Early Childhood Development in Canadian Communities:

Findings from the Understanding the Early Years Initiative

Prepared for:
Human Resources and Skills Development Canada

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INTRODUCTION

1. INTRODUCTION

Increasing evidence supports the importance of investing in the early years of children's development. Recent research shows that the formative years are critical, and that the kind of nurturing and stimulation children receive in their early years can have a major impact on the rest of their lives. The research suggests that neighbourhoods and communities where children grow and learn influence their development; they affect parents' ability to provide a positive family environment and the ability of others in the community to support the development of children as they grow up.

Policies and programs to enhance children's early development differ in important ways among neighbourhoods, communities, and regions across Canada. They are shaped by a broad community that includes families, the private and voluntary sectors, and governments at local, provincial, territorial and federal levels. Gathering community-specific information about children and the places where they are raised can help the community design policies and deliver programs that are sensitive and responsive to local needs. Understanding the Early Years (UEY), a national initiative funded and managed by Human Resources and Skills Development Canada, is contributing to this process.

UEY was launched in 1999 as a research initiative to enhance knowledge of community factors that influence the early development of children. It began with a pilot initiative in North York, Ontario and included 12 community projects by 2002. In 2004, UEY became a national initiative. A further 21 community projects began their three years of UEY activities in 2005, another 15 projects began in 2007, and one First Nations project began in 2008. Please see Appendix A for a list of all the UEY communities.

UEY's overall purpose is to enable members of communities to work together to address the needs of young children by raising awareness of the importance of family and community factors that can influence young children, and strengthening their ability to use local data to help them make decisions to enhance children's lives.

This report presents results for 20 communities that began UEY activities in 2005 and 15 that began in 2007. The data include information describing over 15,000 kindergarten children and their families in 35 communities.[1] The aims of the report are to:

1. describe variation among communities in children's cognitive skills, behaviour, and physical health and well-being based on data collected from children and parents with the Parent Interviews and Direct Assessments of Children Survey (PIDACS);

2. describe the extent of variation among communities in key family background factors, such as family income and parental education, and determine the extent to which these factors are related to children's cognitive, behavioural, and health outcomes;

3. describe the extent of variation among communities in several aspects of family life, such as parental engagement and family functioning, and determine the extent to which these factors are related to children's cognitive, behavioural, and health outcomes;

4. describe the extent of variation among communities in assessments of neighbourhood quality and social support, and determine the extent to which these community factors are related to children's cognitive, behavioural, and health outcomes; and

5. summarize the findings and provide concluding comments.

Appendix B contains the list of children's developmental outcomes as well as potential risk and protective factors that were considered for the study.

Each of these aims is addressed in a separate section. Within each section, a brief literature review is provided and the findings are presented and discussed. The analyses in the penultimate section use a statistical technique called multilevel logistic regression, which is appropriate for analyzing data that are clustered, such as children within communities (Raudenbush & Bryk, 2002), and when the outcome measure is dichotomous, such as whether or not a child has a behaviour problem. This approach allows one to separately estimate the relationships between childhood outcomes and various family and community factors within each community, and at the same time determine the average relationship across the full set of communities. Although the approach to analysis is somewhat complex, the reader does not require a strong statistical knowledge to understand the approach or appreciate the findings.

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[1] Two communities were not included in this report. In one community, Milton, the data collected were insufficient to adequately characterize the community; therefore, the results for this community were not included in the analyses for this report. A different questionnaire was used for the Prince Albert Grand Council community and the Grand Council carried out its own analyses.

A. OVERVIEW OF THE UEY INITIATIVE

The Understanding the Early Years (UEY) Initiative provides three years of funding to community-based, not-for-profit organizations on behalf of their communities to help them learn to generate and use local information on:

- the development of kindergarten[2] (the year before grade one) children;
- family and community factors that influence children's development;
- local programs and services for young children and their families; and
- local socioeconomic characteristics.

In each UEY community, this information enables its local UEY project staff, the UEY community coalition of organizations and individuals, and other community members to identify gaps in services and programs for young children and their families. Moreover, it fosters partnerships among community groups and individuals, enabling them to make informed decisions about the best approaches for young children to thrive. Each community project involves the participation of parents, teachers, schools, school boards, community organizations, and others interested in the well-being of children.

UEY also aims to promote the participation of communities with children from diverse backgrounds, including First Nations, Inuit and Métis children, children in immigrant families, children in low-income families and children in official-language minority communities.

Figure 1-1 illustrates key components of the UEY design and how it works in participating communities. The total set of UEY information includes parents' and teachers' perspectives on the development of kindergarten children, direct assessment results on children's cognitive abilities, parents' perspectives on family circumstances and children's experiences, local information on programs and services, and local socioeconomic characteristics. Table 1-1 indicates the types of data and their sources.

The Parent Interviews and Direct Assessments of Children Survey (PIDACS) uses instruments designed and adapted for five-year-olds in the National Longitudinal Survey of Children and Youth (NLSCY).[3] It has two complementary components: the PIDACS parent interview and direct assessments of kindergarten children's cognitive skills. Together, they provide information on children's developmental outcomes in three cognitive domains (pre-literacy skills, receptive vocabulary, and number knowledge); parents' perspectives on their children's emotional development, behaviour, and health; and many of the important family, neighbourhood, and community factors that have been consistently shown to influence these outcomes (Willms, 2005).

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[2] In Nova Scotia, kindergarten is called "grade primary".

[3] The National Longitudinal Survey of Children and Youth (NLSCY) is a comprehensive, longitudinal survey designed to measure and track the well-being and life experiences of Canada's children and youth as they group up. It has been collecting data every two years since 1994. The survey is conducted by Statistics Canada and sponsored by Human Resources and Skills Development Canada (HRSDC).

FIGURE 1-1. Key components of the UEY design

Enabling Communities

Transferring knowledge

Strengthening ability to make
evidence-based decisions

Working together to act on research

Generating Information

Kindergarten children's development and
experiences, including:
- Parent Interviews and Direct
  Assessments of Children Survey
  (PIDACS)
- Early Development Instrument (EDI)
- Inventory of Community Programs
  and Services
- Local socio-economic characteristics
  (Census of Canada)

Building Knowledge

Community Research Report, including:
- Children's development
- Community and family influences

Community Mapping Report, including:
- Community programs and services
- Socio-economic characteristics
- Development of kindergarten
  children

Community Action Plan

TABLE 1-1. Types of UEY information and data sources

TYPE OF INFORMATION	DATA SOURCE	COLLECTED BY
Development of kindergarten children		
Parents' perspectives	Interview with parents using the *Parent Interviews and Direct Assessments of Children Survey*	R.A. Malatest & Associates Ltd., under contract to Human Resources and Skills Development Canada
Children's abilities	Three direct assessments of children's cognitive abilities using the *Parent Interviews and Direct Assessments of Children Survey*	R.A. Malatest & Associates Ltd., under contract to Human Resources and Skills Development Canada
Teachers' perspectives	Teacher-completed checklist, the Early Development Instrument	Through collaborations with the Offord Centre for Child Studies at McMaster University, the Human Early Learning Partnership at the University of British Columbia, and several provincial EDI collection programs, EDI results were provided to each UEY community.
Family circumstances and children's experiences at home and in the community	Interview with parents using the *Parent Interviews and Direct Assessments of Children Survey*	R.A. Malatest & Associates Ltd., under contract to Human Resources and Skills Development Canada
Information on community programs and services	*Inventory of Community Programs and Services*	UEY Communities
Local socio-economic characteristics	2001 and 2006 Censuses of Canada(and other available data)	Statistics Canada

The PIDACS parent interview is conducted with the 'person most knowledgeable' (PMK) about the child, which is usually the mother or female guardian. In less than 10% of families, the PMK is the father or male guardian. The interview is done by telephone or on the internet if possible, or in person when a telephone or computer is not available. Parents are interviewed in the language of their choice as much as possible. The interview covers family, social, and economic circumstances; children's activities at home; and involvement in the community, including child-care arrangements.

The PIDACS direct assessments are conducted at the child's school with the child, in either English or French, by a trained assessor. The assessments include measures of children's receptive vocabulary, copying and printing skills related to early literacy, and number knowledge. The instruments used to assess these skills are described in greater detail in Chapter 2. The data from the PIDACS parent interview provide information on children's behavioural and health outcomes.

The PIDACS target population in each UEY community was children who entered kindergarten in autumn 2006 for the 2005-2008 UEY communities and in 2008 for the 2007-2010 UEY communities. In most communities, all parents of kindergarten children were encouraged to participate in the parent interview and to provide permission for their child to participate in the direct assessments. In the majority of communities, 300 to 500 completions were obtained using a census approach, but in some of the larger communities completions were obtained from a sample of the kindergarten population. The vast majority of the children were five or six years old at the time of the data collection. The completions for the 2005-2008 UEY communities included 8,834 children and their families, while the 2007-2010 UEY communities included 6,657 children and their families.

The PIDACS indicators developed for this study were carefully examined to ensure that they were valid and reliable measures of the concepts being assessed. Validity refers to whether an instrument is measuring what it is intended to measure. For example, the PIDACS assessment of receptive vocabulary uses the Peabody Picture Vocabulary Test – Revised (PPVT -R). A number of studies have shown that receptive vocabulary is a moderately strong predictor of early reading skills (Scarborough, 1998; Schatschneider, Fletcher, Francis, Carlson, & Foorman, 2004). Reliability refers to the consistency of a measurement process. For example, if a child were assessed using a particular measure, and then reassessed the next day following the same procedures, would the two scores be the same or similar? Reliability is closely related to validity, because acquiring evidence about the consistency of measurement requires that the various tasks or items observed are valid indicators of the underlying concept. The PIDACS instruments were carefully selected from those used in previous studies, including the UEY pilot studies and the NLSCY, to ensure that they are valid measures with high reliability.

The PIDACS data collection was conducted by an independent contractor, R. A. Malatest & Associates Ltd., on behalf of Human Resources and Skills Development Canada. The collection was done in collaboration with participating parents, school boards, schools, and local UEY staff. The analysis of the data and the preparation of this report and a research report for each of the 36 communities were sub-contracted by Malatest to KSI Research International Inc.

Another key piece of information for the UEY communities is from kindergarten teachers, who provided their perceptions of children's development using the Early Development Instrument (EDI). The instrument was developed by the Offord Centre for Child Studies at McMaster University, and the EDI data were collected in collaboration with participating schools, school boards, and local UEY staff. Teachers completed the checklist in the winter of 2006 or 2009 for the children in kindergarten classes of schools participating in each local UEY project.

This report is based on PIDACS data collected for children in kindergarten in the 2006-2007 and 2008-2009 school years; it does not include results based on the EDI data.

The use of PIDACS in this context has a number of strengths, but it also has some limitations. The survey provides reliable and valid information on children's cognitive, behavioural and health outcomes and a wide range of family, neighbourhood, and community factors.

However, PIDACS cannot measure in detail all aspects of children's outcomes, as the administration time for the three direct assessments was about 30 minutes, which is appropriate for children this age. The PIDACS parent interview is very extensive, but it too cannot cover all aspects of family and community life.

Finally, UEY is a descriptive study designed to provide a rich account of the family and community factors that have been found to affect childhood outcomes. Research aimed at understanding the causal relationships between these factors and childhood outcomes requires longitudinal studies that follow children over several years, such as the National Longitudinal Survey of Children and Youth, and studies that involve the random assignment of communities to treatment and control groups.

B. TERMS USED IN THE REPORT

Many of the important terms used in the report are described in the text in each section. However, there are a few terms that may be helpful to the reader in the interpretation of the findings.

Vulnerable Children. Children with very low scores on the direct assessments used in PIDACS and children whose parents' responses indicate they have behavioural or health problems are considered 'vulnerable' in this report. These children may experience problems throughout their childhood and in later life unless they are provided with additional family and community supports to help them overcome these challenges. This is the same sense of the term as it is used in *Vulnerable Children* (Willms, 2002a).

Risk and Protective Factors. Family and community factors may influence a child's development positively or negatively. A factor which has a relationship with low scores on cognitive skills or behavioural problems is often called a "risk factor". A factor which is related to higher scores or fewer behavioural problems is often called a "protective factor". However, it is worthwhile distinguishing between 'time-invariant' or fixed risk factors, 'time-varying' risk factors, and 'causal risk factors'. Sex and ethnicity are fixed risk factors, at least for certain outcomes, as they do not vary with age. Maternal depression is a time-varying risk factor for certain outcomes, as mothers' experience of depression varies over the life-course. A risk factor is elevated to the status of a 'causal risk factor' when it can be shown that it temporally precedes an outcome, is correlated with the outcome, and that a change in the risk factor effects a change in the outcome. For example, if some intervention such as a program of home visitation can be shown to reduce levels of maternal depression, and in turn improve children's outcomes, we would claim that maternal depression is a causal risk factor. Research aimed at understanding the causal relationships between these factors and childhood outcomes requires longitudinal studies that follow children over several years, such as the National Longitudinal Survey of Children and Youth, and studies that involve the random assignment of communities to treatment and control groups.

Variation Among Communities. Many of the analyses in this report look at the extent to which communities vary in their childhood outcomes. For example, is the prevalence of children with health problems greater in one community than another? The outcomes used in this report were dichotomized so that the variation can be portrayed in terms of the differences in the percentages of children in each community experiencing a problem, such as low vocabulary scores.

II.

HOW ARE CHILDREN DOING IN CANADIAN COMMUNITIES?

2. How are Children Doing in Canadian Communities?

A. Developmental outcomes in early childhood

The research on child development has provided guidance as to what developmental outcomes are most important at various stages of development. Efforts to monitor early childhood outcomes have emphasized developmental outcomes in five domains: (1) physical well-being and motor development, (2) social and emotional development, (3) approaches to learning, (4) language development, and (5) cognition and general knowledge (Rhode Island Kids Count, 2005; Willms & Beswick, 2005). This framework is consistent with the priorities of the United Nations' Children's Fund (UNICEF), which includes healthy growth and development, less disease and fewer illnesses, thinking and language skills, emotional and social skills, and self esteem (UNICEF, 2000).

Most young Canadian children are healthy, exhibiting low rates of infant and childhood mortality and morbidity (Canadian Institute of Child Health, 2000). Among pre-school children, asthma is a prominent health concern, which along with other chronic health problems contributes to respiratory illness. Allergies, chronic ear infections, and health problems stemming from injuries also affect many Canadian children. The prevalence of childhood obesity has increased dramatically in the past two decades (Tremblay & Willms, 2000), and has been recognized as a major health problem in Canada for children during the pre-school years (Canning, Courage, & Frizzell, 2004; Willms, 2004).

