between the 10 – 25th percentile	Poor
Below the 10th percentile	Vulnerable

In order to show overall strengths and highlight areas that indicated a need for improvement, the focus of this report is on the "Above the 75th percentile" (excellent), "Between the 10 –25th percentile" (poor), and "Below the 10th percentile" (vulnerable). A full account of percentile results can be found in Appendix D.

If the distribution of scores across neighbourhoods were even, we would expect that:

- 10% of children in a given neighbourhood would fall within the lowest 10th percentile;
- 15% of children would fall within the 10 – 25th percentile; and
- 25% of children would score above the 75th percentile.

Neighbourhood results in Niagara Falls show that this was not the case. While there were neighbourhoods where the distribution of scores was as expected, in other neighbourhoods the proportion of children scoring within a particular percentile boundary was higher or lower than expected.

With this information – communities will put in place action plans that will help children – both before and after they enter school – reach their full potential.
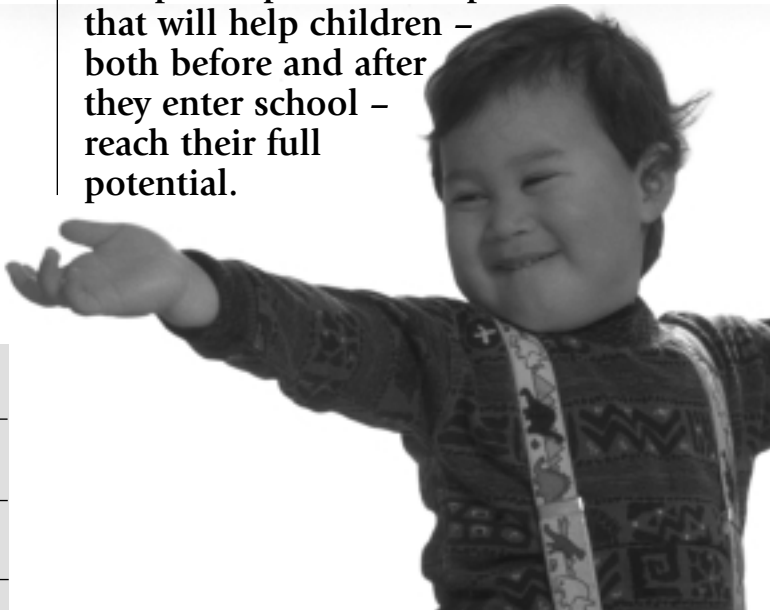
Readiness to Learn Profiles

EDI domain scales are accompanied by Readiness to Learn Profiles. These profiles are community specific and pertain to the city of Niagara Falls. They describe, in terms of skills and behaviour, an average child with EDI scores falling within a specific range. Profiles are based on close examination of EDI results and are intended to provide a realistic picture of senior kindergarten children, based on their score on a particular domain.

Again, three sets of scores are highlighted for each domain, based on the percentile thresholds for the city of Niagara Falls. The first set makes up the high end of the scale and includes children who scored above the 75th percentile on a domain. These children's scores are considered to be excellent, relative to their peers.

The other two ranges represent children who were not doing as well. Children who fell between the 10th and 25th percentile on a domain exhibited relatively poor readiness to learn skills. Children who scored below the 10th percentile, or in the lowest 10% of scores encountered on a domain, are considered to be vulnerable; while scoring poorly on one domain does not necessarily indicate a problem, children who scored in the lowest 10% on two or more domains are at increased risk for future difficulty at school.

Physical Health and Well-being

Physical health is often thought of in terms of being disease-free. A child's ability to resist common infection is certainly important as frequent absences from school due to illness in the early grades may result in a failure to learn the basics needed for more advanced academic work. However, physical health and well-being involves more than freedom from illness or impairment; it also includes adequate energy levels to concentrate on school activities, and age-appropriate motor skills.[2]

Kindergarten and grade one tasks require physical coordination such as controlling a pencil and turning the pages of a book without tearing them. Schools operate on the assumption that five-year old students have such skills. A child who lacks age-appropriate motor skills may become discouraged and develop a negative self-image. If this causes the child to withdraw from classroom activities, he or she may lose important opportunities to practice and learn.[2]

Teacher observations for the EDI Physical Health and Well-Being domain included:

- fine and gross motor skills;
- daily living skills, washroom independence;
- adequate energy levels for classroom activities;
- daily preparedness for school (tired, late, hungry); and
- established handedness.

Figure 3: Mean scores on Physical Health and Well-being

Westlane N=113
Stamford N=169
Elgin N=107
Drummond/Victoria N=217
Chippawa/Rural N=59
Beaverdams N=148
Niagara Falls N=849
2001 Cohort N=25487

0 1 2 3 4 5 6 7 8 9 10

Theoretical range of scores: 0-10.

Higher scores indicate better readiness to learn skills.

Actual range of scores encountered in Niagara Falls: 3.08-10.00
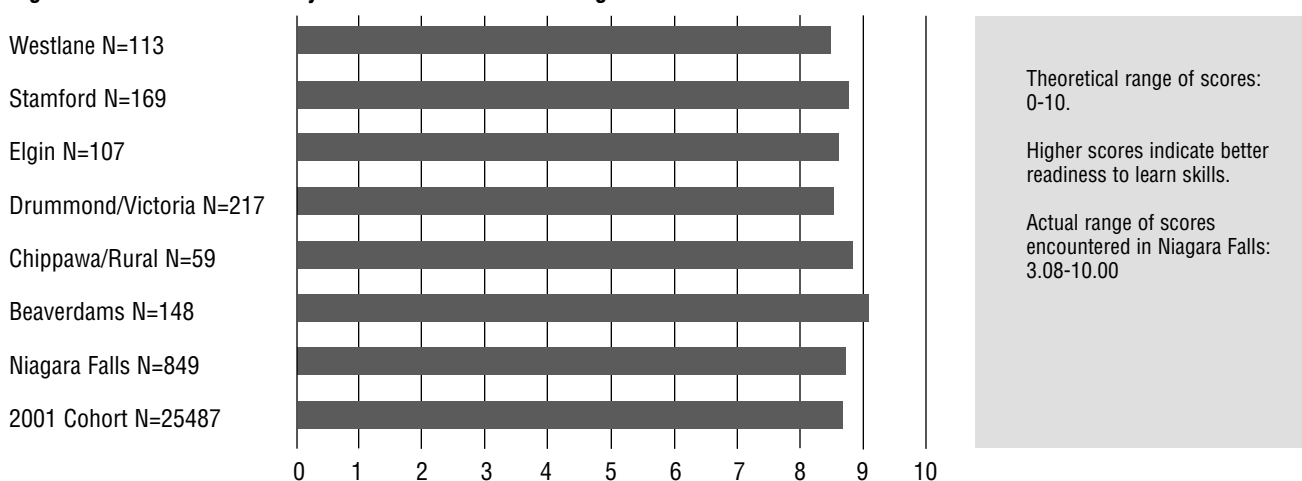
Figure 4: Distribution of children in the lowest 25th percentile – Physical Health and Well-Being

Westlane
Stamford
Elgin
Drummond/Victoria
Chippawa/Rural
Beaverdams

0% 5% 10% 15% 20% 25% 30% 35% 40% 45% 50%

■ Below the 10th percentile   ■ 10 - 25th percentile
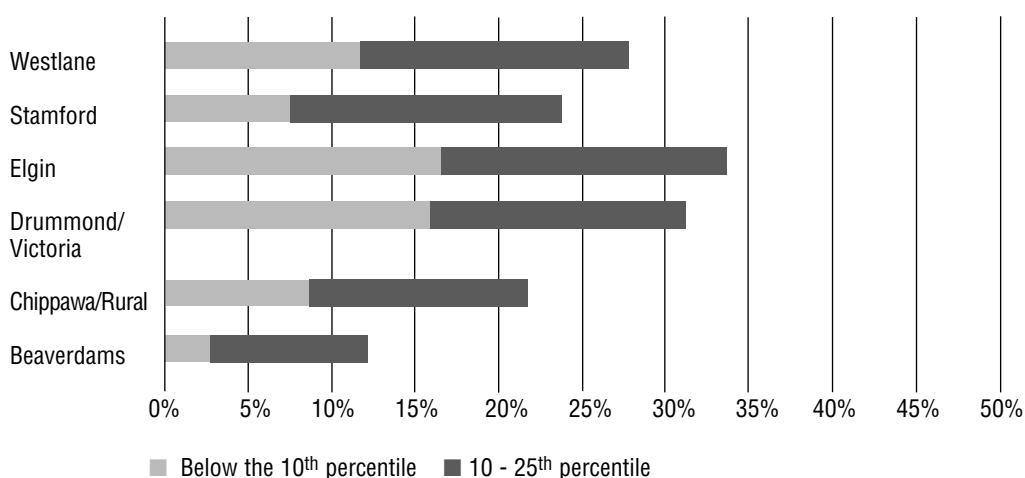
Physical Health and Well Being Readiness to Learn Profile

A

Above the 75th percentile, or best 25% (scoring between 9.61 -10.00)

These children were always physically ready to tackle the new day at school; generally independent; and had good or excellent motor skills.

If the distribution of scores were even, we would expect 25% of children to score above the 75th percentile.

Distribution of Physical Health and Well-being scores in Niagara Falls study areas

Percentile Boundary	Beaverdams	Chippawa/ Rural	Drummond/ Victoria	Elgin	Stamford Victoria	Westlane
Percentage of children scoring above the 75th percentile **Excellent**	25%	33.9%	24.4%	33.6%	25.4%	15.9%

B

Between the 10th and 25th percentile (scoring between 7.32-8.18)

These children had mostly average fine and gross motor skills and an occasional problem with being prepared for the school day by being late or arriving hungry.

If the distribution of scores were even, we would expect 15% of children to fall within the 10 – 25th percentile.

Distribution of Physical Health and Well-being scores in Niagara Falls study areas

Percentile Boundary	Beaverdams	Chippawa/ Rural	Drummond/ Victoria	Elgin	Stamford	Westlane
Percentage of children scoring in the 10-25th percentile **Poor**	10.2%	13.5%	15.2%	16.8%	16%	16.8%

C

Below the 10th percentile, or poorest 10% (scoring 7.31 or less)

These children had average or poor fine and gross motor skills. They were sometimes tired or hungry; usually clumsy; occasionally still sucked their thumbs; had flagging energy levels; and average or poor overall physical development.

