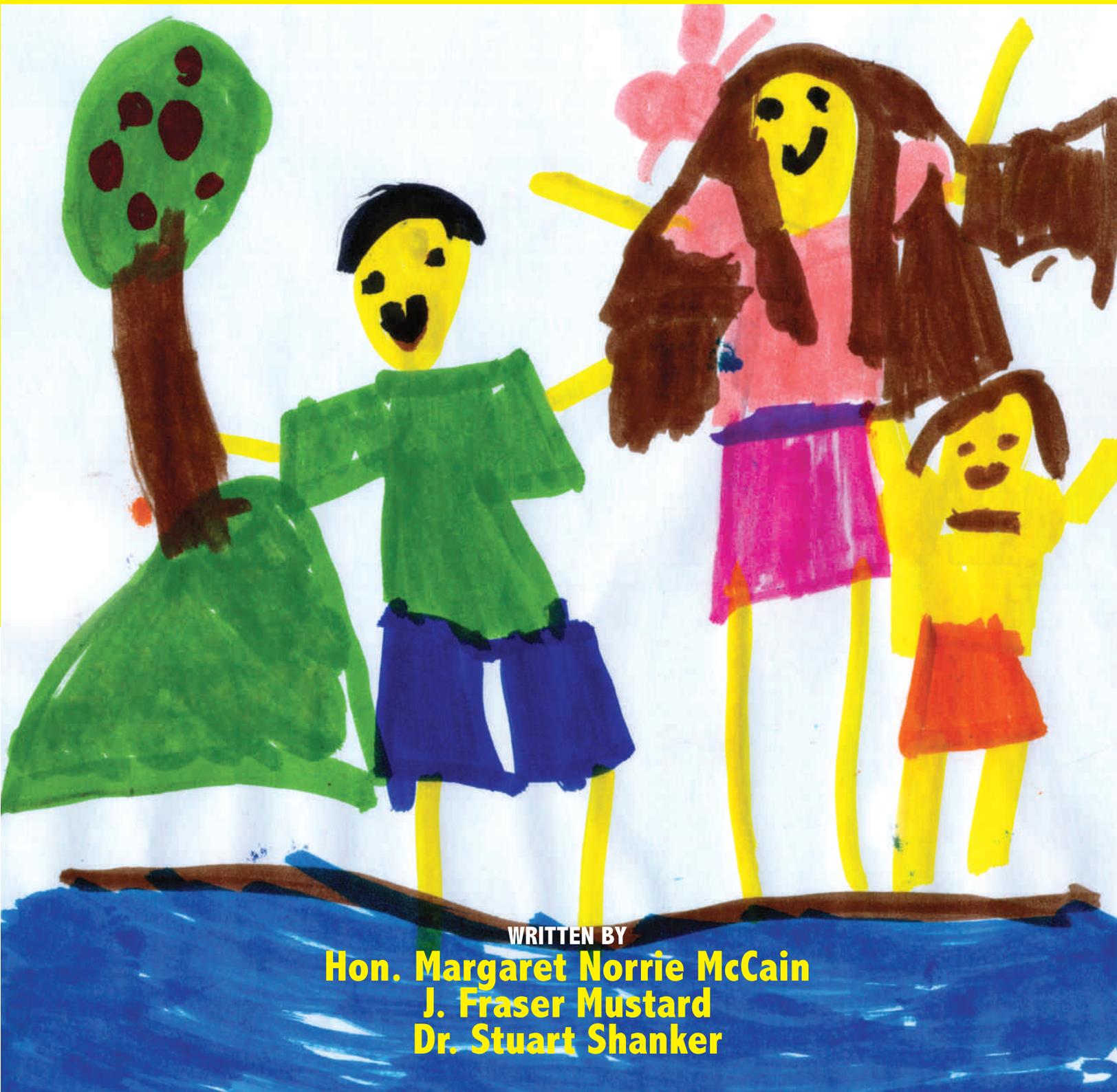


# EARLY YEARS STUDY 2

Putting Science into Action



WRITTEN BY

**Hon. Margaret Norrie McCain  
J. Fraser Mustard  
Dr. Stuart Shanker**

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# THE COUNCIL FOR EARLY CHILD DEVELOPMENT

The Council for Early Child Development (CECD) is pleased to produce *Early Years Study 2: Putting Science into Action*. The CECD was founded in 2004 to promote the recommendations of the 1999 *Early Years Study*. The Council is a not-for-profit, charitable organization that brings together scientists and community networks with a focus on early child development science and community action. The Council is funded through donations from individuals, foundations and the private sector.

## ***The Mission of the Council for Early Child Development***

Scientific networks of neuroscientists, economists, social scientists, and epidemiologists underscore the importance of early child development; there is increasing evidence that experience-based brain development in the early years of life sets neurological and biological pathways that affect lifelong health, learning, and behaviour. The Council aims to make the evidence accessible to communities by putting science into action.

The Council believes that the application of scientific knowledge requires community-based understanding and initiative. Local expertise, leadership, and broad community support is necessary to build successful early child development and parenting centres. To this end the Council will help community groups partner with governments, business, labour, and philanthropic organizations.

## ***The Council's Vision***

The Council envisions community-based early child development and parenting centres linked to the school system and available to all families with young children. These centres are designed to support early brain development. The school-based centres are the hub of an integrated community network of programs, resources, and supports. Centre organization would vary from community to community, depending upon local needs and sensitivity to cultural diversity.

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## A MESSAGE FROM THE AUTHORS

The health, well being and competence for all communities in our globalized world will determine if we can build tolerant, stable, equitable, prosperous, sustainable societies. Without high quality ECD programs for all young children, we will have difficulty with the next steps in our experiments in civilization.

We now understand how early child and brain development sets trajectories in the health, learning and behaviour for life. How we apply this knowledge in our various societies will determine whether we will be successful in the 21<sup>st</sup> century.

To establish stable, prosperous, equitable societies, we have to make equality of opportunity for all young children a key policy of our societies.

We prepared the *Early Years Study: Reversing the Real Brain Drain* in 1999 for the government of Ontario. It is a framework of understanding that has resonated around the world. *Early Years Study 2: Putting Science into Action* is an audit of what has happened in early child development science and practice over the past eight years. It is now time to put the science into action for our children – and for the survival of our species.

*J. Fraser Mustard*

Early childhood development and adult literacy are often discussed as separate topics: yet the interrelatedness of these concepts is of utmost importance. Recent international evidence exposes two disturbing findings. One: nearly nine million adult Canadians lack the literacy skills necessary to cope with everyday life. Two: among developed countries, Canada comes dead last in spending on early childhood programs. Naturally there's a connection.

High literacy skills can equip a population to compete for quality jobs, to earn more, be healthier, build safer communities and take an active part in civic life. Evidence also shows that the benefits of literacy are intergenerational. A child's best start is closely linked to the literacy levels of his parents.

Because of the importance of this intergenerational transfer of skills, effective public policy must reach beyond formal schooling to address the life cycles of both adults and their children. "Thinking" governments advance a life-long approach to learning understanding that success in elementary, secondary, and post-secondary education, as well as in the workplace — gets a good start or not, depending on early experiences.

The solutions are available. Supporting evidence is too. Only early childhood programs are in short supply. The disconnect defies logic, let alone science. When one stands back and looks at a life cycle and developmental approach to lifelong learning, the evidence is clear. It is imperative that Canada gets started on an early childhood system linked to, and as comprehensive and entrenched as, publicly-funded education. We hope our report will motivate governments and communities to take action.

*The Honourable Margaret Norrie McCain*

# INTRODUCTION

*Stuart Shanker*

*The Early Years Study* by Margaret McCain and Fraser Mustard (1999) had an electrifying effect on scientists working in the area of early child development. The book mapped out the neuroscientific explanation for why it was that study after study was confirming what primary school teachers had been reporting for some time: that in the vast majority of cases, when a child enters the school system her educational future already seems to have been decided. Highly verbal and attentive children go on to become successful students; children with poor language or social skills find school a stressful experience and in many cases go on to develop behavioral, psychological and health problems.

Despite intensive efforts, educators are still far from knowing how to systematically alter the developmental trajectory that a child demonstrates when she enters school. It is not surprising, then, that towards the end of the last century many scientists were being drawn to a genetic model of child development. According to this way of thinking, the disparities seen in children's cognitive, language, social, emotional or behavioral skills are the result of their biological inheritance. Belief in the credo that all children are born equal was being subjected to what was regarded as a form of harsh scientific realism. To be sure, everyone remained committed to the principle that, at least in theory, all children should enjoy equal rights. But to think that all children are born with equal aptitudes was seen as wishful liberal thinking, uninformed by the latest advances in population genetics.

*The Early Years Study* had a powerful impact on this determinist mindset. McCain and Mustard spelled out how recent advances in the branch of molecular biology known as *epigenesis* had shown that genes do not produce our various traits, all by themselves as it were. Even paradigm 'fixed traits', such as eye colour, are not solely determined by genes. Rather, genes are part of fully co-actional developmental systems involving everything from a mother's nutri-

tion and well-being to how caregivers interact with a baby or how a society supports child-rearing.

*Children's early experience has far-reaching and solidifying effects on the development of their brains and behaviours. Diverse experiences affect that architecture (i.e. of the brain the expression of genes, and the biochemistry and physiology of the human body – all of which mediate our cognitive, emotional, and social behaviours.*

This point has the utmost importance for how a child's brain develops. The child's experiences in the early years of life are pivotal for how the genes that govern various aspects of neurobiological development are expressed. Furthermore, these experiences are essential for vital cortico-cortical connections that are formed in the early years of life. Recent findings in developmental neuroscience are revealing just why and how these early experiences promote the development of a child's core capacities. This research also tells us why it can be so difficult to alter a child's developmental trajectory; for once formed, the neural connections that underpin a child's competencies can be difficult to modify.

In other words, the child's capacity to learn when she enters school is strongly influenced by the neural wiring that takes place in the early years of life. The connections that are formed between neurons and between neural networks affect a child's ability to attend to a lesson; the speed at which she can process and retain information; the ability to recognize patterns; to absorb new information; to understand what others are thinking or feeling; or simply, to grasp and conform to the norms of classroom behavior. The greater the synchrony between the sub-cortical and prefrontal systems in the child's brain, the more she will thrive in a school environment. But when a child enters school with constrictions in these local and long-range interconnections, this can

significantly impair her ability to rise to the challenges to which she is exposed in school.

The message of *The Early Years Study* was clear: if we truly wish to provide our children with an equal opportunity to maximize their potential, whatever that might be, it is vital that we do everything we can to enhance their early development. But we no longer have the luxury of indulging in philosophical debates about what sort of society we wish to become. We are now confronted with the issue of survival. If our children are to acquire the skills they will need to cope with the challenges they will face in the 21<sup>st</sup> century, we need to recognize the paramount importance of investing heavily in their early years of development, not simply as a means of enhancing the overall competence of our population, but also, as a way to mitigate, and perhaps even prevent in a significant number of cases, the range of developmental, behavioral, psychological and physical problems that seem to be growing exponentially.

In the area of early child development, as in so many areas, Canada is a nation of anomalies. On the one hand we prize early child development and appoint commission after commission to report on its importance; yet as a percentage of our GDP, we spend less on early child development programs than any other developed nation.

We combine a pioneering spirit, which places great emphasis on the role of the family in a child's early development, with a strong belief that children deserve to start life on a level playing field. Yet our research clearly tells us, in terms that cannot be ignored, that significant numbers of our children, at all levels of our society, are being deprived of the critical nurturing experiences that are necessary for optimal early brain development.

*We embrace universal education as a means for providing every child with the opportunity to maximize their developmental potential, yet have failed to act convincingly on the huge body of scientific evidence showing that a child's cognitive, communicative, social and emotional capacities when he or she enters school are largely set in the years 0-6.*

It is easy to lay the blame for this state of affairs at the door of our Federal and Provincial politicians. But they are parents themselves, fully aware of just how important are the early years of life. The reality is our political leaders are assailed by powerful competing demands. It is difficult for them to commit to universal early child development programs of the highest quality when their effects will not be seen for several years.

In 2004 Fraser Mustard established the Council for Early Child Development, an incorporated, not-for-profit, charitable organization, to address precisely this problem. His goal was to create a national organization that would stand outside the political arena and promote the development of Early Child Development and Parenting Centres throughout the country, based on the latest scientific findings.

The Council serves as a powerful vehicle to bring together and support the many outstanding early child development services and scientists scattered across the country. It is committed to putting science into action for children in communities and working with other important national organizations to measure how children are doing in those communities.

The Council has a national board of directors that includes leaders from post secondary education, corporate sectors, public service, public health, education, and philanthropy. The Council is active in brokering partnerships between researchers and communities to monitor children's early environments and assess and analyze the effectiveness of early child development initiatives.

*The Council of Early Childhood Development gathers, builds and disseminates evidence of the critical importance of early child development with the goal of informing public discourse and action.*

In February 2006 the Council launched an Early Childhood Leadership Forum to leverage expertise and knowledge within communities and provinces through cross-fertilization and networking; increase leadership and technical skills necessary for community-based monitoring of early child development;

and stimulate the development of integrated early child development programs for all parents with young children. Ten ECD community leaders from across Canada were selected to be the inaugural Council Fellows.

The Council is also active and influential on the international scene. Currently we are engaged in close collaborative efforts with the World Bank, the Brookings Institute, South Australia, Nueva Leone in Mexico, the Aga Khan University, and Cuba. In addition we advise governments and early child development organizations around the globe.

We have arrived at a defining moment in the history of our species. Modern technologies and economics have brought countries around the world together into what is truly a global community. But it is a global community whose very survival, let alone its prosperity, is threatened by daunting social, environmental, economic and political problems. Now as never before, science needs to be harnessed to serve the needs, not just of every individual in our society, but of every society around the globe.

To get some idea of what can and must be done, we need only consider how in certain parts of the world the rates of infant mortality have been reduced to levels that not long ago would have been thought unattainable; yet in large parts of the world children continue to perish in numbers which, given our current medical knowledge, are not simply tragic but, in fact, unconscionable. So too in the area of child development: not only do we know what sorts of

early child development programs will enable us to develop highly competent populations, but we are even at the point where we can begin to institute programs that will significantly reduce the number of children suffering from developmental, psychological, and behavioral problems. Yet there are few countries in the world that offer such programs for even a minority of their children, let alone the entire population.

*Not only do we know what sorts of early child development programs will enable us to develop highly competent, healthy populations, but we are even at the point where we can begin to institute programs that will significantly reduce the number of children suffering from developmental, psychological, and behavioral problems.*

In this second edition of the *Early Years Study* we review the scientific advances that have been made in the past eight years in developmental neuroscience, and the organizational advances that have been in the implementation of this knowledge. We are still a long way, however, from the sorts of universally accessible high quality programs that are needed. As important as it is to continue our scientific investigations, the most important challenge that we face today is to muster the political will and effort necessary to translate what we already know about early brain development into action.

# CHAPTER ONE

## THE LONG REACH OF EARLY CHILDHOOD

The first *Early Years Study* sparked a surge of interest in early brain development. In the intervening eight years the field has grown more rapidly than could have been imagined. New empirical findings broaden and deepen conclusions put forward in 1999 about how experiences affect the wiring of the brain. New technologies enable a closer examination of the processes involved in healthy brain development and the pivotal role played by emotions. A new measure of clarity and a deeper understanding of the kinds of environments and experiences that promote or impair the developing brain are emerging. The roots of economic productivity and health risks in adulthood are found in early childhood. The convergence of independent research in neuroscience, developmental psychology, epidemiology, population health, molecular biology and economics is remarkable: the earliest experiences of children reach long into adulthood.

The chapter begins with an overview of what is known about how the brain develops. The second section summarizes evidence from economics, social sciences, neuroscience, and epidemiology that documents learning, behaviour, and health outcomes that are strongly influenced by early life. The final section outlines how early environments can be structured to improve early and later outcomes.

### 1. Experience-Based Brain Development<sup>1</sup>

The exponential growth in new knowledge from research in the neurosciences and biological sciences is providing evidence of ‘how’ the social environment of early life gets ‘under the skin’ in the early years of life that shape learning, behaviour, and health throughout the life cycle.

- » Around 5 million years ago human beings’ hominid ancestors descended from the trees began to walk upright and the brains of early human species grew larger and larger. In order to accommodate bipedalism and the large brains of modern humans, babies are born ‘prematurely’ with

How do billions of neurons know what to do to make trillions of connections in the human brain?

one quarter the size of an adult brain, but more than tripling in size by the time the child is three-years-old.

- » Billions of neurons, all with the same genetic coding, make trillions of connections with each other to build the neural pathways of the human brain.
- » Early sensory stimulation activates specific genes in different parts of the brain to differentiate neuron functions and establish sensory pathways.
- » Sensory pathways influence the development of neural pathways to other parts of the brain involved in coping, movement, language, cognition, and biological pathways, including the immune and hormone systems.
- » Early environments are mediated through relationships with primary caregivers that drive the development of neural pathways and shape the baby's brain to become highly attuned to the quality of early experiences.
- » Sensory stimulation in early life influences genetic machinery and differentiation of neurons, which in turn affects how neurons function in setting the foundation for lifelong learning, behaviour, and health.

### 1.1 The Evolution of the Human Brain

The descent from the trees and bipedalism (or walking upright) gave our Homo Sapiens' ancestors a clear advantage over other species. The gradual evolution of a larger cortex, which was precipitated by our becoming bipedal and the social changes that this engendered, allowed humans to develop a more sophisticated ability to focus attention, plan and control actions, reflect on past and anticipate future events, and manage social interchanges.

The transition to bipedalism set a limit on how far the growth of the brain could progress if human females were to preserve their capacity to walk upright. Thus, human babies are born 'prematurely,' while the newborn's brain is only one-quarter its adult size, and then nurtured outside the womb for the first years of life. Humans give birth to a small number of babies with senses that are fairly well developed at birth but who lack the neural systems necessary to

regulate their own internal states and behaviour.<sup>2</sup> Nurturing experience came to play a role in the maturation of the human infant's brain.

Brain development begins soon after conception and continues after birth. The changes that take place in the brain in the early years of life ensure that an infant becomes highly attuned to the environment into which she is born. An infant reared in perilous surroundings—whether a rain forest teeming with predators or a war-torn urban jungle—will develop brain connections and chemical responses that are highly sensitive to signs of danger. Early brain development is for the long-term. It assumes the environment into which an infant is born will not change significantly over the span of her lifetime. Hence the brain connections or chemical tendencies laid down in a dangerous environment at the beginning of life become entrenched. Even if an individual finds herself in a safe and secure environment in her adult

## THE BRAIN IN ACTION

Neurons are the basic building blocks of the brain.

Based on genes and experience, neurons are connected to form networks. Networks that are underdeveloped are pruned.

Each stage of the brain's development rests on another.

The brain includes the cerebrum, brain stem, limbic system, and the cerebral cortex. The limbic system includes several structures that are central to a wide array of body functions, including the thalamus, hypothalamus, hippocampus, and amygdala. The cerebral cortex is divided into the frontal lobe (which includes the prefrontal lobe), parietal lobe, temporal lobe, and occipital lobe. The cortex in the human brain is significantly larger than the cortex found in other mammals, including monkeys and chimpanzees.

years, her brain is likely to stay on constant lookout for the slightest signs of danger: to the detriment of her health, well being, ability to cope and competencies throughout life. On the other hand, an infant born into nurturing surroundings experiences very different sensory stimulation and the brain develops connections and chemical reactions that support more optimal development and better health, well-being, and competencies.

The human brain is a jelly-like mass composed of billions of nerve cells (or neurons) and glial cells. Neurons migrate to perform specialized functions and make trillions of connections with each other to form neurological pathways that make it possible for humans to have the competence necessary to create and live in complex, diverse, and sustainable communities.

## 1.2 Neurons: The Basic Building Blocks

The structures of the brain and the neurons that a child is born with are fixed at approximately four months before birth. The proliferation of neurons, their migration to form distinct brain structures, and their differentiation to particular locations, form the structures of the brain. The most important mechanisms involved in the brain growth spurt that occurs in the final months of gestation and early in life are synaptogenesis, myelination, and the production of glial cells. Recently scientists have found the production of a small number of new neurons in the hippocampus and in the olfactory cortex, but this does not add significantly to the size of the brain.<sup>3</sup>

### *Connecting Neurons – Synaptogenesis*

Genetic instructions interact with signals from other cells and sensory stimulation to further differentiate neurons to carry out distinct tasks in the brain. In order to communicate with each other, neurons link together to create neural circuits and more complex, interconnected neural pathways. A neuron's signal-emitting extension, called an axon, meets one of an adjacent neuron's dozens of signal-receiving fingers, called dendrites. The microscopic points of contact or junctions between neurons are called synapses. Synapses use chemical neurotransmitters to transmit

electrochemical signals between neurons. Synapses allow neurons to form circuits to communicate with each other in different parts of the brain and body.<sup>4</sup> This process is called synaptogenesis.

Each neuron contains a nucleus. DNA in the cell nucleus controls the structure and function of the neurons through protein synthesis. Signals coming into the nucleus from a connecting neuron activate the DNA to trigger the production of proteins that strengthen synaptic connections. The proteins diffuse throughout the cell to where the axon and dendrite synapses have been activated. Repeated stimulation is necessary to activate the genetic pathways which produce proteins that strengthen those specific synapses. The strength of synapses is influenced both by experience and the stimulation of genetic pathways.

Scientists have been able to photograph extensive neuron connections that occur in the first six years of life. Before birth, neurons in some parts of the fetal brain start to sprout axons, the long branches that carry nerve impulses away from the cell body, and dendrites, the shorter branches that receive impulses from the axons of other neurons. At birth there are a few connections present. The process intensifies after birth during the early years. By six years the numbers of neurons are the same as at birth, but connections amongst the neurons are far more numerous. By fourteen years of life, the connections are less dense.<sup>5</sup>

### **BUILDING THE BRAIN**

Everything in the infant environment contributes to brain development—noise, light, and changes in temperature; the touch, voice, and smell of her caregiver.

### *Consolidating Pathways – Synaptic Pruning*

The connections amongst the neurons and neural pathways are dependent upon use. Repeated use leads to strong connections. If connections are under-used the connections are lost, a process often called synaptic pruning or wiring and sculpting of the brain.

The massive over-production of synapses in the early years of development is the result of the rapid growth of axons and dendrites. Neural circuits in parts of the brain continue to renew and develop in normal circumstances.<sup>6</sup>

### *Neurons that fire together wire together*

Donald Hebb, a Canadian psychologist, said many years ago: “When an axon of cell A is near enough to excite cell B and repeatedly or persistently takes part in firing it, some growth process or metabolic change takes place in one or both cells such that A’s efficiency, as one of the cells firing B, is increased”.<sup>7</sup> This is often paraphrased as “Neurons that fire together wire together.”

Long-lasting increases in synaptic strength (known as long-term potentiation or LTP) is a result of frequent stimulation of the fibres of the neurons that carry sensory impulses from the environment to the brain.<sup>8</sup>

### *Myelination*

Myelination refers to the development of a fatty sheath of insulation around the neuron that increases the speed and efficiency of nerve signal transmission. Myelination occurs at different rates in different parts of the brain, with the earliest parts to myelinate in the visual and somatosensory cortex during the prenatal period.

Those areas with the earliest myelination correspond to areas associated with behaviour systems that also function early in development. For example, primary sensory and motor areas involved in abilities such as vision and movement are myelinated before areas involved in higher cognitive functions such as association areas. The timing of this parallels myelination that occurs in the prefrontal cortex, an area that is associated with higher cognitive functions.

### *Glial Cells*

Glial cells do not carry nerve impulses themselves but enable the neurons to do so. They surround the neurons and hold them in place. They supply nutrients and oxygen to the neurons, insulate them from each other, and remove dead neurons. There can be

## **THE KEY PHASES OF BRAIN DEVELOPMENT**

- » Making the brain cells (neurons and glial)
- » Getting the neurons to where they need to be (migration)
- » Getting the parts of the neuron (axons and dendrites) linked with other neurons (synaptogenesis)
- » Consolidating and refining the connections between neurons (pruning)
- » Formation of supportive tissue that surrounds the neurons for efficient communication between them (myelination)
- » Glial cells are the worker bees of the brain. They feed, support, and clean up after the neurons.

Adapted from Shonkoff & Phillips (2000).

anywhere from ten to fifty times as many glial cells as there are neurons.

## **1.3 The Neural Pathways**

Neural circuits and pathways are formed to carry out specific functions. The emergence, maturation, and interconnection of complex neural circuits and pathways takes place in multiple areas of the brain during prenatal and early child development and many extend into middle childhood and adolescent development.