Aside from indicators of children's health status, the domain of physical well-being also includes children's gross and fine motor skill development. Gross motor development pertains to children's use of large muscle groups to walk, sit, stand, and run. Fine motor development refers to the use of their hands to eat, draw, print, write, and perform many other detailed activities. By age five, most children can balance on one foot, hop, and do somersaults, as well as copy shapes, draw a person, and print some letters. Children vary substantially in their rate of development of fine and gross motor development, but substantially poor physical development can indicate that a child may require medical attention or other special services (Shelov, 2004).

The domain of outcomes comprising social and emotional development includes positive social skills, such as children's ability to get along with other children, accept responsibility for their actions, and work independently. Physical aggression plays a critical role in children's development during the pre-school years (Tremblay et al., 2004), and when children enter school, hyperactivity and inattention emerge as important behavioural problems (Willms, 2002a).

The term 'approaches to learning' pertains to children's engagement in learning at school. When children enter school, they vary in their enthusiasm to learn new skills, their curiosity, and their inclination to persist on tasks. Children can develop these traits in positive ways when they are reinforced at home and at school (Rhode Island Kids Count, 2005).

The rate at which children acquire language differs considerably among children, even among those from the same family. During the 1970s and 80s, researchers were concerned with whether variation in vocabulary development was attributable mainly to differences in children's innate capacity, or to differences in their exposure to speech and language. The evidence indicated that hereditary effects are relatively weak: only about 10 to 12% of the variation in children's vocabulary scores was explained by parents' vocabulary scores (Scarr & Weinberg, 2004). Previous research that has examined children's vocabulary growth during the pre-school years suggests that about 20% of the variation is attributable to the quantity of the mother's speech and the frequency with which mothers use particular words (Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991). It is also related to children's exposure to language in the home and to the nature of their interactions with their parents (Hart & Risley, 1995).

Cognitive development includes the abilities to reason, understand relational concepts, build concepts, and work with mathematical concepts. During the preschool years, these abilities are closely tied to children's language development. Together, language and cognitive development are key predictors of the rate at which children acquire reading skills in grades 1 and 2, which in the longer term has important implications for their progress at school (Scarborough, 1998; Schatschneider, Fletcher, Francis, Carlson, & Foorman, 2004).

B. Variation among communities in children's cognitive skills

Information on each kindergarten child's cognitive skills, behaviour, and physical health and well-being is based on the results from the PIDACS direct assessments of children's developmental skills and the PIDACS parent interview, which includes a set of standardized questions that provide information about each child's behavior and health. The direct assessments used in PIDACS are described below. A list of the children's developmental outcomes is provided in Appendix B.

PIDACS includes three direct assessment measures of children's cognitive skills.[4] These assessments were administered in English or French, and thus do not assess the language development of all children in their mother tongue.

Receptive Vocabulary. Children's language development was assessed with the Peabody Picture Vocabulary Test, Revised (PPVT-R), which assesses the vocabulary children understand when they hear spoken words. This is called receptive vocabulary. The assessor says a word, and the child is asked to point to one of four pictures on an easel plate that corresponds to the word. The PPVT-R was used with English-speaking children and the Échelle de Vocabulaire en Images Peabody (EVIP) was used with French-speaking children. The scores were scaled to have a mean of 100 and a standard deviation of 15 for the sample of children in the 2005-2008 communities (UEY-21 sample).

Number Knowledge. The Number Knowledge test measures children's intuitive knowledge of numbers by assessing their understanding of quantity (more vs. less), their ability to count objects, their understanding of number sequence, and their ability to do simple arithmetic. The assessment is administered orally and the child must respond verbally without using a paper or pencil to figure out answers. The scores on this assessment were also scaled to have a mean of 100 and a standard deviation of 15 for the UEY-21 sample. The scoring for this test does not take into account the child's age at time of testing or the amount of time the child has spent in kindergarten. Because the UEY communities completed their data collection at different times during the school year, a regression analysis was used to estimate a score for each child that was adjusted for age and the time spent in kindergarten.

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[4] The PPVT was developed by Lloyd and Leota Dunn at the University of Hawaii, while the EVIP was developed by Claudia M. Thériault-Whalen at St. Thomas University, Fredericton, New Brunswick. The Number Knowledge assessment was developed by Dr. Robbie Case and his colleagues at the Ontario Institute for Studies in Education, University of Toronto. The Who Am I? was developed by Dr. Molly de Lemos and her colleagues at the Australian Council for Educational Research.

Pre-literacy skills. An assessment of children's pre-literacy skills was based on the Who Am I?, which entails various copying and writing tasks. For example, it assesses a child's ability to conceptualize and to reconstruct a geometrical shape and to use symbolic representations, as illustrated by their understanding and use of conventional symbols such as numbers, letters, and words. Children are asked to copy five shapes (such as a circle or a diamond) and to write their names, numbers, letters, words, and a sentence. As with the PPVT-R and Number Knowledge, these scores were scaled to have a mean of 100 and a standard deviation of 15 for the UEY-21 sample. As with the Number Knowledge test, the scoring of this test does not take into account the child's age at time of testing or the amount of time the child has spent in kindergarten. Thus, a regression analysis was used to estimate a score for each child that was adjusted for age and the time spent in kindergarten.

The choice of a cut-off score to define vulnerability is rather arbitrary. For the Peabody Picture Vocabulary Test, a score of 85 is often set as the low score threshold. Children with low scores on the PPVT are at risk of experiencing difficulties in learning to read (Speece, Ritchey, Cooper, Roth, & Schatschneider, 2004), and in Canada, about 20% of children are at risk of not making the critical transition from learning-to-read to reading-to-learn (Sloat, Beswick, & Willms, 2007). In this study, we set the low-score threshold at 85, which is about one standard deviation below the mean, for all three PIDACS direct assessment measures.

Results. The UEY communities varied considerably in the prevalence of vulnerable children, based on the measures of children's receptive vocabulary, number knowledge, and pre-literacy skills. Figure 2-1 shows the range in the prevalence of children with poor developmental skills across the 35 communities for each of the cognitive measures. Children were considered to have 'poor developmental skills' if their scores on the assessments were below 85, which was set as the low threshold score. In this figure, community scores that varied significantly above or below the average prevalence for Canada are indicated with white dots.

Note that for receptive vocabulary there were two 'outlier' communities that were not included in the figure. In both of these communities the prevalence of children with low scores on this assessment was 63%; however, in these communities, there were many children for whom the language used in the assessment (English or French) was not the same as the language spoken mainly at home by the parents.

Figure 2-1. Variation among communities in the prevalence of kindergarten children with poor cognitive skills
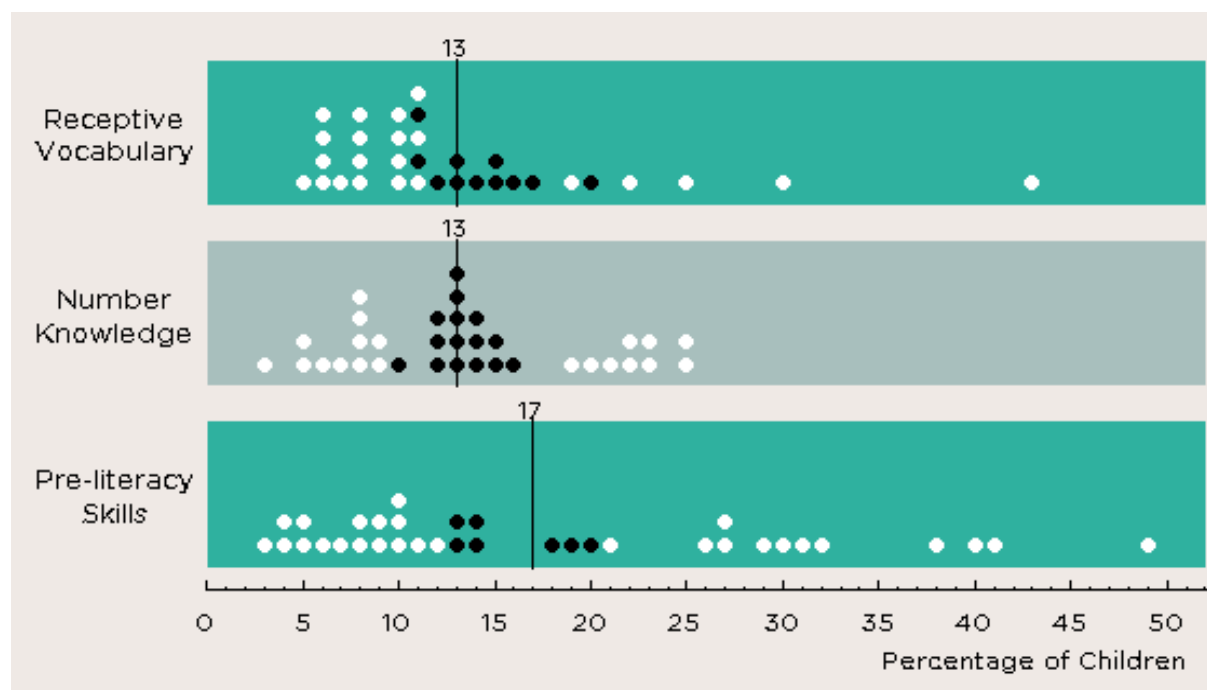
Note: Prevalences that differ significantly (p < 0.05) from the national average prevalence are indicated with white dots.[5] The vertical line is an estimate of the average prevalence. Two "outlier" communities were excluded in the analyses for receptive vocabulary.
Source: PIDACS, 2006-2007 and 2008-2009 (Canada).

The results also reveal that there is considerable variation among communities in the prevalence of children deemed vulnerable on the three cognitive assessments. On the measure of receptive vocabulary, the range is from about 5% to 43%. The range for number knowledge is smaller with the highest prevalence being 25%. The range for pre-literacy skills is larger, from 3% to 49%.

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[5] Two communities may have the same prevalence, but one may have a prevalence that differs from the average (white dot) while the other does not (black dot). This is because statistical significance of the difference from the average depends on the sample size for the community.

C. VARIATION AMONG COMMUNITIES IN CHILDREN'S BEHAVIOURAL OUTCOMES

The PIDACS includes a number of questions for parents about their kindergarten child's behavioural outcomes. These comprise a set of measures pertaining to positive social behaviour and four behavioural problems that are often displayed by children this age: inattention, anxiety, depression and physical aggression. Each scale is based on several questions; for example, the parent is asked how often his or her child cannot sit still or is restless, and he or she answers with one of three possible responses: "never"; "sometimes"; or "often". The responses for each measure are assigned scores of 0, 1, or 2 for "never", "sometimes", or "often" respectively, and averaged across the questions to create a scale ranging from 0 to 2. On the measure of positive social behaviour, a child is considered to have a low score if he or she has a score that is less than or equal to 1.0. Similarly, a child is considered to have a behavioural problem if he or she has a score that is greater than or equal to 1.0 on the relevant measure. The five measures and the estimates of the national prevalence are described below.

Positive social behaviour. Children who exhibit higher levels of positive social behaviour are more likely to try to help and comfort others. They may offer to help pick up objects that another child has dropped or offer to help a child who is having trouble with a difficult task. They might also invite their peers to join in a game. About 13% of the children in the sample were considered to have low scores on this measure based on the UEY data.

Inattention. Children who are inattentive tend to have trouble sitting still, are restless or easily distracted, have trouble sticking to any activity or concentrating for long periods, and may have difficulty waiting their turn in games or group activities. Children who are considered 'hyperactive' often display these traits, but not all inattentive children are hyperactive. The prevalence of inattention, based on this measure, was approximately 13%.

Anxiety. Children with anxiety problems tend to be fearful, worried, or nervous and high strung. Quite often they cry more than other children. Approximately 8% of the children displayed anxiety problems, according to their parents.

Depression. At this age, some children also display depressive symptoms, such as being unhappy or sad more often than other children, or having trouble enjoying activities. Approximately 5% of Canadian children at age five displayed problems related to depression.

Physical aggression. Children at age five can on occasion be hostile or aggressive towards others. However, some children are aggressive more often than others. For example, if another child accidentally hurts them, they assume that the other child meant to do it, and then react with anger and fighting. Some children at this age also physically attack others or threaten them, or they are cruel and bully other children. About 4% of the children in the sample were considered to be physically aggressive, based on this measure.

Results. The prevalence of children with behavioural problems varies markedly among the 35 communities in this study. Figure 2-2 shows the extent of this variation. The prevalence of children considered to have low levels of positive social behaviour varies considerably across the 35 communities, ranging from 7% to 25%. The variation in the prevalence of inattention is also considerable; it ranges from 6% to 18%. However, the communities do not vary substantially in the prevalence of anxiety, depression, or physical aggression; for these three outcomes, the prevalence is close to the national average in the majority of cases.

Figure 2-2. Variation among communities in the prevalence of kindergarten children with behavioural problems
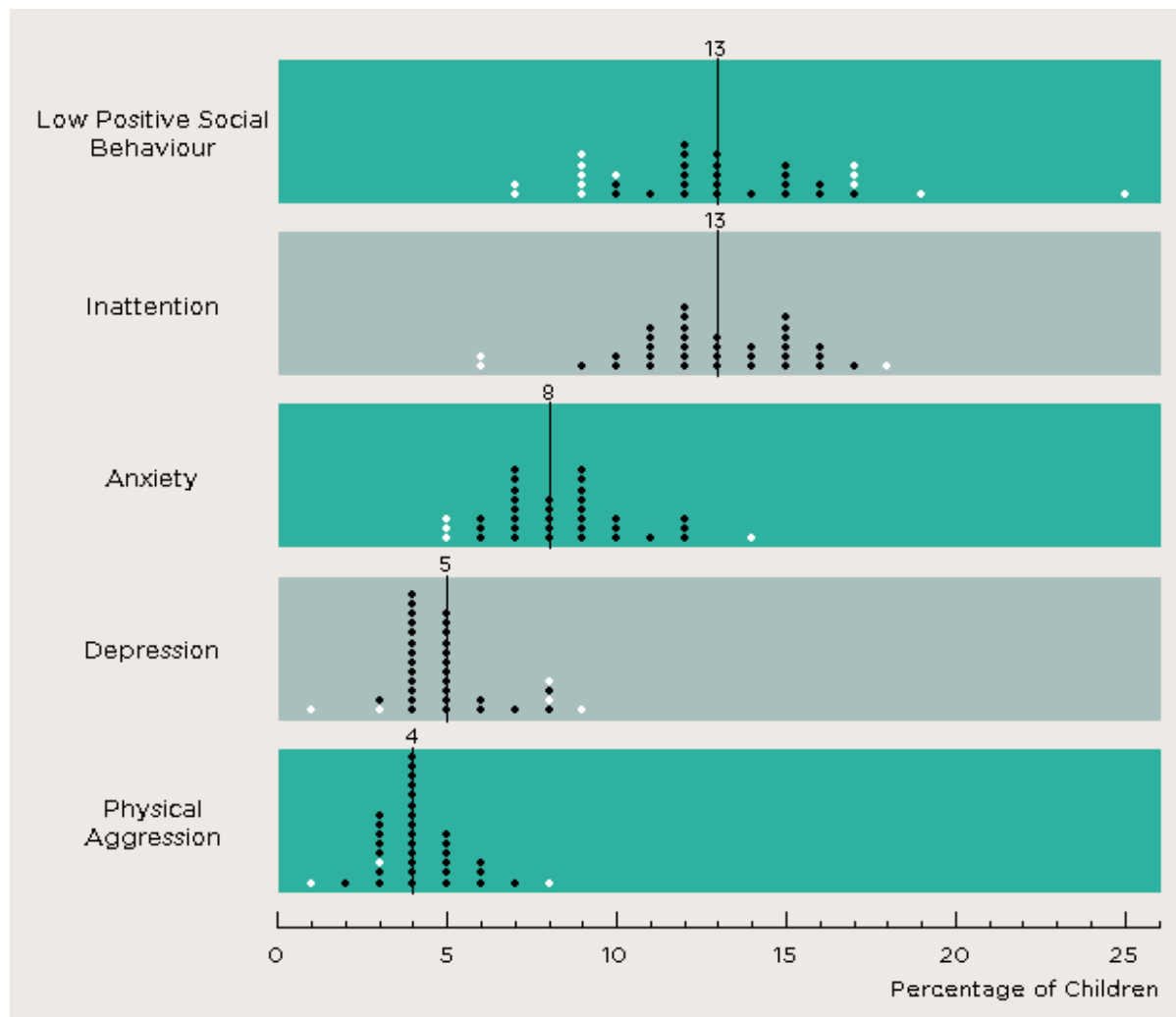
Note: Prevalences that differ significantly ($p < 0.05$) from the average prevalence are indicated with white dots. The vertical line is an estimate of the Canadian average prevalence.