If the distribution of scores were even, we would expect 10% of children to fall below the 10th percentile.

Distribution of Physical Health and Well-being scores in Niagara Falls study areas

Percentile Boundary	Beaverdams	Chippawa/ Rural	Drummond/ Victoria	Elgin	Stamford	Westlane
Percentage of children scoring below 10th percentile **Vulnerable**	2%	8.5%	16.1%	16.8%	7.7%	11.5%

Social Competence

To participate in a classroom setting, children need: an awareness of the general standards of acceptable behaviour; the ability to control their behaviour; appropriate respect for adult authority; and skills to communicate their feelings in acceptable ways. Research has shown that children who exhibit appropriate classroom behaviour in grades one and two perform better in reading and math than children who lack adequate classroom skills.[14] On the other hand, disruptive classroom behaviour in the early grades can predict poor high school performance, even when children's IQ levels are taken into account.[15]

Children also need social skills to get along with their peers. The ability to establish and maintain positive relationships with classmates during the first few weeks of school is directly related to children's success in adjusting to school.[16] To get along successfully with classmates, children need social skills such as the ability to negotiate instead of using aggression, and the ability to enter a group that is already engaged in an activity without disrupting it. Failure to develop the social skills necessary for positive peer interaction by early elementary school has been linked to behaviour that leads to peer rejection.[17] Lack of cooperation and aggressive behaviour in children can persist over time and across settings, resulting in continued peer rejection, even if children change peer groups.[18]

Teacher observations for the Social Competence domain on the EDI included:

- curiosity about the world;
- eagerness to try new experiences;
- knowledge of standard of acceptable behaviour in a public place and self control with regards to behaviour;
- ability to follow rules;
- ability to cooperate, play, and work with other children; and
- appropriate respect for adult authority.

Figure 5: Mean scores on Social Competence

Theoretical range of scores: 0-10.

Higher scores indicate better readiness to learn skills.

Actual range of scores encountered in Niagara Falls: 0.96-10.00
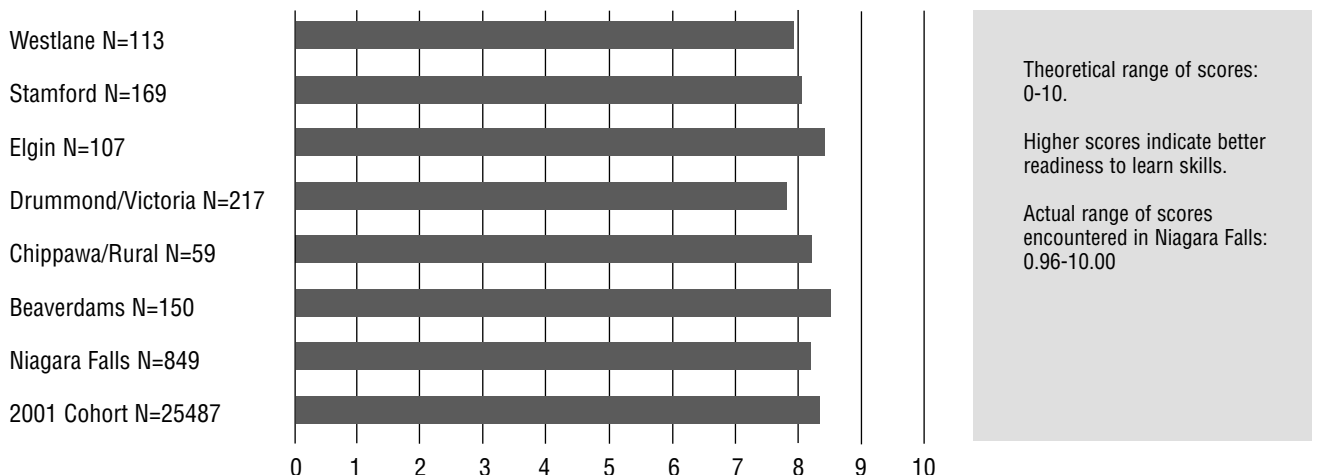
Figure 6: Distribution of children in the lowest 25th percentile on Social Competence

Below the 10th percentile   10-25th percentile
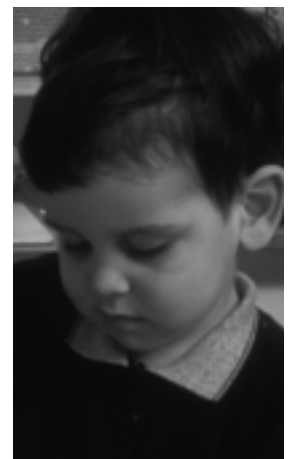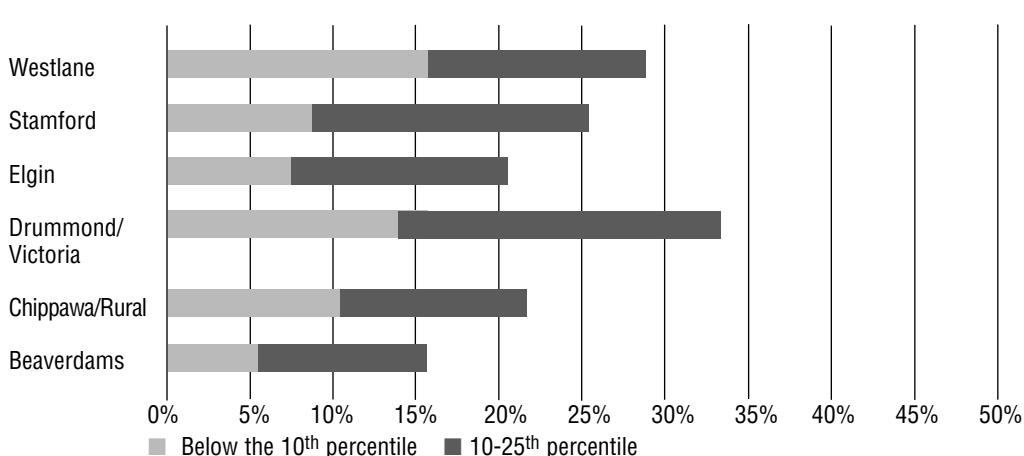
Social Competence Readiness to Learn Profile

A

Above the 75th percentile, or best 25% (scoring between 9.61-10.00)

These children never had a problem getting along, working, or playing with other children; they were respectful to adults; self-confident; had no difficulty following class routines; and were capable of pro-social behaviour.

If the distribution of scores were even, we would expect 25% of children to score above the 75th percentile.

Distribution of Social Competence scores in Niagara Falls study areas

Percentile Boundary	Beaverdams	Chippawa/Rural	Drummond/Victoria	Elgin	Stamford	Westlane
Percentage of children scoring above the 75th percentile **Excellent**	28%	23.7%	25.3%	26.2%	22.5%	21.2%

B

Between the 10th and 25th percentile (scoring between 5.59-7.06)

This group included a range of children with mostly average social skills. They had occasional problems getting along or cooperating with other children. They also had occasional problems with following rules and directions; self-confidence; self-control; accepting responsibility; and solving problems and working independently.

If the distribution of scores were even, we would expect 15% of children to fall within the 10 – 25th percentile.

Distribution of Social Competence scores in Niagara Falls study areas

Percentile Boundary	Beaverdams	Chippawa/Rural	Drummond/Victoria	Elgin	Stamford	Westlane
Percentage of children scoring in the 10-25th percentile **Poor**	10.3%	11.8%	19.4%	13.1%	16.5%	13.3%

C

Below the 10th percentile, or poorest 10% (scoring 5.58 or less)

These children had average or poor overall social skills, with regular serious problems in more than one of the following areas: cooperating with other children; accepting responsibility for their actions; and/or following rules and class routines. They may also have had problems with respect for adults and children, self-confidence, self-control, and adjustment to change. They were usually unable to work independently.

If the distribution of scores were even, we would expect 10% of children to fall below the 10th percentile.

Distribution of Social Competence scores in Niagara Falls study areas

Percentile Boundary	Beaverdams	Chippawa/Rural	Drummond/Victoria	Elgin	Stamford	Westlane
Percentage of children scoring below 10th percentile **Vulnerable**	5.3%	10.2%	13.8%	7.5%	8.9%	15.9%

Emotional Maturity

Children who are ready for school have self-confidence and a positive approach to new experiences. Emotionally mature children can, for the most part, balance a curiosity about the world and an eagerness to try new experiences with an age appropriate ability to reflect before acting. Children who lack self-confidence spend time and energy dealing with the fear of failure. If they are fearful and reluctant to try new activities, children may miss out on learning opportunities. Children who are too impulsive may fail to perceive all aspects of a task, and as a result, not fully understand what is required of them.[2]

Important factors for Emotional Maturity and school readiness include:

- the ability to defer immediate gratification;
- persistence in repetitive but necessary tasks such as sounding out words; and
- the ability to cope with small failures and upsets without tears or anger that might affect continued concentration and prevent children from learning from their mistakes.[19]

Teacher observations for the Emotional Maturity domain on the EDI included:

- pro-social behaviour (helping, tolerance, empathy);
- aggressive behaviour;
- anxiety; and
- hyperactivity, inattention, and impulsiveness.

Figure 7: Mean scores on Emotional Maturity

Theoretical range of scores: 0-10.

Higher scores indicate better readiness to learn skills.