**Figure 1.1** illustrates four neural pathways that, while shown individually, are very much interconnected. The development of the neural circuitry for the sensing pathways for vision, hearing, touch, and other sensing modalities begins before birth and wanes by four–years-old. The neurons for vision, sound, and probably touch are stimulated by incoming sensations that activate genetic pathways and

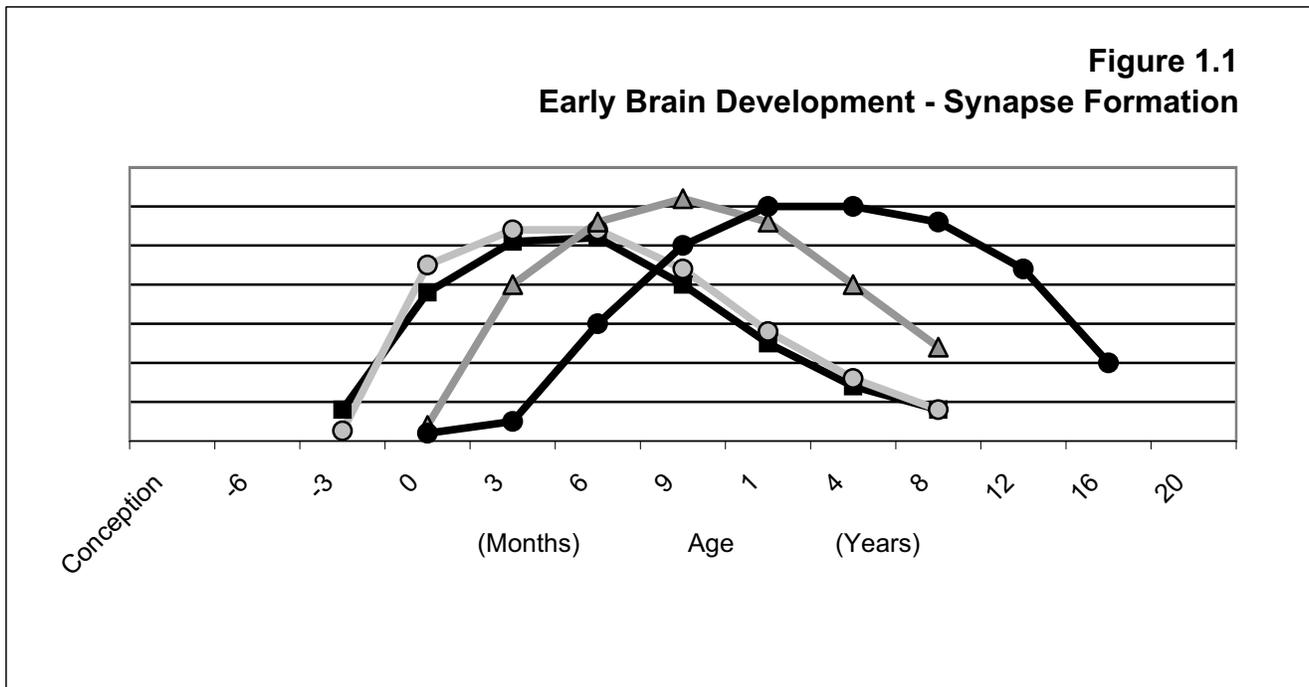
differentiate neural function. Neural pathways that are key to the capacity to cope—that is to respond and adapt to daily experiences, interactions, and challenges—also begin before birth and are active in the early months and years of life. The construction of the language neural pathways follows both the sensory and coping neural pathways and is active in the early years. The neural pathways related to language are dependent upon the sensory neurons for vision and sound. The neural pathways underlying higher cognitive functions are built upon the earlier pathways and are active into adolescence.

Thus, the formation of neural pathways through neural differentiation and synaptogenesis are a hierarchy: the pathways that develop early are crucial for the next stage of neural pathway development. Sensory neural pathways set most of the brain’s ability to interpret the signals and pathways that govern or control intellectual, emotional, psychological, and physical responses to stimuli.<sup>9</sup> Coping pathways also develop early and support higher level

### BUILDING PATHWAYS FOR LEARNING AND HEALTH

Experiences in early life activate gene expression and result in the formation of critical pathways and processes. Billions of neurons in the brain must be stimulated to form sensing pathways, which influence a person’s learning and behaviour, and biological processes which affect physical and mental health.

language and cognitive pathways.<sup>10</sup> Visual and auditory areas of the cortex and limbic system pathways precede receptive language systems, which in turn precede speech. Later developments in the prefrontal cortex support higher cognitive functions and build on the foundation of the earlier neural pathways.<sup>11</sup>



(Nelson in Shonkoff & Phillips, 2000; McEwen, 2002; Greenspan & Shanker, 2004)  
 Early neural pathways are shaped by experience.

## ***Sensory Pathways***

Sensory systems—vision, hearing, touch, taste, smell, and proprioceptor motion—bring sensory signals into the brain and then interpret those signals. Sensory neural pathways connect to all parts of the brain and body.

Sensory stimulation from the surrounding environment triggers the neurons to differentiate and form synapses that build sensory pathways and systems during gestation and infancy. Sensory neural pathways perform fundamental tasks that support, and are integrated into, many higher-level brain functions that evolve later.<sup>12</sup>

Visual neural pathways illustrate how neural circuits are shaped by early experience and how the processes of synapse formation and genetic expression are intertwined.<sup>13</sup> The Nobel Prize-winning work of David Hubel and Torsten Wiesel demonstrated how visual stimulation builds the neural circuit that transfers signals from the thalamus in the limbic system to the visual cortex.<sup>14</sup> In animal experiments, they found that if signals did not pass from the retina to the visual cortex of the brain within a set time frame, the neurons would not develop normal functions for vision. Since Hubel and Wiesel's work, extensive experiments confirm a critical period for the development and wiring of the brain for vision.<sup>15</sup> Three conclusions emerge:

1. There is a critical period for some of the sensory neural circuits, where stimuli is needed to trigger the synapse formation of the neurons in the relevant part of the cortex.
2. When visual stimulation is not available in the critical period, and deficits occur in the development of the region of the cortex responsible for vision, these deficits are not correctable at later stages of development.
3. Gene activation during the critical period leads to gene expression in the visual cortex that influences the function of the neurons for vision. Gene pathways must be activated and regulated for different neurons to have different functions.

The auditory pathway appears to also have a similar critical period. For example, children born

with a dysfunctional cochlear system in the ear are deaf.<sup>16</sup> This defect can be corrected to some extent by surgical implantation of cochlear devices. However, if the corrective surgery is performed too late, the hearing restoration is poor.<sup>17</sup>

The touch neural pathways exist throughout the body as neurons receive stimulation through the skin and carry the signals to the brain. Touch has a significant effect on a number of different neurological and biological pathways. In particular early sensory stimulation through touch influences the development of the coping pathways discussed in the following section.

Scientists now know that sensory stimuli activate neurons in the thalamus.<sup>18</sup> Thalamus neurons then activate neurons in the cortex and may interact with the amygdala, leading to alert responses discussed in the next section. When signals from the primary sensing pathways reach the cortex and perhaps the amygdala, they are interpreted and integrated with other neural pathways.<sup>19</sup>

## ***Allostasis and Neural Pathways for Coping***

The capacity to deal with daily life, challenges, potential threats, and new situations is controlled by a set of interrelated neural pathways and hormonal systems. The capacity to cope becomes part of the brain's neural circuits and other biological pathways set early in life. Coping pathways enable individuals to adapt to their environments.

Allostasis is the physiological process by which bodily functions change to meet demands and challenges.<sup>20</sup> The best known response is the fight-or-flight response which operates primarily through the autonomic nervous system and the limbic hypothalamus-pituitary-adrenal (L-HPA) axis. When allostasis is moderate, it helps individuals cope with demands of daily life. When it is excessive or prolonged, the allostatic load leads to wear and tear on biological systems, tissues and organs, resulting in long-term chronic mental and physical disease.

**Figure 1.2** illustrates the LHPA and the autonomic nervous system pathways. Sensory stimuli that activate the coping pathways are received by the thalamus. Signals from all the sensing pathways

(except for the olfactory system) are directed to the thalamus, which acts as a switch box to direct the incoming messages to the cortex and to other parts of the limbic system. What are known as emotions are largely the response of these pathways to incoming sensing stimuli.

The thalamus transfers possible messages that might indicate a new situation, a threat, or a challenge to the amygdala. One set of neurons, projecting from the amygdala, reaches other parts of the limbic system and brainstem, which control the autonomic nervous system. This pathway stimulates the central part of the adrenal gland to produce and release epinephrine or adrenaline which quickly increases heart rate, affects breathing, and enhances senses.<sup>21</sup>

The slower-acting LHPA pathway involves the amygdala, the hypothalamus, the pituitary gland, the hippocampus, and the adrenal gland, an organ which sits above the kidneys.<sup>22</sup> When aroused by incoming

stimulation, another set of nerves from the amygdala triggers the hypothalamus to stimulate the adrenal gland to release cortisol, a hormone that has a powerful impact on many bodily and brain functions.<sup>23</sup>

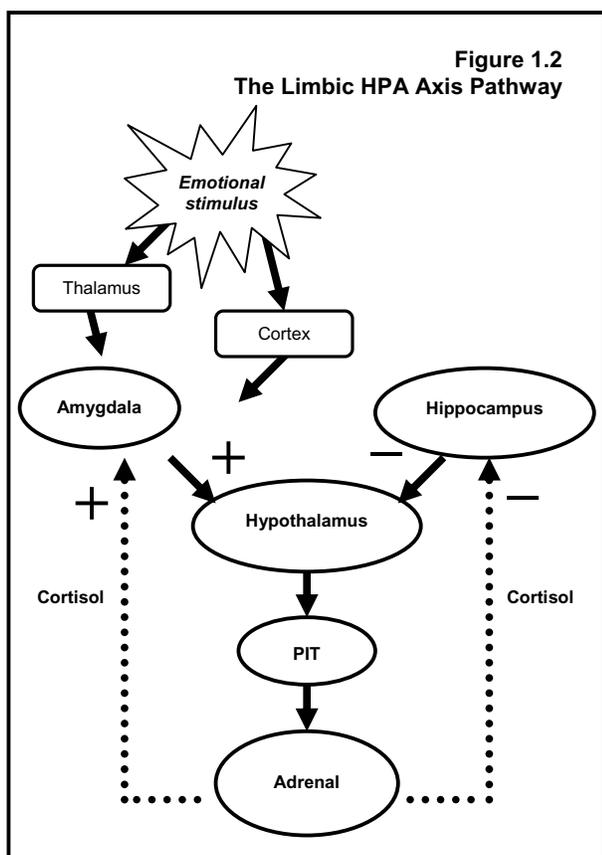
The amygdala responds to sensory stimulation from the environment<sup>24</sup> and is critical for the formation of fear learning.<sup>25</sup> **Figure 1.3** illustrates how sensory stimulation activates neurons in the thalamus at the very centre of the brain.

The neurons in the thalamus must activate neurons in the visual cortex. The thalamus also interacts with the amygdala. Upon receiving visual stimuli in the thalamus about what might be a snake, the thalamus activates pathways to the cortex and to the amygdala which sends out an alert to the hypothalamus, which in turn activates the autonomic nervous system. In the meantime, signals from the cortex are sent back to the amygdala that can affect its function. “Yes, it’s a snake!” and the autonomic nervous system and the LHPA pathways remain on alert or “False alarm, it’s a stick” and all returns to normal.

Internal and external events trigger the body’s allostatic response to challenges, threats, and new situations. Responses are dependent on a number of factors, including the neural circuits for the LHPA axis and autonomic nervous system pathways that are constructed early in life. Early experiences, particularly the quality of nurturing and sensory stimulation during infancy and early childhood, establish set-points in LHPA and autonomic nervous system neural circuits that influence the capacity for coping—for allostasis—throughout life.<sup>26</sup> The connections formed in early life between the amygdala and the thalamus influence how an individual responds to certain kinds of stimuli for their entire life.<sup>27</sup>

Early experiences set up the architecture of the LHPA pathway and autonomic nervous system

Set points for a biological thermostat for coping are embedded in the neural circuitry of the brain early in life.



(Adapted from LeDoux, 2002)



By the time infants are a year old, they are no longer able to discriminate foreign contrasts in the same way that they were able to do at two to three months.<sup>30</sup>

Infants exposed to two languages (for example, Japanese and English) in the first seven to eight months of life will have little difficulty mastering the two languages and they will not have an accent.<sup>31</sup> Psychologist Janet Werker proposes an ‘optimal period’ for the development of the sound system in early development that recognizes the contributions of biology, experience, and functional use.<sup>32</sup>

Individuals who develop an understanding of two languages early in life have denser grey matter in the left hemisphere of the brain than individuals with monolingual backgrounds.<sup>33</sup> They find it easier to learn third and fourth languages later in life. Neurons in the auditory cortex that respond to sound develop a sensitivity to the sounds of different languages in early life that make it easier to differentiate the sounds and develop the neurological pathways necessary for capability with multiple languages. Current research suggests that when a child is exposed to two languages or more from birth, both languages will be processed in the same neural systems, whereas when a child is exposed to a second language at a later point, different neural systems are used. The sound sensing stimuli influence the architecture of the sound section of the cortex, particularly to the sounds that are heard during the first seven months.

The foundations of neural pathways involved in higher level thinking and understanding begin before

### **LANGUAGE ACQUISITION BEGINS IN EARLY INFANCY**

Early infancy is a critical period for language acquisition. An infant exposed to two languages before seven months will be able to speak those languages without an accent and more easily master additional languages. Individuals who acquire multiple languages in early childhood have a denser left hemisphere of the brain than those with one language.

birth and continue into early adulthood. The formation of neural circuits in the frontal lobes of the cerebral cortex, which process complex information, begins around six months of age, as the infant begins to plan and carry out intentional actions, such as reaching for an object. During the preschool period (from three- to six-years-old), rapid development in the frontal lobe and prefrontal cortex, underlie the rapid development of a suite of skills related to attention, problem-solving, planning, understanding quantity, and using symbols.

### **1.4 Heightened Opportunities, Increased Risk**

The early years shape brain development and influence lifelong learning, behaviour, and health. It is a period of opportunity to establish a sturdy neural foundation for later development. It is also a period of increased risk that can compromise optimal development for life.

Neuroscientists have begun to understand in much greater detail what sorts of experiences are important for optimal brain development, why some experiences are more beneficial than others, and why certain kinds of experiences can damage how the

#### **BRAIN PLASTICITY**

Plasticity refers to the ability of the brain to change with learning and all learning depends on memory. For new knowledge to be retained in memory, changes in the brain representing the new knowledge must occur.

- » Genes and experiences determine which pathways are maintained and strengthened and which are eliminated (synaptic pruning).
- » Frequent stimulation of neurons strengthens their connections (long-term potentiation) creating pathways (memory) that last for hours or years.
- » “Higher-order” tasks involve ongoing “top-down” networking between different parts of the brain (cortico-subcortical and cortico-cortical integration).

cortex develops.<sup>34</sup> Indeed, we are now entering the stage where we can understand why changes that happen in the brain in the early years of life are so important for how well a child speaks, how she performs in school, her skills in math or music, her ability to form friends, or even, to enjoy life and become a responsible and productive member of the community.

### ***Timing Matters***

The understanding of the development of the visual system and its neural circuitry has led to a considerable interest in the plasticity of the neurons and the neuron pathways throughout life, and the concept of critical and sensitive periods during development with respect to the brain and the development of neural pathways.<sup>35</sup>

The brain grows massively in the first years of life but *brain growth* is not to be confused with *brain plasticity*.<sup>36</sup> As noted earlier, the brain of a newborn is roughly one quarter its adult size. The rapid growth spurt during early childhood is largely due to synapse formation and myelination.

Plasticity refers to the brain's capacity to respond to environmental stimuli and demands. The primary mechanisms involved in brain plasticity are synaptic

pruning and long-term potentiation discussed earlier and the connections of neurons, neural connections, and pathways in the cortex with each other and with those in other parts of the brain. This final mechanism is often referred to as cortico-subcortical and cortico-cortico integration. Connections between structures within the limbic system and the developing cortex underlie are particularly crucial in integrating the various functions of the brain.

All parts of the brain change as a result of experience but not all parts of the brain are equally plastic. While the brain stem and limbic system will be changed by experience, they are less plastic than the regions of the prefrontal cortex. Some parts of the brain that are highly plastic at birth may only be so for a short window of time.<sup>37</sup> The changes that occur in the early years can significantly impact later plasticity. A recent study suggests that bilingualism from infancy, if sustained, can significantly inhibit the onset of dementia in the late years of life.<sup>38</sup>

Brain plasticity is greatest during the prenatal period and early childhood because basic neural pathways are constructed for the first time during these periods. Learning how to play golf, swim, play tennis, or ski when you are young will lead to better performance than if you try to learn these sports in adult life. These skills are all dependent upon stimulation of the brain's sensing pathways and coordinated responses involving neuromuscular pathways. This is also true for language, understanding, and behaviour. Eric Knudsen has proposed that experience during a sensitive period modifies the brain circuits in fundamental ways, causing neural pathways to become highly stable and therefore difficult to change.<sup>39</sup>

Knudsen points to experimental evidence that finds that a host of cellular molecular changes contribute to the reduction in circuit plasticity after a sensitive period has ended for most neural circuits.<sup>40</sup> It is unlikely that these changes can be reversed later on in such a way that the capacity for plasticity that existed at the beginning of the sensitive period is reinstated.

### ***Optimal Early Environments***

From the first days after birth, an infant and her caregiver are engaged in an interactive system of

### **BRAIN PLASTICITY IS SELECTIVE AND TIME LIMITED**

All parts of the brain change as a result of experience, but not all parts of the brain are equally plastic.

Parts of the brain that are highly plastic at birth may only be so for a short window of time. The changes that occur in the early years can significantly impact later plasticity.

Experience during sensitive periods of development modifies the brain's circuits in fundamental ways causing neural pathways to become highly stable and therefore difficult to change.

reciprocal sensory stimulation.<sup>41</sup> The primary modalities for this process are shared gaze, vocalizations, touch, and smell.<sup>42</sup> Significantly, the mother's signals stimulate positive effects in the infant, which is communicated back to the mother via the infant's signals (her facial expressions, gaze, body movements, vocalizations), so that both members of the dyad enter into a symbiotic state of heightened arousal.

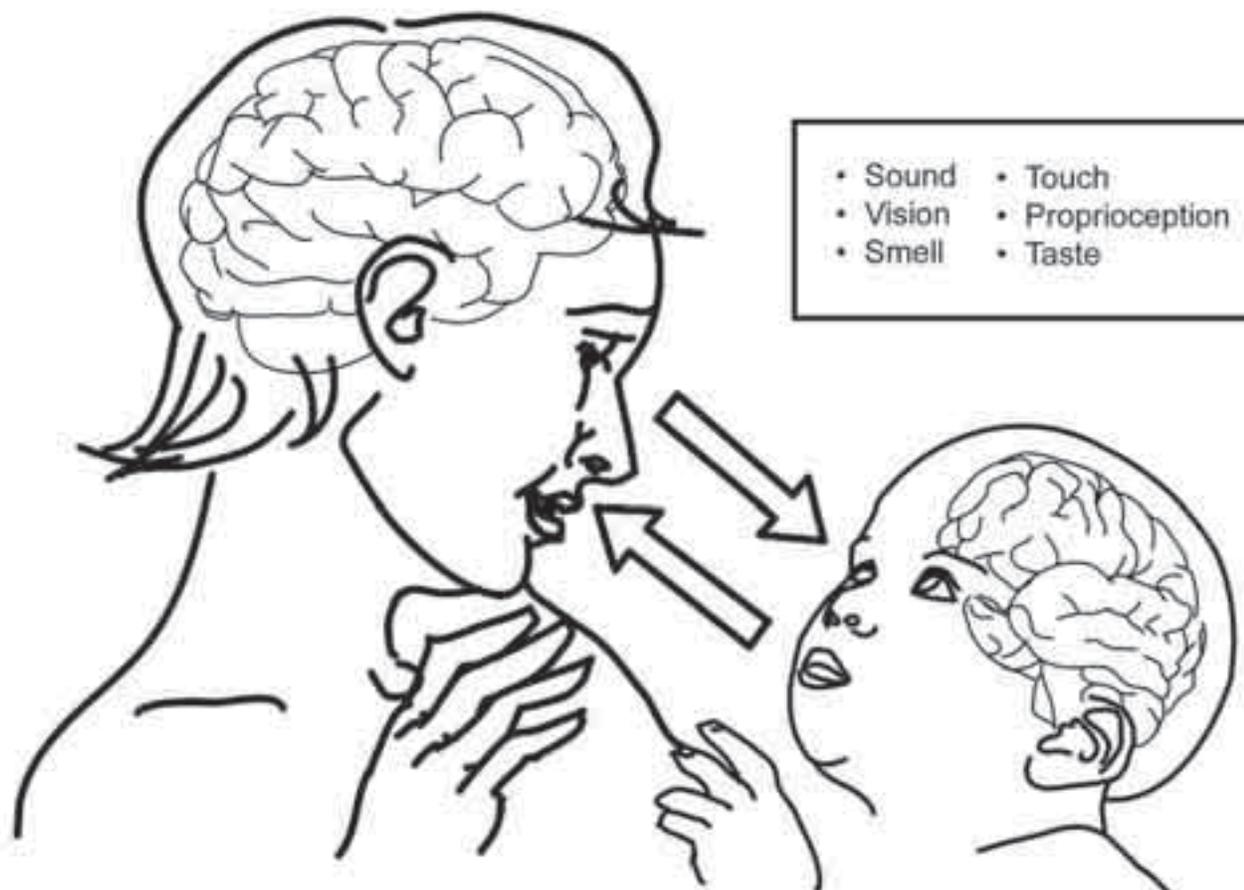
Primary caregivers, usually parents, are crucial in providing the early stimulation that drives the function of the neural pathways. The quality of experience or sensing stimulation with adults (particularly parents or other primary caregivers) and other chil-

dren in the very early years of life has a major effect on neuron function and brain development. The signals from the sensing pathways affect how neurons function and the formation of neural pathways for coping, language, and understanding.

These exchanges amplify the sensory stimulation jointly experienced by mother and child. There is a resultant match between their expressions. The infant finds facial expression she finds pleasurable, and can be said to 'seek them out.' For example, the child smiles in order to evoke the mother's smile.

When an infant is involved in a continuous flow of back-and-forth communication in the exchange of sensory stimulation, she is constantly sampling subtle

**Adult-Child Interaction**      **Figure 1.4**



Interactions between adults and infants provide sensory stimulation that affects early brain development.

Adapted from Halfon, 2004

### **EARLIEST RELATIONSHIPS ARE CRITICAL**

The quality of exchanges between caregiver and infant serves as the foundation for the infant's signalling system and influences the child's subsequent mental and physical health. The relationship between caregiver and infant plays a pivotal role in the child's capacity to interact with others and influences neural pathways for language and higher cognitive functions.

variations in her environment. Her affects not only mobilize her ability to focus on and process these sensory variations but also drive the process of differentiation that occurs between caregiver and infant. As the infant gestures or vocalizes to her caregiver, the caregiver's response changes ever so slightly to deal with the infant's affective overture. In turn, the infant now has an opportunity to process an ever so slightly novel affective response from the caregiver. As this process repeats itself, their co-regulated communication becomes more and more differentiated. This type of learning interaction facilitates new neural pathways in the brain that have

### **ENVIRONMENT MATTERS**

The young child is extremely sensitive to its environment. Exposure to:

- » Maternal depression
- » Caregiver substance abuse
- » Family violence
- » Physical, sexual, or verbal abuse

These and other traumatic experiences may damage deep structures in the brain that affect the quality of future social interactions.

to do with subtle sensory affective discrimination, pattern recognition, and ever more complex subtle response patterns.<sup>42</sup>

The quality of the exchanges between caregiver and infant serves as the foundation for the infant's signaling system and affect how the sympathetic nervous system and LHPA pathways develop, which influence the child's subsequent mental and physical health. Caregiver-infant exchanges play a pivotal role in the child's capacity to attend to and interact with others and influences neural pathways for language and higher cognitive functions. It is this enhanced signaling system that enables the infant to construct patterns that eventually take on meaning and leads to different levels of organization of neural pathways that underlie emotional and intellectual function. Parts of the brain, including the amygdala, become highly attuned to sensory signals through these early interactions and affect neural pathways, particularly the LHPA pathway throughout life.

### ***Impact of Violence and Neglect on the Brain***

Poor caregiver-infant interactions compromise the formation of neural circuits and pathways. A series of studies over two decades show that neglect, abuse, or parenting compromised by depression or substance abuse influences the development of the child's brain and biological pathways.

An infant who receives very little, or negative, sensory input from a primary caregiver will initially attempt to induce positive facial expressions before subsiding into a state of withdrawal.<sup>44</sup> A non-expressive maternal face triggers a negative response in the infant, and a non-responsive infant, or an infant who displays negative facial expressions, can produce a profound negative affect in the mother.<sup>45</sup> Indeed, a recent study has established that the neural systems that a child uses to process facial expressions of emotion are fundamentally influenced by the nature of her early interactions with her primary caregiver.<sup>46</sup>

Infants raised with an abusive, addicted, or a severely depressed caregiver not only experience considerable anxiety when interacting with that caregiver, but come to associate anxiety with other social interactions. Therapies that are designed to

modify thought patterns, such as cognitive behavioural therapy, have shown just how difficult it can be to alter these associations formed under strong limbic influence.

Martin Teicher in his studies of brain development and function in relation to neglect, physical or sexual abuse, and family violence, found adverse environments led to changes in the child's brain structure. He concluded that severe stress (the activation of the LHPA pathway and allostatic load) leaves an indelible effect on brain structure and function that can appear in adult life as depression, anxiety, post-traumatic stress, aggression, impulsiveness, delinquency, hyperactivity, or substance abuse. Teicher has suggested that the effects of early stress that alter the neurological pathways in development may prepare individuals to survive and reproduce in a dangerous world.<sup>47</sup> Parent and her colleagues have also concluded that transmission of individual differences in stress and behaviour to offspring could be adaptive with respect to adult survival a chaotic environment.<sup>48</sup>

Neuroscience research findings align with a large body of research from the social sciences that document the negative impact of adverse early environments on children's developmental outcomes. Children are more likely to have learning and behaviour problems when living with parents who struggle with mental health and/or substance abuse problems. Maternal depression is a key determinant of poor early child development, related to and as important as family functioning, parenting style, and engagement. Conversely, children who live with parents who enjoy mental health are less likely to have behaviour problems than children who live with parents who are depressed or face other psychological problems.<sup>49</sup>

### **ADVERSE ENVIRONMENTS ARE PERSVASIVE**

Most child maltreatment investigations involved allegations against parents. Over 90,000 investigations into child abuse and neglect were substantiated or suspected in 1998.

Witnessing scenes of verbal and/or physical violence and discord have a direct negative effect with long lasting consequences. Young children are highly sensitive to other people's emotions. Negative emotions may produce adverse effects and seem to be particularly influential when they become a constant feature in the psychological climate of the home.<sup>50</sup>

Children who experience parental abuse and/or neglect are more likely to show negative outcomes that carry forward into adult life.<sup>51</sup> These children are more likely to show problems with emotional regulation, self-concept, social skills and academic motivation. Over time, studies have reported that individuals who experience abuse often show serious learning and adjustment problems, including academic failure, severe depression, aggressive behaviour, peer difficulties, substance abuse, and delinquency.

The Canadian Incidence Study of Reported Child Abuse and Neglect is the first nation-wide study that examines the incidence of reported child abuse and neglect.<sup>52</sup> It reported that over 90,000 child maltreatment investigations were substantiated or suspected in 1998. A much larger number likely went unreported. The study found that most child maltreatment investigation involved allegations against parents.