Source: PIDACS, 2006-2007 and 2008-2009 (Canada).

D. VARIATION AMONG COMMUNITIES IN CHILDREN'S HEALTH OUTCOMES

The PIDACS included a number of questions for parents about the general health of their children, and whether they had any physical or mental health problems that limited their activities. These included only health conditions or problems that had lasted or were expected to last for at least six months. Parents were also asked if their children had a respiratory problem, such as hay fever or asthma, any food, digestive or other allergies, or other chronic conditions, such as heart problems, epilepsy, cerebral palsy, or a kidney condition.

The question about children's general health yielded data that were highly skewed; the majority of parents considered their children to be in excellent or good health. The prevalence of children considered to be in 'fair' or 'poor' health was 1.1%. About 11% of children were considered to have problems with asthma, and 10% had allergies. About 7% of children had a chronic condition.

Results. As shown in Figure 2-3, the prevalence of children rated as being in fair or poor health did not vary substantially among communities; it ranged from 0% to 3.5%. There were ten communities where the prevalence of asthma was 8% or lower (although the difference from the national prevalence was statistically significant in only seven of the ten communities). The prevalence of allergies and chronic conditions varied among communities, but in nearly all cases, the prevalence for a community was within 3% of the national prevalence.

Figure 2-3. Variation among communities in the prevalence of kindergarten children with health problems
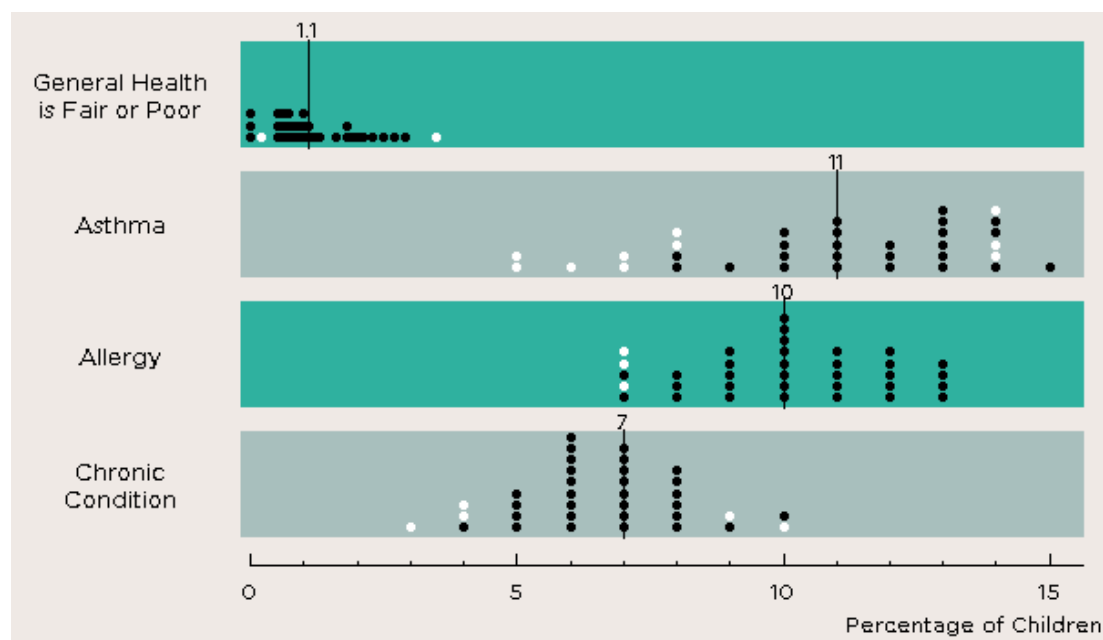
Note: Prevalences that differ significantly (p < 0.05) from the average prevalence are indicated with white dots. The vertical line is an estimate of the average prevalence.

Source: PIDACS, 2006-2007 and 2008-2009 (Canada).

III.

FAMILY BACKGROUND RELATED TO EARLY CHILDHOOD OUTCOMES

3. FAMILY BACKGROUND RELATED TO EARLY CHILDHOOD OUTCOMES

A. THE SOCIAL, CULTURAL AND ECONOMIC CONTEXT OF THE COMMUNITY

Information about the social, cultural and economic context of a community, where young children grow up, is helpful in understanding the role that families and neighbourhoods play in children's developmental outcomes. The social, cultural, and economic context of a community is often summarized with measures describing average levels of family income, the levels of education of its families, and the employment status of its residents. These factors embody what is often called socioeconomic status (SES).[6] Family structure, including the size of the family and whether it is a single- or two-parent family, is also relevant to children's outcomes.

The PIDACS includes measures of all these demographic factors and therefore it is possible to describe the extent to which they vary among communities, and to determine whether they are risk or protective factors for each of the developmental outcomes.

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[6] Socioeconomic status (SES) refers to the relative position of a person or family on an hierarchical social structure. It is a key concept in social science research, because it is related to most social outcomes, including people's physical and mental health, their long-term economic success, and their general well-being. An SES composite is usually based on people's income, level of education, and the nature of their occupations. Other family factors, such as family structure (i.e., family size, and single- or two-parent family) and whether the mother was a teenager when the child was born, are not considered dimensions of SES, even though they are correlated with SES and are usually related to children's developmental outcomes.

B. Variation among communities in family income

Earlier national research based on the National Longitudinal Survey of Children and Youth (NLSCY) indicated that family income had an influence on children's developmental outcomes. The results suggested that for children aged four and five there was a strong relationship between developmental outcomes and family income for children in families with incomes below $30,000 (Willms, 2002a). Among those children with family incomes above $30,000, however, the effects on children's outcomes associated with family income were not as strong. About 17%, or 1 in 6, Canadian children aged zero to five are living in families with annual family incomes below $30,000. In 2005, the median total income of Canadian two-parent families with both parents working was $79,100, while for single-parent, female-headed households it was $30,400 (Statistics Canada, 2007). Several studies have examined the effects of living in low-income families, and have compared the effects on children when they are in their pre-school years versus when they are older. The results suggest that the risk associated with living in a low-income family increases with duration, and that generally the effect during the early years is more detrimental to children than during their elementary or secondary school years (Duncan, Brooks-Gunn & Klebanov, 1994; McLeod & Nonnemaker, 2000). Family income is not the sole determinant of children's developmental outcomes, but children living in poor economic circumstances usually face significant challenges that are not experienced by other children.

Results. The 35 UEY communities vary considerably in the prevalence of children living in families with incomes below $30,000. Figure 3-1 shows the variation among communities. It ranges from 4% to 38% across the 35 communities. In 8 of the 35 communities, more than one in four children was living in a low-income family.

Figure 3-1. Variation among communities in the prevalence of kindergarten children living in families with incomes below $30,000
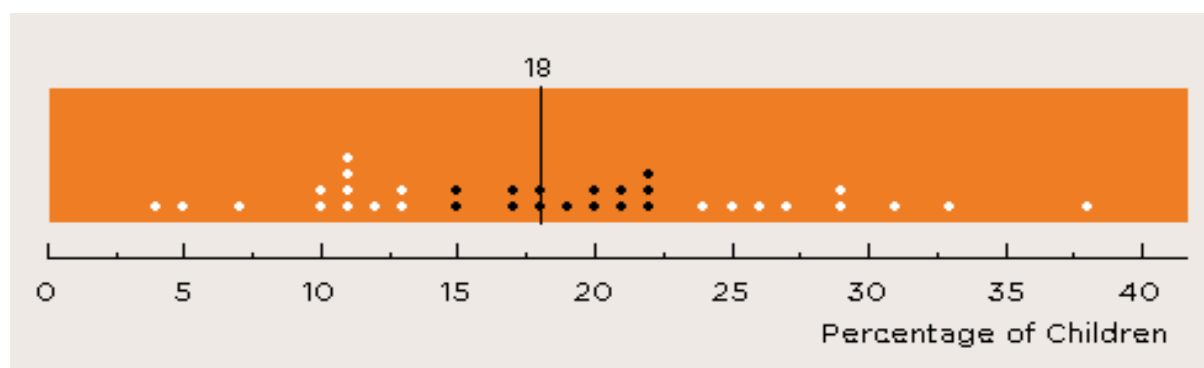
Note: Prevalences that differ significantly (p < 0.05) from the average prevalence are indicated with white dots. The vertical line is an estimate of the average prevalence.

Source: PIDACS, 2006-2007 and 2008-2009 (Canada).

## C. VARIATION AMONG COMMUNITIES IN PARENTAL EMPLOYMENT

National findings from the NLSCY showed children's developmental outcomes at ages four and five were only weakly related to parents' employment status. For mothers, there appears to be a trade-off: mothers who are not employed have more time to be engaged with their child (Cook & Willms, 2002), but they are also more likely to experience depression (Dahinten & Willms, 2002). The children of mothers who are working part-time tend to have slightly better developmental outcomes. As with PIDACS, the NLSCY did not have sufficient data from fathers to examine these relationships. In Chapter 4 of this report, results describing levels of parental engagement and maternal depression are presented.

Results. Figure 3-2 shows the variation among communities in the percentage of mothers and fathers who were not employed. On average, about 34% of the mothers were not employed. However, the percentage varied considerably among communities, ranging from 25% to 53%. In six communities more than 40% of the mothers were not employed. The percentage of fathers who were not employed varied from 3% to 16% across the 35 UEY communities, with an average prevalence of 6%. In four communities, more than 10% of the fathers were not employed.

Figure 3-2. Variation among communities in the prevalence of parents who were not employed

Note: Prevalences that differ significantly (p < 0.05) from the average prevalence are indicated with white dots. The vertical line is an estimate of the average prevalence.
Source: PIDACS, 2006-2007 and 2008-2009 (Canada).

D. VARIATION AMONG COMMUNITIES IN LEVELS OF PARENTAL EDUCATION

Several studies have found a significant relationship between levels of parents' education and a wide range of developmental outcomes (Bradley & Corwyn, 2002). During the early years, the level of the mother's education plays a more prominent role than that of the father (Willms, 2002a), but the effects of a father's education increase after children enter school. Theorists argue that parents' education is important as it is related to expectations and parenting behaviours.

Results. About 5% of Canadian mothers of kindergarten children had not completed secondary school, which is slightly lower than the figure for fathers, which is 7%. Across the 35 communities, the percentage of mothers that had not completed secondary school varied from 1% to 14%, while that of fathers varied from 1% to 21%. These results are displayed in Figure 3-3.

Figure 3-3. Variation among communities in the prevalence of parents who had not completed secondary school
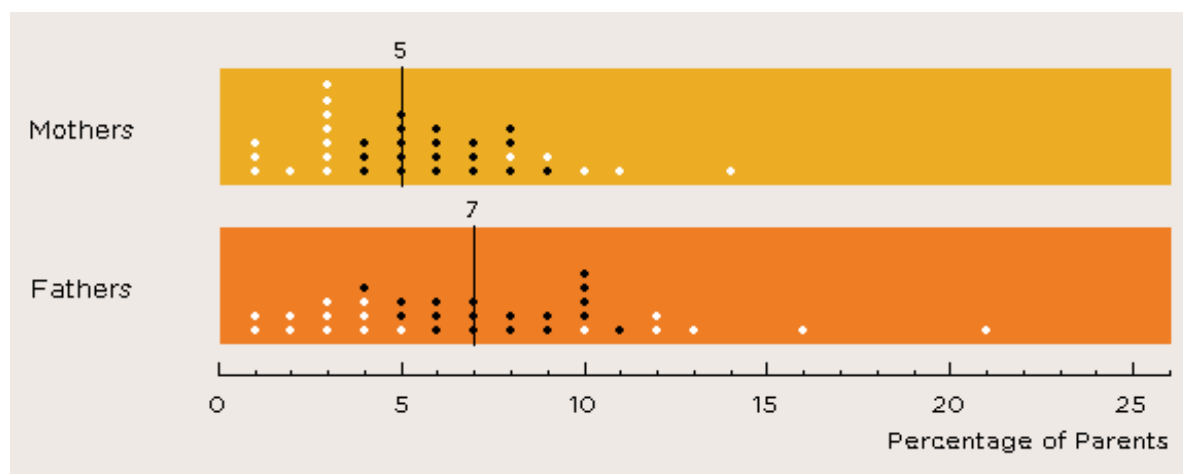
Note: Prevalences that differ significantly (p < 0.05) from the average prevalence are indicated with white dots. The vertical line is an estimate of the average prevalence.

Source: PIDACS, 2006-2007 and 2008-2009 (Canada).

E. Variation among communities in family structure

Two important elements of family structure are whether there are two parents living at home and the number of children in the family. Single mothers tend to be at increased risk of various physical and mental health problems and are likely to have low levels of education. Many single-parent families also experience prolonged periods of low income. Several large-scale studies have found negative effects on children's outcomes associated with growing up in a single-parent family, but these effects are largely attributable to low levels of income and education (Lipman, Offord, Dooley & Boyle, 2002). One of the problems often experienced by single parents is a lack of resources and transportation for their children to attend sports and recreational programs.

Another family structure variable, the number of brothers and sisters living at home, tends to be related to children's developmental outcomes; children with fewer siblings tend to have better cognitive outcomes (Willms, 2002a), and a lower prevalence of physical aggression (Tremblay et al., 2004).