Actual range of scores encountered in Niagara Falls: 0.34-10.00

* Statistically significant when compared to 2001 Cohort; p<0.05
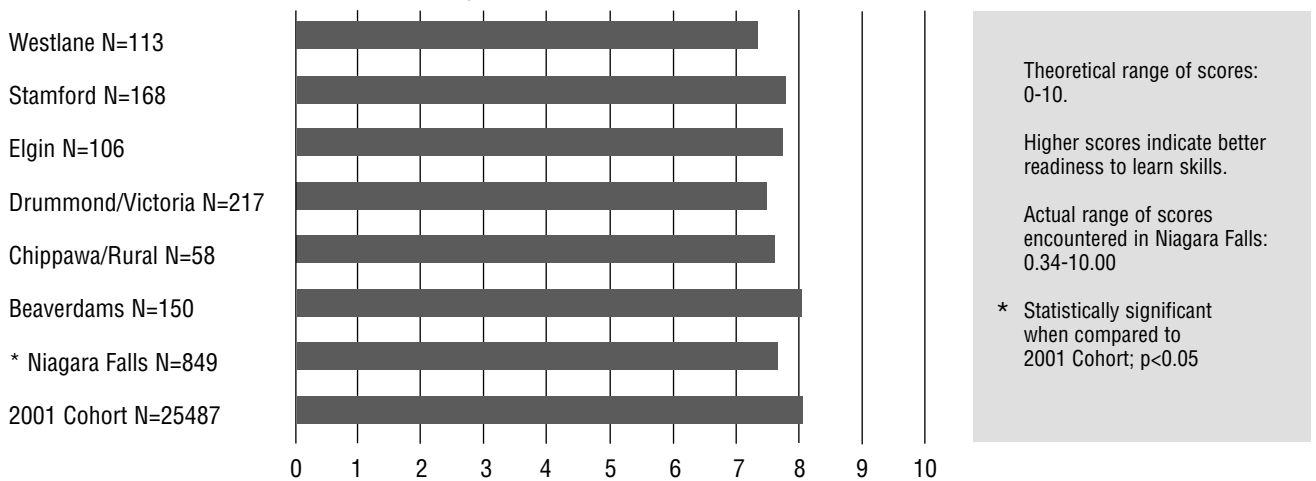
Figure 8: Distribution of children in the lowest 25th percentile on Emotional Maturity

- Below the 10th percentile
- 10-25th percentile
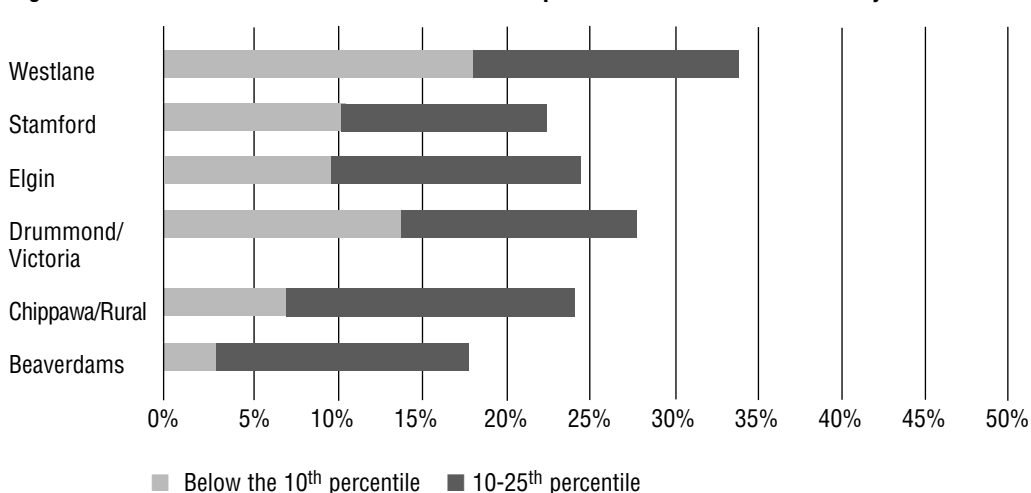
Emotional Maturity Readiness to Learn Profile

Above the 75th percentile, or best 25% (scoring between 8.93 -10.00)

These children almost never showed aggressive, anxious, or impulsive behaviour; had a good ability to concentrate; and were often helping other children.

If the distribution of scores were even, we would expect 25% of children to score above the 75th percentile.

Distribution of Emotional Maturity scores in Niagara Falls study areas

Percentile Boundary	Beaverdams	Chippawa/ Rural	Drummond/ Victoria	Elgin	Stamford	Westlane
Percentage of children scoring above the 75th percentile **Excellent**	24%	20.7%	24%	24.5%	28%	20.4%

Between the 10th and 25th percentile (scoring between 5.55 –6.96)

These children were occasionally disobedient or showed aggressive behaviour. They may have been inattentive or easily distractible; fearful or worried; upset when left by their caregiver; and/or insensitive to other children's distress.

If the distribution of scores were even, we would expect 15% of children to fall within the 10 – 25th percentile.

Distribution of Emotional Maturity scores in Niagara Falls study areas

Percentile Boundary	Beaverdams	Chippawa/ Rural	Drummond/ Victoria	Elgin	Stamford	Westlane
Percentage of children scoring in the 10-25th percentile **Poor**	15.3%	17.2%	14.2%	15.1%	12.5%	15.9%

Below the 10th percentile, or poorest 10% (scoring 5.4 or less)

These children had regular problems managing aggressive behaviour; were prone to disobedience; and/or were easily distractible, inattentive, and restless. They were usually unable to show spontaneous helping behaviour towards other children; were occasionally fearful or nervous; and sometimes upset when left by their caregiver.

If the distribution of scores were even, we would expect 10% of children to fall below the 10th percentile.

Distribution of Emotional Maturity scores in Niagara Falls study areas

Percentile Boundary	Beaverdams	Chippawa/ Rural	Drummond/ Victoria	Elgin	Stamford	Westlane
Percentage of children scoring below 10th percentile **Vulnerable**	2.7%	6.9%	13.4%	9.4%	10.1%	17.7%

Language and Cognitive Development

Language skills at school entry are related to later academic achievement. Research from Canada and the United States reports that children's oral language level in kindergarten accounts for between 30% and 40% of later reading ability.[20] Vocabulary size, and the ability to name letters and attend to the component sounds within words seem to be particularly important.[21]

Cognitive – or thinking – skills involve the ways in which children perceive, organize, and analyze information in their environment. Children need adequate cognitive skills in order to retain and retrieve information and effectively explore new experiences. The cognitive skills required at school entry include: age appropriate numeracy skills (counting and sorting); the ability to understand similarities and differences between groups of objects; and the ability to remember specific pieces of information and recite them back.[2] Research indicates that cognitive skill levels prior to school entry predict later academic success.[22]

Teacher observations for the Language and Cognitive Development domain included:

- interest in books, reading, and language related activities;
- age-appropriate reading and writing skills;
- interest in simple math-related activities;
- age-appropriate numeracy skills;
- ability to understand similarities and differences; and
- ability to recite specific pieces of information from memory.

Figure 9: Mean scores on Language and Cognitive Development

Westlane N=112
Stamford N=169
Elgin N=107
Drummond/Victoria N=217
Chippawa/Rural N=59
Beaverdams N=150
Niagara Falls N=849
2001 Cohort N=25487

Theoretical range of scores: 0-10.

Higher scores indicate better readiness to learn skills.

Actual range of scores encountered in Niagara Falls: 0.38-10.00
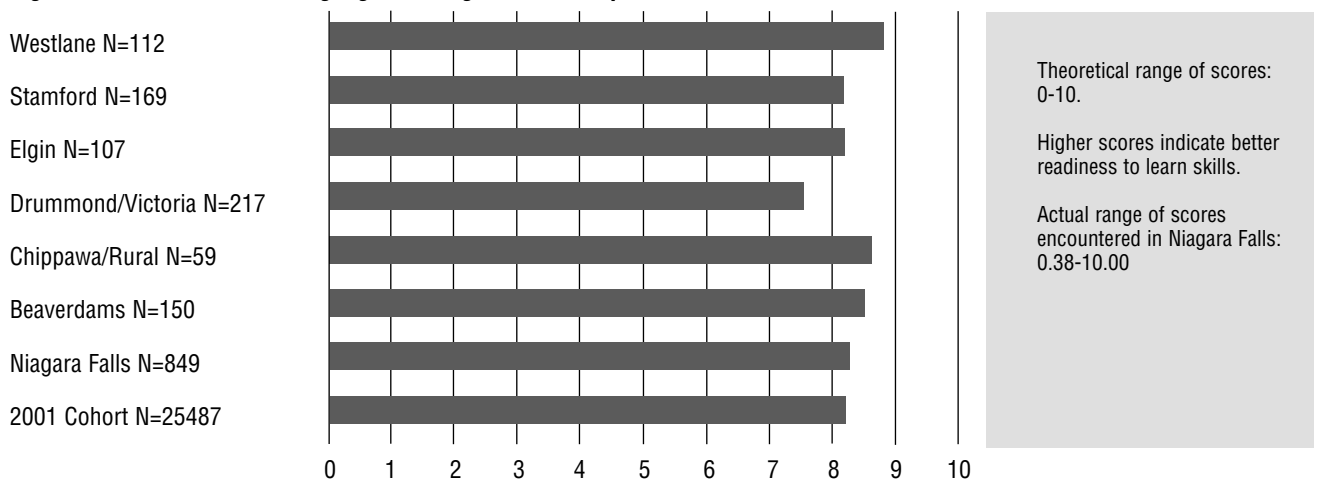
Figure 10: Distribution of children in the lowest 25th percentile on Language and Cognitive Development

Westlane
Stamford
Elgin
Drummond/Victoria
Chippawa/Rural
Beaverdams

■ Below the 10th percentile ■ 10-25th percentile
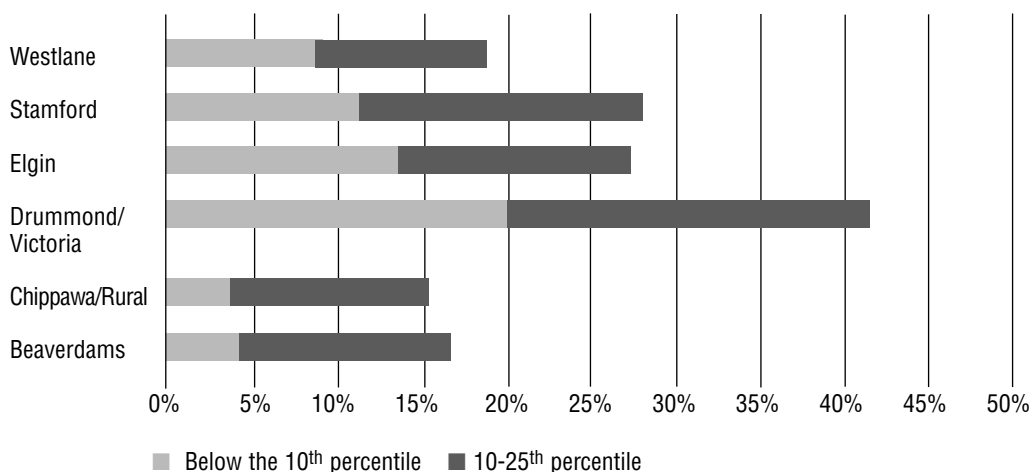
Language and Cognitive Development Readiness to Learn Profile

A

Above the 75th percentile, or best 25% (scoring between 9.61 - 10.00)

These children were interested in books, reading, writing, and rudimentary maths. They were capable of reading and writing simple and sometimes complex words, and could count and recognize numbers and geometric shapes.