## **1.5 Epigenetics**

One of the most dramatic discoveries in molecular biology over the past generation involves the interplay between early experiences and how, where, and when genes work. Epigenetics is the study of how genes can be turned on or off by environmental factors. Identical twins have the same DNA and therefore have the same genotype, but experience activates mechanisms, which alter genetic expression. Thus, variations in

The science of **epigenetics** explains the mysterious inner layers of the genetic onion that may account for why identical twins aren't exactly identical, and why some people are predisposed to illness while others are not.

“Epigenetics tells us that little things in life can have an effect of great magnitude.”

— Moshe Szyf, 2006, p. 34

disease, behaviour, and other traits and characteristics emerge over their lifespan.

- » Genes are a blueprint for development that needs instructions about what to do and when and how to do it.
- » The epigenome is a suite of biochemical markers and switches in cells that provide instructions and influence the expression of particular genes.
- » The epigenetic signals are influenced by early environments and experiences.
- » Epigenetic signals from the environment can be passed along to the next generation—without a change in actual DNA.

Each person has an individualized genetic code that is in the nucleus of a cell. To be expressed, the genetic code must be activated—that is, uncoded and transcribed into proteins that can carry the message to other cells. Gene regulation is strongly influenced by epigenetics, or hidden influences on the genes that can affect every aspect of development, including the transcription to proteins.<sup>53</sup> Epigenetics proposes a control system of ‘switches’ that turn genes on or off—and suggests that experiences, like nutrition and stress, can control these switches and cause heritable effects in humans. Heritable changes in genome function occur without a change in the actual gene structure. For example, when a cell established a particular pattern of ‘active’ and ‘non-active’ genes, this same pattern will be passed on to a daughter cell, even though during cell division all genes are ‘shut off.’ When genes are affected by epigenetics, changes are often replicated during cell division.

Epigenetics has been over-shadowed by the work of the Human Genome Project, but the importance of this field in brain development is leading to advocacy for a human epigenome project. The billions of neurons in an individual’s brain contain the same genetic coding, but neurons in different parts of the

brain acquire specific functions. The activation of the genes in neurons establishes the differentiation of neuron function. Epigenetic processes influence the differentiation of neurons and their connections for the different functions such as vision, hearing, language, behaviour, and the stress pathway. This epigenetic process allows neuron differentiation and the development of different structures and organs during development.

The code for proteins within genes can be chemically modified by environmental influences. A number of combined, nearby modifications may represent a particular pattern. Such a pattern may serve as a template for passing on its informative message in the form of specific chemical modifications to other molecules. Particular amino acid groups within proteins may be modified and serve as transmitters of such information. Such chemical modification patterns are called epigenetic tags.

### *Early Rat Development*

Experiments with rats and monkeys illustrate that early nurturing and stimulation influence the expression of genes and can actually modify genetic codes that are passed along to the next generation. Michael Meaney’s experiments with rats illustrate how early experience shapes the architecture of the neural circuits involved in stress response and coping. If the mother neglects to lick and groom the pups at birth and during infancy, cognitive abilities and coping skills are reduced in adult life.<sup>54</sup> It turns out that the intensity of licking and grooming that rat pups re-

#### **GENES NEED NURTURING**

Research on baby rats and monkeys demonstrates the power of early nurturing on the expression of genes. The behaviours of infants environmentally and genetically predisposed to problems were altered by changing their caregiver interactions. Moreover, the changes endured into adulthood.

ceive affects the levels of cortisol released. Reduced licking and grooming—reduced touch—increases levels of cortisol in the rat pup’s developing brains.<sup>55</sup> Touch in the early period of life seems to influence how the LHPA pathway functions in later life.

Meaney and other scientists conclude that maternal care during infancy programs stress responses in the offspring by modifying the neural systems in the limbic system and the HPA pathway.<sup>56</sup> The early rearing conditions permanently influence the set-point for control of the limbic system, the HPA pathway, autonomic nervous systems and biological responses to stress throughout life.<sup>57</sup> These changes in neuron function influence the temperament, behaviour, and memory of the rats throughout their life course.<sup>58</sup> Poor development of the limbic system and the HPA pathway in early life are associated with subsequent behavioural and mood disorders in animals.<sup>59</sup> If the offspring of mothers who show low licking are placed with a mother who has the high licking characteristics, the pups develop normally. Conversely, pups of high licking mothers raised by foster mothers that are low licking will tend to have the same defect as pups of low licking mothers.

High cortisol levels in early rat life affect the regulation of two specific genes that are involved in forming neural circuits. The genes are chemically modified and their expression is permanently altered.<sup>60</sup> One gene is the glucocorticoid receptor gene that affects the LHPA pathway and the brain’s long-term responsiveness to cortisol. The other gene is the gene involved in protein synthesis. Since the chemical modification or methylation of gene structures is difficult to reverse, this is a possible mechanism for the long-term environmental effects of maternal interaction with newborns on gene expression that can last throughout life. Meaney and other scientists conclude that an epigenomic state of a gene can be established in early life as the consequence of the quality of maternal care.<sup>61</sup>

### ***Early Monkey Development***

Scientist Steve Suomi studies Rhesus monkey colonies—a non-human primate model that is valuable for the study of the gene-environment interactions. In comparison to other laboratory animals, non-human

primates have complex behaviours and social structures that resemble those present in human groups. As with humans, the baby Rhesus monkey’s development follows a sequence that includes attachment formation, curiosity, and social fears, and they use their mothers as a home base for virtually all of their environmental exploration. By the time of weaning, most youngsters are spending several hours a day playing with peers. This increases both in frequency and complexity through the first year, and remains at high levels up to puberty. With time, play patterns become increasingly gender-specific and sex-segregated. By the end of the third year, early adolescent monkeys have learned about managing their aggression, as well as about respecting the troop’s various dominance hierarchies.

Steve Suomi and his colleagues have conducted a set of studies that followed groups of monkeys, a proportion of which were genetically highly reactive (high cortisol levels).<sup>62</sup> Cross-fostering high-reactive monkeys with highly nurturing mothers produced dramatic differences. The high-reactive monkeys became secure and precocious in their exploratory patterns, seeking out novelty and challenges. As adults they rose to the top of the social hierarchy in the troop, had robust immune responses, lower circulating cortisol levels, and the females become nurturing mothers. In other words, genetically vulnerable animals brought up in a good early environment for early monkey development do not show behavioural problems.<sup>63</sup>

On the other hand, high-reactive monkeys who experienced poor mothering (or peer rearing) during their first six months showed disrupted sleeping patterns as infants, high cortisol levels in the face of mild challenges throughout the lifespan, excessive adrenalin following challenges, increased risk of anxiety and depression, excessive alcohol consumption, aggressive behaviour, and for females, risk for poor maternal behaviour when they became mothers themselves.

Suomi and others have now tied the findings related to the power of early nurturing environments to the expression of genes.<sup>64</sup> Experiments with monkeys provide evidence about the gene-environment interactions and health, learning, and behaviour

outcomes.<sup>65</sup> In a recent study, Maestripieri has reported how early experience affects the intergenerational transmission of infant abuse in Rhesus monkeys.<sup>66</sup> He has concluded, in keeping with the work of Suomi, that the intergenerational transmission of infant abuse in Rhesus monkeys is largely the result of infant experience in early life affecting gene function.<sup>67</sup>

## 2. The Long Reach of Early Childhood on Health, Behaviour, and Learning

Early experiences establish the architecture of the brain and the developmental trajectories for the learning, behaviour, and health of individuals and populations. Coping abilities, competencies, health, and well-being are strongly influenced by the neural circuitry that develops as a result of the intricate interaction of genes and early environments and experiences.

Health, behaviour, and learning are interconnected manifestations of social and economic circumstances, including those in early life. The amalgamated evidence for the long reach of early childhood throughout life is presented in the following sections.

### 2.1 Health, Learning, and Behaviour in Context of Socio-economic Circumstances

Social environments and economic resources influence human development. People with little educa-

#### SES AND OUTCOMES

Social economic status (SES) is a hierarchical structure representing wealth, power and prestige.

SES is associated with social and developmental outcomes: birth weight; academic achievement, physical and mental health, literacy, criminal behaviour and life expectancy.

People with low SES tend to have poor outcomes. Those with high SES are more likely to have good outcomes.

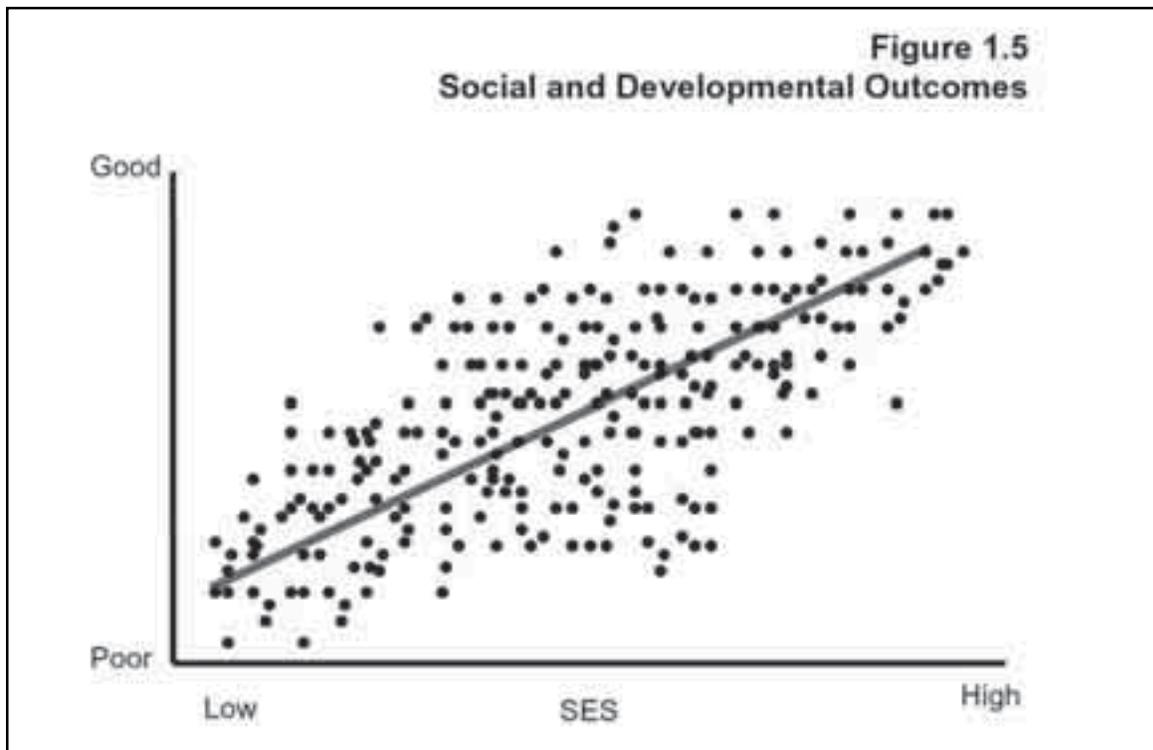
tion, income, or control over their lives are more likely to have difficulties. Educated, affluent, powerful people tend to be healthier and have fewer difficulties. But an arrow can not be drawn directly between social and economic circumstances and outcomes. The relationship is more of a gradient. Those who are slightly more affluent than the poorest group have slightly better outcomes. Those who are in moderate socioeconomic circumstances do better than those with fewer resources but not as well as those with a higher social and economic status (SES).

SES refers to the relative position of an individual, family, or community in a hierarchical social structure.<sup>68</sup> SES typically measures income, occupation, and education and may take into account prestige and power. Social and developmental outcomes include weight and health at birth, academic achievement, mental and physical health status, literacy rates, criminal activities, and mortality. People with low SES have the least chance of having good outcomes and those with high SES have the best chance.

The relationship between social and economic status (SES) and outcomes can be represented as a line on a graph that can be flat or sloped at various angles. The greater the social and economic distance between those with the fewest and the most resources, the steeper the line tilts to the vertical, indicating greater distances between the best and worst outcomes.

In **Figure 1.5** each dot represents an individual. The solid black line represents the overall statistical relationship between socioeconomic status (SES) and poor to good social and developmental outcomes. It is the gradient for this population of individuals. At the lower end of the gradient are individuals from the lowest SES and the worst outcomes. At the upper end are the more affluent individuals with the best outcomes. The gradient is continuous, meaning the entire population is somewhere along the tilted line. It is not simply that disadvantaged individuals do not do as well, but that with every increase in socio-economic status, there is a commensurate improvement in outcomes.

Some of the individuals (represented by the dots) are quite a bit above the gradient line. They are individuals who are doing much better than would be



Social and developmental outcomes are related to SES. As SES rises, outcomes improve.

expected taking their socioeconomic status into account. Other individuals or dots are quite a bit below the line. These are individuals who are not doing as well as expected given their SES.

The gradient effect indicates that the health and well-being of populations are linked to different social settings and how resources are shared within the population. In communities and regions where there is little difference in socioeconomic status or where developmental outcomes are not as closely associated with economic differences, the gradient—the line—tilts more to the horizontal.

Socioeconomic gradients comprise three components: level, slope, and strength of the outcome-SES relationship:<sup>69</sup>

- » The level of the gradient is the expected score on the outcome measure for a person with average SES. The level of a gradient for a neighbourhood, region, province, state, or country is an indicator of its average performance after taking into account the SES status of all the individuals.
- » The slope of the gradient is the extent of inequal-

ity of outcomes that can be attributed to SES.

Steeper gradients mean a greater impact on SES on the outcomes. More gradual gradients show a lower impact of SES. Steeper gradients indicate greater inequality and flatter gradients indicate less inequality.

- » The strength of the gradient is the proportion of variance in the outcome that is explained by SES. If the strength of the relationship is strong, then a considerable amount of the variation in the outcome measure is associated with SES. A weak relationship suggests that relatively little of the variation can be attributed to SES. Various statistical calculations can be used to assess the strength of the relationship.

## 2.2 Health

Brain and biological pathways in the prenatal period and in the early years affect physical and mental health in adult life.<sup>70</sup> The evidence from studies of the social determinants of health and well-being in humans, monkeys, rats, and other mammals show that

the effect of the social environment on brain development and function in early life contributes to physical and mental health problems throughout life. The LHPA pathway established in utero and in early childhood is linked to hormone and immune systems that have an impact on the body's tissues and organs. The functioning of this pathway is implicated in adult health and disease. Children brought up in adverse environments are predisposed to coronary heart disease, hypertension, type II diabetes, substance abuse, and mental health problems.

Analysis of data collected from individuals in South Australia born between 1975 and 1976 and men and women born in Preston, England, from 1935 to 1943, and women born in East Hertfordshire, England, between 1923 to 1930,<sup>71</sup> found that low birth weight is associated with raised cortisol concentrations that contribute to poor physical and mental health. Increased activity of the LHPA axis may contribute to raised blood pressure in adult life. The effect was not caused by confounding variables, such as body weight, body fat distribution, smoking, or social class. Because the association was observed in young men and women in Adelaide, as well as older populations in England, it could mean that the factors that lead to low birth weight and adult cortisol overproduction affect young, as well as older, men and women.

A review of the fetal origin of health problems<sup>72</sup> confirms earlier findings<sup>73</sup> that the in utero environment can set risks for cardiovascular disease, influ-

ence the risk for type II diabetes, and influence behaviour problems, such as schizophrenia, and possibly autism. The review concludes that the alteration in gene function by epigenetic processing will tend to stay with the individual throughout the life cycle. Seckl, in reviewing prenatal cortisol and the long-term programming of biological pathways that influence disease, concluded, in respect to prenatal circumstances and birth weight, that this stage of development could program the function of the HPA pathway for later stages of life, with effects on blood pressure, type II diabetes, and hyperlipidemia.<sup>74</sup>

The findings from a Swedish longitudinal study show that children who experienced neglectful and abusive early environments have an increased risk in adult life for poor health. In the study, the risk for cardiovascular problems for adults who had been in very adverse early child circumstances in comparison to those who were in good environments for child development was 7 to 1. The risk for mental health problems, such as depression was 10 to 1.<sup>75</sup> The data concerning depression in this study is compatible with what is now understood about how poor early child development can alter gene expression in relation to serotonin transport which can influence depression. The odds ratio for mortality for those brought up in the poorest environments was 1.9 compared to children brought up in good circumstances.

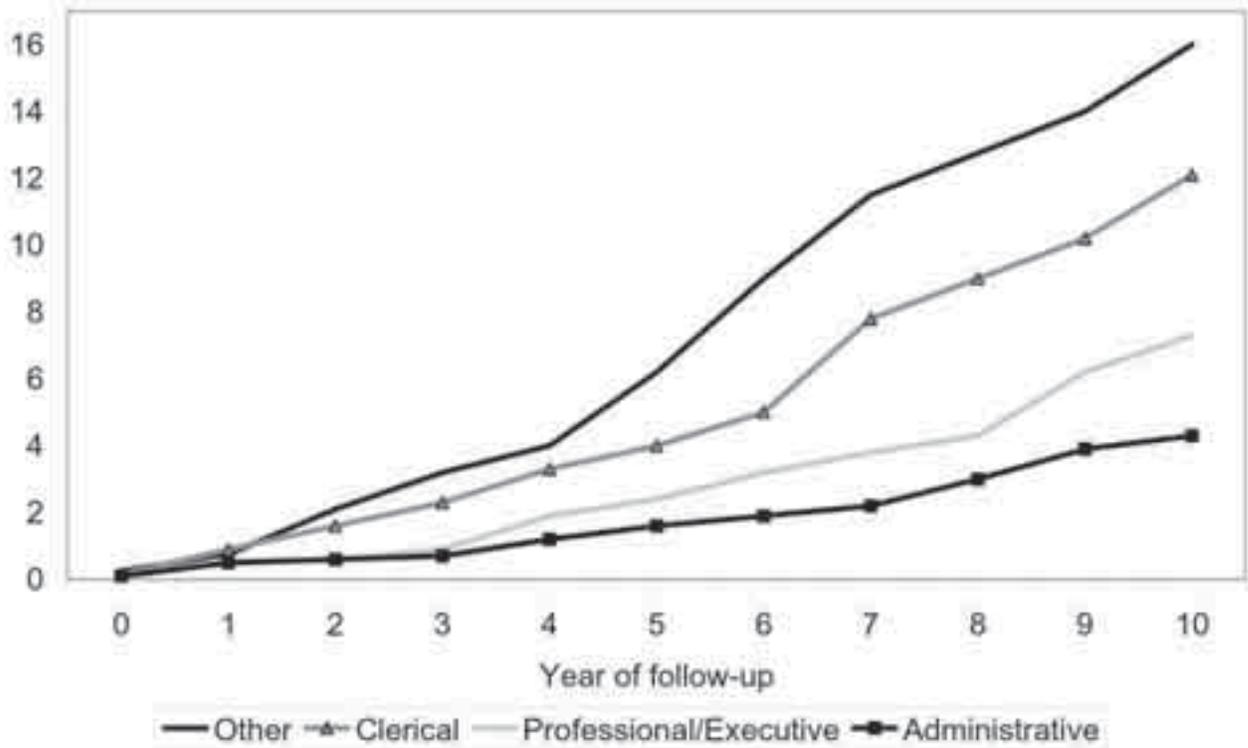
Evidence from animal and human studies indicate that poor development in the early years can lead to increased risk for alcohol or drug addiction. As discussed in the section on brain development, studies with Rhesus Macaque monkeys or rats show that inadequate touch stimulation in the early period of development influences the risk for both behaviour and alcohol addiction problems in later life.<sup>76</sup> In studies of the Kaiser Permanente program in California,<sup>77</sup> it was found that individuals who had been exposed to child neglect and abuse when young were at high risk for drug and alcohol addiction in adult life.

### **HEALTH PROBLEMS RELATED TO EARLY LIFE**

- » Coronary heart disease
- » Non-insulin dependent diabetes
- » Obesity
- » Aging and memory loss
- » Mental health (e.g., depression)
- » Substance addictions
- » Premature death

Cumulative mortality

Figure 1.6  
U.K. Civil Service Mortality - All Causes



(Marmot, 1996)

Cumulative mortality for the British Civil Service by job classification.

### ***The Relationship Between Health and Socioeconomic Status***

In Western countries the largest number of individuals affected by the social determinants of health and well-being are in the middle-class. The SES gradient pattern for health is consistent for most diseases across countries.

Michael Marmot's study of the United Kingdom civil service illustrates the SES gradient in mortality.<sup>78</sup>

**Figure 1.6** shows the cumulative mortality for the civil service by job classification during the first 10 years of the study. All the data are adjusted for age and sex. The top tier are in the administrative category and the lowest ranking group are in the "other" category. None of the groups live in poverty and all have access to a public health care system. Yet there is a clear gradient in mortality.

Case et al, using data from the United States from the National Health Interview Survey, the Panel Study of Income Dynamics, the Child Development Supplement, and the Third National Health and Nutrition Examination Survey, examined when the population socioeconomic gradients in health could be detected. They found that the socioeconomic gradients in health could be detected by age three and the steepness of the gradients increased as the population became older. This evidence is important since it shows that the gradient in health status among adults has its antecedent in early childhood. These findings are remarkably consistent with what we now know about the development of the brain in the early years and its effect on physical and mental health in later life. A key conclusion is that if we wish to improve equity in health, investment in the early years of life

Research suggests some individuals may be genetically predisposed to behaviours that contribute to poor health.

(ages 0- to 3-years) is important. Also, it is possible to spot signs and symptoms of poor health in early development and take steps to improve outcomes.<sup>79</sup>

Since the risk for cardiovascular disease increases with the allostatic load chronic stress and is related to the socioeconomic status of individuals, researchers have studied the relationship of cardiovascular disease to variations in brain function (influenced by the LHPA pathway). They found a socioeconomic gradient in serotonin function that was related to individuals having the short alleles but not for individuals with the long alleles for the serotonin transporter gene. In this work they found that dysregulated serotonin function correlated with cardiovascular risk factors such as smoking, blood pressure, and type II diabetes. These relationships raised the question as to whether some of the cardiovascular risk factors are, in effect, markers of behaviour related to brain development and that the stress pathways may be a factor in causing endothelial alteration or injury in major arteries.<sup>80</sup>

### ***Socioeconomic Status in Early Life and Adult Health Status***

Socioeconomic status in early life influences health status in middle and late adulthood. Wadsworth and colleagues in a detailed study of the 1946 British birth cohort have provided evidence about how conditions in early life can set risks for both physical and mental health problems in adult life.<sup>81</sup> Power, Manor, and Fox, in their studies of the 1958 British birth cohort explored the causes of inequalities in health. In the initial work, they concluded that circumstances prevailing at each stage of child and adolescent development were relevant to the health differences among adults.<sup>82</sup> In more recent work, they have presented further evidence that the manner in which

brain and biological pathways develop in early life influence adult disease.<sup>83</sup>

In a study of the 1970 New Zealand birth cohort Poulton et al. came to the same conclusion that poor socioeconomic circumstances for early child development have long-lasting negative influences on adult health, and the socioeconomic gradient in health in adults emerges in childhood.<sup>84</sup> This is comparable with Fogel's conclusion that improvement in early child development following the Industrial Revolution was a key factor in the health improvement in Western countries.

Findings from several longitudinal studies indicate that socioeconomic position in early life influences health several decades later and for some outcomes, early circumstances override those of adult life. What is less clear is how the socio-economic experiences become incorporated into the actual biology of individuals. A strong suspect is the limbic HPA pathway and its role in the secretion of cortisol.<sup>85</sup>

## **2.3 Behaviour**

Behaviour refers to the patterns of actions, interactions, and performance of individuals. Behaviour problems, such as attention-deficit hyperactivity disorder (ADHD), antisocial behaviour and autism, are manifestations of brain function involving many shared components of the brain pathways and neurochemicals. The neural pathways most involved in behaviour involve the LHPA pathway and the prefrontal cortex.

Gene activation, differentiation of neuron function, and synapse formation in the early years provides an explanation for behavioural problems. The evidence from behaviour studies is compatible with the concept that vulnerability in gene structure combined with a poor environment for early child development can lead to significant behaviour prob-

### **BEHAVIOUR PROBLEMS RELATED TO EARLY LIFE**

- » ADHD
- » Antisocial
- » Autism

lems in later life. Children who do not experience behaviour problems, in spite of adverse early experiences may be resilient because of their genetic structure.

### ***Attention-Deficit Hyperactivity Disorder***

Attention-deficit hyperactivity disorder (ADHD) affects an estimated 8-12% of children worldwide. Children who are prone to ADHD are often under- or over-reactive to sensory stimulation and struggle with motor planning and sequencing. They may have trouble sequencing many actions in a row or sequencing their thoughts. Environmental factors that contribute to ADHD in vulnerable individuals include pregnancy and delivery complications and a dysfunctional family environment.<sup>86</sup> Pregnancy and delivery complications, such as toxemia or eclampsia, prematurity, and exposure to alcohol and cigarettes during pregnancy, appear to be environmental factors that can alter the brain development in early life, rendering the child vulnerable to this disorder.<sup>87</sup>

ADHD is associated with other behavioural problems, including difficulties at school, family conflict, poor occupational performance, psychiatric disorders, substance abuse, and antisocial behaviour.<sup>88</sup> The linkage is probably related to common biological pathways and the frontal brain.<sup>89</sup> Nadder et al concluded that the co-morbidity was governed by environmental influences that affect a shared genetic liability through gene environment correlations or interactions.<sup>90</sup>

ADHD appears to be a condition caused by the interaction between the environment and genetic vulnerability.<sup>91</sup> Further understanding of factors contributing to ADHD will need a better understanding of gene-environment interactions in respect to the various nerve pathways and the effect of environmental stimulation on gene function.

### ***Antisocial Behaviour***

Richard Tremblay has shown that at two years of age most children show antisocial behaviour (“the terrible twos”) that usually comes under control before the children reach school age, providing they are in a

positive environment. Children brought up in neglectful, abusive conditions will show significant antisocial behaviour by the time they start school. In a study of antisocial behaviour (aggression) in children entering the Montreal school system, Tremblay found about 14% of children show little physical aggression and about 53% show moderate aggression that gradually comes under control. About 32% showed high levels of aggression at the time of school entry with some improvement in control as they become teenagers. About 4% of the children did not improve and were considered chronic. Many of the teenage males in the chronic group ended up in the criminal justice system. As illustrated in **Figure 1.7**, only about 30% of children entering the school system with high or chronic antisocial behaviour receive a high school diploma, demonstrating an effect of the pathways affecting behaviour and learning.<sup>92</sup>

As discussed earlier, studies with animals show that poor environments for early development can lead to poor regulation of the LHPA system, leading to negative effects from an overproduction of cortisol and other chemicals on brain function affecting the LHPA pathway and interacting with a child’s biological differences to create many steps in the maladaptive behaviour.