Results. As estimated from the PIDACS data, the national prevalence of kindergarten children living in single-parent families is about 16%. The prevalence varied substantially across the 35 communities, ranging from 1% to 31%. These results are shown in Figure 3-4.

Figure 3-4. Variation among communities in the prevalence of kindergarten children living in single-parent families

Note: Prevalences that differ significantly (p < 0.05) from the average prevalence are indicated with white dots. The vertical line is an estimate of the average prevalence.
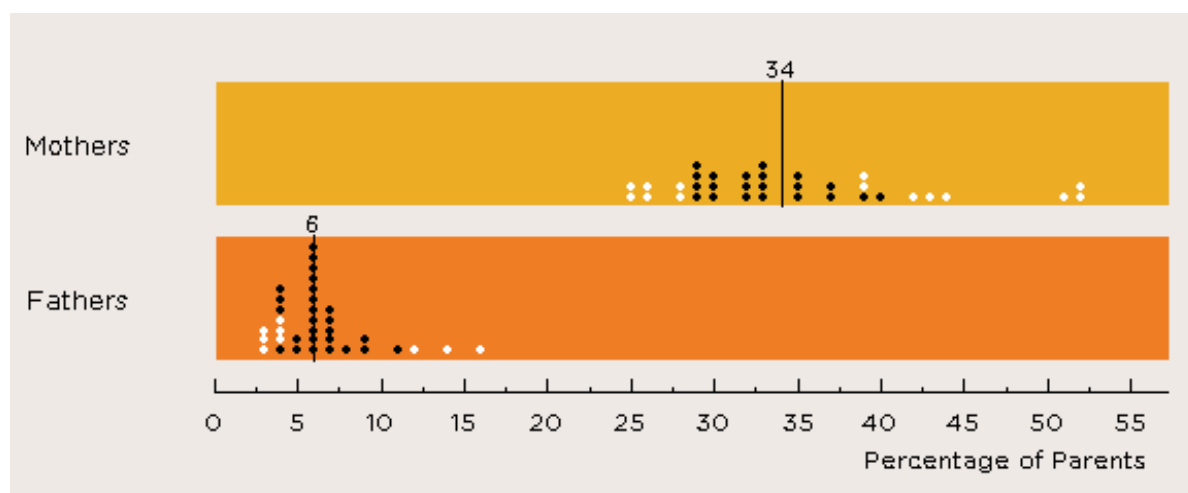**Source:** PIDACS, 2006-2007 and 2008-2009 (Canada).

Figure 3-5. Variation among communities in the average number of siblings
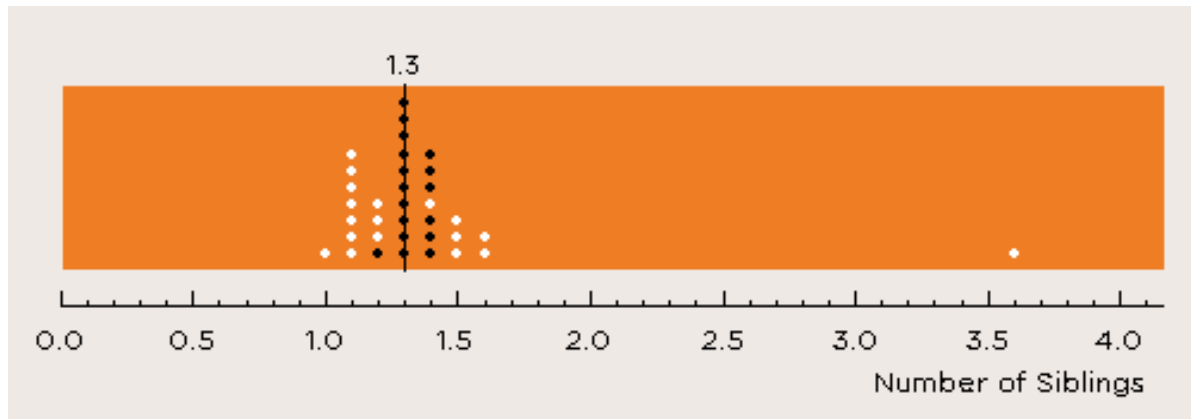
Note: Prevalences that differ significantly (p < 0.05) from the average prevalence are indicated with white dots. The vertical line is an estimate of the average prevalence.

Source: PIDACS, 2006-2007 and 2008-2009 (Canada).

The average number of siblings for Canadian kindergarten children is about 1.3. This aspect of family structure also varied across the 35 UEY communities, ranging from 1.0 to 3.6. The variation among communities is shown in Figure 3-5.

IV.

FAMILY PROCESSES RELATED TO EARLY CHILDHOOD OUTCOMES

4. FAMILY PROCESSES RELATED TO EARLY CHILDHOOD OUTCOMES

A. FAMILY LIFE IN UEY COMMUNITIES

The PIDACS included measures of four key aspects of family life that were identified in earlier research based on the NLSCY to be strongly related to children's developmental outcomes (Willms, 2002b):

"The research indicates that the important factors are parenting skills, the cohesiveness of the family unit, the mental health of the mother, and the extent to which parents engage with their children; and that these features affect and are affected by the neighbourhood, the school and the wider community". (p. 366)

This section of the report follows the same format as the previous section. The role of family process factors in influencing early childhood outcomes is discussed and the extent to which factors vary among communities is examined. Multi-level regression models are fit to the data to discern the strength of the relationships of these factors within and among communities. The effects of neighbourhood and social support are discussed in Chapter 5.

B. Variation among communities in family functioning and maternal depression

The concept of family functioning refers mainly to the cohesiveness and adaptability of the family. It concerns how well the family functions as a unit, not just the strength of the relationships between spouses or between parents and their children. A number of studies have shown that family functioning is related to children's developmental outcomes, especially children's behaviour (Racine & Boyle, 2002).

In this study, family functioning is assessed with 12 items pertaining to a family's ability to communicate, to make decisions and solve problems as a group, to discuss feelings and concerns, to get along together, and to feel accepted for whom they are. The total scores on the scale range from 0 to 36, with higher scores indicating a more positively functioning family. A cut-off score of 24 was used to denote families that had poor family functioning. About 10% of the families in the 21 UEY communities assessed with PIDACS in 2006-2007 (i.e., the Canadian PIDACS data) scored below 24 on this scale.

Other research indicates that about 5% to 7% of mothers experience depression after the post-partum period (Health Canada, 1999). Depression is often accompanied by insomnia, emotional problems, anxiety, and feelings of guilt. These in turn can have adverse effects on a mother's interactions with her child, leading to poorer social and cognitive skills. Depression among fathers may also have adverse effects, but the number of fathers studied in earlier research based on UEY Pilot data and the NLSCY was insufficient to estimate its effects.

The PIDACS interview included ten items pertaining to depression. Respondents were presented with a set of statements describing certain feelings and behaviours and asked to indicate how often they felt or behaved that way during the previous week. The scores were scaled on a ten-point scale, and a low-score cut-off of 2.5 was used to denote mothers who were displaying strong signs of depression. (Due to the small number of fathers who responded as the "person most knowledgeable" about the child, a measure of depression was calculated for only the mothers.) This approach is identical to that used in the NLSCY. On statements such as: "I felt that I could not shake off the blues, even with help from my family or friends", "I felt lonely", and "I had crying spells", these mothers would have indicated that they felt this way "occasionally or a moderate amount of time (3-4 days per week)" or "most or all of the time (5-7 days per week)". The cut-off of 2.5 resulted in a prevalence of mothers indicating signs of depression of about 11%. This prevalence is comparable to that found in other studies, including the NLSCY (Somers & Willms, 2002).

Figure 4-1. Variation among communities in the prevalence of families with low family functioning or with mothers experiencing depression
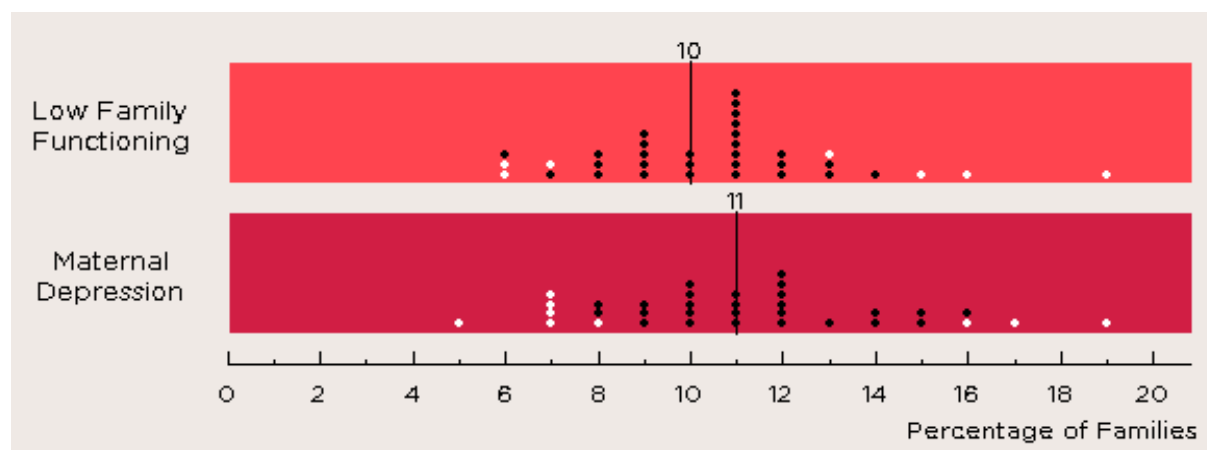
Note: Prevalences that differ significantly (p < 0.05) from the average prevalence are indicated with white dots. The vertical line is an estimate of the average prevalence.

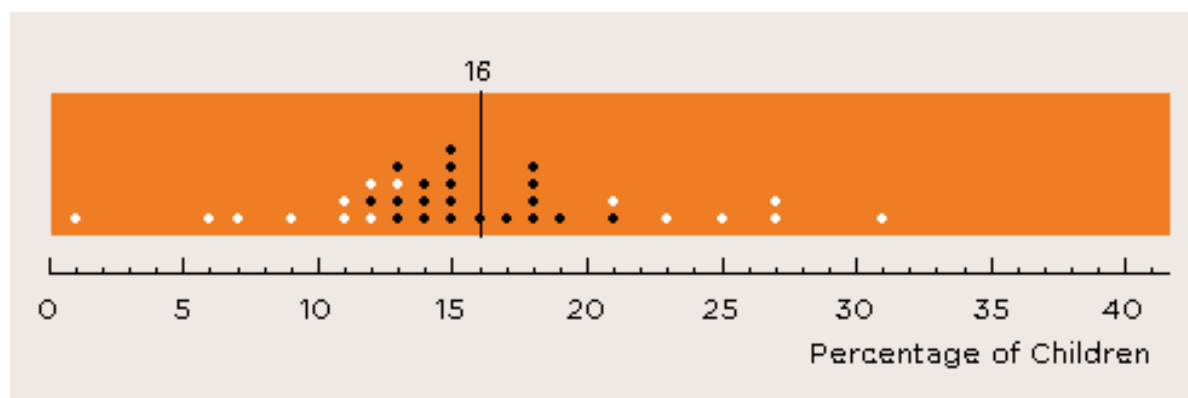**Source:** PIDACS, 2006-2007 and 2008-2009 (Canada).

The 35 UEY communities varied substantially in their levels of family functioning and maternal depression. The extent of this variation is shown in Figure 4-1. The prevalence of children living in families with low family functioning varied from 6% to 19% across the 35 communities. The variation among communities in the prevalence of children living in families with mothers experiencing depression is comparable; it ranges from 5% to 19% across the 35 communities.

C. VARIATION AMONG COMMUNITIES IN PARENTING STYLES

A number of studies have shown that children's developmental outcomes are associated with their 'style' of parenting (Baumrind, 1991). The term 'style' is used to describe a typology that includes: authoritative, authoritarian, permissive and neglectful. Children's outcomes tend to be more positive when parents monitor children's behaviour, are responsive to their needs, and encourage independence with a democratic approach (Chao & Willms, 2002). This style of parenting is called 'authoritative' parenting, which stands in contrast to 'authoritarian' parenting, characterized by parents being highly controlling and somewhat harsh in their approach to discipline, and 'permissive' parenting, characterized by parents being overly indulgent and setting few limits for behaviour. Parents who are not loving and responsive and do not adequately monitor their children's behaviour are referred to as 'neglectful'.

In the PIDACS, parents answered 14 questions that were used to develop two ten-point scales from which the four parenting styles can be derived: Love and Support and Authority.

Love and Support. This scale measures the extent to which parents are loving, responsive to the child's needs, and recognize the child's individuality. Parents who are loving and supportive tend to praise their children more, and are warm and expressive. Parents would score low on this measure if they tended to be harsh with their children, neglectful, or detached.

Authority. This scale measures parents' efforts to socialize their child into the family and society by supervising the child and making demands for mature behaviour. Parents scoring high on this scale tend to set boundaries and expectations. They consistently reinforce behaviour that is 'in bounds', and when their child is 'out of bounds' they guide him or her towards appropriate behaviour. These parents would be intolerant of misbehaviour, but not over-controlling.

These two constructs are commonly used in a typology of parenting styles, illustrated in Table 4-1, which classifies parents in terms of their responses to the needs of children for nurturance and supervision (Baumrind, 1991).

TABLE 4-1. Typology of parenting styles as a function of "Love and Support" and "Authority"			
		Love and Support	
		High	*Low*
Authority	*High*	**Authoritative**	**Authoritarian**
	Low	**Permissive**	**Neglectful**

Based on their scores on the measures of 'love and support' and 'authority', parents were classified as authoritative, permissive, authoritarian, or neglectful. With this classification, about 54% of Canadian parents are authoritative, 25% are authoritarian, 10% are permissive, and 11% are neglectful.