If the distribution of scores were even, we would expect 25% of children to score above the 75th percentile.

Distribution of Language and Cognitive Development scores in Niagara Falls study areas

Percentile Boundary	Beaverdams	Chippawa/ Rural	Drummond/ Victoria	Elgin	Stamford	Westlane
Percentage of children scoring above the 75th percentile **Excellent**	36%	52.5%	16.1%	21.5%	21.3%	46.4%

B

Between the 10th and 25th percentile (scoring between 5.78 - 7.69)

These children usually could not read simple words and were not very interested in numbers, reading or writing (yet they were often able to write their own name). They were often unable to attach sounds to letters, and may have had occasional problems with remembering things.

If the distribution of scores were even, we would expect 15% of children to fall within the 10 – 25th percentile.

Distribution of Language and Cognitive Development scores in Niagara Falls study areas

Percentile Boundary	Beaverdams	Chippawa/ Rural	Drummond/ Victoria	Elgin	Stamford	Westlane
Percentage of children scoring in the 10-25th percentile **Poor**	13.3%	11.9%	22.1%	15.9%	18.4%	11.6%

C

Below the 10th percentile, or poorest 10% (scoring 5.77 or less)

Children in this range had problems with both reading/writing and numeracy, and were unable to read and write the simplest words. They were uninterested in trying, and often unable to identify letters and attach sounds to letters (yet still the majority of this group could write their own name). They also had difficulty with remembering things; counting to 20; recognizing and comparing numbers; and were usually not interested in numbers.

If the distribution of scores were even, we would expect 10% of children to fall below the 10th percentile.

Distribution of Language and Cognitive Development scores in Niagara Falls study areas

Percentile Boundary	Beaverdams	Chippawa/ Rural	Drummond/ Victoria	Elgin	Stamford	Westlane
Percentage of children scoring below 10th percentile **Vulnerable**	4%	3.4%	19.8%	13.1%	11.2%	8%

Communication Skills and General Knowledge

By the time children start school they should be able to understand the verbal communications of adults and other children. In turn, they should also be able to verbally communicate their own experiences, ideas, wishes, and feelings, in a way that can be understood by others.[23] While language skills are important for learning to read and write, and the ability to count is important for beginning arithmetic, other less specific knowledge is also important. Reading readiness requires the knowledge that a story has a beginning, middle and end and an understanding of the ways in which language is symbolically representative.[24] Familiarity with number related toys and board games, such as snakes and ladders, assists children to master basic adding and subtracting.[25]

Teacher observations for the Communication Skills and General Knowledge domain included:

- the ability to communicate one's own needs and understand others;
- clear articulation;
- active participation in story-telling (not necessarily with good grammar and syntax); and
- age-appropriate interest and knowledge about life and the world around us.

Figure 11: Mean scores on Communication skills and General Knowledge

Westlane N=112
Stamford N=169
Elgin N=107
Drummond/Victoria N=217
Chippawa/Rural N=59
Beaverdams N=150
Niagara Falls N=849
2001 Cohort N=25487

0 1 2 3 4 5 6 7 8 9 10

Theoretical range of scores: 0-10.

Higher scores indicate better readiness to learn skills.

Actual range of scores encountered in Niagara Falls: 0.00-10.00
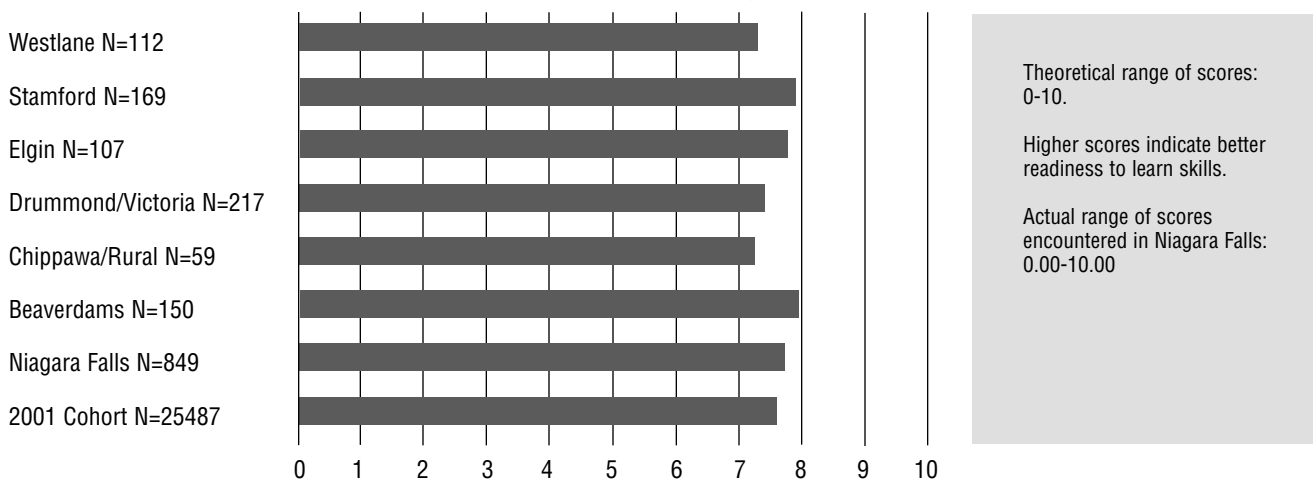
Figure 12: Distribution of children in the lowest 25th percentile on Communication Skills and General Knowledge

Westlane
Stamford
Elgin
Drummond/Victoria
Chippawa/Rural
Beaverdams

0% 5% 10% 15% 20% 25% 30% 35% 40% 45% 50%

▨ Below the 10th percentile   ▨ 10-25th percentile
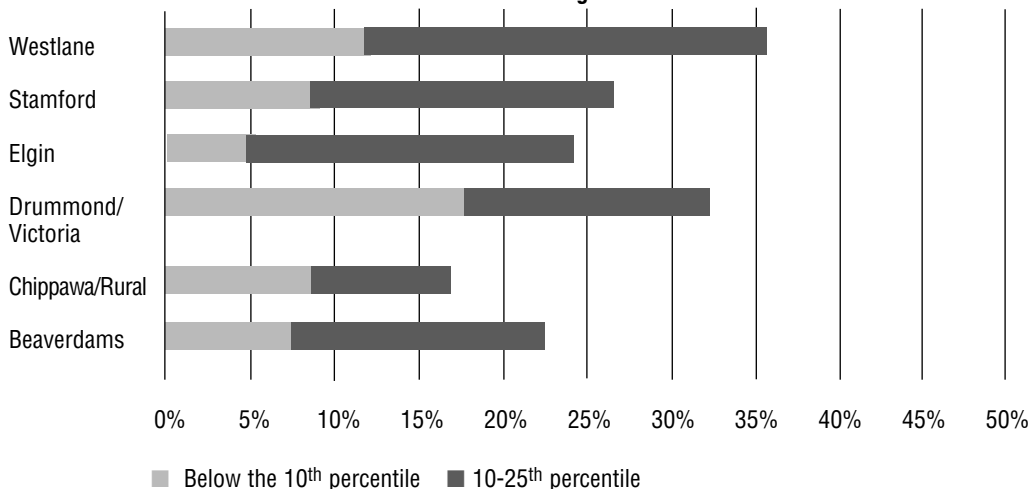
Communication Skills and General Knowledge Readiness to Learn Profile

A

Above the 75th percentile, or best 25% (scoring between 9.44 -10.00)

These children had good or excellent communication skills; could tell a story and communicate with both children and adults; and had no problems with articulation. English was usually their first language.

If the distribution of scores were even, we would expect 25% of children to score above the 75th percentile.

Distribution of Communication Skills and General Knowledge scores in Niagara Falls study areas

Percentile Boundary	Beaverdams	Chippawa/ Rural	Drummond/ Victoria	Elgin	Stamford	Westlane
Percentage of children scoring above the 75th percentile **Excellent**	24%	33.9%	24%	25.2%	21.9%	12.5%

B

Between the 10th and 25th percentile (scoring between 5.29 – 6.67)

Children in this range had good or average communication skills and average articulation, but limited ability to participate in play involving the use of language.

If the distribution of scores were even, we would expect 15% of children to fall within the 10 – 25th percentile.

Distribution of Communication Skills and General Knowledge scores in Niagara Falls study areas

Percentile Boundary	Beaverdams	Chippawa/ Rural	Drummond/ Victoria	Elgin	Stamford	Westlane
Percentage of children scoring in the 10-25th percentile **Poor**	15.4%	8.4%	14.8%	19.6%	18.3%	24.1%

C

Below the 10th percentile, or poorest 10% (scoring 5.28 or less)

These children had poor or average communication skills and articulation. Their command of English was average at best. They had difficulties talking to others; understanding; and being understood. Typically, these children also had poor general knowledge.

If the distribution of scores were even, we would expect 10% of children in any given neighbourhood to fall below the 10th percentile.

Distribution of Communication Skills and General Knowledge scores in Niagara Falls study areas

Percentile Boundary	Beaverdams	Chippawa/ Rural	Drummond/ Victoria	Elgin	Stamford	Westlane
Percentage of children scoring below 10th percentile **Vulnerable**	7.3%	8.5%	17.5%	4.7%	8.3%	11.6%

Neighbourhoods with Increased Needs in Terms of Vulnerability.