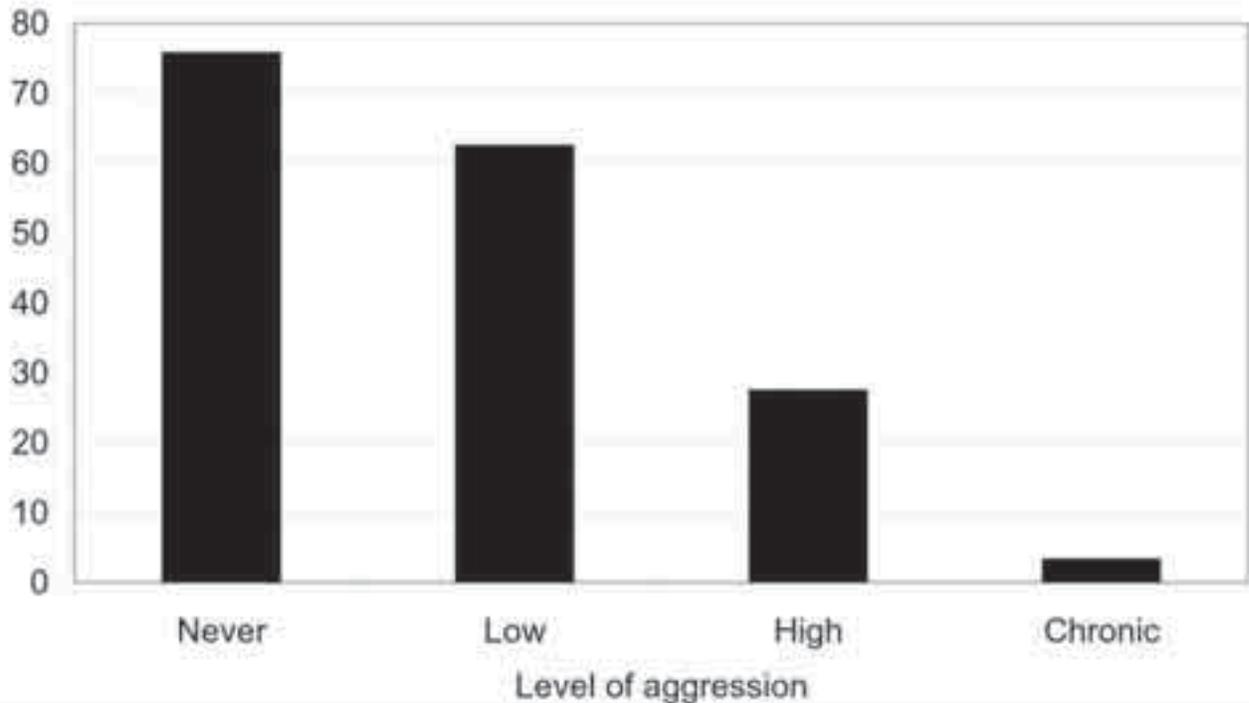
In a more recent study, Tremblay and his colleagues studied the trajectories of children from five months to 42 months after birth.<sup>93</sup> They found that the children who seem to be at the highest risk of not learning to regulate aggressive behaviour during early childhood have mothers with a history of antisocial behaviour during their own school years, mothers who start childbearing in their adolescence and who smoke during pregnancy, and parents who have low incomes and difficulties living together. Tremblay recommends prevention programs during pregnancy that specifically target parents’ control over their own physical aggression to reduce physical aggression in their children.

### ***Autism***

Autism is a disorder that includes problems with social interaction and communication, restricted,

Percent  
graduated high  
school

Figure 1.7  
High School Diploma by Level of Aggression at Age 5



(Tremblay, 1999)

Only 30% of children entering Grade 1 with high or chronic levels of aggression graduate from high school.

repetitive, and stereotyped patterns of behaviour. It is also marked by differences in responses to sensory stimulation. Autistic infants are often overly sensitive or under-reactive to touch, movement, sights, or sounds.

Autism is likely a result of a combination of genetic and environmental causes. Recent studies suggest that autism is a downstream effect of initial sensory and/or motor challenges that significantly impair the infant's ability to process sensory stimulation vital for optimal development of the neural pathways.<sup>94</sup> Difficulties are registered in the early sensory pathways and interfere with optimal development. Difficulties in receiving and processing sensory stimulation interferes with a young infant's ability to engage in reciprocal relationships which are essential

to the formation of other neural networks—including the LHPA, language, and higher cognition functions.

### ***Behaviour Problems and Adverse Early Environments***

Neuroscientists have found evidence of the negative impact of violent or neglectful environments on early brain development that carries forward into adulthood. Findings from observational and longitudinal studies concur.

- » A study of children caught in the Israeli-Palestine conflict found children in the Gaza Strip had three times the rate of emotional and behavioural problems as children in middle-class families in Hamilton, Ontario.<sup>95</sup>

### **WAR IS NOT GOOD FOR CHILDREN ...**

War and conflict is directly associated with poorer outcomes for children. Violence, epidemics, unstable social and political environments can also deprive children of their parents.

Infants raised in orphanages tend to have reduced IQs and display more health and behavioural problems. The longer the institutional deprivation, the more pronounced the negative outcomes. The trajectory is not significantly altered by the introduction of positive parenting later in infancy.

This is strong evidence that the stability and quality of a society has a significant effect on early child development. It also means that regions plagued with political instability and violence will be severely challenged as they try to improve the developmental outcomes of children. However, not improving conditions for early childhood will likely increase antisocial problems later on.

- » A longitudinal study of the relationship between early child development for language and intelligence in males was carried out in Sweden by Stattin and Klackenborg-Larsson. They found poor language development at 6, 18, and 24 months strongly correlated to the number of criminal charges in adolescence.<sup>96</sup> Although there are many explanations for this relationship, there is strong evidence that the degree of verbal exposure from reading and talking in early childhood has a significant effect on verbal skills and language at later stages of development.<sup>97</sup> Also, it is difficult to talk to or read to a young child without holding it (touch). As described in the section on brain development, touch is a critical factor influencing the development of the HPA pathway, which can influence behaviour, including antisocial behaviour, in later life. The

experience of multiple sensing pathways in early life can affect multiple functions such as language, intelligence, and behaviour in later stages of life.

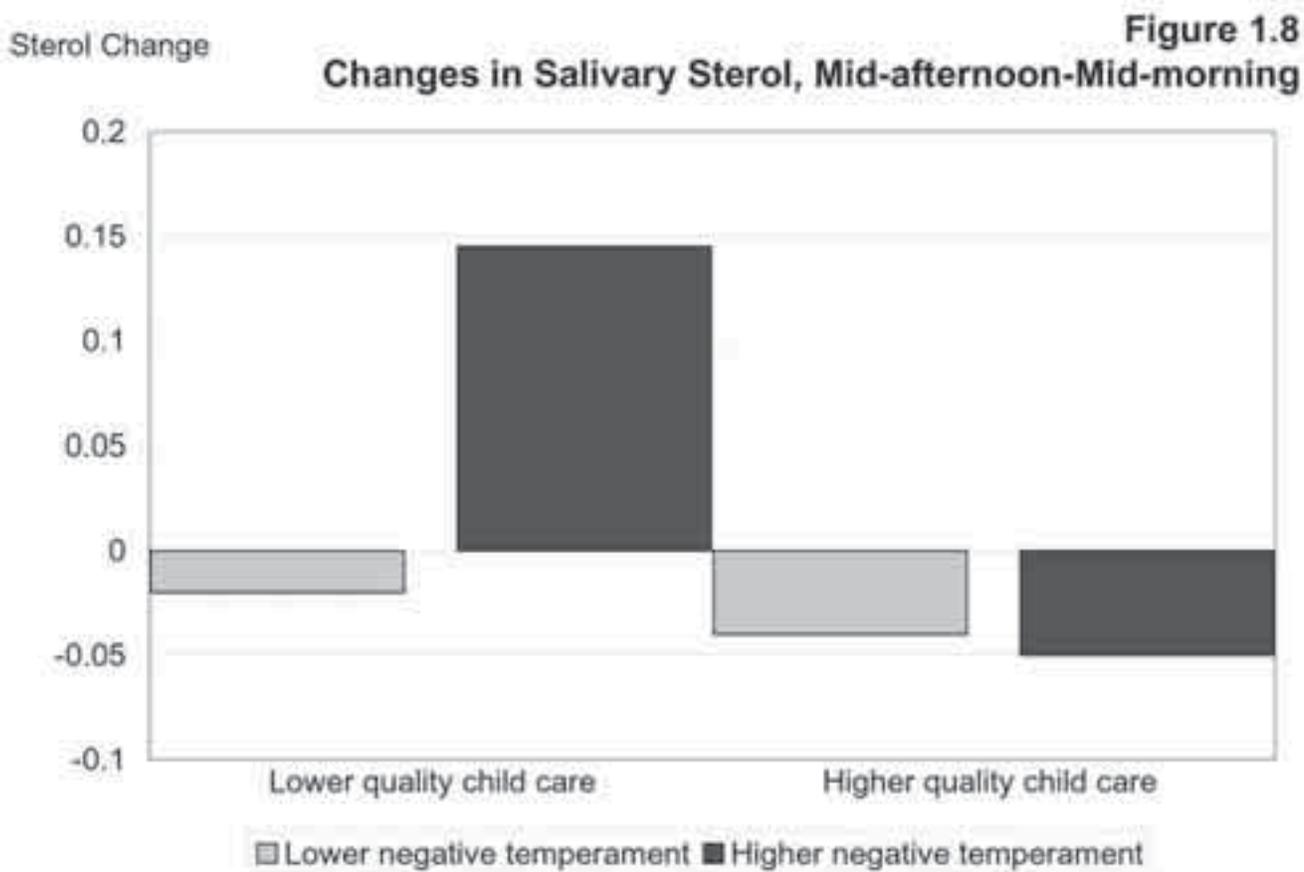
- » Frank and Earls, in their review of orphanage studies, concluded that the effect of negative environments in orphanages was not appreciably reduced in adult life even with massive expenditures. Most orphanages put young children at increased risk for infection, poor language development, and behaviour problems and many of these children became psychiatrically-impaired and economically-deprived adults.<sup>98</sup>
- » Rutter compared children from Romanian orphanages adopted into middle-class British homes with 52 non-deprived United Kingdom-born children adopted before the age of six months. There was a strong relationship between cognitive development and the age at which the Romanian children were adopted. The earlier the adoption, the better the outcome. Although there was some recovery for all the children, substantial deficits in development persisted for children who were older when removed from the orphanages. Rutter concluded that institutional deprivation led to some form of early biological programming or neural damage that could not be substantially changed by the quality care provided by the adoptive families.<sup>99</sup>
- » Rutter's findings are in agreement with those of Ames<sup>100</sup> and Le Mare<sup>101</sup> and colleagues in their study of Romanian orphans adopted into middle-class Canadian homes in British Columbia. They compared the children adopted within four months of birth with those who had spent more than eight months in orphanages. Both groups were compared with Canadian born middle-class children raised by their biological families. At 10-years-old, the late adoptees had lower IQ's than those who were adopted early and children born into British Columbia families. The findings support others that link IQ to the quality of early

child development.<sup>102</sup> The late adoptees had lower school achievement scores, more attention deficit disorders and more behavioural problems. ADHD was diagnosed in 34% of the late adoptees, while only 3% from the British Columbia group, and 9% of the early adoptees had this problem.

Parents of the late adoptees reported far greater parenting stress than those who adopted younger infants, indicating problems may be compounded by poor quality interaction between the infant and its adoptive parents. All these observational studies are compatible with the evidence that the quality of support and care given to infants in the early months has a significant effect on brain development and behaviour and learning later in life. The results also show that while you can help the late adoptees develop, they do not reach the same level of performance as those adopted early.

This evidence is also in keeping with the biological data that there are critical and sensitive periods in early life for the development of the brain and related biological pathways that set functions that are difficult to change later in life.

- » Researchers have related the quality of child care programs to physiological measures, particularly to cortisol levels.<sup>103</sup> In high quality child centres, children’s cortisol levels at the end of the day are lower than in low quality centres. This is a biological assessment of the quality of early child development programs. Poor quality early childhood programs seem to have a negative effect on the LHPA pathway and cortisol measurements. In an Australian study, researchers found that poor quality child care is associated with high sterol (cortisol) levels later in the day.<sup>104</sup> Others also



(Gunnar & Donzella, 2002)

The quality of the child care environment has a significant impact on children with more difficult temperaments.

found that the impact of poor quality varied among children. **Figure 1.8** shows that the most vulnerable children (higher negative temperament) are most affected by lower quality child care.

## 2.4 Learning

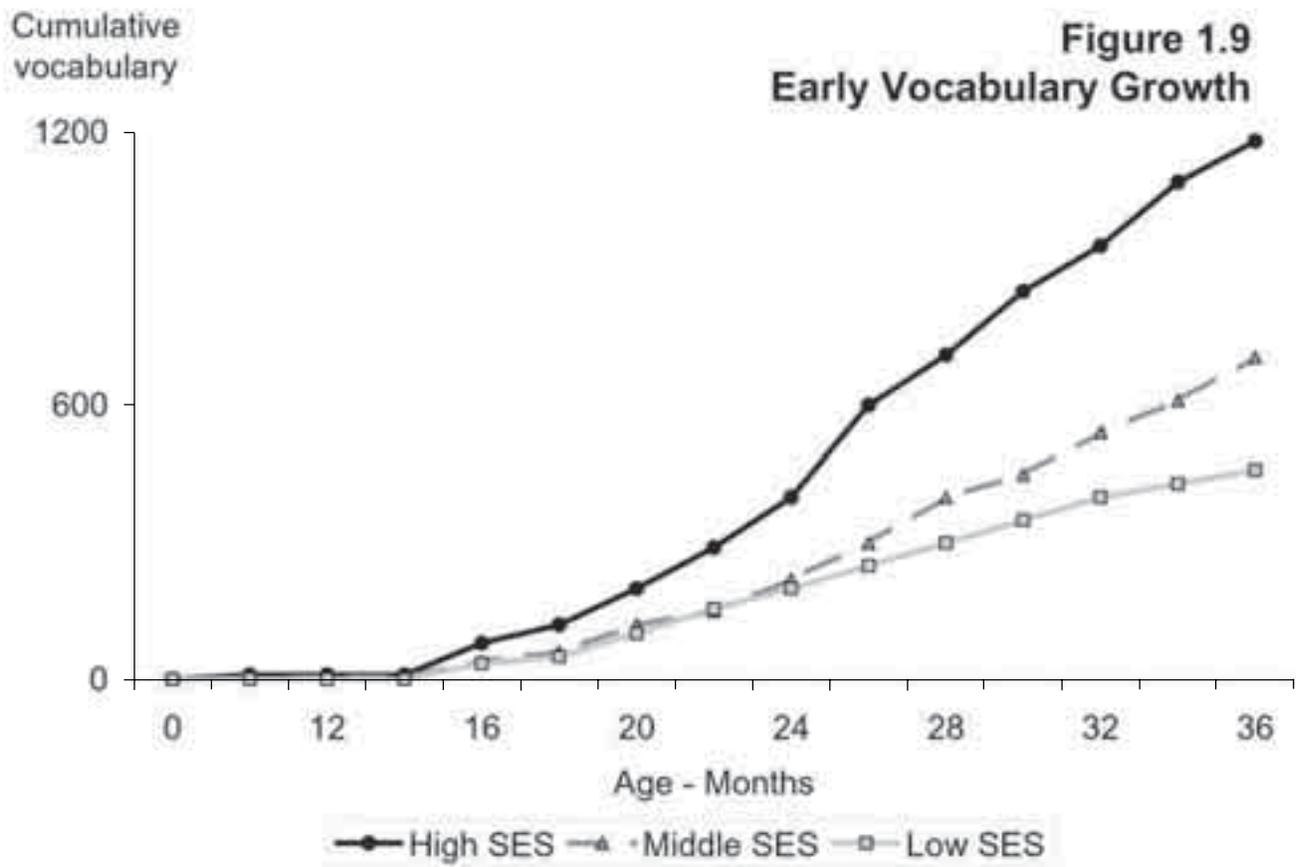
Learning is the process of acquiring knowledge, skills, attitudes, or values that causes a permanent change in behaviour or understanding. It is a process that depends on experience, brain development and physical growth. Language and literacy are central to learning.

### Language Development

The work of Huttenlocher et al,<sup>105</sup> and Hart and Risley,<sup>106</sup> Kuhl,<sup>107</sup> and Gopnik et al<sup>108</sup> has shown that the extent of language exposure to very young chil-

dren has a significant effect on later verbal skills. The difference in verbal skills at age three (**Figure 1.9**) among the different socioeconomic groups in the Hart and Risley study still held in respect to language capability and understanding at age nine. This observation is compatible with the evidence that the most sensitive period for the development of language capability is in the early years. Kuhl demonstrated children’s ability to discriminate phonemes in languages to which they are exposed, greatly diminishes after they are seven months old.<sup>109</sup>

The evidence from neuroscientists about the differentiation of neurons to detect different sounds for language also supports the concept that trajectories for language and literacy performance tend to be set in infancy. The data from longitudinal studies and the few randomized early intervention programs also



(Hart & Risley, 1995)

Differences in verbal skills at age three are related to family SES.

## **LANGUAGE SKILLS ARE A STRONG AND EARLY PREDICTOR OF SCHOOL SUCCESS**

- » Children with low language skills at school entry are unlikely to have the process reversed by the school system.

indicate the early years are when the brain is most receptive to the development of verbal skills and language.

Both baby humans and songbirds are dependent on adults for their complex vocalizations.<sup>110</sup> Humans and songbirds have evolved a complex hierarchy of specialized forebrain areas in which motor and auditory centers interact closely. Dyslexics show slow communication between different regions of the brain.<sup>111</sup> They also have difficulties reading and naming subjects in pictures of subjects. In recent studies, reduced activation in the left occipital temporal area was found for both word reading and picture naming.

Recent studies of children with dyslexia who have been through a program of language development based on phonics, indicates that there may be considerable plasticity in the neural circuits connecting the different parts of the brain involved in language and words. With this strategy, the brains of the dyslexic children (six or older) exposed to phonics programs, developed normal neurological pathways for both word reading and picture naming within eight months.<sup>112</sup> The research tool used to assess this was fMRI, which measures the function of the different parts of the brain. The children, as well as showing the normal activation of the centres for speech, reading, and language, no longer had difficulty in reading. The dyslexia story is a good example of the hierarchy of neural path development. Dyslexia is probably a problem with neural pathways related to language and cognitive development rather than the sensory or LHPA pathway. Therefore the optimal period to intervene comes later and lasts longer than problems associated with dysfunction in the LHPA.<sup>113</sup>

Many studies show that children who develop

poor verbal skills during the first three years of life will do poorly in language and literacy in the school system.<sup>114</sup> The 1970 longitudinal British birth cohort studies indicate group preschool programs support language development. The findings are quite conclusive that participation in preschool and parenting practices were important predictors of the mobility of children from all social classes in the school system.<sup>115</sup> Feinstein found that development scores (including vocabulary and communication skills) at 22 months predicted educational qualifications at age 26. Children who showed low performance, particularly low performance related to language skills, at school entry are unlikely to have the process reversed by the school system.<sup>116</sup>

Jefferis and colleagues have examined the relationship between birth weight, childhood socioeconomic environment, and cognitive development in the 1958 British birth cohort. They found that the postnatal environment had an overwhelming influence on cognitive function. Birth weight had a weaker but independent association. Low birth weight children in the upper social class had better mathematics results than the low birth weight children in the lower social classes at ages seven and eleven. Furthermore, the school system did not change the performance for the low birth weight children who were in the low social class.<sup>117</sup>

Power and Hertzman are completing their studies of the biological pathways and development in 1958 British birth cohort at age 45. They have found the cortisol secretion patterns at age 45 are correlated with conditions influencing early child development.<sup>118</sup> Cortisol secretion at age 45 is associated with the mathematical skills at 7- to 16-years of age reported in their earlier paper.<sup>119</sup> This illustrates that early brain development affects the HPA stress pathway and that it is involved in learning and cognition (mathematics) at this time.

### ***Assessing Literacy***

The Organisation for Economic Co-operation and Development (OECD), Statistics Canada, and the United States Department of Education conduct population-based assessments of prose, document, and

quantitative literacy. Proficiency is assessed using a scale of 1 (low) to 5 (high). Each level is described in terms of individual performance:

- » At Levels 4 and 5 on the prose scale, persons are able to access information and draw multifaceted conclusions from a number of complex and lengthy written sources.
- » At Level 3 a person is able to find answers by locating several pieces of information from a few to a number of different, simpler sources. This level is deemed as the minimum needed to understand and use information in the emerging knowledge-based economy.
- » Those scoring at Level 2 are able to comprehend and integrate information from a few simple sources, but, for example, would have difficulty applying written instructions about the purpose and proper use of medication. Thus, persons at this level may not be able to consistently understand the more difficult texts and tasks that are increasingly prevalent in modern societies.
- » Persons at Level 1 would have difficulty understanding a simply-written text unless it was explained to them first.

**Figure 1.10** shows 42% and 48% of adults (ages 16 to 65) in Canada and the United States performed at Levels 1 and 2. In Chile, more than an 80% of the

population is at the two lowest levels. Conversely, between 15-20% of adults in Canada and the U.S. had high scores (Levels 4 and 5). Over 34% of Sweden's adult population performs in the top levels while in Chile, less than 3% do.

**Figure 1.11** shows the results for the adult literacy assessment in the U.S. carried out by the Department of Education. About 50% of the adult population is at Levels 1 and 2 and only about 5% are at Level 5 in this study. In the American study they assessed prose, document, and quantitative literacy.

In developed countries there is a relationship between poverty and literacy. In the American literacy study, about 40% of the population at Level 1 lived in poverty and only 5% of the population at Level 5 (see **Figure 1.12**). The OECD studies also demonstrate a strong correlation between equity in literacy and equity in incomes.

### *Literacy in Cuba*

It could be argued that because Canada and the United States have a mixed immigrant population in contrast to the more homogeneous Scandinavian population, the difference in literacy performance is due to the heterogeneity of populations in Canada and the United States. As illustrated in **Figure 1.13**, the UNESCO studies of Latin American countries,

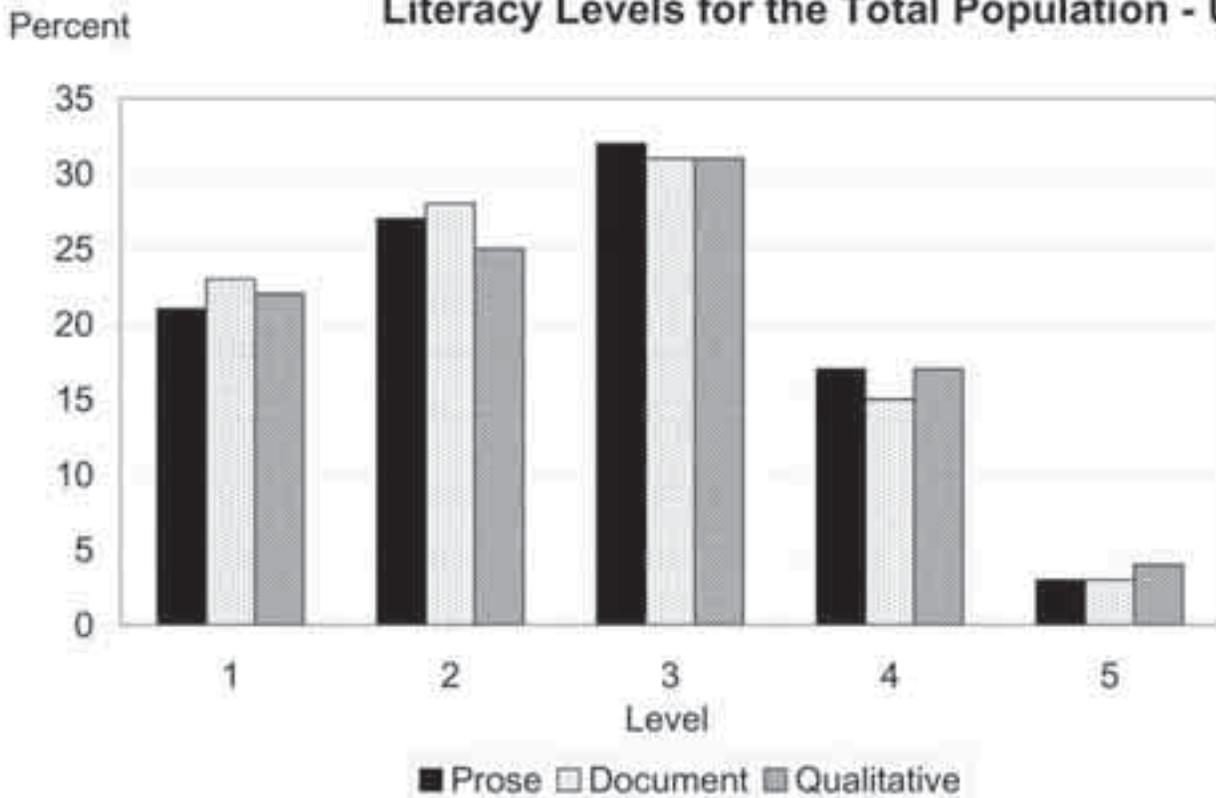
| <b>Figure 1.10</b>                                  |               |               |
|-----------------------------------------------------|---------------|---------------|
| <b>Document Literacy – 1994-1998, Ages 16 to 65</b> |               |               |
|                                                     | Level 1 and 2 | Level 4 and 5 |
| Sweden                                              | 23%           | 34.0%         |
| Canada                                              | 42%           | 23.0%         |
| Australia                                           | 43%           | 17.0%         |
| United States                                       | 48%           | 18.0%         |
| Chile                                               | 85%           | 3.0%          |
| Mexico                                              | 84%           | 1.7%          |

(OECD, 2004)

42% of Canadians performed poorly on standard literacy assessments.