Figure 4-2. Variation among communities in the prevalence of parents of differing parenting styles
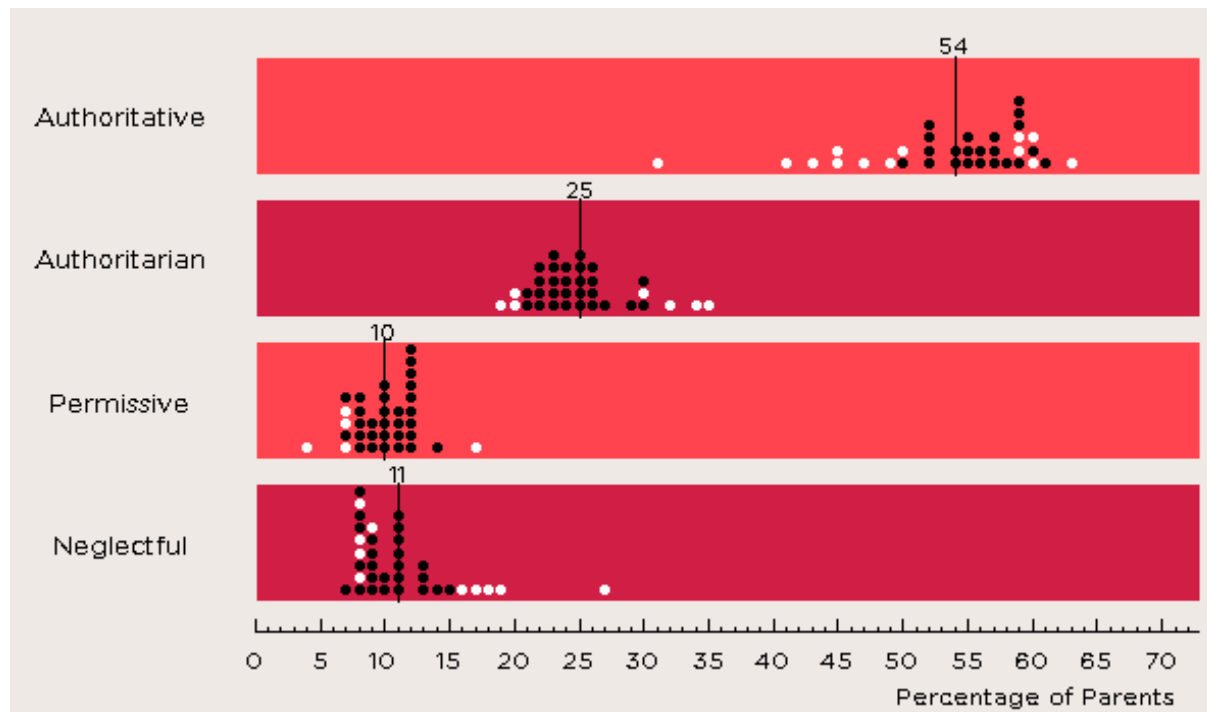
Note: Prevalences that differ significantly (p < 0.05) from the average prevalence are indicated with white dots. The vertical line is an estimate of the average prevalence.

Source: PIDACS, 2006-2007 and 2008-2009 (Canada).

The percentages classified as authoritative varied significantly among communities, as shown in Figure 4-2. The range is from 31% to 63%. The ranges for the other three types of parenting styles were not as large.

D. Variation among communities in parental engagement

One of the most important family factors affecting childhood outcomes is parental engagement with the child. Research, including research based on the NLSCY, has shown that parents who are engaged with their children in activities such as reading to them, playing games with them, or simply talking and laughing with them has positive effects on their development. The PIDACS includes a scale measuring the extent of parents' engagement in these activities as well as their efforts to teach specific concepts such as the names and sounds of letters, or counting.

The parental engagement scale is scored on a ten-point scale, similar to the scales regarding parenting styles. Figure 4-3 shows the extent of variation among communities in their levels of parental engagement. The national average score on the ten-point scale was 4.8, but the scores varied from 3.8 to 5.3 across the 35 communities.

Figure 4-3. Variation among communities in average levels of parental engagement

Note: Prevalences that differ significantly ($p < 0.05$) from the average prevalence are indicated with white dots. The vertical line is an estimate of the average prevalence.

Source: PIDACS, 2006-2007 and 2008-2009 (Canada).

An important aspect of parental engagement affecting children's health and well-being is support for children involved in sports activities in their community. The PIDACS includes measures of the extent to which children are engaged in organized and unorganized sports, the amount of time they are read to each day, and the time they spend watching television. Watching television is not considered a positive form of engagement, as excessive time watching television tends to diminish the time children spend being read to or involved in sports activities.

Research on Canadian youth has found that children's involvement in unorganized sports is an important protective factor against childhood obesity, more so than participation in organized sports involving a coach or instructor. The amount of time children spend watching television and videos or playing computer games is a risk factor for childhood obesity (Tremblay & Willms, 2003). In this case, the Canadian average levels of participation in organized and unorganized sports activities are arguably not the best benchmarks; these levels of participation are considered too low by many researchers, such as those who compile the annual report card for Active Healthy Kids Canada. Similarly, researchers maintain that Canadian children spend too much time in front of a television or computer (Active Healthy Kids Canada, 2007).

Figure 4-4. Variation among communities in kindergarten children's participation in organized and unorganized sports

Note: Prevalences that differ significantly (p < 0.05) from the average prevalence are indicated with white dots. The vertical line is an estimate of the average prevalence.
Source: PIDACS, 2006-2007 and 2008-2009 (Canada).

Figure 4-4 shows the variation among communities in the number of times per week that children were engaged in organized and unorganized sports activities. On average, they were engaged in organized sports that involve a coach or instructor about 1.3 times per week. This level of involvement does not vary much among the 35 communities; in 18 of the 35 communities, the average was between 1.1 and 1.7 times per week. There were three outliers, however: two communities with a very low level of involvement and one with a high level of involvement.

Unorganized sports do not involve a coach or instructor, and thus can include many types of activities that children engage in such as running, swimming, or sports activities in their neighbourhood. Canada's Physical Activity Guide for Children and Youth recommends that children accumulate 20 to 30 minutes of moderate exercise or 30 to 60 minutes of light or moderate exercise every day (Public Health Agency of Canada, 2007). Levels of involvement in unorganized sports varied substantially among the UEY communities. The average was 4.1 times per week, but the amount varied among communities from 2.9 to 4.9 times per week.

Figure 4-5. Variation among communities in the time kindergarten children spend watching television or videos
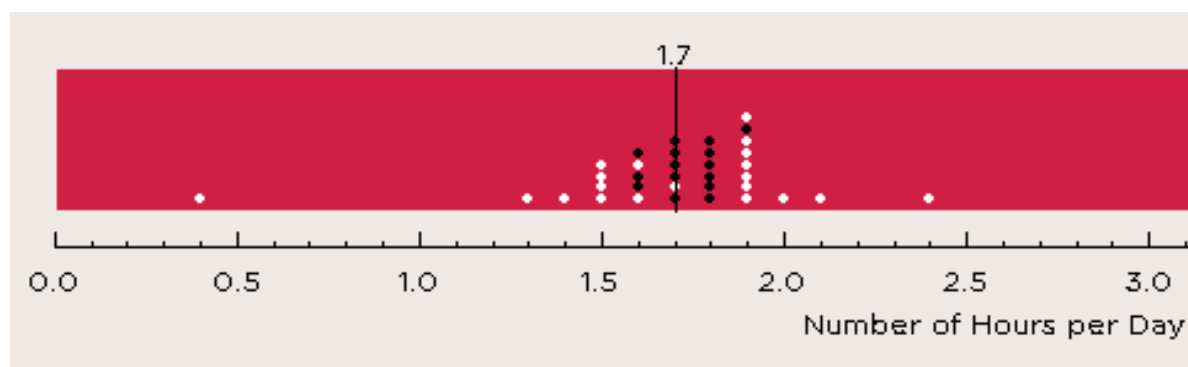
Note: Prevalences that differ significantly (p < 0.05) from the average prevalence are indicated with white dots. The vertical line is an estimate of the average prevalence.
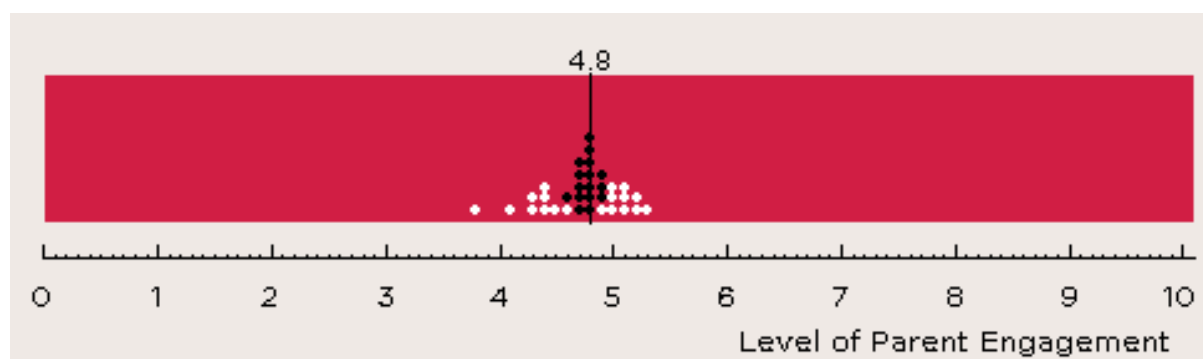
Source: PIDACS, 2006-2007 and 2008-2009 (Canada).

Figure 4-5 shows the amount of time kindergarten children spend watching television or videos is remarkably high – on average about 1.7 hours per day. The amount of "screen time" may be even higher, as the question used in PIDACS did not include computer use or the time spent on electronic games. There is one community where the average is considerably lower – only 0.4 hours per day, but there are 11 communities where the average is more than 1.85 hours per day.

Figure 4-6. Variation among communities in the percentage of kindergarten children who were read to at least once every day

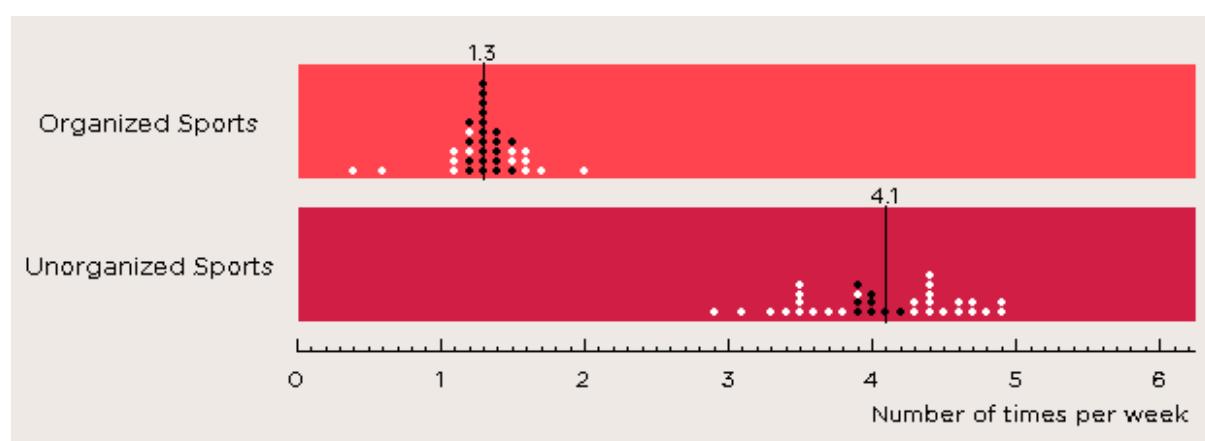**Note:** Prevalences that differ significantly (p < 0.05) from the average prevalence are indicated with white dots. The vertical line is an estimate of the average prevalence.

Source: PIDACS, 2006-2007 and 2008-2009 (Canada).

One of the most important aspects of parental engagement is reading to the child. On average, 76% of children were read to at least once per day. This also varied considerably among communities: in two communities the prevalence was less than 50%, while in 12 communities the prevalence was above 80%. These results are displayed in Figure 4-6.

V.

NEIGHBOURHOOD AND COMMUNITY FACTORS RELATED TO EARLY CHILDHOOD OUTCOMES

5. NEIGHBOURHOOD AND COMMUNITY FACTORS RELATED TO EARLY CHILDHOOD OUTCOMES

A. NEIGHBOURHOOD FACTORS AND SOCIAL SUPPORT

The quality of a neighbourhood and the local community can have positive effects on children's developmental outcomes in several ways. For example, the availability of local playgrounds and pools can directly affect children's physical development. When the neighbourhood is a safe place for children to play, it is easier for parents to be engaged with their children in ways that contribute to their health and well-being. Social support plays an important role; if parents feel supported by their neighbours, friends, and family, there tend to be lower levels of family stress and fewer parents experiencing depression (Mulvaney & Kendrick, 2005).

Three aspects of neighbourhood characteristics were assessed with the PIDACS: neighbourhood quality, neighbourhood safety, and neighbourhood cohesion. The PIDACS also included a measure of parents' social support. These measures are described below.

Neighbourhood Quality. The PIDACS asked parents some general questions about the quality of their neighbourhood, such as whether the neighbourhood had lots of other families with children, good schools and nursery schools, adequate facilities for children such as playgrounds and pools, good health facilities, actively involved residents, and accessible public transportation.

Neighbourhood Safety. The PIDACS parent interview included four questions on neighbourhood safety. Parents were asked whether it was safe to walk alone in their neighbourhood after dark; whether it was safe for children to play outside during the day; whether there were safe parks, playgrounds, and play spaces; and whether one could count on adults in the neighbourhood to watch out that children were safe.

Neighbourhood Cohesion. This PIDACS measure refers to whether neighbours are close and support each other. In communities that score high on this measure, parents feel that neighbours help each other, that when there is a problem the neighbours get together to deal with it, that there are adults in the neighbourhood that children can look up to, that parents watch out to make sure children are safe, and that when the family is away from home the neighbours keep their eyes open for possible trouble.

Social Support. This PIDACS measure assesses the level of support the parent feels from friends and family members. In communities that score high on this measure, parents feel that there are family and friends that help them feel safe, secure, and happy, that there are people they can turn to for advice or talk about problems, and that there are people who share their interests and have similar attitudes and concerns.

B. VARIATION AMONG COMMUNITIES IN NEIGHBOURHOOD FACTORS AND SOCIAL SUPPORT

The responses for questions on all four of the measures for neighbourhood quality and social support were scaled on a ten-point scale, such that 5.0 is a neutral response. Figure 5-1 shows the extent of variation among the 35 UEY communities in their average scores on these measures. Although all communities had average scores above 5.0, communities varied significantly in their assessments of neighbourhood factors and social support. The largest variation is in the general measure of neighbourhood quality; average scores ranged from 4.9 to 8.2. The parents in most communities considered their neighbourhoods to be safe places to raise their children. However, there was one community that had an average score that was more than one full point below the average for this scale. The average scores on the measure of cohesion had a similar range, and there were three communities that had scores that were well below the average. Average scores on the measure of social support were more tightly clustered, with all scores except one falling between 8.0 and 9.0.