Children who scored below the 10th percentile (in the lowest 10% of scores encountered in Niagara Falls) on one domain are considered to be vulnerable in terms of readiness to learn skills. While scoring in the lowest 10% on one domain does not necessarily indicate that a child will experience problems, scoring below the 10th percentile on two or more domains increases a child's risk in terms of difficulty at school.

Neighbourhood study areas that had a greater proportion of children scoring below the 10th percentile on one or more domains, when compared to the city of Niagara Falls, are considered to have increased needs in terms of development, in relation to their peers across the city. Neighbourhood study areas that had a lower proportion of vulnerable children, when compared to the city of Niagara Falls, have relatively decreased needs in terms of development.

Table 5: Proportion of children scoring below the 10th percentile.

	2001 Cohort	Niagara Falls	Beaverdams	Chippawa/Rural	Drummond/Victoria	Elgin	Stamford	Westlane
One domain	*13.2%	11.2%	4 %	11.9%	17.1%	17.8%	11.2%	8.9%
Two or more domains	*13.1%	17.3 %	8%	8.5%	22.6%	13.1%	11.8%	20.4%
Total: One or more domains	*26.3%	28.5%	12%	20.4%	39.7%	30.9%	23%	29.3%

*Based on the local distribution of children within communities across Canada. Local distribution was determined by community specific percentile boundaries.

Figure 13: Proportion of children scoring below the 10th percentile

■ On one domain   ■ On two or more domains
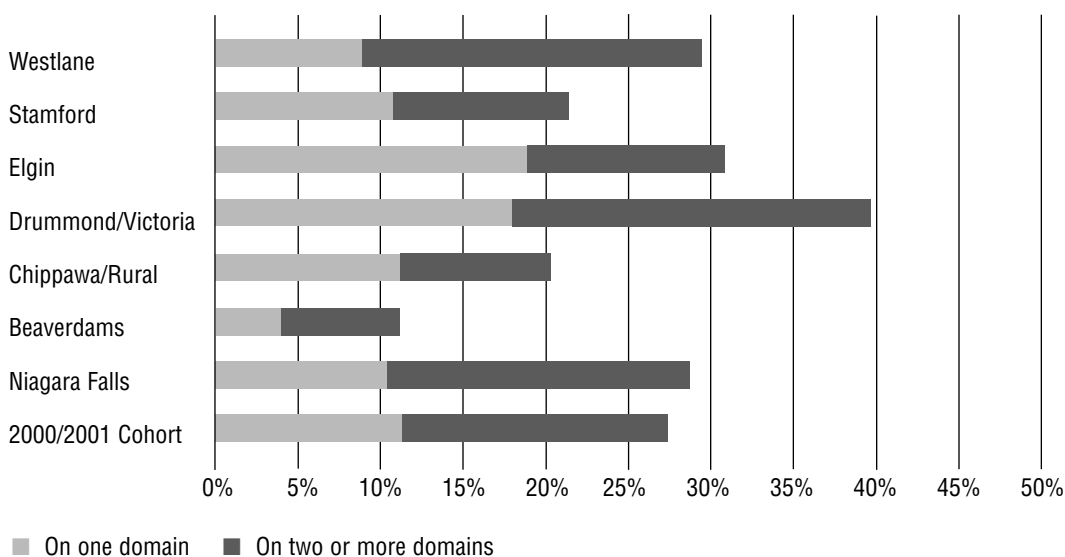
Summary of Findings

The statistics presented in this report are descriptive in nature and are based solely on the application of the EDI. Analyses conducted in Niagara Falls are presented by neighbourhood study area (see Appendix A for map). Neighbourhood scores for each of the EDI domains were compiled by consolidating the scores of children living in each neighbourhood study area. Percentile thresholds are relative and are based on the distribution of scores for their respective population (e.g. the city of Niagara Falls and the 2001 Cohort). Neighbourhood domain scores were divided into percentiles, based on percentile thresholds for the city of Niagara Falls.

Macro level results

Generally, compared with the five-scale averages of the EDI in participating communities across Canada, children in Niagara Falls scored either slightly better, or as well as, children in the 2001 Cohort, with the exception of the Social Competence and Emotional Maturity domains, where Niagara Falls scored lower. A statistically significant difference in scores ($p < 0.05$) was found in the Emotional Maturity domain, where the mean scores for Niagara Falls and the 2001 Cohort were 7.72 and 8.04 respectively.

While results on this level are not very striking:

- 28.5% of children in Niagara Falls scored below the 10th percentile on one or more readiness to learn domains, indicating that they were vulnerable in terms of readiness to learn skills, compared to 26.3% of children in the 2001 Cohort.

These numbers can be further broken down to show:

- 11.2% of children in Niagara Falls scored below the 10th percentile on one readiness to learn domain, compared to 13.2% of children in the 2001 Cohort.

- 17.3% of children in Niagara Falls scored below the 10th percentile in two or more readiness to learn domains, compared to 13.1% of children in the 2001 Cohort. Scoring in the lowest 10% on two or more domains

puts a child at increased risk for future difficulty at school.

Micro level results

The distribution of scores provides insight into the proportion of vulnerable children within neighbourhoods.

- In the city of Niagara Falls, the proportion of children who scored in the lowest 10% on one or more domains varied across neighbourhoods from 12% (Beaverdams) to 39.7% (Drummond/Victoria).

- One half (3 out of 6) of the neighbourhood study areas had increased needs (a greater proportion of children scoring in the lowest 10% on one or more domains) when compared to both the 2001 Cohort and the city of Niagara Falls. These neighbourhoods were: Drummond/Victoria at 39.7%, Elgin at 30.9%, and Westlane at 29.3%, compared to the 2001 Cohort at 26.3%, and the city of Niagara Falls at 28.5%.

- In contrast, three out of the six neighbourhood study areas had a relatively low proportion of vulnerable children when compared to the 2001 Cohort and the city of Niagara Falls. These were Stamford at 23%, Chippawa/Rural at 20.4%, and Beaverdams at 12%.

Results of additional group comparisons

Several additional group comparisons were carried out, based on the Niagara Falls data (Appendix C). These comparisons showed that:

- Girls scored better than boys on all five readiness to learn domains. This is a consistent developmental phenomenon that occurred in all sites where the EDI was implemented.

- On average, children born earlier in the year scored better than children born later in the year. Again, this is a consistent developmental phenomenon that occurred in all sites where the EDI was implemented.

Summary of Findings

- Children with ESL status (English as a second language), and children who were not classified as ESL, but had English as a second language (their English was adequate for school instruction), seemed to do better in the domains of Physical Health and Well-being, Social Competence, and Emotional Maturity than English-speaking children. However, they did worse in the two language related domains – Language and Cognitive Development, and Communication Skills and General Knowledge. While these results are interesting, their interpretation is limited, since non-English speaking children constituted only 5% of the kindergarten population involved in Niagara Falls.

- Data gathered from McMaster University using the EDI shows that children with identified problems who attend early intervention programs generally have significant deficits to make up for, and rarely manage to do so by the end of the kindergarten year. Results in Niagara Falls support this. Children participating in the EDI in Niagara Falls who attended (or were still attending) intervention programs scored significantly lower than other children on four out of five domains of readiness to learn. This is not to suggest that intervention is not effective. Research provides evidence that early intervention increases developmental and educational gains for children. What is important to note is that many studies report that the earlier the intervention, the more effective it is. Developmental gains are greater, and the likelihood of developing problems is reduced when intervention occurs at birth or soon after the diagnosis of a deficit or risk factor.[25] Due to the short time period between birth and school entry, it appears to be essential that intervention begins as early as possible if children are to be helped to overcome deficits and develop to their full potential. Furthermore, the fact that many children do not make up for significant deficits by the age of five suggests that support in the formal school system is needed if these children are to take advantage of the social and academic environment of school.

- Junior Kindergarten attendance significantly improved children's readiness to learn scores; however, the impact – positive or negative – of having attended other preschool programs was inconclusive in this study. The number of children reported as having attended various types of child care was not large enough to allow for comparisons.

Recommendations

The purpose of the EDI is to profile early development by reporting on populations of children at the community level. Community agencies and schools in Niagara Falls have the opportunity to use the EDI findings to assist in resource planning to improve the developmental learning outcomes of children. This report represents a starting point for the Understanding the Early Years research project in Niagara Falls. It provides a sense, both developmentally and geographically, of children's readiness to learn in terms of their preparedness for school. From here, researchers will be able to identify specific areas for further investigation. The following recommend-ations are intended to guide future research in examining readiness to learn in Niagara Falls.
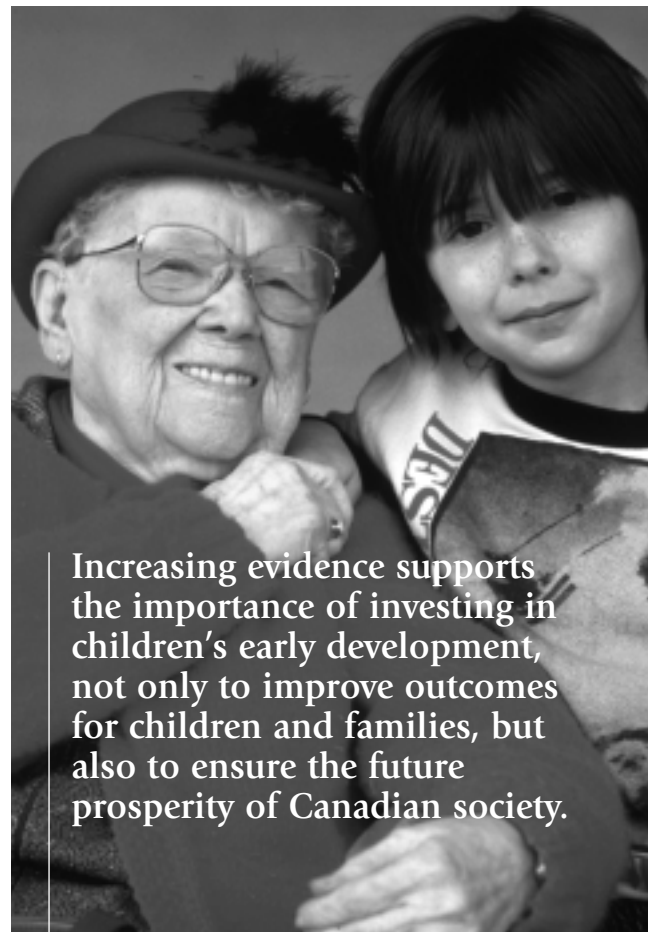

Increasing evidence supports the importance of investing in children's early development, not only to improve outcomes for children and families, but also to ensure the future prosperity of Canadian society.