Figure 1.11

Literacy Levels for the Total Population - USA



(US Department of Education, 2002); 50% of American adults are at Levels 1 and 2 in literacy assessments.

demonstrate that heterogeneity of populations is not a barrier to high literacy performance.<sup>120</sup>

Cuba outperforms every other Latin American country in literacy.<sup>121</sup> The government of Cuba introduced health, nutrition, and immunization programs for mothers and young children more than 30 years ago. In the 1960s and 70s Cuba also developed a network of *Circulos Infantiles*, child care centres for working mothers based on extensive research of the appropriate physical and program design for an early childhood setting. The centres were so successful in promoting children's early language development and literacy that the country embarked on a national community program, *Educa a tu Hijo*, based on the *Circulos Infantiles* in the 1980s. Parent participation grew steadily throughout the 1990s and by the end of the century, 99% of young children and their families were taking part. In con-

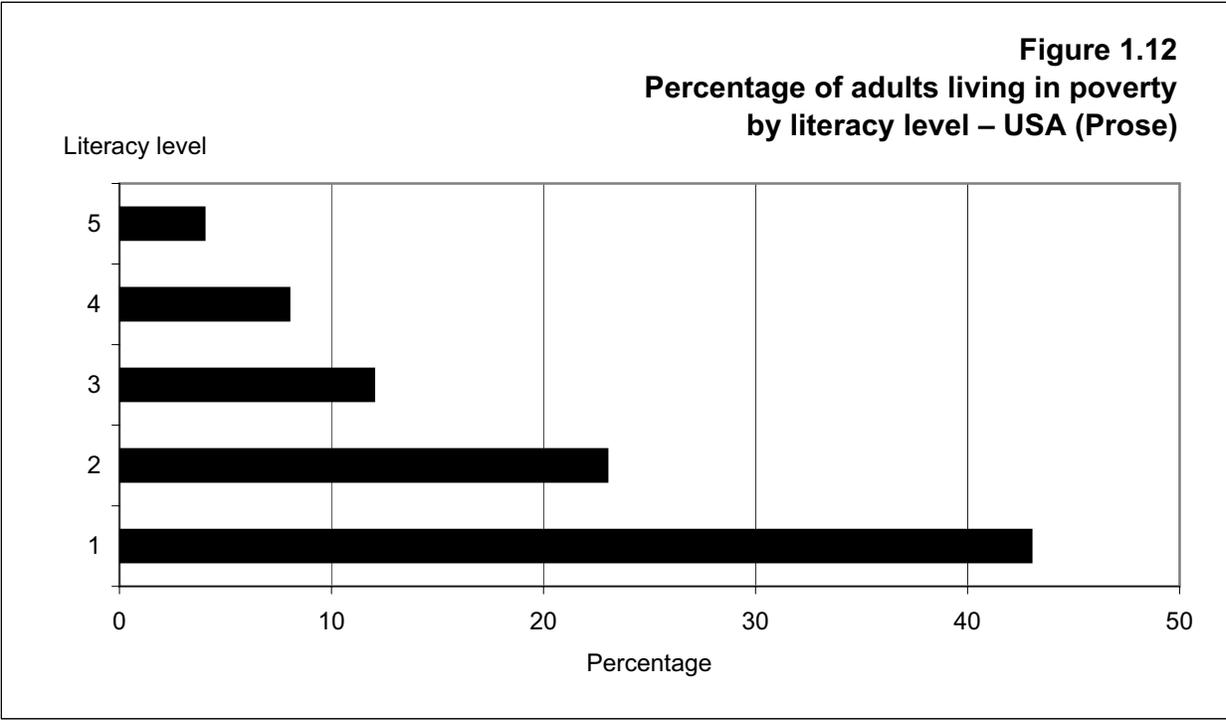
trast, only 12% of Mexican children attend preschool.<sup>122</sup>

Cuba stands out against the rest of Latin America in a number of key areas:

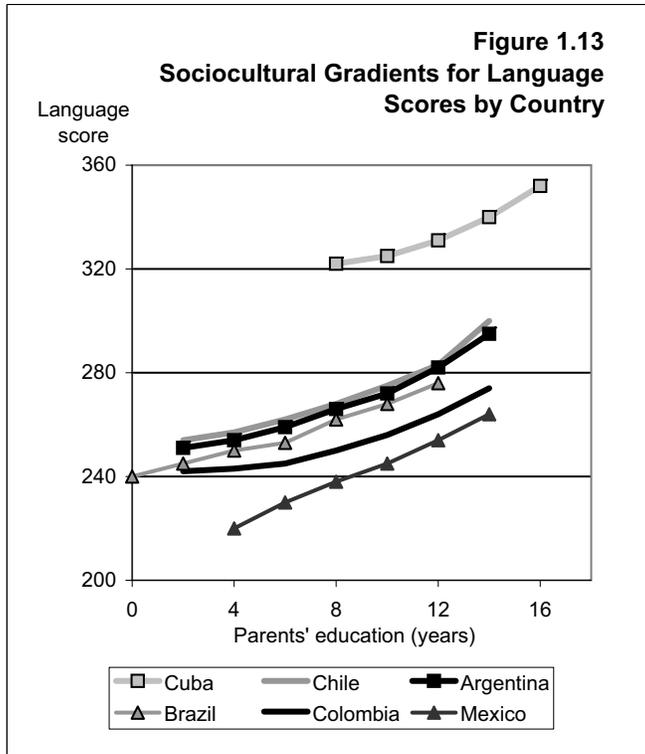
- » Children outscore their counterparts on Grade 3 tests in language and mathematics.<sup>123</sup>
- » Cuban schools report one-quarter the number of fights as other schools in the region.<sup>124</sup>
- » The life expectancy in Cuba is better than almost all other Latin American countries.

The Cuban data is compatible with the concept that programs promoting healthy child development from the prenatal period through early childhood can improve outcomes for a non-homogeneous population (African, Spanish, Indian).

Criticism that Cuban data may be skewed by biased tests and sampling errors is not shared by UNESCO researchers. Canadian Doug Willms who was involved in the study has no reservation that the



(US Department of Education, 2002); The American adult literacy study found a strong correlation between poverty and literacy.



(Willms, 2000a); Cuban youth have higher literacy scores than youth in other Latin American countries.

data reflects the characteristics of the population studied.<sup>125</sup> The Cuban findings are also consistent with other population health assessments concluding that greater equity in literacy increases the health and performance of all social classes.<sup>126</sup>

## 2.4 Socioeconomic Gradient in Health, Behaviour, and Learning

Whatever in the social environment affects health, learning, and behaviour, it reaches all social classes, although all are not equally influenced. Outcomes in all population-based research appear as a gradient when plotted against the social and economic status (SES) of the sample studied. Members of the low SES group are more likely to have poor outcomes but there are fewer numbers of people in the low group. Likewise, members of the highest SES group are less likely to face challenges (although some do), but there are few numbers in this group. Thus, the largest number of individuals affected by factors influencing health, learning, and behaviour are in the two middle groupings, or as often referred to, the middle-class.<sup>127</sup> In Canada this represents about 75% of the total population.

Because it is the biggest group, the most children experiencing difficulties will be from the middle-class.

### **TO WORK PROGRAMS MUST BE UNIVERSAL**

Vulnerable children are found in all SES groups but populations are not evenly distributed between groups. The largest numbers of children overall are found in the middle groupings. The lowest SES group has a greater percentage, but a smaller number, of vulnerable children. Conversely, children in the middle SES groups are less likely to be vulnerable, but because of the size of the group, this is where the most vulnerable children are found. Restricting programs to vulnerable children in the low SES group therefore misses the majority of children experiencing difficulties.

Any program to improve the competence and well-being of populations should therefore be available for all families with young children. While such initiatives will have the greatest impact on children in the lowest socioeconomic groups, they will influence outcomes for vulnerable children in all social classes, thus improving the quality of the entire population.<sup>128</sup>

As indicated in **Figure 1.14**, 50% of those performing at Level 1 have physical and mental health problems. Those with the highest literacy skills had far fewer physical and mental health problems. The health problems are a gradient when plotted against the population's literacy competence. Each step down the scale of literacy capability, the worse the health status of the population, and the greater the numbers of people having difficulties.<sup>129</sup> An interesting question is why is there a relationship between literacy competence and health status? The answer probably lies in early childhood with the development of brain pathways that affect health and literacy competence.

Interestingly, it is not wealth, but equality, that produces healthy populations. Consistently countries demonstrating high health and literacy outcomes show a fairly flat socioeconomic gradient. Countries with healthy, more literate populations invest heavily in young children and their families.

The top scorers in literacy assessments provide quality, universally-accessible early childhood programs.<sup>130</sup> At present, there is very limited evidence that special education programs once children enter the school system improve their literacy performance to the same extent as produced by a good preschool program.<sup>131</sup> To achieve high population performance and equity in literacy (and reduce the incidence of anti-social behaviours and to improve the mental and physical health of their populations), it appears that societies will have to make a larger investment in early child development programs.

## 3. Early Experiences Can Make a Difference

Children's earliest experiences have far-reaching and solidifying effects on the development of their brains and behaviours. Diverse experiences affect the architecture of the brain and set trajectories for learning, health, and behaviour through childhood

and into adulthood.

### 3.1 Early Relationships

Researchers have long identified the crucial role that the primary caregiver plays in the infant's development.<sup>132</sup> Over the past eight years, neuroscience has begun to shed light on the neurological processes underpinning these phenomena.<sup>133</sup> Neuroscientists are discovering that human brains are specialized for receiving and understanding stimulation from other people<sup>134</sup> and the kinds of early experiences that are necessary for the optimal functioning of these neural pathways.<sup>135</sup>

- » Humans, like all other mammals, are born with a number of mechanisms to promote mother-baby attachment
- » New-borns are perceptually attuned to the human face, voice, touch, taste, and even movements,

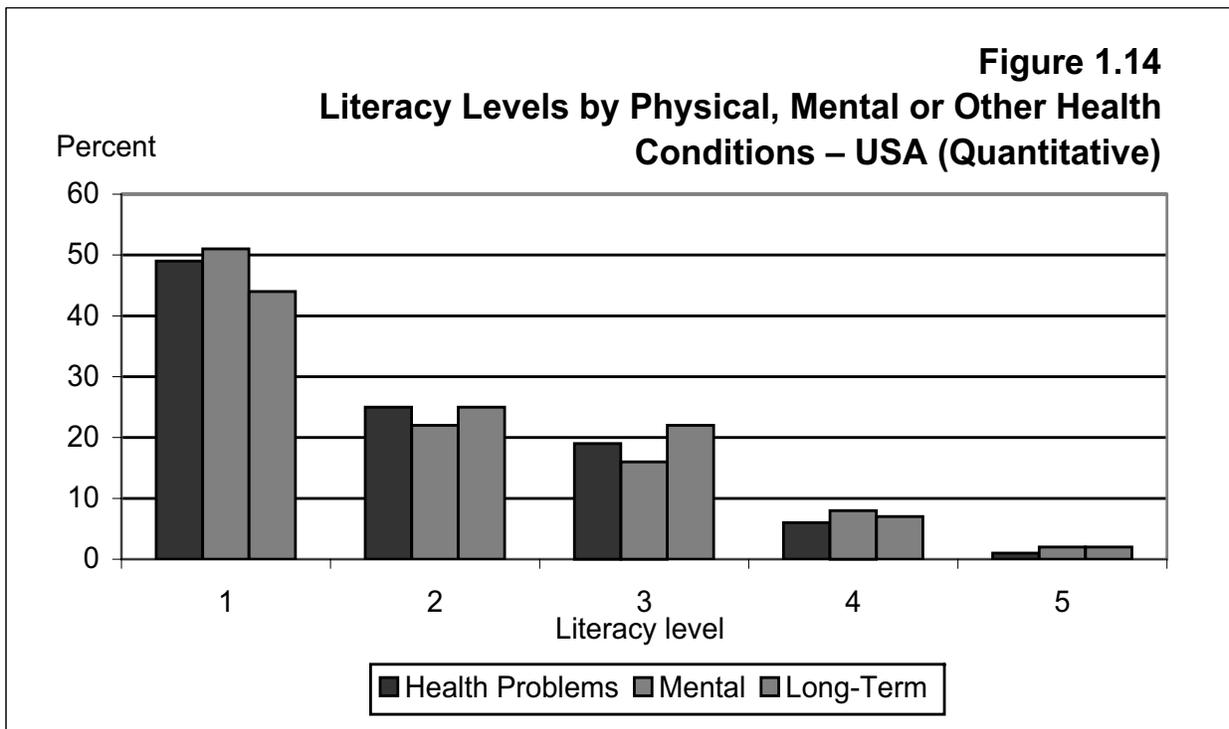
#### WEALTH DOES NOT EQUAL HEALTH

It is not wealth, but equality that produces healthy populations. Consistently countries demonstrating high health and literacy outcomes show a fairly flat socioeconomic gradient. Countries with healthy, more literate populations, invest heavily in young children and their families.

with a marked preference shown to the primary caregiver

- » Infants have reflexive behaviours that automatically evoke caregiver responses, the most important of which are crying, smiling, gazing, cooing, and imitation

Caregivers exhibit a number of behaviours that



(US Department of Education, 2002)

Low literacy levels are associated with increased health problems.

### **GOOD INTENTIONS, POOR OUTCOMES**

Under a practice that persisted from the 1950s into the present, hospitals immediately separate babies from their mothers and placed them in sterile nurseries. The intention was to keep the baby warm, reduce infections, and enable the mother to rest after delivery. A number of mechanisms triggered by immediate skin-to-skin contact between newborn and mother were compromised by these new delivery procedures.<sup>136</sup> The result was a dramatic increase in breast-feeding problems, which in turn has significant ramifications for both early brain development and later health. The incidence rate of these problems was significantly reduced in hospitals that reverted to the practice of immediate contact between mother and infant.<sup>137</sup> Ironically, it also turns out that babies placed immediately with their mother are actually warmer than 'cot babies.'

suggest humans are pre-adapted to nurture our infants. Mothers can hear their infant crying in very noisy environments, reliably distinguish between the crying of their own infant and other infants, distinguish between their own infant's smell and that of other infants, and they unconsciously fine-tune their behaviours in order to help their infant master verbal, social, and cognitive skills.

A new infant, guided by smell, will search for the breast and begin rooting and suckling. This reflexive behaviour, which dramatically reduces infant crying, also triggers a surge of oxytocin in the mother, which is vital for attachment, and a GI hormone that enhances the mother's capacity to cope with the caloric demands of breast-feeding. But perhaps most striking is the discovery that the newborn's 'search' for the breast enhances her olfactory learning about the environment. This effects the expression of serotonin receptor genes that will affect adult behaviour and health and has an overall organizing effect on the

### **NURTURING INTERACTIONS**

Nurturing interactions with adults in the early years feed sensory stimuli into the developing neural pathways of a young child's brain that underlie acquisition of a number of core competencies:

- » The caregiver feeds and shelters the child, allowing it to integrate sensory stimulation sight, sound, touch, movement, and smell.
- » The infant's ability to engage in chains of communication with her caregivers, using vocalizations, gestures, facial expressions, and body movements. Through brief exchanges that gradually develop into sustained, co-regulated chains, the infant acquires the ability to engage in purposeful behaviours of her own, such as taking her mother by the hand and leading her to the kitchen cupboard and gesturing and vocalizing to get the cookie she wants.
- » A child's growing ability to think symbolically emerges as a result of attending to and mastering her caregiver's meaningful use of sounds or gestures in increasingly complex problem-solving interactions. This is accompanied by the emerging ability to represent experiences (including feelings, intentions, and actions) in words, play, drawings, block constructions, or other symbolic forms.
- » A child's ability to build bridges between ideas, connecting feelings, facts, and new understandings about how the world works. Nurturing caregivers question, challenge, offer choices, and actively engage in play. First hand, concrete experiences shape ideas that can be expressed symbolically in drawings, paintings, dramatic play, and in verbal and written forms.

For a fuller account of this developmental scenario, see Greenspan, S. & Shanker, S. (2004) *The First Idea*, Da Capo Press, Perseus Books.

development of the brain.<sup>138</sup>

### ***The Social Context of Optimal Early Child Development***

Like the young of other animal species, human children develop through social interactions. Physical activity with each other and with adults builds an understanding of limits and the ability to monitor growing strength. Children develop problem-solving strategies from first-hand actions with objects in their world, and from exchanging points of view with other children and with adults. Children learn the tools of their culture, including literacy and numeracy, through their interactions with the environment and each other.

Play engages a young child and promotes learning.<sup>139</sup> Play is how children make sense of the world and is an effective method of learning for young children. Ideas and skills become meaningful tools for learning are practiced, and concepts are understood. Play engages children's attention when it offers a challenge that is within the child's capacity to master.

The qualities developed through play are the same required to succeed in school. Children who enter Grade 1 with strong oral communication skills are confident, able to make friends, are persistent and creative in completing tasks and solving problems, and are excited to learn, have pathways set for

#### **THE IMPORTANCE OF PLAY**

- » Expands intelligence
- » Is a testing ground for language and reasoning connecting to the challenges children face in school, such as literacy, math, and science concepts
- » Stimulates the imagination, encouraging creative problem solving
- » Helps develop confidence, self esteem, a sense of strengths and weaknesses, and a positive attitude toward learning
- » Is a significant factor in brain and muscle development

academic success.<sup>140</sup>

### ***Literacy***

The acquisition of literacy skills begin long before Kindergarten, beginning at birth through everyday interactions like talking, singing, sharing books, telling stories, or pointing out and naming objects. Painting, drawing, or picking up things also serve a purpose. These activities help develop hand muscles and coordination—skills necessary for learning how to write. Children begin to take meaning from printed text by combining a growing sense of story and the structure of language with the idea that print represents spoken language and thoughts. Children's ability to derive meaning from print text is further enhanced with greater understanding of letter-sound relationships and word recognition.<sup>141</sup>

### ***Numeracy***

Numeracy begins with the three-year-old understanding she is taller than her one-year-old brother, that she gets two cookies because she is bigger and he gets one because he is smaller. Relationships between objects (big-small, long-short, etc.) and object classifications are the foundation to numeracy. To develop an understanding of the meaning of numbers, children count objects one by one, pointing to them as they say the numbers in the sequence. And children must also grasp the concept of cardinality—that the last number in the sequence tells how many objects there are. Play consolidates understanding about numbers and children can then begin to use number sequences that is a prerequisite for addition, subtraction, multiplication, and division.<sup>142</sup> Play that involves games that use a number line, one-to-one correspondence, and counting help children master and integrate understanding about numbers.

### ***Inquiry***

Inquiry or scientific reasoning begins in infancy.<sup>143</sup> Babies see how objects move and behave, gather information, build patterns of expectations about the world around them, and form general categories. Toddlers experiment with tools and learn to manipulate objects. They learn to solve simple problems they encounter in their environment, such as how to get an

object out of reach or how to make their desires understood. Preschool children use methods of inquiry including data collection, predicting, recording, and talking about findings. Problems to be solved emerge in preschool play.

### **3.2 Early Intervention Studies**

Programs to support early child development should begin early, in utero, and continue through to formal schooling.<sup>144</sup> To intervene effectively it is important that programs are led by highly qualified staff.

#### ***Home Visiting***

Home visiting is a widely used approach to help families with young children in developed and developing countries. It is an attractive strategy as services can be tailored to meet the needs of individual families and resources brought to those who are socially or geographically isolated. Home visiting is most effective when linked to center-based programs.<sup>145</sup> Center-based programs working with parents (including home visits) are better able to deliver an integrated “dose effect” for early child development. The Nurse Family Partnership Program is a randomized controlled trial. The effects on child development outcomes were significant but modest (effect sizes from .03 to .25),<sup>146</sup> but more effective for children in the program who also became enrolled in preschool Head Start or licensed daycare programs.

#### ***Nutrition and Stimulation***

An estimated 40% of children under age five in non-industrialized countries have stunted development.<sup>147</sup> Grantham-McGregor and colleagues set out to examine the benefits of nutrition and stimulation on Jamaican children 9 to 24 months old whose height was two standard deviations less than the reference point for their age and sex. The children were randomized to four groups: nutrition supplement; stimulation; stimulation plus nutrition supplement; and no intervention. Interventions were delivered in the homes through community health aides. The children were followed for 24 months. Both stimulation and nutrition alone improved development. But the greatest impact came from combined stimulation and nutrition. Nutrition and stimulation together led to the

stunted children matching the non-stunted groups’ development within the two years.<sup>148</sup> Grantham-McGregor and colleagues went back to follow the effects on IQ and cognition for the same children at ages 11 to 12. Children who were stimulated showed a gain in IQ and cognitive function but were below non stunted middle-class children. The children given only improved nutrition did not show a gain in cognition and IQ, leading the researchers to conclude that growth restriction in the very early years has long-term functional consequences.<sup>149</sup> In other studies, interventions that begin in pregnancy produced greater effects.<sup>150</sup>

A similar study in Colombia found food supplementation alone did not benefit the children but when combined with stimulation had substantial benefits.<sup>151</sup> A Peruvian study found that diarrhea-induced malnutrition in young children was associated with poor cognitive function at age 9. They concluded that strategies to improve cognitive function of school age children in less developed countries should focus on securing the nutrition and well-being of children in early life.<sup>152</sup> Following a detailed study of nutrition in Guatemala, researchers concluded that improved nutrition in the early years of life substantially improved performance in the education system.<sup>153</sup> All this is in keeping with the finding that nutrition and a good developmental environment are necessary for optimal early child and brain development.

#### ***Infant Health and Development Program***

A study of the cognitive and language development in children from birth to age 3 by the United States Infant Health and Development Program (IHDP) found that the quality of the child’s program dramatically influences outcomes.<sup>154</sup> Brooks-Gunn concluded from the IHDP data that high quality center-based care showed excellent results on early child development,<sup>155</sup> including children cared for solely by their mothers. Moreover the benefits continued into the late elementary and high school years.

In studies of low birth weight premature infants, Brooks-Gunn and her colleagues found WISC verbal scores at age eight corresponded positively for children enrolled in a group program from 18 to 36 months. The program included home visits and

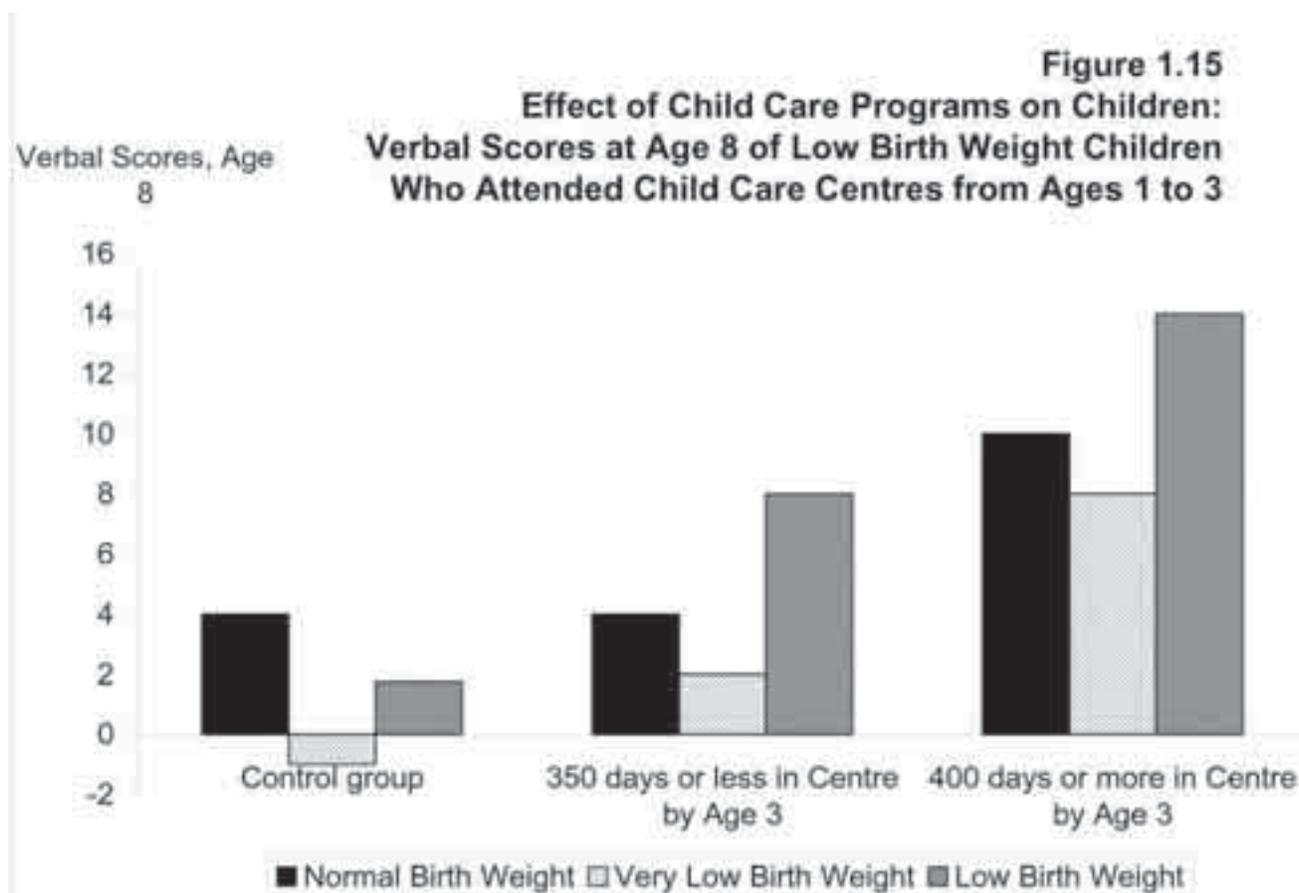
appropriate healthcare after birth. **Figure 1.15** illustrates one of the most striking findings. Children who attended the group centre for more than 400 days over the period had much better verbal scores at age 8 than children who spent less time in the centers. However, both groups outperformed children who attended no program.<sup>156</sup> This is good evidence of a “dose effect.” The length of the programming received is as significant as the intensity of the intervention. Again, these findings are congruent with what we know about adequate and frequent stimuli influencing the biology of brain development in the very early years and that there is a dose effect in how neurons form their synapses.

### *Chicago Longitudinal Study*

Child parent centres located in or near public elementary schools produced positive differences in child development for children age 3 to age 9, when compared to children not in the program. Key findings of the Chicago Longitudinal Study included significantly higher educational attainment and lower rates of juvenile arrest.<sup>157</sup> While the initiative did enhance child development outcomes, starting children at an earlier age and involving their parents would likely have produced more pronounced results.