Figure 5-1. Variation among communities in their average scores on measures of neighbourhood factors and social support
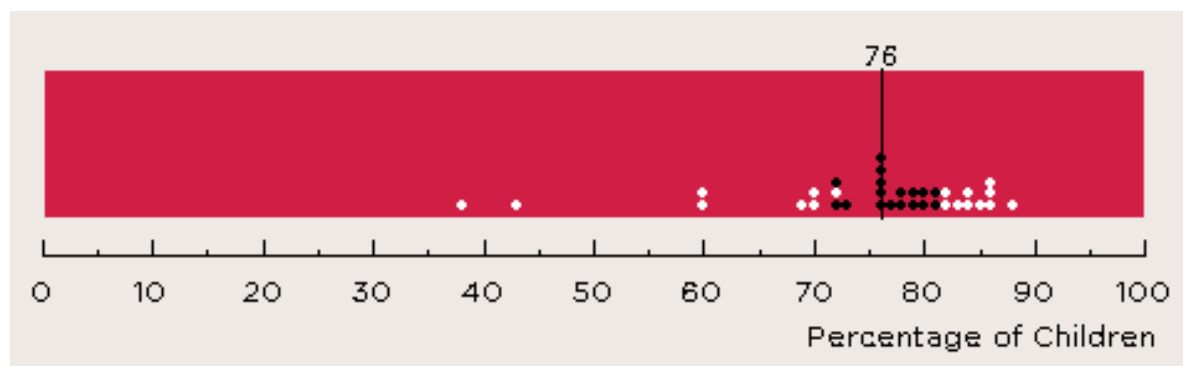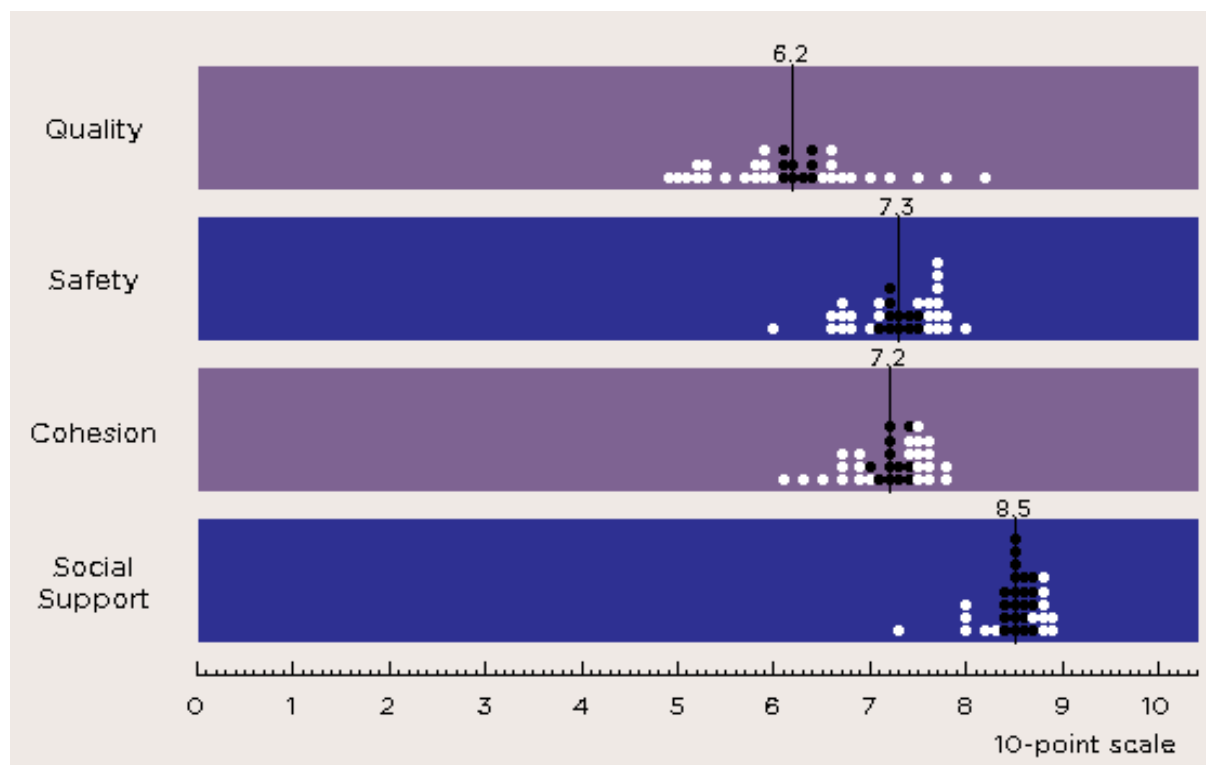

Note: Prevalences that differ significantly ($p < 0.05$) from the average prevalence are indicated with white dots. The vertical line is an estimate of the average prevalence.

Source: PIDACS, 2006-2007 and 2008-2009 (Canada).

VI.
RELATIONSHIPS BETWEEN CHILDREN'S OUTCOMES AND FAMILY AND COMMUNITY FACTORS

6. Relationships between Children's Outcomes and Family and Community Factors

A. TWO RESEARCH QUESTIONS

The results in the second section of the report indicated that the 35 UEY communities included in this study varied substantially in their young children's cognitive, behavioural, and health outcomes, while the results in the third, fourth and fifth sections indicate that the communities also varied considerably in a number of aspects of family background, in various aspects of family practices, and in the nature of the neighbourhoods of the community. A list of the measures is provided in Appendix B. Other studies have indicated that many of these factors are related to early childhood outcomes. In this study we can bring these three major sets of factors together to examine their joint relationships with children's outcomes.

This section of the report attempts to address two questions:

"What is the relationship of family background, family process, and neighbourhood factors to children's cognitive, behavioural, and health outcomes?" and

"To what extent can the variation among communities in childhood outcomes be explained by variation in demographic, family process and neighbourhood factors?"

The analysis uses a 'multi-level logistic regression model' to analyze the data. Although the technique is somewhat complicated, the results have a fairly straightforward interpretation. The first question is addressed by considering the magnitude of the 'odds-ratios' for each potential risk or protective factor. A factor is a risk factor for vulnerability if the odds-ratio is significantly greater than 1.0, while it is a protective factor for vulnerability if it is significantly less than 1.0. The use and interpretation of logistic regression models are provided in Box 1.

The 'multi-level' part of the term, 'multi-level logistic regression model', refers to a statistical approach usually called hierarchical linear models (HLM). An HLM model takes into account the multilevel structure of the data; in our case, we have children nested within communities. In essence, the logistic regression analysis is conducted separately within each community, and, therefore, we can obtain estimates of the odds-ratios for each community and then their average across the 35 communities. Our interest is in estimates of the average odds-ratios, across the 35 communities, for each factor. This yields an estimate of the likelihood that an average child with a certain set of characteristics would experience a particular outcome. We can also estimate, for each community, the likelihood that such a child would experience a particular outcome. In our case we ask, for each community, whether a hypothetical 'average child' (for example, a child with average family income, average levels of parental education, etc.) would experience an outcome such as inattention. Our interest is in whether this likelihood varies among the 35 communities. This provides a means for answering the question, "Does the variation among communities in these demographic factors account for some of the variation in childhood outcomes?"

Box 1. Logistic Regression Models

Logistic regression models are used when the outcome measure is dichotomous, such as whether or not a child is considered to have low receptive vocabulary scores, or has a particular behavioural or health problem. The explanatory variables can be either continuous, such as number of siblings, or dichotomous, such as whether or not the mother had completed secondary school. The logic underlying logistic regression is similar to multiple regression, except that the regression coefficients cannot be as easily interpreted. However, when converted to 'odds-ratios' with a simple mathematical transformation, these can be easily interpreted.

The 'odds' of an event occurring is the likelihood of an event occurring divided by the likelihood of an event not occurring. For example, if the likelihood of a boy experiencing depression is 20%, or 0.20, and the likelihood of a boy not experiencing depression is 80%, or 0.80, then the odds of a boy experiencing depression is 0.20 divided by 0.80, or 0.25. An 'odds-ratio' is simply the ratio of the odds for two different groups. If the odds of boys experiencing depression is 0.25, and the odds for girls is 0.15, then the odds-ratio associated with the child's sex is 0.25 divided by 0.15, or 1.67.

A logistic regression model yields estimates of the odds-ratios for each factor in the model. The odds-ratios are interpreted as the change in odds associated with a one-unit change in the factor, given all other factors in the model are held constant. In the case of dichotomous factors, such as whether or not a child's father was employed, the odds-ratio is simply the odds for fathers who were employed compared with the odds for those who were not employed. If there were no relationship, the odds-ratio would be 1.0, but if fathers' employment is a protective factor, we would observe an odds-ratio that was less than 1.0, perhaps in the range of 0.5 to 0.75. For example, if the odds-ratio for father's employment status were 0.75 for a model pertaining to depression, we would say that the odds of a child experiencing depression among employed fathers are only three-quarters of that for children whose fathers were not employed. Also, to estimate the cumulative risk associated with two or more risk factors one can multiply odds-ratios.

B. RISK AND PROTECTIVE FACTORS FOR COGNITIVE OUTCOMES

Table 6-1 provides estimates of the odds-ratios for the three cognitive outcomes associated with demographic, family process, and neighbourhood factors. Recall that the approach used for the analysis essentially estimates the relationship between an outcome and the set of explanatory factors within each community, and then determines the average of these relationships across the 35 communities. Also note that the effects associated with any particular variable are the effects *after controlling for other factors in the model*. For example, reading to a child is a strong protective factor for low receptive vocabulary. It may be that parents from higher socioeconomic backgrounds are more likely to read to their child every day, but this observed relationship is the estimated effect attributable to reading after taking socioeconomic factors into account.

The odds-ratios for females are all below 1.0, which indicates that females are less likely than males to have low levels of receptive vocabulary, number knowledge and pre-literacy skills. For example, the odds-ratio for receptive vocabulary is 0.67 for females; this indicates that the odds of girls having low levels of receptive vocabulary – a score below 85 – is only 67% that of boys. The child's sex has a very strong relationship with success on the measure of pre-literacy skills; the odds of girls having low levels of pre-literacy skills are 41% that of boys.

Low family income is a significant risk factor for low receptive vocabulary; the odds of children having low receptive vocabulary for children living in families with incomes below $30,000 are about one-third to one-half higher than that of families with incomes above $30,000. The relationship of low family income is also evident for poor number knowledge and pre-literacy skills, but the relationships were not statistically significant.

The children of mothers who were unemployed were more likely to have poor number knowledge skills than the children of mothers who were employed; the odds-ratio is 1.25. Similarly, children of fathers who were unemployed were more likely to have poor receptive vocabulary skills than those whose fathers were employed; the odds-ratio is 1.40. The odds-ratios for employment status across all three outcomes suggest that unemployment is a risk factor; however, not all of the relationships were statistically significant.

By far the most important risk factors were whether the parents had completed secondary school. The relationships were similar across the three outcomes, and of about the same magnitude for mothers' and fathers' education, with odds-ratios ranging from 1.36 to 1.73.

Family structure also plays a key role. Children in single-parent families were at greater risk of having poor number knowledge and pre-literacy skills, and children who had more brothers or sisters tended to be at greater risk of having poor receptive vocabulary skills.

Two of the family process factors stand out: children whose parents were classified as 'permissive' were at greater risk of having poor cognitive skills, while children that participated in organized sports were less likely to have poor cognitive skills. It may be that participating in organized sports is a proxy for a more pervasive form of engagement. Children who were read to daily were much less likely to have poor receptive vocabulary

scores, while those who spent more time watching television or videos tended to be at risk of having poor number knowledge and pre-literacy skills.

The neighbourhood factors had relatively weak effects, except for social support, which is a protective factor for low receptive vocabulary. Neighbourhood cohesion and safety were protective factors for low number knowledge, but the effects were relatively weak.

Table 6-1. Relationship between cognitive skill outcomes and demographic, family process and neighbourhood factors (Odds-ratios)

	Low Receptive Vocabulary	Low Number Knowledge	Low Pre-literacy Skills
Child's Sex and Family Background			
Child is Female	**0.67**	**0.81**	**0.41**
Low Income Family	**1.43**	1.21	1.12
Mother is Unemployed	1.07	**1.25**	1.08
Father is Unemployed	**1.40**	1.22	1.14
Mother did not Complete Secondary School	**1.62**	**1.63**	**1.45**
Father did not Complete Secondary School	**1.36**	**1.73**	**1.59**
Single Parent Family	1.12	**1.41**	**1.54**
Number of Siblings	**1.19**	1.06	1.02
Family Processes			
Low Family Functioning	1.16	**1.23**	1.11
Mother Experiencing Depression	1.23	1.07	0.93
Authoritarian Parent (vs. Authoritative)	0.99	0.93	**0.85**
Permissive Parent (vs. Authoritative)	**1.26**	**1.48**	**1.20**
Neglectful Parent (vs. Authoritative)	1.10	1.07	0.93
High Level of Participation in Organized Sports	**0.87**	**0.86**	**0.86**
High Level of Participation in Unorganized Sports	0.97	1.00	0.98
High Level of Parental Engagement	1.00	1.03	0.99
More than 2 hours per day of TV	0.98	**1.16**	**1.18**
Child is Read to Daily	**0.69**	0.99	1.07
Neighbourhood Factors (effects associated with 1-point increase on 10-point scale)			
Better Neighbourhood Quality	1.01	1.00	0.99
Safer Neighbourhood	0.96	**0.95**	0.98
More Cohesive Neighbourhood	1.01	**0.94**	0.96
More Social Support	**0.88**	0.98	1.02

Note. Sample size for the analysis of low receptive vocabulary was 10,131 children in 33 communities (two outlier communities are not included). Sample size for low number knowledge and low pre-literacy skills was 10,591 children in 35 communities. Figures in bold text are statistically significant ($p < 0.05$).

C. Risk and protective factors for behavioural outcomes

Table 6-2 provides estimates of the odds-ratios for the potential risk and protective factors associated with children's behavioural outcomes. As with the cognitive outcomes, girls were much less likely than boys to be at risk of poor developmental outcomes. However, the general pattern of observed relationships is considerably different from that of cognitive outcomes: family demographic factors play a less prominent role while family processes play a greater role.

For low positive social behaviour, maternal unemployment is a risk factor, while low maternal education and living in a single parent family appear as protective factors. Low family income, having a father that had not completed secondary school, and living in a single-parent family are risk factors for inattention. The latter two factors are also risk factors for physical aggression, and having more brothers and sisters in the family is associated with both depression and physical aggression.

Low family functioning is a significant risk factor for all five behavioural outcomes, with odds-ratios ranging from 1.29 to 1.53. With the exception of low positive social behaviour, maternal depression is also a significant risk factor across the behavioural outcomes, with odds-ratios ranging from 1.55 to 1.84.

Parenting style also plays a strong role. Compared with children whose parents were considered 'authoritative', those with 'authoritarian' parents were at greater risk of low positive social behaviour and inattention, while those whose parents were 'permissive' or 'neglectful', were at considerably greater risk of displaying behaviour problems.

Participation in organized and unorganized sports proved to be a protective factor for some of the behavioural outcomes, as did increased parental engagement. Reading to a child appeared as a risk factor for low positive social behaviour and inattention; it may be that there is a 'reverse causation'; for example, parents may be more likely to read to their child if their child is inattentive.

Among the neighbourhood factors, neighbourhood cohesion and social support was a protective factor for low positive social behaviour and depression, but it was a risk factor for physical aggression. Generally, the neighbourhood factors were weak in their effects.