1. Certain domain scores in some neighbourhoods showed large differences. Scores across all five domains need to be considered when creating a neighbourhood profile. In addition, the goal of a community should be to have all children achieve a score of ten in each of the five domains, indicating that they are ready to learn at school, before they enter grade one. On a pragmatic level, it is useful to look at neighbourhood means in terms of working towards this goal.

2. Given that each of the five EDI domains is made up of several behaviour and development indicators, future research is needed to examine specific characteristics (subsets of indicators within domains) that contributed to low readiness to learn scores in Niagara Falls.

3. In keeping with the 2001 Cohort data supplied by McMaster University, the results of children with identified special needs were excluded from analysis in this report. In order to profile the development of all children in the population that participated in the EDI implementation, further studies should be done based on and/or including these data.

4. Research has shown that both community and family factors impact child outcomes, but further study is needed to show the magnitude of this impact and the mechanisms through which it occurs.[3] In the city of Niagara Falls, the proportion of children who scored in the lowest 10% on one or more domains varied across neighbourhoods from 12% (Beaverdams) to 39.7% (Drummond/Victoria). Further investigation is needed to indicate family and community factors that may influence readiness to learn in these particular neighbourhoods. Two forthcoming companion reports will contribute to this investigation by linking the EDI results with community and family characteristics in Niagara Falls:

■ the Community Mapping Study will look at neighbourhood specific characteristics, as well as data on existing resources and demographics, to try to determine factors that contribute to neighbourhood scores; and

■ The Integrated Report will highlight information about readiness to learn in relation to family and social variables, as well as presenting sample data from cognitive measures.[4]

  Results from the EDI will be compared with data from the CMS and NLSCY Community Study to determine if any patterns exist in Niagara Falls between child development outcomes, and family and community characteristics.

5. Results of additional group comparisons based on the Niagara Falls data (Appendix C) warrant further investigation to explore differences between specific groups within the population studied.

6. Niagara Falls results showed that children who attended Junior Kindergarten had significantly better readiness to learn scores; however, based on the data collected, the impact–positive or negative–of having attended other preschool– programs was inconclusive. The number of children reported as having attended various types of child care was not large enough to allow for comparisons, primarily because teachers did not have access to the type of detailed information about child care found in the EDI. If the EDI is repeated in Niagara Falls, mechanisms for collecting these data must be improved.

7. The EDI provides information at the community level to assist in monitoring change and outcomes in terms of early child development. The 2001 Niagara Falls EDI results established a baseline of children's readiness to learn skills. Planning for future EDI implementation on a three to five year cycle will allow the outcomes of early child development to be tracked, and help assess whether efforts to improve development in the early years have improved outcomes in Niagara Falls.

8. All future research endeavors in the community should have pragmatic as well as sound research methodologies, in order to be useful to policy makers, educators, families, service providers, and governments.

Recommendations

Appendix A

City of Niagara Falls Neighbourhood Study Areas
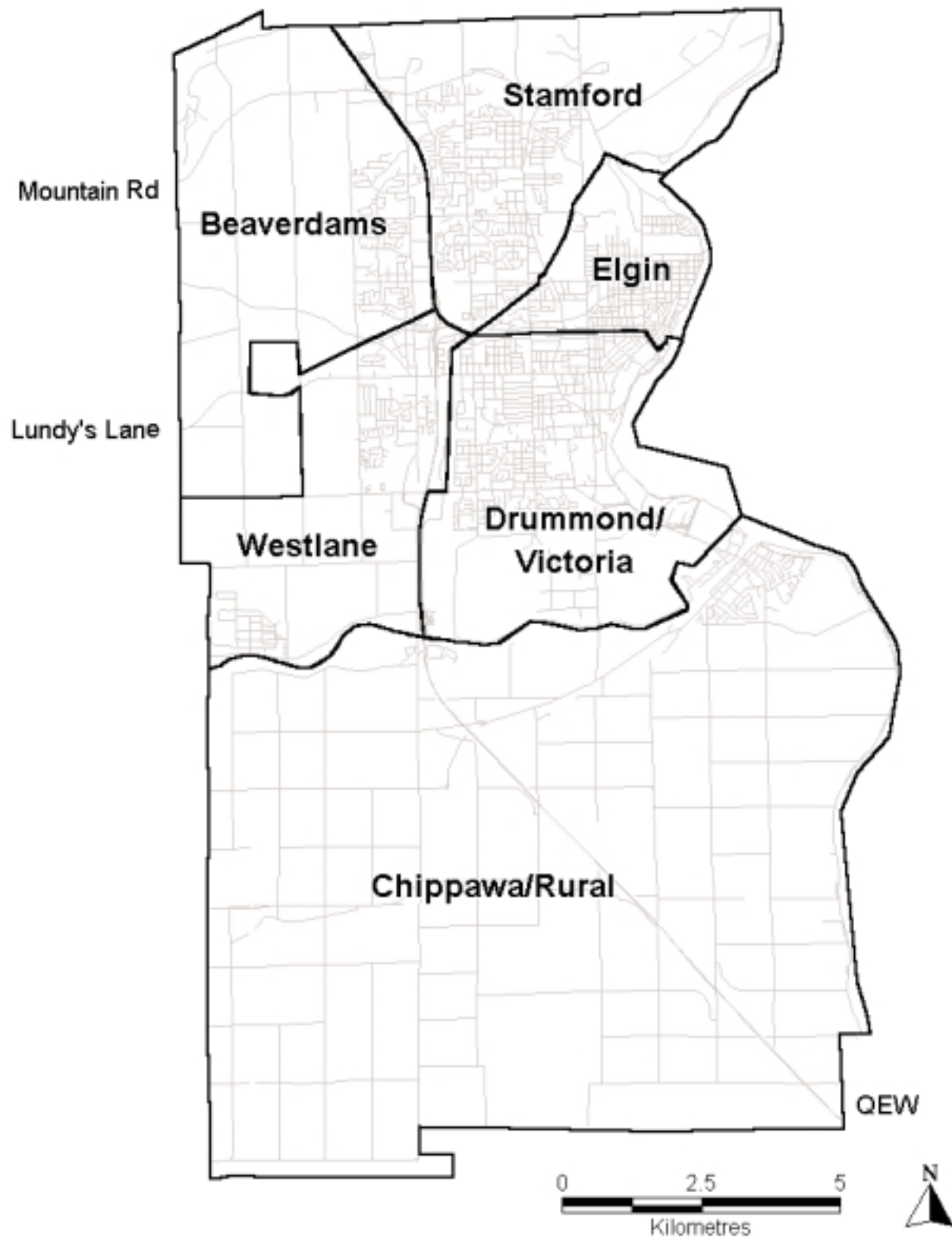
Appendix B

Background information: Niagara Falls and 2001 Cohort populations

Background information	Niagara Falls	2001 Cohort
Total number of children participating	920	29441
Total number restricted to senior kindergarten level, and excluding children with documented special needs and those for whom there was missing data	849	25497
Number of children excluded due to documented special needs	40	1072
Average age of children	5.4	5.7
Number of girls	419	13904
Percentage	45.5%	47.2%
Number of boys	501	14888
Percentage	54.5%	50.6%
Number of children with ESL status	28	4205
Percentage	3.0%	14.3%
Average number of school days absent (September to February)	5.6	6.0
Number of children rated by teacher as requiring further assessment	115	3674
Percentage	12.5%	12.5%

The following EDI implementation sites make up the 2001 Cohort:

Site/School Board	Number of children participating
Abbotsford, BC	1586
Coquitlam-Fraser North, BC	2140
South Eastman, MB	388
Winnipeg, MB	2610
Prince Albert, SK	758
Saskatoon, SK	1458
Mississauga Dixie-Bloor Area, ON	839
Niagara Falls, ON	920
Ottawa-Carleton District School Board, ON	4912
Toronto District School Board North, ON	4201
Toronto District School Board South, ON	4258
Thames Valley District School Board, ON	2126
Montreal, QC	1276
Hampton, NB	356
Southwest Newfoundland	327
Prince Edward Island	1286
Total Number	**29441**

Note: In the above sites the EDI was implemented at junior and/or senior kindergarten level. Results included in this report are restricted to senior kindergarten in keeping with the Niagara Falls measure.

Appendix C

Niagara Falls Group Comparisons

Based on all non-missing cases for each category. Children classified as having special needs were excluded. Higher scores indicate better levels of readiness to learn at school. Comparisons that are statistically significant were calculated using a univariate one-way analysis of variance (ANOVA) at $p<0.05$, controlling for gender and age.