### *Perry Preschool Program*

Perhaps the most well-known of all the North American intervention studies, the Perry Preschool project examined the lives of 123 African Americans born in



(Hill, Brooks-Gunn & Walfoegel, 2003)

The ‘dose effect’ of early childhood programming: adequate and frequent stimulation is needed to change outcomes. Children who spent more than 400 days in the program outscored children who spent less than 350 days. Both groups outscored the no program group.

poverty. From 1962–1967, at ages 3 and 4, the subjects were randomly divided into a group that received a high-quality preschool and weekly home visits and a comparison group that received no interventions. Data has been gathered on the participants over the intervening years. The latest analysis comes from interviews with the subjects at age 40 (97% are still alive), with additional data gathered from school, social services, and arrest records. The sample attending preschool significantly outperformed the no-program group. They did better on literacy tests, 65% versus 45% graduated high school, and a higher proportion went on to university.<sup>158</sup>

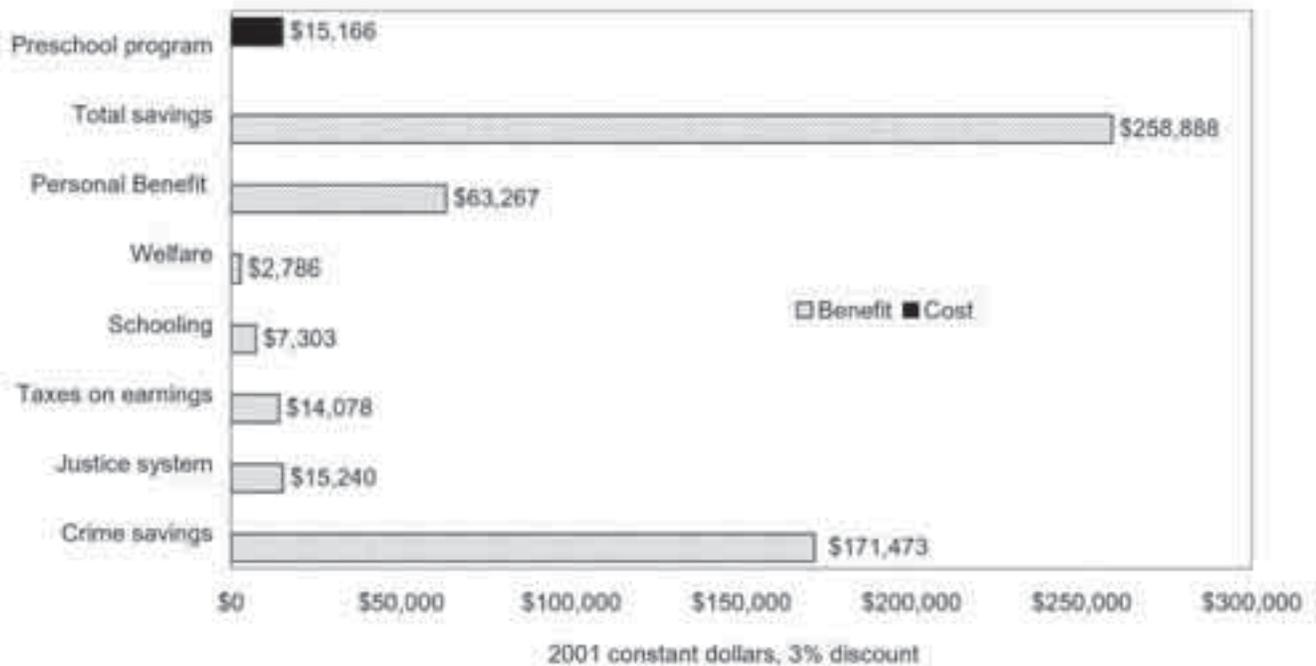
The study includes a cost:benefit analysis. The most substantial finding is savings from reduced antisocial behaviour in the intervention group, measured by fewer arrests for drug, property, or violent crime. **Figure 1.16** illustrates the cumulative economic return to society of the program; \$258,888 per participant on an initial investment of \$15,166 per

child, or a \$17.07 return on each dollar spent (a better return than any stock investment). Of that return, \$195,621 went to the general public (\$12.90/\$1.00) and \$63,256 went to each participant (\$4.17/\$1.00). Of the public return, 88% came from crime savings, 4% from education, 7% from increased taxes paid on higher earnings, and 1% from welfare savings.<sup>159</sup> Although participation had an initial effect on IQ of the children, it was not sustained. This is not unexpected since the weight of the evidence is that IQ is strongly influenced by the conditions during infancy.<sup>160</sup> By today's standard Perry Preschool is a late intervention study. Outcomes are more pronounced for quality programs started in pregnancy or at birth.

### *Abecedarian Project*

The Abecedarian project in North Carolina has provided important information about the effect of early intervention with a high quality child development program on cognitive development over more

**Figure 1.16**  
**High/Scope Perry Preschool Study**  
**Costs/Benefits per Participant at 40-years-old**  
 (\$17.07 return per dollar invested)



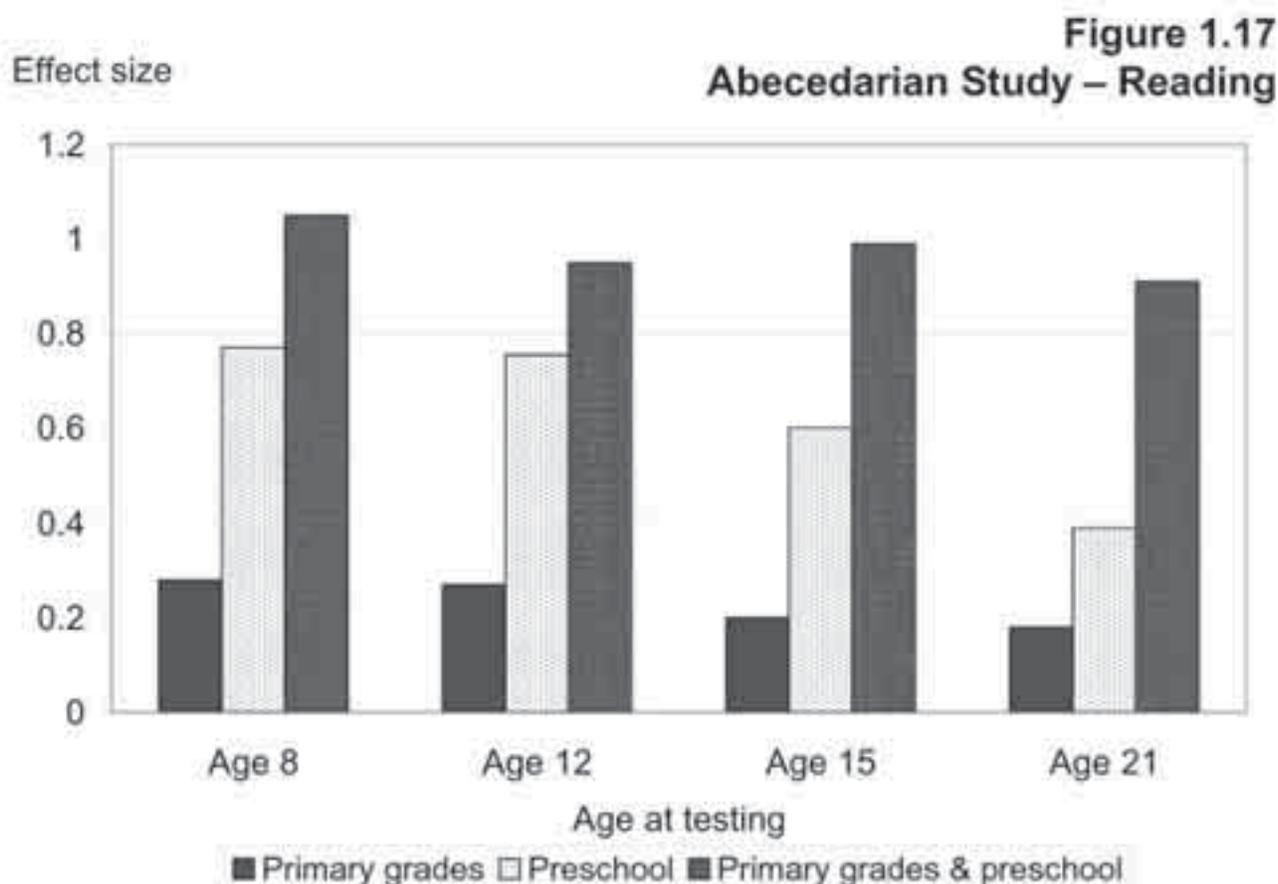
(Schweinhart et al., 2005)

than 20 years. A group of African American children whose mothers had IQs ranging from 74 to 124 (average 85) were randomly selected for two groups. A control group received no intervention, and another group of infants starting preschool at four months. At school entry, the preschool group was split into two. One received the standard school program and the other an enriched program for the first three years. The no-intervention group was also randomized into one group given three-years of special schooling and the other group given the standard educational program.

The no-preschool group given the special three-year school program showed better reading skills than the group receiving neither preschool nor special education; the effect, however, was much weaker than for the children who attended preschool. The children

attending both preschool and special education showed substantially elevated skills in reading and mathematics that continued into early adulthood. In contrast, the preschool children not placed in the special three-year school program lost a significant portion of their gains by age 21. The integration of the preschool and school program produced the greatest gains in reading.<sup>161</sup> These findings are compatible with the presence of sensitive periods in early childhood for language and literacy development, which influence later development in middle childhood. It intersects with conclusions from the neurosciences and biological sciences that to improve literacy investment in the preschool period is important.

### 3.3 Integrated Early Childhood Settings



(Campbell & Ramey, 2002)

Early investment that is sustained through primary school is the most effective investment.

*Starting Strong II*, a review of early childhood programs in 18 countries for the Organization for Economic and Cooperative Development (OECD), recommended a more systemic approach across early childhood programs and the integration of traditional care and education sectors.<sup>162</sup> Its review of Canada recommended bridges between existing early childhood programs with the aim of integration at both the ground level and at policy and management levels. Nine OECD countries have now integrated their entire early childhood systems for children from birth to age 6 under one government department. They regard early childhood programs as an essential part of the preparation of children for public school, as an important component of the supports for families, in particular for those with employed parents, and finally, as a venue for identifying children and families who will need special services.

The comprehensive early intervention studies (Abecedarian and Perry Preschool) discussed in the previous section offered integrated programming that combined health, early childhood education, non-parental care, home-visiting, and parenting supports to participants. In fact, a comprehensive, integrated approach is a common characteristic of effective early interventions.

Other studies have considered the impact of integrated early childhood settings for community-based programs that are not targeting at-risk children but are accessible to children living in a particular neighbourhood or community.

- » An international review of early years integration studies concluded that integrated care and education programs were beneficial for children from birth to six.<sup>163</sup>
- » In a British study of preschool education, researchers reported that children who attended integrated early childhood centres made better intellectual progress by the time they entered primary school than children who attended regular child care centres, supervised family child care, or other combinations of non-parental care and early education programs.<sup>164</sup>
- » The Ontario Better Beginnings, Better Futures (BBBF) program is a 25-year demonstration project of targeted services for families with

children to age 5 in five community sites, or with children from 4- to 8-years of age in three community sites. Two of the preschool sites built on existing program platforms (such as child care programs) had a direct focus on child development and achieved a greater degree of integration and were associated with improved child social and cognitive outcomes.<sup>165</sup> The preschool sites, as a group, had *less* impact on children than the sites focusing on 4- to 8-year-olds. Ray Peters, the principle investigator, suggests that schools may provide a platform for allowing new supports to reach a tipping point of altering children's environments, and that quality child care programs could serve the same function for preschoolers.<sup>166</sup>

- » The Toronto First Duty project reported that increased integration is related to significant improvements in parenting capacity (including reading with children at home and involvement with the school) and program quality.<sup>167</sup>

## 4. Conclusions

The results from these and other studies are compatible with the evidence from the biological and neurosciences that the critical and sensitive periods for brain and biological development are significantly influenced by experience in the early years beginning with pregnancy. A substantial investment in early child development will be necessary to improve the competence, health, and well-being of populations throughout the world.

From all that has been surveyed in this chapter, we can draw five basic and extremely important conclusions:

- » Early experiences shape brain development.
- » Brain development strongly influences learning, behaviour, and health throughout life.
- » The early years are a period of heightened opportunities and increased risks.
- » Families and communities matter.
- » Early child development programs can make a significant difference.

## NOTES

- <sup>1</sup> This section is based on Mustard, J.F. (2006) *Early Child Development and Experience-based Brain Development: The Scientific Underpinnings of the Importance of Early Child Development in a Globalized World*. Brookings Institute.
- <sup>2</sup> Shanker & King 2002, Greenspan & Shanker 2004, Falk 2005
- <sup>3</sup> The one region that has been extensively studied in respect to renewal is that part of the brain associated with memory, the hippocampus. It appears to be capable of the synthesis of new neurons under appropriate conditions and stimulation and this is important for long-term memory. Renewal of neurons also appears to be true for parts of the hypothalamus and the amygdala as well as the olfactory neurons.
- <sup>4</sup> Kouichi et al, 1995; Kandel, 1991, 2001; LeDoux, 2002a; Sternberg & Gold, 2002; Fields, 2005
- <sup>5</sup> Recent research has shown that children with autism have an excess of white matter in the frontal lobes, cerebellum and association areas. The pathways connecting left and right sides of the brain are underdeveloped. LI networks tended to be over-connected and long range networks tended to be under-connected (Herbert, 2005; Carper & Courschene, 2005, Just 2004). At present there is no cohesive theory to explain these findings, but scientists are studying whether, as a result of their biological challenges, children with autism fail to undergo those interactive experiences that are essential for synaptic pruning and wiring.
- <sup>6</sup> Gage, 2003
- <sup>7</sup> Hebb, 1949, p. 62
- <sup>8</sup> Over the past eight years there has been considerable interest in the role of LTP in the hippocampus as a means of understanding the mechanisms of memory formation and LTP in the Amygdala in order to understand the integrated role of affect in memory formation.
- <sup>9</sup> Hebb, 1949; Sternberg, 2000; Nelson, 1999; Kandel, 2001; McEwen, 2002; LeDoux, 2002a; Knudsen, 2004; Fields, 2005
- <sup>10</sup> McEwen, 2002
- <sup>11</sup> Knudsen, 2004
- <sup>12</sup> Hyman, 1999; Knudsen, 2004; Seckl and Meaney, 2004; Gluckman and Hanson, 2004
- <sup>13</sup> Hubel and Weisel, 1965; Rauschecker, 1999; Hensch, 2004; Klinke, 1999
- <sup>14</sup> In animal experiments Hubel & Wiesel discovered that if signals did not pass from the retina to the brain during a critical period in early life, it was difficult for the neurons in the visual cortex to develop normal functions for vision later in development. It was simply too late for the neurons in the visual cortex to respond appropriately and differentiate for the vision function (Hubel & Wiesel, 1965)
- <sup>15</sup> Cynader and Frost, 1999; Kandel et al, 1991, 2001; Nelson, 1999; Keating and Hertzman, 1999; Barr, 2003; Gluckman and Hanson, 2004, Hensch 2003, Li et al, 2006
- <sup>16</sup> Rauschecker, 1999; Klinke, 1999
- <sup>17</sup> Rauschecker, 1999; O'Donoghue, 2000
- <sup>18</sup> Alonso, 2006
- <sup>19</sup> Sternberg, 2000; McEwen, 2002; LeDoux, 2002a
- <sup>20</sup> McEwen, 2002
- <sup>21</sup> Sapolsky, 2003
- <sup>22</sup> Gunnar & Vasquez, 2006; McEwen, 2002; LeDoux, 2002a
- <sup>23</sup> The hypothalamus release corticotropin-releasing hormone (CRH). CRH stimulates the pituitary gland to produce adrenocorticotropin or corticotropin (ACTH) which in turn stimulates the adrenal gland to produce and release cortisol. Cortisol is a hormone that has a longer-lasting effect than epinephrine. Levels of cortisol impact on the receptors of the hippocampus and affects the abilities involved in learning, memory, and the regulation of the stress responses.
- The LHPA pathway is similar to a thermostat in that its operation maintains an appropriate balance - or allostasis - each day. Cortisol levels rise when one gets up in the morning and return to low levels at the end of the day, providing it has not been too stressful and the LHPA pathway functions normally.
- <sup>24</sup> Adolphs & Spezio 2006; Anderson & Phelps 2000
- <sup>25</sup> Phelps, 2006
- <sup>26</sup> Knudsen, Heckman, Cameron & Shonkoff, 2006; Shonkoff & Phillips, 2000; Mustard, 2006
- <sup>27</sup> Brewin 2001
- <sup>28</sup> Shaywitz et al, 1998
- <sup>29</sup> Kuhl et al, 1992, 1993a, 1993b
- <sup>30</sup> Kuhl, 1993b
- <sup>31</sup> Mechelli, 2004; Maye et al, 2002; Kuhl, 1992, 1993a
- <sup>32</sup> Werker & Tees, 2005
- <sup>33</sup> Mechelli, 2004
- <sup>34</sup> Greenspan & Shanker, 2004
- <sup>35</sup> Rosenzweig and Bennett, 1996; Cynader and Frost, 1999; Hensch, 2004; Knudsen, 2004
- <sup>36</sup> The term *brain plasticity* is used in slightly different although related senses:
- The brain's capacity to reorganize as a result of injury or disease in such a way that healthy cells or systems take up the function of damaged or diseased cells or systems. This happens, for example, when damage to the left perisylvian region at birth or in the first year of life results in language functions being developed in the right hemisphere (Bates & Roe 2001).
  - Sensory systems become enhanced to compensate for an impaired system, as happens, e.g., to the motor systems governing touch in an infant born blind.
  - The creation of new connections between neurons and neural systems, both cortico-cortical and cortico-

subcortical as a result of experience.

- 37 Uylings et al, 2006  
38 Bialystok, Craik & Freedman 2007  
39 Knudsen, 2004  
40 Knudsen, 2004  
41 Schore 1994  
42 Greenspan & Shanker 2004  
43 Greenspan & Shanker 2004  
44 Tronick, 1989  
45 ibid  
46 de Haan et al, 2004  
47 Teicher, 2002, 2003  
48 Parent et al, 2005  
49 Dodge, Petit, & Bates, 1993  
50 Cummings, 1994  
51 Bolger & Patterson, 2001; Shonk & Cicchetti, 2001; Maughn & McCarthy, 1997  
52 Trocmé et al, 2001  
53 Weaver et al, 2004; Seckl & Meaney, 2004  
54 Francis et al, 1999; Brake & Meaney, 2004; Caldji et al, 2003  
55 Meaney, 2001a; Meaney & Szyf, 2005  
56 Caldji & Meaney, 1998; Caldji et al, 2000  
57 Meaney, 2001a, 2001b; Parent et al, 2005  
58 Knudsen, 2004; Meaney, 2001  
59 Plotsky et al, 2005; Caldji et al, 2000; Meaney, 2001a  
60 Weaver et al, 2004; Parent et al, 2005  
61 Weaver et al 2004; Harper 2005  
62 Suomi, 1999; Suomi, 2002  
63 Suomi, 2003  
64 The gene for the serotonin transporter comes in two lengths, a long and short. Each version is called an allele. Suomi (2003) has discovered that there are long and short alleles in the serotonin transporter gene promoter. The animals homozygous for the long gene structure for the serotonin transporter gene are resistant to adverse experience in early infant development (these are resilient animals). Monkeys that are heterozygous for the short serotonin transporter gene linked polymorphic region are at risk for decreased serotonin function. If the infant animals with the short gene structure are separated from their mothers when they are young (lack of touch and other stimuli), they can develop poorly with abnormal LHPA pathways and poor serotonin function in respect to the frontal brain and the risk of abnormal behaviour (depression), extreme aggression, and alcohol addiction. The difference between the two lies not in the information for making the transporter itself (the “translation region”) but in the portion of the gene that controls how well the translation of the gene coding is read, namely the “promoter region”. Animals homozygous for the long allele are resistant to the effects of poor infant development. Genetically vulnerable females who have poor early development will tend to poorly nurture their

offspring. Dysfunction in the serotonin pathway and the frontal brain is associated with hyperactivity of the LHPA pathway.

- 65 Suomi, 2003  
66 Maestripieri, 2005  
67 Suomi, 2002, 2003  
68 Keating & Hertzman, 1999  
69 Willms, 2006  
70 Barker, 1989, 1998; Gluckman & Hanson, 2004  
71 Phillips, 2000  
72 Gluckman & Hanson, 2004  
73 Barker, 1989, 1998  
74 Seckl, 2004  
75 Lundberg, 1993  
76 Barr et al, 2004a; Weaver et al, 2004  
77 Felitti et al, 1998  
78 Marmot, 1996  
79 Case et al, 2002  
80 Manuck, 2005  
81 Wadsworth, 1991  
82 Power, Manor, and Fox, 1991  
83 Power et al, 1997, Power and Hertzman, 1997, Power et al, 1999  
84 Poulton et al, 2002  
85 Boyce & Keating, 2004  
86 Offord et al, 1992; Biederman et al, 2002, Biederman and Faraone, 2005  
87 Biederman and Faraone, 2005  
88 Biederman and Faraone, 2005, Cantwell, 1996; 1997; Teicher, 2002; Nadder et al. 2002  
89 Nadder et al. 2002; Biederman and Faraone, 2005  
90 Nadder et al, 2002. Among the genetic factors considered to contribute to ADHD are the dopamine transporter gene, the monoamine oxidase gene, serotonin receptor genes and the serotonin transporter gene (Faraone, 2005)  
91 Biederman and Faraone, 2005  
92 Tremblay 1999  
93 Tremblay et al, 2004, 2006  
94 Greenspan & Wieder 2006

Each sensory pathway may be:

- hyper-arousable (e.g., the baby who overreacts to normal levels of sound, touch, or brightness)
- hypo-arousable (e.g., the baby who hears and sees but evidences no behavioural or observable affective response to routine sights and sounds—often described as the “floppy” baby with poor muscle tone who is unresponsive and seemingly looks inward)
- neither hypo- nor hyper-arousable but having a subtle difficulties in processing sensory stimulation (hypo- or hyper-arousable babies may also have a processing difficulty).

If an individual sensory pathway is not functioning optimally the range of sensory experience available to the

infant is limited. This limitation determines, in part, the options or strategies the infant can employ and the type of sensory experience that will be organized. Some babies can employ the full range of sensory capacities. At the stage of regulation and interest in the world, one can observe that such babies look at the caregiver's face or an interesting object and follow it. When this baby is upset, the opportunity to look at the caregiver helps her to become calm. Similarly, a soothing voice, gentle touch, rhythmic rocking, or a shift in position (offering vestibular and proprioceptive stimulation) can help such a baby relax, organize, and self-regulate.

Babies that are on what might be described as a 'developmental trajectory placing them at risk of developing autism' have difficulty with these calming behaviours. Some may only functionally employ one or two sensory modalities. They may be alert and calm to visual experience, but are either relatively unresponsive, become hyper-excitable, or appear to become "confused" with auditory stimuli. Other babies appear to use vision and hearing to self-regulate and take an interest in the world but have a more difficult time with touch and movement. They may become irritable with even gentle stroking and are only calm when held horizontally (they become hyperaroused when held upright). Still other babies calm down only when rocked to their own heart rate, respiratory rate, or the caregiver's heart rate.

As babies use a range of sensory pathways, they also integrate experiences across the senses (Spelke & Owsley, 1979). Yet, there are babies who are able to use each sensory pathway but have difficulty, for example, integrating vision and hearing. They can alert to a sound or a visual cue but are not able to turn and look at a stimulus that offers visual and auditory information at the same time. Instead, they appear confused and may even have active gaze aversion or go into a pattern of extensor rigidity and avoidance.

The sensory pathways are usually observed in the context of sensorimotor patterns: for example, turning toward the stimulus or brightening and alerting involve motor outputs. There are babies who have difficulties in the way they integrate their sensory experience with motor output. The most obvious case is a baby with severe motor difficulties. At a subtle level, it is possible to observe compromises in such basic abilities as self-consoling or nuzzling in the corner of mother's neck or relaxing to rhythmic rocking.

Babies with sensorimotor dysfunction typically have difficulty utilizing the range of sensory experiences available to them for learning, and as a result, may be unable to organize purposeful, goal-directed movement as well as socially adaptive behaviours. These babies often have maladaptive responses in forming affective relationships or attachments. For instance, an infant who is hyper-

sensitive to touch, sound, and movement may avoid tactile contact, being held and moved in space, and may avert gaze to avoid face-to-face interactions. A child may be unable to play with peers because of problems sequencing actions, a high need for physical contact, or inappropriate affect during interactions because of low muscle tone or poor sensorimotor feedback. Both are examples of how sensorimotor dysfunction may affect emotional behaviours. In addition, difficulties with muscle tone or coordination can affect the infant's ability to signal interest in the world. For example, the young infant who arches away from the mother's breast during feeding will affect the level of engagement that occurs during a normal feeding experience. In turn, these problems affect the caregiver's ability to respond consistently or inconsistently to their infant's signal: particularly when they do not understand what the baby's responses mean. The mother whose baby arches away every time he is held may feel that she is a less capable mother, particularly if the baby's tactile hypersensitivities or increased muscle tone are not identified.

Some investigators explore sensory, motor, and affective differences in terms of temperament, which tends to look at overall patterns of behaviour. Temperamental differences have been shown to influence the organization and regulation of inter/intrapersonal processes (Campos, Campos, & Barrett, 1989). Temperamental qualities characterizing the child as "difficult," for example, have been linked to later psychopathology (Thomas & Chess, 1984). The difficult temperament might create challenges in self-regulatory processes and potentially effect infant-caregiver interaction adversely. Of course, neither sensory nor temperamental characteristics alone necessarily predict pathology. The effects of particular sensory or temperamental characteristics can be mediated by the attention of a sensitive, responsive caregiver. Because temperament looks at the overall patterns of behaviour and the sensory processing pathways described above looks at specific capacities, which in many respects underlie temperament and explain temperament, it's especially important to understand the individual's particular sensory processing ability. For example, a sensory overreactive infant is very likely to be temperamentally difficult to comfort.