Table 6-2. Relationship between behavioural outcomes and demographic, family process and neighbourhood factors (Odds-ratios)

	Low Positive Social Behaviour	Inattention	Anxiety	Depression	Physical Aggression
Child's Sex and Family Background					
Child is Female	**0.41**	**0.45**	1.00	0.92	**0.54**
Low Income Family	0.89	**1.28**	1.03	1.12	1.10
Mother is Unemployed	**1.25**	0.99	1.08	0.87	0.94
Father is Unemployed	0.92	1.15	1.18	**1.41**	1.12
Mother did not Complete Secondary School	**0.69**	1.18	0.80	1.05	0.80
Father did not Complete Secondary School	0.95	**1.38**	0.90	0.90	**1.53**
Single Parent Family	**0.80**	1.35	0.97	1.21	**1.51**
Number of Siblings	1.01	0.97	1.01	**1.15**	**1.30**
Family Processes					
Low Family Functioning	**1.37**	**1.45**	**1.29**	**1.53**	**1.52**
Mother Experiencing Depression	0.90	**1.55**	**1.99**	**1.73**	**1.84**
Authoritarian Parent (vs. Authoritative)	**1.72**	**1.24**	1.07	1.06	1.29
Permissive Parent (vs. Authoritative)	**1.92**	**3.57**	**1.79**	**2.19**	**3.66**
Neglectful Parent (vs. Authoritative)	**2.99**	**3.18**	**1.73**	**2.05**	**4.67**
High Level of Participation in Organized Sports	**0.94**	**0.91**	**0.91**	**0.89**	**0.92**
High Level of Participation in Unorganized Sports	**0.94**	0.98	0.99	**0.96**	1.04
High Level of Parental Engagement	**0.83**	0.96	1.01	0.93	0.96
More than 2 hours per day of TV	0.95	**1.08**	**0.91**	1.01	**1.10**
Child is Read to Daily	**1.23**	**1.21**	1.11	1.11	1.08
Neighbourhood Factors (effects associated with 1-point increase on 10-point scale)					
Better Neighbourhood Quality	1.03	0.98	0.98	0.97	1.03
Safer Neighbourhood	1.02	0.98	0.96	0.94	0.99
More Cohesive Neighbourhood	**0.93**	0.96	1.01	1.05	1.02
More Social Support	**0.94**	1.04	0.96	**0.92**	**1.08**

Note. Sample size for these analyses was 11,343 children in 35 communities. Figures in bold text are statistically significant ($p < 0.05$).

D. Risk and protective factors for health outcomes

Table 6-3 provides the estimates of the odds-ratios for the four health outcomes examined in this study. Girls are less prone than boys to having poor physical health, allergies, asthma or chronic health conditions.

Family demographic factors appear to play a relatively weak role as protective factors for three of the four health outcomes. The exception is allergies, and in this case there are countervailing effects; for example, low family income and having a mother who is not employed are risk factors while having an unemployed father is protective. Note that the prevalences of these health problems are relatively low, ranging from 1.1% for poor general health to 11% for asthma. Thus, some observed odds-ratios, such as 1.49 for low family income with poor general health, are quite large but not statistically significant.

Maternal depression is a risk factor for all four health outcomes. In this case there may be a certain degree of reverse or reciprocal causation; mothers whose children are experiencing health problems may be more prone to depression. Children of permissive parents were more likely to have asthma, while those with neglectful parents were prone to poor general health.

As with the other cognitive and behavioural outcomes, neighbourhood factors had relatively weak effects on health outcomes and in most cases were not statistically significant.

Table 6-3. Relationship between health outcomes and demographic, family process and neighbourhood factors (Odds-ratios)

	Poor Physical Health	Asthma	Allergies	Chronic Health Condition
Child's Sex and Family Background				
Child is Female	**0.69**	**0.65**	**0.82**	**0.70**
Low Income Family	1.49	1.13	**1.34**	1.19
Mother is Unemployed	0.88	0.96	**1.13**	1.07
Father is Unemployed	1.10	1.05	**0.66**	0.81
Mother did not Complete Secondary School	1.59	1.04	0.81	1.17
Father did not Complete Secondary School	**1.93**	1.10	**0.73**	1.00
Single Parent Family	1.55	**1.32**	0.94	0.89
Number of Siblings	0.86	**0.90**	**0.87**	0.98
Family Processes				
Low Family Functioning	1.03	0.95	1.03	**1.31**
Mother Experiencing Depression	**2.13**	**1.28**	**1.30**	**1.36**
Authoritarian Parent (vs. Authoritative)	0.76	1.05	1.02	0.98
Permissive Parent (vs. Authoritative)	1.61	1.01	0.98	1.10
Neglectful Parent (vs. Authoritative)	**1.94**	1.04	1.01	0.98
High Level of Participation in Organized Sports	**0.81**	**1.04**	0.97	0.95
High Level of Participation in Unorganized Sports	**0.91**	0.99	1.00	0.98
High Level of Parental Engagement	**1.20**	**1.07**	**1.07**	**1.09**
More than 2 hours per day of TV	0.97	1.00	0.97	0.97
Child is Read to Daily	1.13	0.95	0.97	1.04
Neighbourhood Factors (effects associated with 1-point increase on 10-point scale)				
Better Neighbourhood Quality	0.93	0.97	**0.95**	0.98
Safer Neighbourhood	0.99	**0.93**	0.97	0.94
More Cohesive Neighbourhood	0.92	**1.05**	1.01	1.00
More Social Support	1.02	1.01	**1.05**	1.03

Note. Sample size for these analyses was 11,343 children in 35 communities. Figures in bold text are statistically significant ($p < 0.05$).

E. Variation among communities accounted for by demographic, family process and neighbourhood factors

UEY provides a unique opportunity to discern whether variation among communities in certain risk and protective factors accounts for some of the observed variation among communities in children's developmental outcomes.

For a risk or protective factor to account for variation in an outcome, two conditions must be present: (a) levels of the factor must vary significantly among communities, and (b) the factor must have a strong relationship with the outcome.

For example, the child's sex is an important explanatory factor within every community; females are less at risk than boys for experiencing problems in all three domains - cognition, behaviour and health. However, the ratio of girls to boys does not vary among communities, and, therefore, the child's sex *cannot* account for any of the among-community variation. As another example, mothers' employment status varies considerably among communities (see Figure 3-2), but maternal unemployment is not a significant risk or protective factor for 9 of the 12 outcomes (low receptive vocabulary, low pre-literacy skill, inattention, anxiety, depression, physical aggression, poor physical health, asthma, and chronic health conditions). Therefore, maternal employment *cannot* account for among-community variation, at least for these nine outcomes. However, maternal depression is a factor that meets both criteria: the percentage of mothers showing signs of depression varies significantly among communities and it is a significant risk factor for 8 of the 12 outcomes considered. Therefore, this factor *can* account for some of the variation among communities in their childhood outcomes.

A common approach for considering the relative importance of a set of explanatory factors is to estimate the proportion of variance among communities explained by the explanatory factors. One first estimates the variance among communities without any explanatory variables in the model – this is called the 'null model' – and then one estimates the variance among communities after entering the set of explanatory variables. The reduction in variance divided by the initial (null-model) variance is the proportion of variance explained by this set of explanatory variables.[7]

The first column of Table 6-4 provides estimates of the variation among communities in the prevalence of children with poor developmental outcomes for each of the measures. The results are expressed in standard deviation units. For example, the average prevalence of allergies across the 35 communities is about 10%. However the prevalence of allergies varies significantly among communities as was observed in Figure 2-3. The standard deviation of the prevalence is 1.9; therefore we would expect that most of the communities

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[7] The estimation of variance explained with multilevel logistic regression models is slightly more complicated, as one must work with the variation in the estimates of the level 2 (community) intercepts. However, the variation among level 2 intercepts for a model that includes covariates depends on where the covariates are centered. In these analyses, the covariates were centered on the full-sample means. With multi-level models the variation among communities after taking account of the explanatory factors can be larger than the unadjusted variation. In these cases, the estimate of variance explained is not provided.

will have a prevalence that falls within a range of 10% plus or minus two standard deviations (3.8%).

The second column of Table 6-4 provides estimates of the proportion of variance among communities attributable to the seven family background factors. For example, for low receptive vocabulary, about 12% of the variation among the 35 UEY communities is attributable to the set of family background factors examined in this study. The third column provides estimates of the proportion of variance among communities attributable to family processes, which include family functioning, maternal depression, and the factors related to parenting styles and engagement with the child. Note that the models used to estimate these proportions of variance were for family processes alone, without family background as controls. Similarly, the fourth column provides estimates of the variation among communities accounted for by the four community factors, without controls for family background or family processes. The fifth column gives the estimates of the variation among communities accounted for by family background and family processes, and the last column provides estimates for all factors combined.

Variation among Communities. The first column of Table 6-4 shows the extent of variation among communities in each of the outcomes. The results show clearly that the prevalence of children with low scores on the cognitive measures vary considerably among communities, much more so than the behavioural or health outcomes.

Family Background. The findings of this analysis reveal that family background plays an important role in explaining variation among communities for most outcomes. Generally it plays a more important role in explaining variation among communities in children's behavioural outcomes and their general health status than for other outcomes. In the case of physical aggression, for example, almost three-quarters of the variation among communities is attributable to family background. This means that the likelihood of a child with average family background characteristics exhibiting problems with physical aggression is virtually the same in every community.

Family Processes. The family process factors included in this study accounted for about one-third to one-half of the variation among communities in children's behavioural outcomes. They had less explanatory power for cognitive outcomes. They did account for over one-half of the variation in parents' assessments of their children's general health status, but did not account for much of the variation among communities in the prevalence of asthma, allergies or chronic conditions.

Neighbourhood Factors. The variables describing neighbourhood quality and social support accounted for about 18% to 30% of the variation among communities in the prevalence of low receptive vocabulary, inattention, depression, and poor physical health. For the other factors these factors had negligible effects.

Family Background and Family Processes Combined. The fifth column of Table 6-4 shows the joint effects of family background and family processes combined. For example, for receptive vocabulary, about 12% of the variation among communities could be accounted for by family background and 18% by family processes. Taken together, these

two sets of factors accounted for 21% of the variation among communities. For the behavioural outcomes, between 50% and 95% of the variation is accounted for by the two sets of factors. Also, 83% of the variation among communities in the prevalence of poor general health can be explained by family background and family processes.

All Factors Combined. The last column shows the percentage of variation among communities explained by all three sets of factors. The inclusion of neighbourhood variables in most cases reduces the percentage of explained variance or has no appreciable effect. In the case of anxiety, its inclusion lowers the estimate considerably. Thus, the results presented in the fifth column are preferred as they provide a more stable account of the variation among communities that can be accounted for by the variables included in this study

Table 6-4. Variation among communities in kindergarten children's outcomes and the percentage of variation accounted for by demographic, family process and neighbourhood factors

	Variation among Communities (standard deviation of prevalence)	Percentage of Variation Explained				
		Family Background	Family Processes	Neighbour-hood Factors	Family Background and Family Processes	All Factors (total variance explained)
Low Receptive Vocabulary	7.9	11.8	17.5	20.6	21.0	28.1
Low Number Knowledge	6.1	13.5	16.5	8.8	19.2	19.6
Low Pre-Literacy skills	12.5	-	0.7	0.2	-	-
Low Positive Social Behaviour	3.7	9.9	42.8	-	48.0	45.5
Inattention	2.6	37.9	33.8	23.7	58.0	56.2
Anxiety	2.1	29.1	51.0	-	70.8	34.3
Depression	1.7	33.3	59.3	18.1	67.3	58.7
Physical Aggression	1.4	74.5	57.5	-	94.6	98.0
Poor Physical Health	0.9	58.8	58.9	30.4	83.3	97.1
Asthma	2.8	2.8	1.8	-	0.5	-
Allergies	1.9	29.1	-	2.0	21.9	24.0
Chronic Conditions	1.5	13.8	13.4	-	17.8	11.1

VII.
SUMMARY AND CONCLUSIONS

7. Summary and Conclusions

A. Summary of Findings

This study uses data from 35 communities (see Appendix A) that participated in the Understanding the Early Years (UEY) Initiative – 20 from 2005 to 2008 and 15 from 2007 to 2010. UEY is a national initiative funded and managed by Human Resources and Skills Development Canada. Its aim is to gather community-specific information about kindergarten children and the places where they are raised, which can help communities design policies and deliver programs that are sensitive and responsive to local needs. Community research reports have been prepared for each of the participating communities. The community reports provide detailed information on how kindergarten children in each community are faring in their cognitive, behavioural, and health outcomes, and on important family, neighbourhood and social support factors that influence young children's development.

This report integrates the findings from the UEY projects implemented under the Initiative in each of the participating communities. One of its aims is to describe the variation among communities in kindergarten children's developmental outcomes and the family, neighbourhood and social support factors that are related to kindergarten children's outcomes, as suggested in earlier research. Achieving this aim can help the participating communities situate their results in a broader context, and thereby strengthen their ability to use local data to make decisions to enhance children's lives. A list of the measures is provided in Appendix B.

The UEY data also have the potential to contribute to the broad literature on children's development. They are unique in at least three important ways. One is that they include large community-based samples on a wide range of children's outcomes and the factors that are presumed to be important risk and protective factors. Thus, the data provide an opportunity to determine the extent to which these outcomes and potential risk and protective factors vary among communities. Second, the data provide an opportunity to determine the strength of the relationships between children's outcomes and a wide range of family and neighbourhood factors. Other studies have examined many of these relationships, but very few studies have included such a wide range of outcomes and explanatory factors in the same study. The data collected within any one UEY community does not provide a very powerful test of these relationships, but with comparable data on 35 communities, we essentially have a 35-study meta-analysis of the important relationships, thereby providing robust estimates of the effects of those explanatory factors on children's outcomes. Finally, we know that the policies and programs aimed at enhancing children's early development differ in important ways among neighbourhoods, communities, and regions across Canada. We also know that children's developmental outcomes vary among communities. However, we know relatively little about whether factors such as parenting style, parental engagement, or neighbourhood quality differ among communities, and if so, whether these differences explain some of the variation among communities in their childhood outcomes. This is the first study in Canada that has attempted to address this question.

The analyses are based on data collected with the Parent Interviews and Direct Assessments of Children Survey (PIDACS), one of the key instruments of UEY. These data include information on over 15,000 children and their families from 35 communities. The analyses in this report used a regression technique called multilevel logistic regression, which is appropriate for analyses when the data are hierarchically clustered, such as children nested within communities, and when the outcome variable of interest is dichotomous, such as when a child is classified as having or not having a behavioural problem. The results of a logistic regression analysis are typically expressed as 'odds-ratios', which allow one to not only discern whether an observed relationship is statistically significant, but also whether it is important in substantive terms. For example, the results indicated that the odds-ratio for girls versus boys of having low receptive vocabulary scores was 0.67. This suggests that the odds of a girl having low receptive vocabulary were only two-thirds those of boys. In contrast, the odds-ratio of experiencing low receptive vocabulary is 1.62 for a child whose mother had not completed secondary school compared with a child whose mother had completed secondary school. This indicates that the child whose mother had not completed secondary school is more than one-and-a-half times as likely to have low receptive vocabulary as the child whose mother had completed secondary school.