Gender

Scale	Means		Statistically significant?
	Girls N= 391	Boys N=415	
Physical Health and Well-being	8.97	8.60	Yes
Social Competence	8.52	7.78	Yes
Emotional Maturity	8.22	7.26	Yes
Language and Cognitive Development	8.69	7.92	Yes
Communication Skills and General Knowledge	8.14	7.47	Yes

Age of child (mean score is 5.6 years)

Scale	Means		Statistically significant?
	Above the mean age N=436	Below the mean age N=395	
Physical Health and Well-being	8.89	8.66	Yes
Social Competence	8.40	7.86	Yes
Emotional Maturity	7.89	7.55	Yes
Language and Cognitive Development	8.59	7.94	Yes
Communication Skills and General Knowledge	8.1	7.471	Yes

English as a Second Language (ESL)

Scale	Means		Statistically significant?
	Not ESL N=799	ESL N=21	
Physical Health and Well-being	8.77	9.04	No
Social Competence	8.14	8.11	No
Emotional Maturity	7.73	7.72	No
Language and Cognitive Development	8.31	6.98	Yes
Communication Skills and General Knowledge	7.87	4.92	Yes

First Language

Scale	Means		Statistically significant?
	English **N=758**	**Not English** **N=50**	
Physical Health and Well-being	8.75	9.17	Yes
Social Competence	8.11	8.64	Yes
Emotional Maturity	7.72	7.86	No
Language and Cognitive Development	8.3	7.921	No
Communication Skills and General Knowledge	7.90	6.32	Yes

Children who attended an early intervention program

Scale	Means		Statistically significant?
	Early intervention **N=22**	**No early intervention** **N=540**	
Physical Health and Well-being	8.45	8.95	Yes
Social Competence	7.50	8.44	Yes
Emotional Maturity	6.69	7.89	Yes
Language and Cognitive Development	7.80	8.39	No
Communication Skills and General Knowledge	6.76	8.10	Yes

Children who attended any other language or religion classes

Scale	Means		Statistically significant?
	Language/religion classes **N=30**	**No Language/religion classes** **N=445**	
Physical Health and Well-being	8.75	8.89	No
Social Competence	8.38	8.34	No
Emotional Maturity	7.71	7.86	No
Language and Cognitive Development	8.54	8.17	No
Communication Skills and General Knowledge	7.26	8.10	Yes

Children who attended an organized preschool

Scale	Means		Statistically significant?
	Preschool N=123	**No Preschool N=403**	
Physical Health and Well-being	9.00	8.90	No
Social Competence	8.49	8.26	No
Emotional Maturity	7.98	7.77	No
Language and Cognitive Development	8.42	8.11	No
Communication Skills and General Knowledge	8.16	7.95	No

Children who attended Junior Kindergarten

Scale	Means		Statistically significant?
	JK N=737	**No JK N=60**	
Physical Health and Well-being	8.82	8.34	Yes
Social Competence	8.20	7.59	Yes
Emotional Maturity	7.76	7.35	No
Language and Cognitive Development	8.36	7.38	Yes
Communication Skills and General Knowledge	7.91	6.82	Yes

Type of non-parental care arrangement

Scale	Means		Statistically significant?
	Full-time N=65	**Part-time N=96**	
Physical Health and Well-being	8.89	8.90	No
Social Competence	8.47	8.40	No
Emotional Maturity	7.88	7.70	No
Language and Cognitive Development	8.66	8.64	No
Communication Skills and General Knowledge	8.15	8.26	No

Appendix D

Distribution of scores by study area

Physical Health and Well being

Percentile Boundary	Beaverdams	Chippawa/ Rural	Drummond/ Victoria	Elgin	Stamford	Westlane
Percentage of children scoring above the 75th percentile Excellent	25%	34%	24%	34%	25%	16%
Percentage of children scoring in the 51-75th percentile Good	30%	15%	21%	9%	18%	26%
Percentage of children scoring in the 26-50th percentile Satisfactory	33%	29%	23%	23%	33%	30%
Percentage of children scoring in the 10-25th percentile Poor	10%	14%	15%	17%	16%	17%
Percentage of children scoring below 10th percentile Vulnerable	2%	9%	16%	17%	8%	12%

Social Competence

Percentile boundary	Beaverdams	Chippawa/ Rural	Drummond/ Victoria	Elgin	Stamford	Westlane
Percentage of children scoring above the 75th percentile Excellent	28%	24%	25%	26%	23%	21%
Percentage of children scoring in the 51-75th percentile Good	29%	31%	18%	32%	23%	27%
Percentage of children scoring in the 26-50th percentile Satisfactory	28%	24%	24%	22%	29%	23%
Percentage of children scoring in the 10-25th percentile Poor	10%	12%	19%	13%	17%	13%
Percentage of children scoring below 10th percentile Vulnerable	5%	10%	14%	8%	9%	16%

Emotional Maturity

Percentile boundary	Beaverdams	Chippawa/ Rural	Drummond/ Victoria	Elgin	Stamford	Westlane
Percentage of children scoring above the 75th percentile Excellent	24%	21%	24%	25%	28%	20%
Percentage of children scoring in the 51-75th percentile Good	35%	21%	21%	30%	23%	20%
Percentage of children scoring in the 26-50th percentile Satisfactory	23%	35%	28%	21%	26%	26%
Percentage of children scoring in the 10-25th percentile Poor	15%	17%	14%	15%	13%	16%
Percentage of children scoring below 10th percentile Vulnerable	3%	7%	13%	9%	10%	18%

Language and Cognitive Development

Percentile boundary	Beaverdams	Chippawa/ Rural	Drummond/ Victoria	Elgin	Stamford	Westlane
Percentage of children scoring above the 75th percentile Excellent	36%	53%	16%	22%	21%	46%
Percentage of children scoring in the 51-75th percentile Good	31%	19%	22%	36%	28%	26%
Percentage of children scoring in the 26-50th percentile Satisfactory	15%	14%	20%	14%	20%	8%
Percentage of children scoring in the 10-25th percentile Poor	13%	12%	22%	16%	18%	12%
Percentage of children scoring below 10th percentile Vulnerable	4%	3%	20%	13%	11%	8%

Communication and General Knowledge

Percentile boundary	Beaverdams	Chippawa/ Rural	Drummond/ Victoria	Elgin	Stamford	Westlane
Percentage of children scoring above the 75th percentile Excellent	24%	34%	24%	25%	21%	13%
Percentage of children scoring in the 51-75th percentile Good	23%	19%	16%	17%	34%	22%
Percentage of children scoring in the 26-50th percentile Satisfactory	31%	31%	28%	34%	18%	30%
Percentage of children scoring in the 10-25th percentile Poor	15%	8%	15%	20%	18%	24%
Percentage of children scoring below 10th percentile Vulnerable	7%	9%	18%	5%	8%	12%

Appendix E

The Early Years Action Group-Niagara Region (EYAG-NR)

In the Niagara Region, there are approximately 5,000 births every year, and over 25,000 preschool children. They will be our community leaders and workforce, the innovators and planners who make this region, and Ontario, strong 25 years from now. The EYAG-NR was established in 1998 as an alliance of community members, agencies, and organizations dedicated to meeting the needs of families and children in the early years. The vision of the EYAG-NR is to create a community that undertakes co-operative investment in the early years to ensure that every child reaches his or her optimal potential.

It is the goal of the EYAG-NR to ensure that all members of our society share and support this vision.

Towards this goal, the EYAG-NR has developed a four-point strategy:

1. develop a plan for optimal investment in the early years;
2. inform, educate, and advocate for a child-friendly community;
3. make best use of resources to provide coordinated and family-centred services; and
4. monitor and evaluate the progress of children and the effectiveness of EYAG-NR initiatives.

The EYAG-NR strategy is based on four basic values.

- **Children: our most precious resource**
  We believe that children have the right to a safe, nurturing, and enriching environment.

- **The primacy of families in the healthy development of children and the integrity of the family**
  We respect the rights and responsibilities of families as nurturers.

- **The community's responsibility for the healthy development of children**
  We believe that partnerships through community participation and involvement are critical components of the Early Years Action Group–Niagara Region.

- **Success based on meaningful and measurable outcomes supported by relevant research**
  We believe in monitoring our success as indicated by meaningful and measurable outcomes supported by relevant research.

The Niagara Falls UEY Project is sponsored by the Early Years Action Group-Niagara Region. For more information about the EYAG-NR contact the Regional Niagara Public Health Department at (905) 688-3762.

Niagara Nurtures

a *Good Life* Needs a *Good Start*

The Early Years Action Group–Niagara Region

Appendix F

The Early Childhood Community Development Centre (ECCDC)

Serving Niagara's early childhood education and care since 1993, the Early Childhood Community Development Centre is a not-for-profit, charitable, community-based development organization that enhances the quality, efficiency, and availability of early childhood education and care community services in Niagara. The ECCDC also promotes the cohesion and professionalism of the region's early childhood education and care sector, so that those involved in the care, development, education, and well-being of children may work together to anticipate and meet the increasingly diverse needs of Niagara's children and working families. The ECCDC's efforts have facilitated the continued advancement of Niagara's early childhood education and care services, so that they are among the best available anywhere.

Funded primarily by the Regional Municipality of Niagara, Children's Services Division, the ECCDC offers a host of free or at-cost services, including:

- access to a lending library of quality classroom equipment and learning resources;
- affordable program planning, training, and organizational development services;
- resource referral services;
- community planning and advocacy; and
- a means of participating in provincial and national research projects.

Purpose
To optimize healthy child development.

Mission
Serve as a catalyst to build community capacity for early childhood development and care services through the provision of resources, supports, and training.

Vision
A community that values and supports healthy child development including well-informed parents; appropriate federal, provincial, and municipal policies, programs, and legislation; a dynamic and progressive early childhood education and care system comprised of public, private, and home-based operators; and a suitably qualified, trained,

and compensated labour force of early childhood development and care practitioners.

Beliefs
- The first six years of life lay the foundation for healthy physical development, the acquisition of social skills, and competence in communication, reading, mathematics, and reasoning. These skills are essential for success in school and for later labour force participation. Quality early childhood education and care programs improve the lives of children and families and result in substantial long-term savings for society.
- Quality child care is the cornerstone to a comprehensive and cohesive early childhood education and care system; and quality child care services enhance and support all other early child development and care services targeted at individual children and their families.
- Quality child care services provide for the promotion of trusting, caring, and cooperative relationships that respect the worth and uniqueness of the individual, and offer stimulation that encourages growth in the whole person.
- Affordable access to quality early childhood education and care services is inextricably linked to the nation's economic growth and advancement.
- Quality child care that supports and enhances children's physical, intellectual, emotional, social, and spiritual development is possible in a variety of settings that are healthy and safe, and can be provided by a mix of suitably informed family members and qualified early childhood development and care practitioners.
- New federal and provincial policies are needed to assist and support working parents so they aren't forced to choose between workplace productivity and their children's well being.
- Stability and quality in the child care sector are contingent upon adequate financial resources, access to appropriate tools and equipment, operational efficiency, strategic leadership, consistent adherence to sound business practices, and a compensation structure that rewards excellence and allows career-oriented individuals to remain in the profession.