Even when the infant is quite competent from a regulatory standpoint, a caregiver might fail to draw a baby into a regulating relationship. For example, dysregulation may occur with a caregiver who is exceedingly depressed or who is so self-absorbed that there is no soothing of the new infant. A caregiver who is impatient with or threatened by the infant's manifestation of sensory or temperamental sensitivity and who reacts with abuse, or withdrawal or other maladaptive means may encourage infant reliance on

- ineffective patterns of behaviour and further contribute to the infant's inability to achieve self-regulation.
- <sup>95</sup> Miller, 2000
- <sup>96</sup> Stattin & Klackenberg-Larsson, 1993
- <sup>97</sup> Hart & Risley, 1995
- <sup>98</sup> Frank & Earls, 1996
- <sup>99</sup> Rutter, 2004
- <sup>100</sup> Ames, 1997
- <sup>101</sup> Le Mare, 2005
- <sup>102</sup> Wickelgren, 1999; Klebanov, 1998
- <sup>103</sup> Dettling et al, 2000
- <sup>104</sup> Sims et al, 2005
- <sup>105</sup> Huttenlocher, 1991
- <sup>106</sup> Hart & Risley, 1995, 1999
- <sup>107</sup> Kuhl, 1992, 1993b
- <sup>108</sup> Gopnik et al, 1999
- <sup>109</sup> Kuhl, 1993b
- <sup>110</sup> Doupe & Kuhl, 1999
- <sup>111</sup> McCrory et al, 2005. The parietal temporal region, the inferior frontal gyrus and the temporal region (the Broca and Wernicke areas).
- <sup>112</sup> Shaywitz et al, 2004; Price & Mechelli, 2005
- <sup>113</sup> Pugh, 2002
- <sup>114</sup> Hart & Risley, 1995; Huttenlocher, 1991; Stattin & Klackenberg-Larsson, 1993
- <sup>115</sup> Egerton & Bynner, 2001; Osborn & Milbank, 1987
- <sup>116</sup> Feinstein, 2003
- <sup>117</sup> Jefferis et al, 2002
- <sup>118</sup> Power & Hertzman, 2006
- <sup>119</sup> Jefferis et al, 2002
- <sup>120</sup> Casassus, 1998
- <sup>121</sup> Willms, 2002a; Carnoy and Marshall, 2004
- <sup>122</sup> Tim L. Merrill, 1996. Only 12% of Mexican children attend preschool. 19% make it to secondary school.
- <sup>123</sup> Casassus, 1998
- <sup>124</sup> Carnoy and Marshall, 2004
- <sup>125</sup> Willms, personal communication, 2005
- <sup>126</sup> United Nations Human Development Report, 2005
- <sup>127</sup> McCain and Mustard, 1999
- <sup>128</sup> Willms, 2002b, 2004
- <sup>129</sup> U.S.'s Dept of Education, 2002
- <sup>130</sup> OECD, 2001
- <sup>131</sup> Mervis, 2004
- <sup>132</sup> Berk & Shanker 2006; Greenspan & Shanker 2004
- <sup>133</sup> Lieberman 2007
- <sup>134</sup> Adolphs 2003
- <sup>135</sup> Phelps 2006
- <sup>136</sup> Hofer, 1994
- <sup>137</sup> Winberg, 2005
- <sup>138</sup> Als, Duffy, & McAnulty 1996; Fifer & Moon 1994. It is also important to note here that there is a significant positive correlation between the use of motherese and an infant's growth (see Monnot, 1999).
- <sup>139</sup> Berk & Winsler, 1995; Kagan & Britto, 2005; Kagan & Lowenstein, 2004; Greenspan & Shanker, 2004
- <sup>140</sup> Shonkoff & Phillips, 2000; Bennett, 2004; National Research Council, 2001; Sylva et al 2004; Maggi et al, 2005
- <sup>141</sup> Neuman & Dickinson, 2001; Bennett, 2004
- <sup>142</sup> Case et al, 1999; National Research Council, 2001
- <sup>143</sup> Gopnik, Meltzoff & Kuhl, 1999
- <sup>144</sup> Ludwig and Sawhill, 2006
- <sup>145</sup> Gomby, 2005
- <sup>146</sup> Olds et al, 2004.
- <sup>147</sup> de Onis et al, 1993
- <sup>148</sup> Grantham-McGregor, 1991
- <sup>149</sup> Walker et al, 2000
- <sup>150</sup> Walker et al, 2000
- <sup>151</sup> McKay, 1983
- <sup>152</sup> Berkman et al, 2002
- <sup>153</sup> Brown & Pollitt, 1996
- <sup>154</sup> Brooks-Gunn et al, 2002
- <sup>155</sup> Hill et al, 2002
- <sup>156</sup> Hill et al, 2003
- <sup>157</sup> Reynolds et al, 2004
- <sup>158</sup> Berrueta-Clement, 1984; Schweinhart et al, 2005
- <sup>159</sup> Schweinhart et al, 2005
- <sup>160</sup> Wickelgren, 1999; Campbell et al, 2001; Schweinhart et al, 2005
- <sup>161</sup> Campbell and Ramey, 2002; Ramey et al, 2000
- <sup>162</sup> OECD, 2006
- <sup>163</sup> Penn et al, 2004
- <sup>164</sup> Sylva et al, 2004
- <sup>165</sup> Peters et al, 2000
- <sup>166</sup> Peters et al, 2004
- <sup>167</sup> Pelletier & Corter, 2005; Corter et al, 2006; Patel & Corter, 2005

# CHAPTER TWO

## IT TAKES A CHILD TO RAISE A VILLAGE

The oft-referenced African proverb “it takes a village to raise a child” recognizes that children live in families and families live in communities. Renowned social scientist, Urie Bronfenbrenner, championed a theory of human ecology that recognized how the interconnections and dependencies among families, tribes, neighbourhoods, social institutions, public policy, and economic forces shape a child’s early environments and development.<sup>1</sup> During the launch of the *2007 Global Monitoring Report*, the Jamaican Minister of Education flipped the proverb and stated: “It takes a child to raise a village.”<sup>2</sup>

Chapter 1 outlined how child development and experience-based brain development in the very early years of life sets biological pathways that affect cognition, behaviour, the capacity to learn, memory, and physical and mental health throughout the life cycle. The Jamaican minister’s play on words is a reminder that how societies understand and apply their knowledge of human development will determine the kind of cultures, societies, and civilizations created.

The human species has witnessed the rise and demise of numerous civilizations unable to respond to changing circumstances. Humanity’s future depends on its ability to manage today’s complex interplay of the emerging new economy, changing social and physical environments, and the impact of the change on individuals, particularly children, in their most vulnerable and formative years.

This chapter reviews:

- » Humanity’s experiments in civilizations and the lessons they provide for the challenges of the 21<sup>st</sup> century.
- » Canadian families and how well they are adjusting to economic, demographic, social and ethno-cultural changes.
- » The political and economic need for a healthy, competent population that is able to cope with continual change and why investments in young children are essential to the survival and quality of the “global village.”

## 1. Experiments in Civilization

Over the last 200,000 years *Homo Sapiens* have evolved to become the dominant primate.<sup>3</sup> In this evolutionary process, humans have developed a brain with a capacity for language, cognition, creation (economic and social), and the ability to control emotions, fear and behaviour. The aptitude to record and remember history and to consider the future has allowed humanity to create, in many regions, reasonably stable, prosperous, and democratic societies. Today we face the challenges of uneven population growth, population migration, climate change, and constraints on the resources needed to sustain life. In the past, when societies failed to meet their challenges, they regressed or collapsed.

### 1.1 Hunters and Gatherers

Until about 10,000 years ago, humans lived as hunters and gatherers in relatively small groups. Females largely controlled child rearing while males were engaged in hunting to supply the group with animal protein.<sup>4</sup> The first deadly human conflicts were driven by the imperative to secure food and water.

Climate change has long affected the evolution of the human primate. *Homo Sapiens* appear to have been more adaptable than the Neanderthals who were a significant primate species until they died out 25,000–30,000 years ago. Its ability to adjust to climate change allowed the human population to gradually increase.<sup>5</sup> The advent of the plow gave birth to the Agricultural Revolution and the beginning of experiments in civilizations.<sup>6</sup>

### 1.2 Agricultural Communities

The advent of agricultural tools freed humans from hunting and gathering and facilitated the development of agrarian societies. Different types of social organization and power relationships emerged, while towns and cities, laws, religions, technological innovations, armies, rulers, and governing institutions began to form.<sup>7</sup> Urban dependence on rural food production led to property rights, financial institutions, laws, regulations, and penalties. The creation of surpluses transformed communal societies into socio-economic hierarchies with religious leaders, inherited monar-

chies, land and business owners, and craftsmen and labourers.<sup>8</sup>

Languages also evolved, making communication possible within and among groups.<sup>9</sup> At the beginning of the Agricultural Revolution there were no symbols to convey information. The development of symbol systems and alphabets allowed written communication, the establishment of laws, and the recording of business transactions and some history.<sup>10</sup> This period also led to the evolution of religions. These belief systems shaped the social organization, culture, and governance of the emerging civilizations.

With the Agricultural Revolution, humans in different parts of the world were able to create massive and complex empires, including the Chinese, the Incas, the Maya in Central America, the Romans, the Egyptians, the Greeks, North American aboriginals (for example, the Iroquois and Floridians) and most recently, the British.<sup>11</sup> The history of the last 10,000 years shows a delicate balance between the understanding and interests of rulers, social-political organizations, and other elites, and their ability to plan for the future and secure and sustain relative prosperity and stability. When the balance tipped, the civilization failed.

Even sophisticated early civilizations whose creations have survived through millennia were prey to this hard lesson. The Sumerians (3,000 B.C.) lived in the fertile valleys between the Tigris and Euphrates rivers. They were remarkably proficient in building new institutions and structures, developing forms of governance, and laws and systems for feeding and supporting the urban populations. Irrigating crops in hot climates, however, causes the soil to become salinated. If the Sumerians understood the problem, they were unable to solve it. The food necessary to sustain their socio-economic structure could not be produced, leaving them vulnerable to encroaching tribes.<sup>12</sup> This is one of many instances where a civilization fell, in part due to its inability to understand and discuss the future and take steps to sustain an ecosystem necessary for food production.

### 1.3 Generating and Using New Knowledge

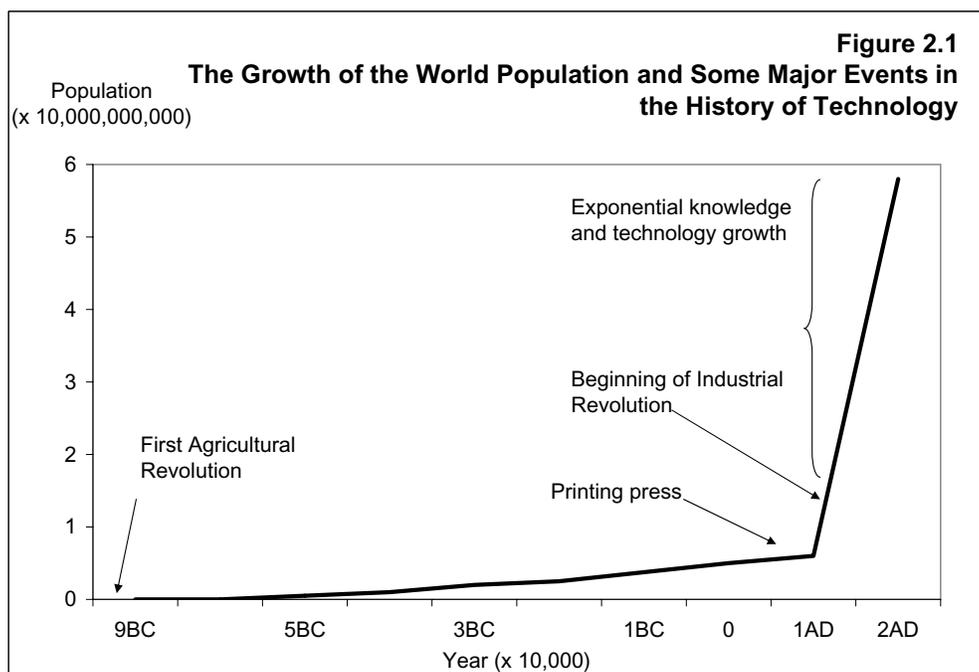
The ability to communicate and develop new knowledge and technologies has continued to evolve and

reward the innovators. For example, the facility to build sailing vessels capable of long journeys, along with the development of techniques for navigation, permitted global travel and colonial exploitation. Spain and Portugal's supremacy in this field made them wealthy, controlling the East Indies and dominating the Incas and Aztecs. This period also revealed the potential for biological warfare. The Europeans brought with them viruses and bacteria that people in the Americas had not been exposed to. By decimating the population, small armies were able to conquer vast empires with consequences that persist today.<sup>13</sup>

The advance of knowledge has made those societies that possess it more prosperous. During the last 250 years, more democratic forms of governance, improved population health, and more stable social orders have been established, albeit with continuing conflicts between social classes, nations, religions, and cultures. As the Victorians enjoyed the exploits of colonialism and technology, they also questioned the deracination, misery, poor health, and filth it produced. Some felt that the exponential growth in new technologies would eventually destroy the human race. The conflicts and destructive behaviours in the

20<sup>th</sup> century support the concerns of the gloomy Victorians to some extent. Early in the 20<sup>th</sup> century, World War I, slaughtered about 12 million people. The communist revolution in Russia, the Depression, and the emergence of the Nazi power base in Germany led to the Second World War, and more than 50 million dead. The death toll in 20<sup>th</sup> century global conflicts reached more than 100 million humans. The advent of weapons of mass destruction makes it imperative that humans learn to communicate and understand each other, plan for the future, and control their behaviour if the evolution of civilizations is to continue.<sup>14</sup>

The advent of the printing press 600 years ago allowed for broad scale education and influenced the evolution of democracy and the diffusion of ideas such as liberty, human rights, and equality.<sup>15</sup> Nevertheless, large sectors of the world's population lack access to formal schooling, and even countries with advanced education systems do poorly in assessments of literacy and understanding. For example, nearly half the population of Canada and the United States with poor literacy skills have difficulty understanding the nature of evolution or of the geosphere-biosphere interaction on the planet.<sup>16</sup>



(Fogel, 2000)

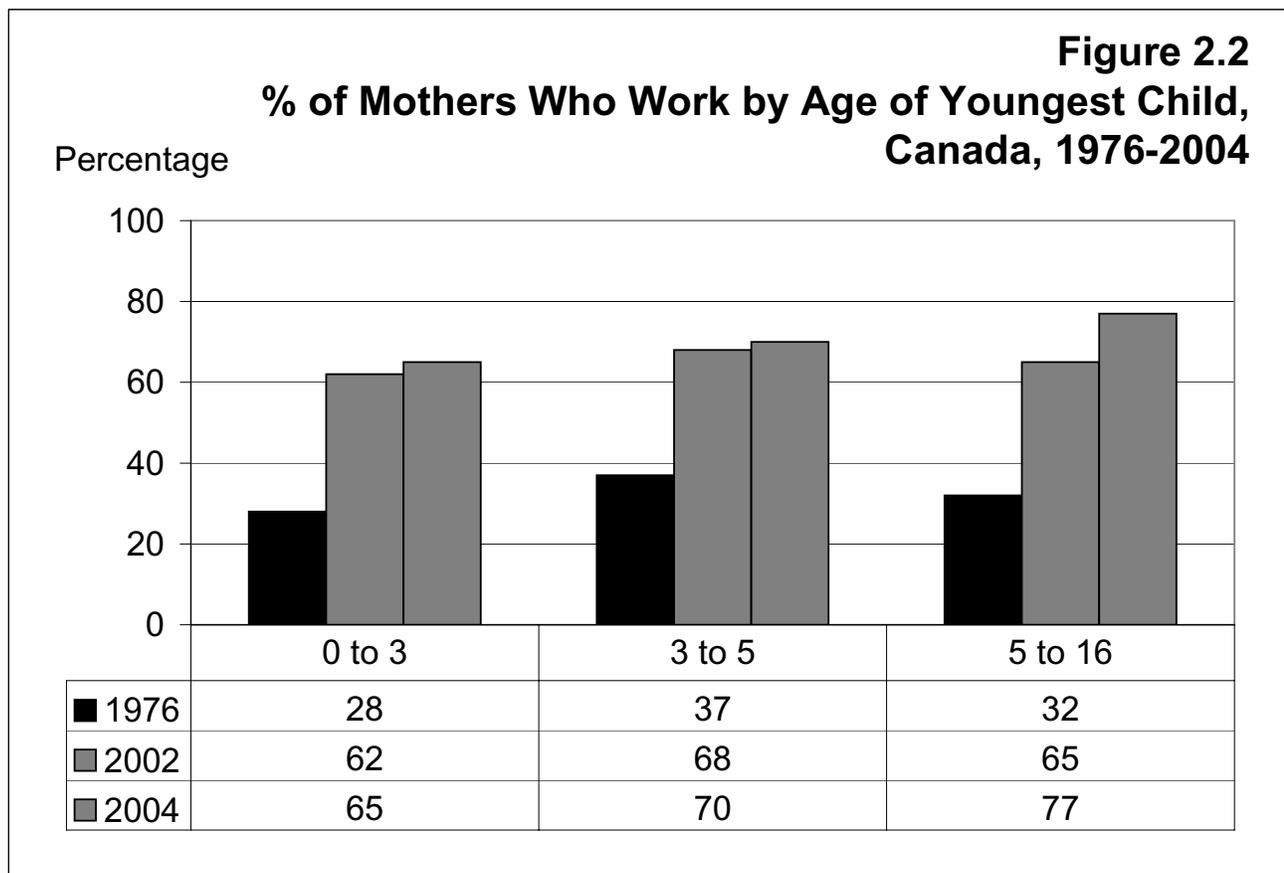
How do we build and sustain diverse, democratic, tolerant, competent, sustainable, non-violent societies in an increasingly globalized world with significant variation in the understanding, competence, and quality of populations? Inequities in health, development, income, and literacy breed social instability and violence. The implications spill beyond borders. Can we continue our experiments in civilization with minimal damage to our biosphere and better control of conflicts within and between societies? One goal must be the creation of institutional arrangements to ensure populations throughout the world can easily communicate with each other and understand the implications of the new knowledge. To establish sustainable, stable, equitable, tolerant, pluralistic, democratic societies, ways must be found to optimize human development, health, and well-being in all regions of the world.

## 2. Families

Families are, and have been, the basic social units of human societies. Families nurture the young and ensure the survival of the species. But families have never done it alone. Childrearing has always taken place within the group, the tribe, the village, the neighbourhood, the community. Today's families are adapting to the shifting realities of global economies, technological advances, and increasing demands to produce a new healthy, competent generation capable of participating in rapidly changing, democratic societies.

### 2.1 Earning a Living and Raising Children

Parents, even fathers and mothers with very young children, are in the social labour force. This has



(Statistics Canada, 2003, 2006)

created a major social revolution that has changed the daily rhythm of family life in Canada and other western countries over the past four decades. In 1967 fewer than 20% of mothers with young children were in the paid labour force. In 2007, the percentage is over 70% and growing.

‘Time famine’ has become the short hand to describe the challenges of balancing work and family demands, especially when there are young children. The time that parents spend with their children is a major investment in early child development. But longer work days and other lifestyle changes (for example, fewer family meals) has led to parents spending less time with each other and less time with their older children than they did 20 years ago. The exception is with very young children; parents obviously understand the importance of the first five years of life and over the past decade have been spending more time with their youngest children.<sup>17</sup> In 2005, Canadian parents spent almost an hour per day more on child-related activities than parents in 1986. Parents find more time for work and their youngest children by neglecting their own needs, including sleep. Mothers still spend significantly more time with their children of all ages, but fathers are catching up. Employed fathers spent about 36% as much time with their children as mothers did in the 1970s. By the end of the 1990s it was 53%.<sup>18</sup>

A possible explanation for the boost in time spent with young children may be the impact of the *Early Years Study* and its popularization of the value of

Work/life initiatives [are] not just a feel-good answer to personal time conflicts, but a solution to business problems and one that could provide companies with a competitive edge.

**Ford Foundation**

reading and playing with children and the importance of fathers’ involvement. Nevertheless, Canadians, outside of Quebec, report high levels of dissatisfaction with the amount of time work takes from their family life.<sup>19</sup> Family and other

private time are important sources of belonging, social support, and satisfaction. A social norm overly focused on work neglects other important elements of healthy and cohesive societies, including civic engagement, the pursuit of personal growth, and meaningful family and other relationships.<sup>20</sup> Employers also derive benefits from employees who are more satisfied with work-family balance through enhanced employee loyalty and healthier and more cohesive societies.<sup>21</sup>

### ***Working More, Earning Less***

While more families have two income-earners, families headed by younger parents still have considerably higher rates of poverty. The younger the parent, the more likely the family is to have a low income. As shown in **Figure 2.3**, in 2001, a staggering 56.6% of families with parents under 25-years-old lived below Statistics Canada’s Low Income Cutoff (LICO). That is a slight dip from the 58.1% during the 1991 recession, but still a 36.4% increase from 1981. By comparison, 23.4% of families with parents 25-34 lived in poverty. While the rate of low-income families among the 25- to 34-year-old group was smaller, the poverty rates for these families still grew by 31.1% in two decades.

Low family income is associated with poorer outcomes for children and the longer the child lives in poverty the more pronounced the difficulties.<sup>22</sup> Economic stress is particularly prevalent among Aboriginal, ethno-cultural and new immigrant families. 52.1% of all Aboriginal children live in families with low incomes.<sup>23</sup> A Toronto study found the rate of poverty for children under six-years from ethno-racial communities is 45%, compared to 26% for other children of the same age.<sup>24</sup> And almost 50% of new immigrant families with children are low income.<sup>25</sup> The high and growing incident of low income among families with children suggests the birth of children negatively impacts the economic circumstances of families.<sup>26</sup> Furthermore, **Figure 2.4** indicates the income gap between young families, baby boomers, and seniors continues to widen. These disparities bring consequences, including dropping fertility and a decline in intergenerational, racial, and cultural cohesion.

| <b>Figure 2.3</b>                                                  |             |             |             |                           |
|--------------------------------------------------------------------|-------------|-------------|-------------|---------------------------|
| <b>Canadian Families with Children with Incomes Less Than LICO</b> |             |             |             |                           |
| <b>Age of Head of Household</b>                                    | <b>1981</b> | <b>1991</b> | <b>2001</b> | <b>% change 1981-2001</b> |
| < 25                                                               | 41.50%      | 58.10%      | 56.60%      | 36.40%                    |
| 25-34                                                              | 17.70%      | 21.20%      | 23.20%      | 31.10%                    |
| All families with children                                         | 16.20%      | 17.10%      | 17.60%      | 8.60%                     |

Statistics Canada, Census 1981, 1991, 2001)

| <b>Figure 2.4</b>                                           |             |             |             |                 |
|-------------------------------------------------------------|-------------|-------------|-------------|-----------------|
| <b>Median Incomes of Families with Children 1981 – 2001</b> |             |             |             |                 |
| <b>Age of head of household</b>                             | <b>1981</b> | <b>1991</b> | <b>2001</b> | <b>% change</b> |
| Total                                                       | \$58,523    | \$60,899    | \$54,311    | -7.20%          |
| < 25                                                        | \$27,045    | \$19,040    | \$19,705    | -27.10%         |
| 25-34                                                       | \$50,397    | \$49,030    | \$41,111    | -18.40%         |
| 35-44                                                       | \$60,334    | \$63,508    | \$53,569    | -11.20%         |
| 45-54                                                       | \$69,991    | \$74,319    | \$66,742    | -4.60%          |
| 55-64                                                       | \$67,483    | \$70,813    | \$74,576    | 10.50%          |
| 65+                                                         | \$50,621    | \$58,638    | \$58,369    | 15.30%          |

Statistics Canada, Census 1981, 1991, 2001)

Low income among modern families cannot be attributed to an increase in lone parent families. Poverty rates for lone parents are declining as more mothers enter the workforce.<sup>27</sup> *Starting Strong II*, the report of the Organization for Economic Co-operation and Development, documents a slight increase in lone parent families in Canada, from 12.7% of all families with children in 1980, to 13.9 % in 2000.<sup>28</sup> By comparison, 19.5% of American families with children were led by a lone parent in 1980, rising to 26.5% in 2000. This is almost double the Canadian figure.

### ***Role of Tax, Income Transfer and Service Subsidies***

Tax policies and income transfers greatly determine the economic well-being of families. Canada is not particularly generous when it comes to supporting its

families with children. As indicated in **Figure 2.5**, the average family benefit package in two of Canada's richest provinces, Alberta and British Columbia, came near the bottom in an international comparison of the total value of all tax measures, income transfers, and other financial subsidies to families, excluding universal health care.<sup>29</sup>

The average British Columbia package is not even one-quarter of the benefit package available in Austria, which stands alone internationally for the generosity of its benefit package for families with young children. It is also less than half the value available to families in the United Kingdom and Australia. Kershaw points out that given the linguistic, political, and cultural heritage that Canada shares with the United Kingdom and Australia, the disparity in family benefit packages merits attention. The

disparity is all the more noteworthy since the United Kingdom ranked in the middle of the pack in the early 1990s before the Blair government set eliminating child poverty as a top policy priority.<sup>30</sup>

## 2.2 Gender Equity

Canadians are remarkably committed to women's equality. In November 2006, a poll conducted by the Trudeau Foundation found that gender equity is a strong value for the vast majority of Canadians.<sup>31</sup> It trumps other values including inclusion based on religion, culture, and language. But where public values and policies coalesce around gender equity in education, employment, and civic life, they break-down when it comes to women as mothers.

Reconciling the biological realities of motherhood including pregnancy, childbirth, and breastfeeding and demands of parental responsibilities with equitable opportunities for women to earn a living, have a career, and contribute to society requires institutional supports which Canada lacks. Employment policies which allow parents to reconcile work with bearing and raising children, and services, income transfer, and tax policies that recog-

nize the social costs of having children are required if mothers are to enjoy the same equity rights as their childless counterparts.

Pursuance of these policies not only benefits a gender equity agenda.