There are three major findings emerging from the analyses in this study.

1. **Communities vary substantially in the developmental outcomes of children at ages 5 to 6**. The study examined the prevalence of children's vulnerability in a set of three cognitive skills outcomes (receptive vocabulary, number knowledge, and pre-literacy skills), five behavioural outcomes (low positive social behaviour, inattention, anxiety, depression, and physical aggression), and four health outcomes (general physical health, asthma, allergies, and chronic conditions). Although the variation among communities in the prevalence of childhood vulnerability is statistically significant for all outcomes, it is much greater for cognitive outcomes than for behavioural or health outcomes. Among the behavioural outcomes, the greatest variation was observed for the prevalence of children with low positive social behaviour and problems with inattention.

2. **There are a number of risk and protective factors that have moderate to strong relationships with children's developmental outcomes. However, the relationships varied across the outcome domains.**

    a. **Boys are significantly more likely than girls to have low cognitive scores, behaviour problems, and health problems**. The results indicate that the odds of boys being vulnerable on 10 of the 12 child outcomes assessed in this study were 1.2 to 2.4 times that of girls.

b. **The strongest predictors of whether children have low scores on measures of receptive vocabulary, number knowledge and pre-literacy skills were whether the parents had completed secondary school and whether the parents had a permissive parenting style**. Living in a low-income or single-parent family were also risk factors, but their effects were not significant across all three cognitive measures. Participation in organized sports was a moderately strong protective factor.

c. **For behavioural outcomes, family processes played a more important role than socioeconomic factors.** Three family process factors emerged with consistently strong relationships to behavioural outcomes: poor family functioning, maternal depression, and a permissive or neglectful parenting style. As with cognitive outcomes, participation in organized sports was a protective factor.

d. **Only one factor, maternal depression, was consistently related to health outcomes.** There may be reverse or reciprocal effects; that is, mothers may be more prone to depression if their children are suffering health problems.

c. **The neighbourhood factors used in this analysis generally had weak effects and inconsistent relationships with outcomes in all three domains.**

3. **The risk and protective factors identified in this study account for some of the variation among communities in children's developmental outcomes**. About 20% of the variation among communities in their cognitive outcomes could be accounted for by the family background and family process factors measured in this study. In contrast, these factors accounted for between 48% and 95% of the variation among communities in behavioural outcomes. For health outcomes, the findings are mixed: the family background and process factors explained over 80% of the variation among communities in the prevalence of poor physical health, but only about 20% of the variation among communities in the prevalence of allergies or chronic conditions, and virtually none of the variation among communities in the prevalence of asthma.

B. CONCLUDING REMARKS

The Understand the Early Years (UEY) Initiative is providing communities with valuable information about their needs and strengths. It is helping communities with different economic, social and physical characteristics understand how their young children are doing, what the community is doing to support those children, and the family and community factors that influence young children's development. The Community Research Report for each community presents data on kindergarten children's development and on family and community experiences. This report presents research results that can help communities understand 'what matters most' for the various childhood outcomes measured by the Parent Interviews and Direct Assessments of Children Survey. For example, several communities have a significantly high proportion of children with low receptive vocabulary, low number knowledge skills, and low pre-literacy skills. This report suggests that family background, particularly parents' level of education and parent's style of parenting, play an important role in the development of these skills. Also, children who are read to more frequently are less at risk of poor receptive vocabulary, and children who spend less time watching TV or videos are less likely to have poor number knowledge or pre-literacy skills. Participation in organized sports is also a protective factor for these outcomes.

A common misperception is that childhood vulnerability is mainly attributable to poverty and family structure. This study shows clearly that this is not always the case. Children from low-income families and single-parent families tend to be more at risk of experiencing cognitive, behavioural, or health problems than those in two-parent families with average or above average family incomes. However, other factors also play important roles. These include family functioning, maternal depression, parenting styles, and social support. For some developmental outcomes, especially behavioural outcomes, these factors play a more important role than living in a low-income or single-parent family.

Under the UEY Initiative, in each community, local UEY project staff work with their UEY coalition of community organizations and individuals to create an evidence-based Community Action Plan to address the gaps in community supports for their young children identified by the UEY research. In developing their action plans, they consider a range of information, including the results from their community research reports. An important consideration for many communities will be whether to adopt strategies targeted towards particular groups of children, such as those in low income-families or single-parent families, or to adopt more general universal strategies, such as trying to improve parenting skills or engagement among all families of young children.

This research suggests that one must consider each outcome separately and how a particular outcome is related to the demographic characteristics of the community and its profile on measures of family and neighbourhood characteristics. For example, this research suggests that children living in single-parent families are especially prone to asthma. One might take this to the next step by asking about the living conditions in these families; it may be that many of these children are living in apartments with carpets which render them more prone to asthma. Smoking in the home may also be a contributing factor. Trying to address these issues would be an appropriate targeted strategy.

The findings in this report indicate that measures of neighbourhood quality have rather weak relationships with childhood outcomes after taking account of family background and family processes measured at the individual level. This does not mean that neighbourhood quality does not matter; rather, it means that most of the variation associated with neighbourhood quality is captured by the family-related factors included in this study.

The UEY Initiative stands to make important contributions to community development. Within each of the participating communities, through the development of their Community Action Plans, and the events and activities to disseminate the research information to parents, service providers, educators and others, the UEY staff and their coalitions will engage communities in the development of their young children.

UEY is also an important research tool. The concluding remarks to *Vulnerable Children* (Willms, 2002c), which was based on data from Canada's National Longitudinal Survey of Children and Youth, noted that although the research found that communities varied in their outcomes, it was difficult to determine why they varied. A major problem was the unit of analysis: there was little utility in considering provinces as 'communities' because there were too many factors that contributed to the observed differences, while census areas tended to be too small to achieve accurate estimates of prevalence. He also noted that the NLSCY did not afford much information on resources or practices at these levels, and concluded, "This problem is being addressed with the development of the UEY project" (p. 351). The UEY data are limited in that they are cross-sectional, and thus one cannot make strong causal statements. However, UEY has allowed us to better understand the factors that contribute to differences among communities. In this respect it can be seen as an important complement to the NLSCY; together these two studies have provided important information about how best to improve children's developmental outcomes in Canada.

Studies such as UEY and the NLSCY provide *trailing indicators* of children's developmental outcomes and the risk and protective factors associated with them. In addition to providing a rich descriptive account of how well communities and provinces are doing, trailing indicators are important because they can help us establish standards, provide an assessment of the extent of inequalities among ethnic and socioeconomic groups, and enable us to discern the impact of certain risk and protective factors. This information can inform us on how best to design and target interventions. The next generation of community studies can emphasize the collection of *leading indicators* of children's development – indicators that measure outcomes or symptoms as children are developing – and the effects of different kinds of interventions on children's development. For example, nearly all children in New Brunswick and Prince Edward Island are assessed in their cognitive and language skills *before* they enter kindergarten with the *Early Years Evaluation*, and families with children who have relatively poor developmental skills are provided with extra support before their children enter kindergarten (Willms, 2009). However, these interventions vary considerably in their type and intensity, and we do not know what kinds of interventions are most effective. The UEY research has provided a strong empirical base from which to launch this next generation of studies.

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APPENDICES
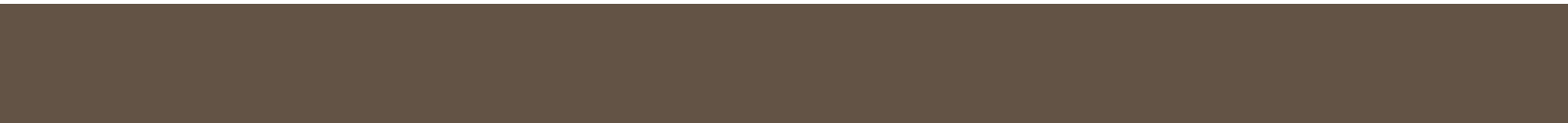
APPENDIX A: LIST OF PARTICIPATING COMMUNITIES

COMMUNITY	HOST ORGANIZATION
UEY Pilot Communities (5) Funded in 2000	
UEY PRINCE ALBERT	*Saskatchewan Rivers School Division No. 119, Prince Albert, Saskatchewan*
UEY WINNIPEG	Winnipeg School Division No.1, Winnipeg, Manitoba
UEY NORTH YORK	Adventure Place, North York, Ontario
UEY PRINCE EDWARD ISLAND	Early Child Development Association of PEI, Charlottetown, Prince Edward Island
UEY SOUTHWESTERN NEWFOUNDLAND	Community Education Network, Stephenville, Newfoundland
UEY Pilot Communities (7) Funded in 2001	
UEY ABBOTSFORD	United Way of the Fraser Valley, Abbotsford, British Columbia
UEY SASKATOON	Saskatoon Communities for Children, Saskatoon, Saskatchewan
UEY SOUTH EASTMAN	South Eastman Health/Santé Sud-Est Inc., Steinbach, Manitoba
UEY NIAGARA FALLS	Early Childhood Community Development Centre, St. Catharines, Ontario
UEY DIXIE-BLOOR OF MISSISSAUGA	Peel District School Board, Mississauga, Ontario
UEY MONTRÉAL	Centre 1, 2, 3 Go!, Montréal, Québec
UEY HAMPTON	Hampton Alliance for Lifelong Learning, Hampton, New Brunswick

UEY Communities (21) Funded in 2005

UEY GREATER VICTORIA	Community Social Planning Council of Greater Victoria, Victoria, British Columbia
UEY MISSION	United Way of the Fraser Valley, Abbotsford, British Columbia
UEY OKANAGAN SIMILKAMEEN	School District No. 53 (Okanagan Similkameen), Oliver, British Columbia
UEY SUNSHINE COAST	Powell River Child, Youth and Family Services Society, Powell River, British Columbia
UEY CAMPBELL RIVER	Campbell River Child Care Society, Campbell River, British Columbia
UEY NORTH SHORE	North Shore Community Resources, North Vancouver, British Columbia
UEY NORTHEAST SASKATCHEWAN	Northeast Regional Intersectoral Committee, Melfort, Saskatchewan
UEY DIVISION SCOLAIRE FRANCO-MANITOBAINE	Division scolaire franco-manitobaine, Lorette, Manitoba
UEY NIAGARA REGION	Early Childhood Community Development Centre, St. Catharines, Ontario
UEY OTTAWA	Success by 6/6 ans et gagnant Ottawa, Ottawa, Ontario
UEY NORTHERN REGION OF ONTARIO	Superior Children's Centre, Wawa, Ontario
UEY KAWARTHA LAKES AND HALIBURTON COUNTY	Ontario Early Years Centre - Haliburton Victoria Brock, Lindsay, Ontario
UEY LOWER HAMILTON	Wesley Urban Ministries, Hamilton, Ontario
UEY MILTON	Reach Out Centre for Kids, Burlington, Ontario
UEY NORTHUMBERLAND COUNTY	Northumberland Child Development Centre, Port Hope, Ontario
UEY POINTE-DE-L'ÎLE	Centre 1, 2, 3 Go!, Pointe-de-l'Île, Montréal, Québec
UEY MONTRÉAL CHASSIDIC AND ORTHODOX COMMUNITY	YALDEI Developmental Centre, Montréal, Québec
UEY GREATER SAINT JOHN	Family Plus-Life Solutions Inc., Saint John, New Brunswick
UEY CUMBERLAND COUNTY	Cumberland Mental Health Services, Amherst, Nova Scotia
UEY HALIFAX WEST AND AREA	Sackville-Bedford Early Intervention Society, Lower Sackville, Nova Scotia
UEY WESTERN NOVA SCOTIA	Nova Scotia Community College (Kingstec Campus), Kentville, Nova Scotia

UEY Communities (16) Funded in 2007

UEY BURNABY	Burnaby Family Life, Burnaby, British Columbia
UEY NEW WESTMINSTER	Lower Mainland Purpose Society, New Westminster, British Columbia
UEY WEST KOOTENAY	Kootenay Boundary Community Services Co-operative, Nelson, British Columbia
UEY NORTH PEACE - NORTHERN ROCKIES	North Peace Community Resources Society, Fort St. John, British Columbia
UEY KAMLOOPS	Interior Community Services, Kamloops, British Columbia
UEY COWICHAN VALLEY	Volunteer Cowichan, Duncan, British Columbia
UEY RED DEER	Family Services of Central Alberta, Red Deer, Alberta
UEY MOOSE JAW - SOUTH-CENTRAL SASKATCHEWAN	Prairie South School Division No. 210, Moose Jaw, Saskatchewan
UEY REGINA	Regina Qu'Appelle Health Region, Regina, Saskatchewan
UEY SOUTHEAST SASKATCHEWAN	Holy Family Roman Catholic School Division No. 140, Weyburn, Saskatchewan
UEY PRINCE ALBERT GRAND COUNCIL	Prince Albert Grand Council, Prince Albert, Saskatchewan
UEY SELKIRK-INTERLAKE	Lord Selkirk School Division, East Selkirk, Manitoba
UEY MALTON	Peel District School Board, Mississauga, Ontario
UEY GEORGINA	York Child Development and Family Services, Newmarket, Ontario
UEY PICTOU, ANTIGONISH AND GUYSBOROUGH	Kids First Association, New Glasgow, Nova Scotia
UEY CAPE BRETON – VICTORIA	Cape Breton Family Place Resource Centre, Sydney, Nova Scotia

APPENDIX B. CHILDREN'S DEVELOPMENTAL OUTCOMES AND POTENTIAL RISK AND PROTECTIVE FACTORS

Children's Developmental Outcomes

Cognitive Skills Domain

Receptive vocabulary

Number knowledge

Pre-literacy skills

Behavioural Domain

Low positive social behaviour

Inattention

Anxiety

Depression

Physical aggression

Health Domain

General health (fair or poor)

Asthma

Allergies

Chronic health condition

Potential Risk and Protective Factors

Family Background

Family income

Mothers' employment status

Fathers' employment status

Mothers' completion of secondary school

Fathers' completion of secondary school

Single vs. two-parent family

Number of siblings

Family Processes

Low family functioning

Mother experiencing depression

Parenting style

Authoritative parent

Permissive parent

Authoritarian parent

Neglectful parent

Parent is engaged with the child

Child's participation in organized sports

Child's participation in unorganized sports

Child watching TV or videos

Child is read to daily

Neighbourhood Factors and Social Support

Neighbourhood Quality

Neighbourhood Safety

Neighbourhood Cohesion

Social Support to parents