- Success in any profession is related to self-awareness, passion for the work, a positive and empowering work environment, opportunities for advancement and recognition, networking with peers in and beyond one's own geographical area, and the sense that one is not only earning a living, but making a positive contribution to society.
- To meet the needs of area families, Niagara's early childhood education and care system must include quality full-time, part-time, seasonal, special needs, and short-term care in child care centres, as well as by in-home and home-based care providers, nursery schools, and resource programs.
- All of Niagara's early childhood education and care services must reflect current Canadian research and insight into the child development process, and should accommodate the cultural diversity of our community.
- Children, parents, and early childhood education and care practitioners benefit when all members of Niagara's early childhood education and care system share information, work together to address issues, and understand and respect one another's contributions to healthy child development.

The Niagara Falls UEY Project is administered by the Early Childhood Community Development Centre. For more information about the ECCDC call (905) 646 7311 or visit www.eccdc.org.

MAKING A
Difference

Contributing to the quality, sustainability and efficiency of Niagara's early childhood education and care services.

Early Childhood
COMMUNITY
Development Centre
E · C · C · D · C

Glossary of Terms

Cohort

A group of people that share a common experience across time. In this report, the term "2001 Cohort" is used to describe 25,487 senior kindergarten students in various communities across Canada who participated in the EDI during the 2000/2001 school year. While the 2001 Cohort provides a means of comparing children in Niagara Falls to other 5-6 year old children across Canada, it should be noted that it is not truly national, nor is it representative.

Community Mapping Study (CMS)

A research component of the UEY Project that gathers information and reports on:

- the physical and socio-economic characteristics of the neighbourhoods in which children live (at the time of study);
- the kinds of programs and services available to children 6 or younger and their parents; and
- the location of programs in relation to where children live.

Domain

An area identified by research as an important aspect of child development. There are five developmental domains assessed by the EDI:

- Physical Health and Well-being;
- Emotional Maturity;
- Social Competence;
- Language and Cognitive Development; and
- Communication Skills and General Knowledge.

Early Childhood Community Development Centre (ECCDC)

A non-profit, charitable, community based development organization that provides resources, supports, and training to individuals and organizations involved in the care, development, education, and well-being of young children within the Niagara Region. The ECCDC is the sponsor of record and administering agency for the UEY Project in Niagara Falls.

Early Development Instrument (EDI), formerly called the School Readiness to Learn Instrument

A questionnaire for kindergarten teachers, designed to measure the outcomes of children's early years as they influence their readiness to begin learning at school. The EDI was developed by Drs. Offord and Janus at the Canadian Centre for Studies of Children at Risk, McMaster University.

Early Years Action Group-Niagara Region (EYAG-NR)

An alliance of community members, agencies, and organizations dedicated to meeting the needs of families and children in the early years within the Niagara Region. The EYAG-NR is the sponsor of the UEY Project in Niagara Falls.

Human Resources Development Canada (HRDC)

A division of the Federal Government and UEY Project funder. The Applied Research Branch (ARB) of HRDC supplies information to governments for both the formulation of policy relating to children and youth, and initiatives such as the federal/provincial/territorial Early Childhood Development Initiative. Families are also the focus of ARB's policy research, to ensure children receive a good start to life. ARB sponsors major surveys of children and youth, such as the NLSCY, and supports research based on the survey data. Understanding the Early Years (UEY) is an ARB research initiative.

Macro level

A global level of EDI analysis looking at results for populations as a whole. Macro level results can be compared to look at differences between whole populations. Results on this level present a broad picture of research outcomes; however, they often fail to create a striking enough profile to indicate community action, as differences within specific populations even out at this level.

Mean

The arithmetic average of a set of scores.

Micro level

A detailed level of analysis for EDI results, which looks at differences within a population.

National Longitudinal Survey of Children and Youth (NLSCY)

A survey designed to follow a representative sample of Canadian children from 0 to 25 years of age, collecting data in two-year intervals. The survey examines a variety of factors thought to influence child development and growth. The NLSCY is conducted in joint partnership by Human Resources Development Canada and Statistics Canada.

NLSCY Community Study

A special version of the National Longitudinal Survey of Children and Youth that focuses on the early years of child development (0 – 6 years). Research tools include an in-depth parent telephone interview and three direct child assessments:

- **Peabody Picture Vocabulary Test, Revised (PPVT-R)**
  A cognitive measure used to assess a child's receptive vocabulary.

- **Who Am I?**
  A cognitive measure based on copying and writing tasks, which are designed to test children's ability to conceptualise and reconstruct geometric shapes and to use symbolic representations, as illustrated by their understanding and use of conventional symbols such as numbers, letters, and words. Because these tasks are not dependent on language, Who Am I? can be used to assess children whose knowledge of English or French is limited.

- **Number Knowledge Assessment**
  A cognitive measure used to test a child's understanding of numbers. Children who do not have this understanding, or who are working in a language different from their mother tongue, often have difficulty mastering basic arithmetic and demonstrating number sense. The Number Knowledge Assessment evaluates children's understanding of quantity (more vs. less), their ability to count objects, their understanding of number sequence, and their ability to do simple arithmetic.

Population measure
Statisticians define a population as the entire collection or group of items that is the focus of concern - in this case, all senior kindergarten children within the District School Board of Niagara (DSBN) and the Niagara Catholic District School Board (NCDSB), in the city of Niagara Falls, in the 2000/2001 school year. Rather than making inferences based on a sample, population measures gather information based on the entire collection or group.

Readiness to learn
A child's preparedness to take advantage of formal school learning upon entering grade one. The Early Development Instrument measures readiness to learn based on developmental milestones, rather than curricular achievement. Children who enter school ready to learn have developed the ability to get along well with others, use basic coping strategies, and are open to new experiences. In short, they are receptive to the learning opportunities school presents.

Scale average
The average score for a particular group of children on an EDI domain, based on a possible range of scores from 0 –10.

School readiness to learn profile
A community specific profile that describes, in terms of skills and behaviour, children whose scores fall within the highest and lowest percentile boundaries on the Early Development Instrument.

Standard deviation
Standard deviation is the average distance of scores in a distribution from their mean. Approximately two-thirds of the observations lie within one standard deviation from the mean (in both directions).

Statistical significance
A finding (for example the difference between the means of two random samples) is described as statistically significant, when it can be demonstrated that the probability of obtaining such a difference, by chance only, is relatively low. Findings are usually described as statistically significant when the result is among those that (theoretically) would occur no more than 5 out of 100 times ($p<0.05$) when the only factors operating are the chance variations that occur whenever random samples are drawn.

t-test
A test that employs the statistic (t) to test a given statistical hypothesis about the mean of a population (or about the means of two populations).

Percentile boundary
The parameters for a category of EDI scores or percentages (below the 10th percentile, above the 75th percentile, etc.). Percentile boundaries and their thresholds, or cut-off scores, are relative, based on the distribution of scores for the population being assessed. This means that the percentile boundaries for Niagara Falls are based on all scores encountered within the city of Niagara Falls; similarly, the percentile boundaries for the 2001 Cohort are based on all scores encountered in the 2001 Cohort population.

Understanding the Early Years (UEY)
A national initiative that provides research information to help strengthen the capacity of communities to make informed decisions about the best policies and most appropriate programs to serve families with young children. It seeks to provide information about the influence of community factors on children's development, and to enhance community capacity to use this data to monitor both early childhood development, and to create effective community-based responses.

Endnotes

[1]   McCain & Mustard, 1999. Doherty, 1997.

[2]   Doherty, 1997.

[3]   Kohen, Hertzman & Brooks-Gunn, 1998.

[4]   Direct assessment tools:
• Peabody Picture Vocabulary Test, Revised (PPVT-R), Dunn & Dunn, 1981.
• Who Am I?, De Lemos et al. 1999.
• Number Knowledge Assessment, Case & Okamoto revision version, NLSCY Community Component, 2001.

[5]   Directors Office, Income Security and Social Development Studies
Applied Research Branch, Strategic Policy, Human Resources Development Canada
Place du Portage, Phase IV, 4th floor
Hull, Quebec K1A 0J9

[6]   Connor & Brink, 1999.

[7]   Pulkkinen & Tremblay, 1992. Stennett, 1988. Tremblay, Masse, Perron, Leblanc, Schwartzman & Ledingham, 1992.

[8]   Horn & Packard, 1985. Kontos, 1988. Reynolds, Mavrgenes, Bezrucko & Hagemann, 1996. Stevenson, Parker, Wilkinson, Hegion & Fish, 1976.

[9]   Barrington & Hendricks, 1989. Cairns, Cairns & Neckerman, 1989. Entwistle & Hayduk, 1988. Gilbert, Barr, Clark, Blue & Sunter, 1993.
Lloyd (1978).

[10] Barrington & Hendricks, 1989. Entwistle, Alexander, Cadigan & Pallas, 1986.

[11] Coie & Kupersmidt, 1983. Dodge, 1983. Ladd & Price, 1987.

[12] Tremblay, Masse, Perron, Leblanc, Schwartzman, & Ledingham, 1992.

[13] Ensminger, Kellam & Rubin, 1983.

[14] Entwistle, Alexander, Cadigan & Pallas, 1986. Lambert & Nicoll, 1977.

[15] Feldhusen, Thurston & Benning, 1970. Lambert, 1972.

[16] Ladd, 1990.

[17] Coie & Kupersmidt, 1983. Dodge, 1983. Dodge, Coie & Brakke, 1982. Ladd & Price, 1987. Putallaz, & Gottman, 1981.

[18] Coie & Kupersmidt, 1983. Ladd & Price, 1987.

[19] Singer & Singer, 1993.

[20] Berninger, Proctor, de Bruyn & Smith, 1988. Biemiller & Siegel, 1991. DeHirsch, Jansky & Langford, 1966.

[21] Adams, 1990. Biemiller & Doxey 1993. Reynolds, Mavrgenes, Bezrucko & Hagemann, 1996. Yopp, 1988.

[22] Hess, Holloway, Dickens & Price, 1984. Reynolds, 1989. Tizard, Blatchford, Burke, Farquhar & Plewis, 1988.

[23] The United Way of America, 1993.

[24] Rutledge, 1993.

[25] The Global Intervention Network, 2002.
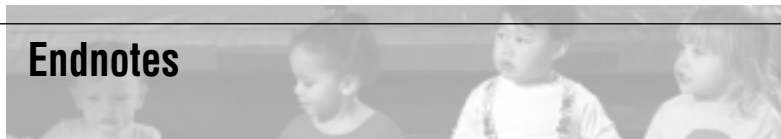
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