*The equality of women in general and of mothers in particular is closely tied to the well-being of children. The greater a woman's relative economic power and the level of adult gender equality within the family, the more likely that children's welfare will be considered a priority in household resource decisions.*<sup>32</sup>

Moreover, equality begets equality. Boys and girls are more likely to benefit equally from the family's resources in households where mothers share in decision-making.<sup>33</sup> Analysis of Canadian data indicates children are not disadvantaged when their mothers work<sup>34</sup> and maternal income provides net advantages. Poverty is five times more prevalent in single earner, two-parent families, and low income is a major indicator of poor outcomes for children.<sup>35</sup>

## 2.3 Family Size

Gender equity influences the number of children women are willing to have. Canada recorded a fertility rate of 1.49 children per woman in 2001 compared to 2.08 in the United States.<sup>36</sup> By 2019, it is predicted that deaths will outnumber births, producing an unhealthy social dynamic. The problem with low fertility is it reduces population size, not at all ages, but only among the young. Populations with low fertility can fall in size at an extremely rapid rate, becoming demographically unsustainable. The more immediate impact is shrinking labor forces. Although increases in productivity are likely to be sufficient to maintain the size of any one country's economy for the next period, in a global economy, capital will flow to countries with relatively high fertility and immigration.<sup>37</sup>

A key factor in the difference between Canada and the United States is the traditionally higher fertility of American minorities. Canada cannot count on its new immigrants or visible minority groups to stem its population decline. Within the first to second generation, immigrant fertility drops to that of the

**Figure 2.5**

**International Rankings, Metric for "Average" Benefit Package Value, without Health Care Costs/Benefits, 2004**

| "Average" FBP  | Can \$ (Purchasing Power Parities) | % of Average Earnings |
|----------------|------------------------------------|-----------------------|
| Austria        | \$ 657.95                          | 20.16 %               |
| UK             | \$ 380.23                          | 8.63 %                |
| France         | \$ 350.10                          | 10.22 %               |
| Norway         | \$ 339.86                          | 9.84 %                |
| Australia      | \$ 337.45                          | 8.94 %                |
| Denmark        | \$ 311.15                          | 8.28 %                |
| Belgium        | \$ 300.52                          | 6.92 %                |
| Germany        | \$ 286.12                          | 7.59 %                |
| Sweden         | \$ 273.29                          | 8.66 %                |
| Finland        | \$ 265.86                          | 8.22 %                |
| Ireland        | \$ 264.88                          | 8.77 %                |
| Alberta (2005) | \$ 222.51                          | 5.97 %                |
| BC (2005)      | \$ 211.27                          | 5.67 %                |
| Netherlands    | \$ 204.11                          | 4.45 %                |
| US             | \$ 183.69                          | 5.44 %                |
| Japan          | \$ 103.27                          | 2.35 %                |
| New Zealand    | \$ 22.99                           | 0.78 %                |

(Bradshaw, 2001 in Kershaw, 2007)

overall population.<sup>38</sup> Only fertility among Aboriginal families remains above replacement levels at 2.6 births per woman, but is also in decline. Statistics Canada attributes some of the Canada–U.S. gap to difference in access to contraception and abortion. In Canada, the public health care system provides universal and free access to medical services, while in the United States such services face legal and social restrictions and can be costly.

International data associates higher rates of maternal education with lower fertility.<sup>39</sup> Australian demographer Peter McDonald suggests dropping fertility can be attributed in part to economies that provide major advantages to childless women. Children are costly to parents, especially to mothers. When women have opportunities in education and market employment, but these opportunities are severely curtailed by having children, then, on average, women will have fewer children.<sup>40</sup> The market approach of the global economy also promotes investment in self rather than in others.<sup>41</sup>

*Reversal of low fertility implies a new social contract in which women who have children are not severely disadvantaged in economic terms.*

### 3. Pluralism in Canada

Canada relies on a steady influx of young newcomers to stem its population decline. Immigration accounts for two thirds of population growth. In 2001, over 18% of the Canadian population was foreign born, the highest level since the country's first immigration boom ended in 1931. The changing composition of new immigrants makes Canada a multicultural,

Pluralism is an engagement that creates a common society from diversity. It affirms and accepts diversity and is intolerant of intolerance. Pluralism recognizes the need for societies to provide the context for diversity by meeting minimum standards of decency, order, and a few core, shared values.

multilingual, multiethnic, multiracial society. The proportion of foreign-born Canadians is highest in Canada's largest cities—Toronto, Vancouver and Montreal. Close to two thirds of new immigrant children speak neither English nor French. The proportion of visible minority students in the school-aged population increased from one student in three in 1991 to four students out of ten in 2001.<sup>42</sup> In kindergarten classes more than half the children are from recently immigrated families.<sup>43</sup>

#### *Unity in Diversity*

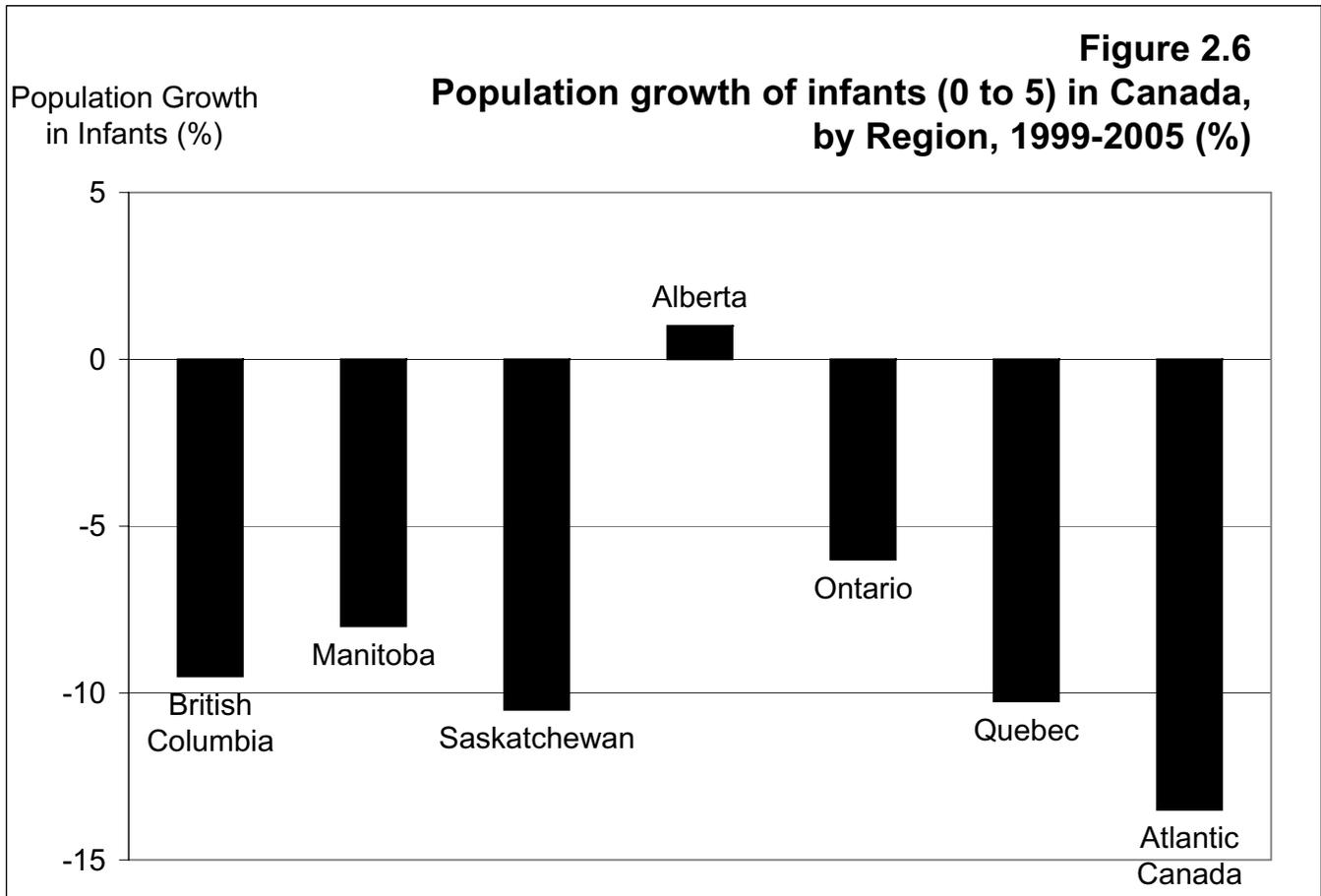
Canada's long-standing official policy of multiculturalism was instituted in 1971 by then Prime Minister Trudeau. The policy is rooted in the liberal concept of individual freedom, with each person free to choose whether, or to what extent, they wished to maintain an inherited ethnic or religious identity. Multiculturalism was adopted in an era of social change with greater public focus on gender, racial, sexual, and ethnic rights. It is under attack in Europe, but has been sustained in Canada through changing waves of immigration, including increasing numbers of visible minority groups. This can be attributed to the combination of public programs designed to support the inclusion of newcomers and the willingness of each new group to accept the primacy of the rights of the individual.<sup>44</sup>

Canada has been praised as the world's most successful pluralistic society. His Highness Aga Khan, described the Canadian practice of seeking unity in diversity as "Canada's gift to the world." He has joined with the Canadian government to establish the Global Centre for Pluralism. The centre will function as a global repository and source for knowledge about fostering pluralistic values, policies, and practices and work with countries to nurture successful civil societies.

*"The rejection of pluralism is pervasive across the globe and plays a significant role in breeding destructive conflicts."*

– His Highness Aga Khan

The mission of the Centre supports several key Canadian international policy objectives, among them the promotion of democracy and good governance, a



(Roy, 2006)

more equitable sharing of the world's resources between developed and developing countries, and the projection of Canadian values, such as the rule of law, human rights, and respect for diversity.

*We cannot make the world safe for democracy unless we also make the world safe for diversity”*  
 – His Highness Aga Khan<sup>45</sup>

The Aga Khan's promotion of pluralism is motivated by the mission of the religious/ethnic group he leads. It promotes the sustainability of families to support their children's early development and encourages its followers to be an integral part of the communities in which they live.

### ***Racial Divide***

Canada's success as a pluralistic society is enviable but there are two troubling issues that will undermine

its achievements if ignored. These issues are the prospects of visible minority immigrants and their children and conditions in Aboriginal communities.

Historically, immigrants caught up to the average Canadian income within 10- to 15-years of their arrival in Canada, but there was a sharp break in this trend in the late 1980s. Aydemir and Skuterud document a marked deterioration in the earnings of successive cohorts of male immigrants, with the most recent cohorts earning as much as 50% to 60% less than their Canadian-born counterparts.<sup>46</sup> European-born immigrants still do well. Their children are more highly educated and earn 14% more than the offspring of Canadian-born parents.<sup>47</sup> The opposite is true for the children of visible minority immigrants, suggesting racism plays a role. The 1990s saw waves of immigrants from the Caribbean, South and Central America, South and East Asia, and Africa. They

experience poverty at a rate almost double the Canadian average (38% versus 21%). Their poverty is highly concentrated in distressed neighbourhoods in Toronto, Montreal, and Vancouver, where one in three poor persons belongs to a visible minority group.<sup>48</sup>

As **Figure 2.7** shows visible minorities are more likely to feel excluded from the broader society and are the most likely to report discrimination because of their ethnicity.<sup>49</sup> More problematic is the high level of visible minorities who perceive unfair treatment in the workplace or when applying for a job. Over half (56%) cite employment-related discrimination.<sup>50</sup> Prejudice in the workplace particularly challenges pluralism, since social inclusion is greatly dependant upon a person's ability to access suitable employment.

Restricted workplace opportunity causes growing numbers of immigrants to engage in self-employment in enclaves which offer a protected market of ethnic clients and an accessible pool of immigrant workers.<sup>51</sup> The benefits of these social-cultural networks are more pronounced for established, educated immigrants. For more disadvantaged members of the group, neighbourhood and employment enclaves are associated with more exploitative working environments<sup>52</sup> and fewer opportunities to learn English or French or improve educational levels.<sup>53</sup> Other Canadian researchers found immigrants of lower socio-economic status tended to suffer less isolation and improve their standards outside the enclave.<sup>54</sup>

Much has changed in the economic structure and characteristics of immigrant populations. The manual labourers who found the ethnic enclaves of the first half of the 20<sup>th</sup> century a refuge are being replaced by immigrant families whose successful participation in Canadian society depends on their access to the knowledge economy.<sup>55</sup>

*If new arrivals to Canada are isolated in neighbourhoods of stagnation, with inadequate education and employment opportunities it can contribute to attitudes and behaviours that are against the basic ideals and values of the broader society<sup>56</sup> and Canada's attempts at pluralism will have failed.*

### **Aboriginal Exclusion**

It is shameful and well-documented that Aboriginal peoples endure a profound gap in health and developmental status when compared to the general Canadian population. Canada has been ranked number one by the United Nations for its quality life while Aboriginal peoples living on reserves are ranked 62.

*The developmental outcomes of Aboriginal children rank below the national average for Canadian children.<sup>57</sup>*

*One in five Aboriginal children are born to teenage mothers, fetal alcohol syndrome is most pronounced in First Nations and Inuit communities,<sup>58</sup> and more than half of Aboriginal children do not finish high school.<sup>59</sup>*

The legacy of residential schools remains part of the fabric of Aboriginal families and communities.<sup>60</sup> The residential school system was the antithesis of pluralism, based on a public policy of enforced assimilation. Children were removed from their parents and placed in institutions funded by the federal government and usually operated by churches.

Experiences of neglect and abuse of children in most but not all residential schools endures. While provincial/territorial data sources are imprecise and vary, estimates suggest that more than 25,000 Aboriginal children have entered the child welfare system—more than three times the highest enrolment figures of the residential schools in the 1940s.<sup>61</sup> The number of First Nations on-reserve children entering into care rose by 71.5% across Canada between 1995 and 2001, while the overall proportion of children living on reserves increased by less than 1%.<sup>62</sup> Most Aboriginal Child and Family Service agencies in Canada must operate within provincial/territorial child welfare legislation that is based on Western concepts of individual rights that are often contradictory to Aboriginal communal parenting systems. In the absence of Aboriginal-driven institutions, child removal is a principal intervention and another feature of assimilation by the dominant society.

#### 4. Successful Society Challenge

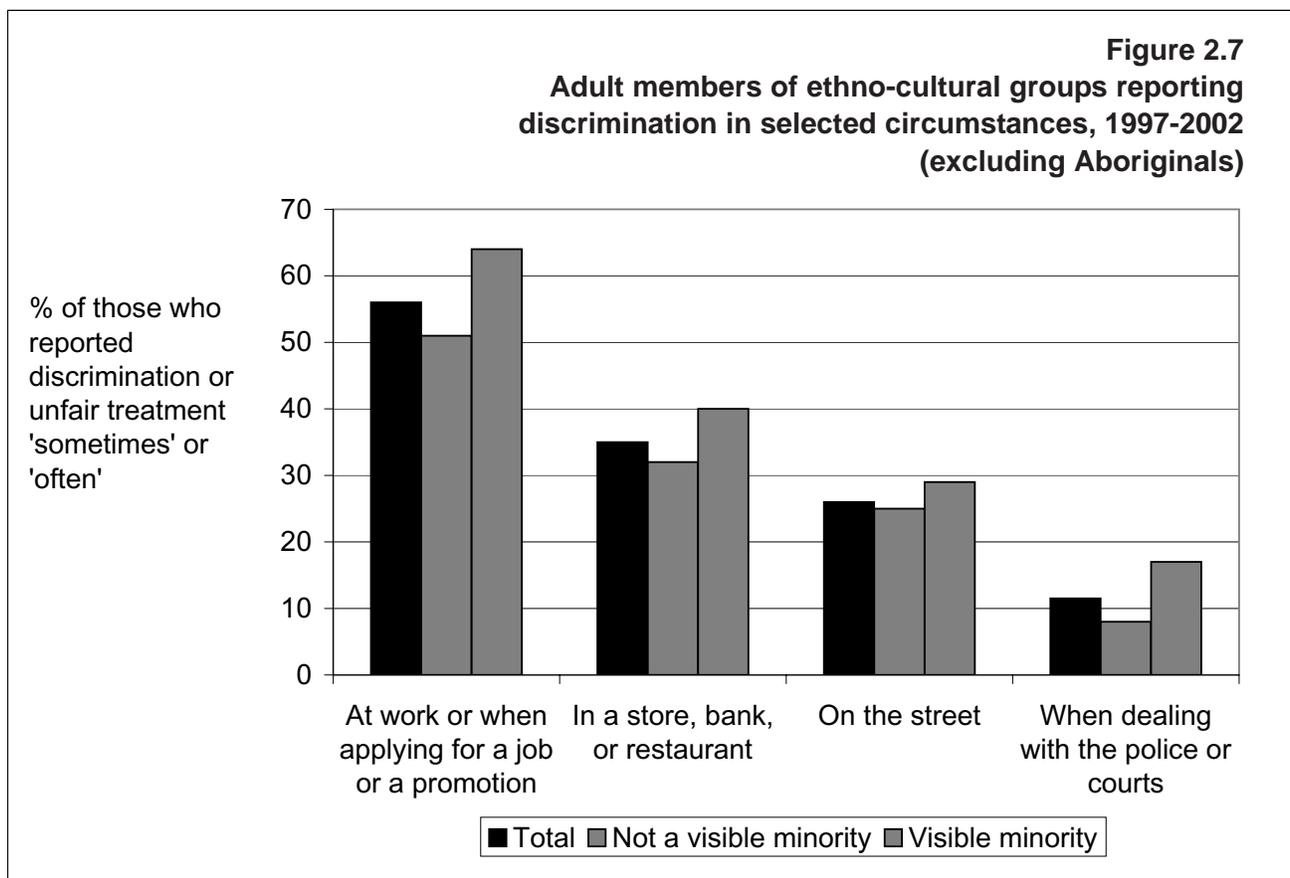
The pessimists among scientists warn of the disruptions of civilizations accompanied by excessive violence, loss of life, chaos, and, a return to less democratic governance unless a more collective approach to improve the competence and quality of all populations is adopted.<sup>63</sup>

We approach the task with a better understanding of the determinants of economic growth and civic societies.<sup>64</sup> Among the Nobel Prize winners in Economics, Jan Tinbergen, the first Nobel Laureate, pointed to the competence of the labour force as an important production factor.<sup>65</sup> Robert Fogel, the 1993 Nobel Prize winner also focused on the importance of “people development”. In 1998, Amartya Sen emphasized the quality of populations and their societies in respect to economic growth. In a recent Brookings

*Working Paper*, Dickens, Sawhill and Tebbs discuss the effects of investing in early childhood.<sup>66</sup> They conclude that investment in early child development will have a net economic benefit to individuals and societies. They warn however:

*“Because most of these benefits are longer term while the costs of mounting the programs are more immediate, the political system tends to be biased against making such investments. But any business that operated in this way would likely fail to succeed. A similarly dim prospect may be in store for a country that fails to take advantage of such solid investment opportunities.”*

Helpman in his book, *The Mystery of Economic Growth*, again emphasizes the importance of the quality of human capital.<sup>67</sup> Van der Gaag, advocating



(Statistics Canada, 2003)

Visible minorities are most likely to report discrimination or unfair treatment. Reporting in more than one situation results in totals greater than 100.

for a “level playing field” at the World Bank meeting in 2000, concluded that early child development affects education, health, the social capital, and the overall equality of societies and that this is key for stable societies and economic growth.

*For adults equality in education and health leads to equality of opportunity; better education and health lead to higher income. Significantly, data show that countries with a more equitable distribution of income were also more healthy. The evidence is undeniable, yet the reasons for the relationship are being debated. Nevertheless, the link between more equality of opportunity early in life and more equality in education, income, and health later in life appears to be strong, as does the aggregate link between greater equality in income and the health of a society. And again, the benefits begin with early child development.*

#### 4.1 Improving Early Child Development in Developing Regions

Improving early child development in developing regions is a staggering test for the future of humanity. More than 20% of Africa’s 140 million children are at a very high risk for poor development. 95% do not have access to early child development programs. Of the children in the world who do not attend school, nearly 50% are in Africa. In twelve African countries AIDS, war, and civil strife has made orphans out of 20% of children less than 15-years-old. New approaches are needed to care for these large numbers of children without parents. Alternatives must be found to traditional orphanages where children’s development has proven to be severely compromised.<sup>68</sup>

#### 4.2 Global Challenges Need Global Solutions

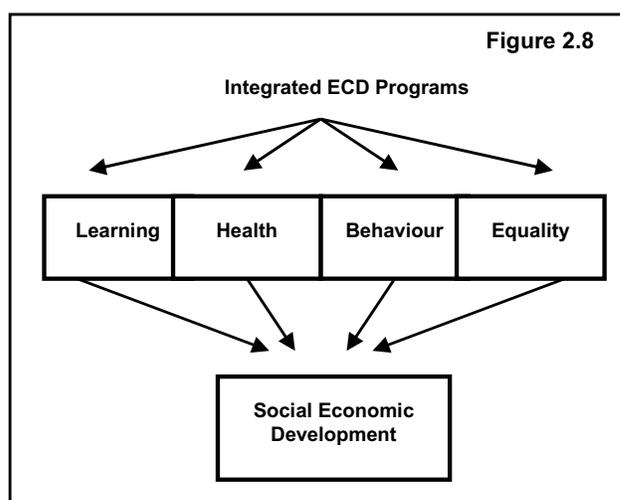
Attempts to reduce global poverty among the world’s populations will be impossible unless equity in literacy and health in all regions of the world is achieved. Establishing a democratic, tolerant, equitable, prosperous, sustainable world will require investments in early child development. Vast differences in human development calls for outstanding leadership and innovation from the major international organiza-

tions. This is a role that can redefine the United Nations and its agencies, including the World Health Organization, and the international banks such as the World Bank, the Asian Development Bank, and the Inter-American Development Bank.

The World Bank in its 2006 World Development Report raised the question of equity and development. The new president, Paul Wolfowitz, wrote:

*Equity is defined in terms of two basic principles. The first is equal opportunity: a person’s life achievements should be determined primarily by his or her talents and efforts, rather than by predetermined circumstances such as race, gender, social and family background, or country of birth. The second principle is the avoidance of deprivation in outcomes, particularly in health, education, and consumption levels.<sup>69</sup>*

The discussion of equity in the report states: *Equity and fairness matter not only because they are complementary to long-term prosperity. It is evident that many people – if not most – care about equity for its own sake. Some see equal opportunities and fair processes as matters of social justice and thus as an intrinsic part of the objective of development.... [E]vidence suggest[s] that most societies exhibit a pervasive and long-standing concern for equity.<sup>70</sup>*



(Van der Gaag, 2002)

Promoting equity begins in the earliest stages of life with the opportunity to be born healthy into a nurturing family, to live in a safe neighbourhood and to benefit from quality early childhood programs.

Wright, in his Canadian Broadcasting Corporation 2004 Massey Lecture, outlines the imperative to act, now:

*... We have the tools and the means to share resources, clean up pollution, dispense basic health care and birth control, set economic limits in line with natural ones. If we don't do these things now, while we prosper, we will never be able to do them when times get hard. Our fate will twist out of our hands. And this new century will not grow very old before we enter an age of chaos and collapse that will dwarf all the dark ages in our past.<sup>71</sup>*

## 5. Conclusions:

- » Our future depends on our ability to manage the complex interplay of the emerging new economy, changing social and physical environments and the impact of change on individuals, particular young children in their most vulnerable, early years.
- » Successful societies are pluralistic. There is considerable stress on young children due to the poor socio-economic circumstances of their families and neighbourhoods. The strong correlation between poor socio-economic status and children from ethno-racial and Aboriginal families is a grave test to Canadian pluralism.
- » The labour force participation of mothers is essential to modern economies, and while it presents challenges to society and individual families, these are offset by economic and gender equity benefits.
- » Early childhood development affects education, health, the social capital, and the overall equity within populations. This is key for stable, cohesive societies and economic growth.

## NOTES

- <sup>1</sup> Bronfenbrenner, 1979
- <sup>2</sup> EFA Global Monitoring Report Team, 2006
- <sup>3</sup> Balter, 2002; Boserup, 1981; Tattersall, 1998; Calvin, 2002; Olson, 2002
- <sup>4</sup> Boserup, 1981; Tattersall, 1998; Ehrlich, 2000; Olson, 2002; Wright, 2004
- <sup>5</sup> Boserup, 1981; Ehrlich, 2000
- <sup>6</sup> Wright, 2004
- <sup>7</sup> Boserup, 1981; Tattersall, 1998; Olson, 2002
- <sup>8</sup> Wright, 2004
- <sup>9</sup> Tattersall, 1998; Ehrlich, 2000; Hauser et al, 2002; Olson, 2002; Holden, 2004
- <sup>10</sup> Greenspan & Shanker, 2004; Ehrlich, 2000
- <sup>11</sup> Kenoyer, 2003; DiChristina 2005; Wright, 2004
- <sup>12</sup> Wright, 2004; Diamond, 2005
- <sup>13</sup> Wright, 2004
- <sup>14</sup> Wright, 2004
- <sup>15</sup> Erhlich, 2000
- <sup>16</sup> OECD/Stats Canada, 2000/2005
- <sup>17</sup> Turcotte, 2007
- <sup>18</sup> Gauthier, Smeeding, & Furstenberg, 2004
- <sup>19</sup> Duxbury & Higgins 2003
- <sup>20</sup> Kershaw, 2007.
- <sup>21</sup> Duxbury et al, 1999
- <sup>22</sup> Bradshaw, 2001
- <sup>23</sup> Ontario Federation of Indian Friendship Centres, 2000
- <sup>24</sup> Ornstein, 2006
- <sup>25</sup> Morissette & Zhang, 2001
- <sup>26</sup> Suave, R. 2007
- <sup>27</sup> ibid
- <sup>28</sup> OECD, 2006
- <sup>29</sup> Kershaw, 2007
- <sup>30</sup> Bradshaw et al, 1993
- <sup>31</sup> Environics Research Group, 2006
- <sup>32</sup> EFA Global Monitoring Report Team, 2007
- <sup>33</sup> ibid
- <sup>34</sup> Gagné, 2003
- <sup>35</sup> Vanier Institute, 2007
- <sup>36</sup> Statistics Canada, 2001
- <sup>37</sup> McDonald, 2001
- <sup>38</sup> Statistics Canada, 2006
- <sup>39</sup> McCrary & Royer, 2005
- <sup>40</sup> McDonald, 2000
- <sup>41</sup> McDonald, 2001
- <sup>42</sup> Statistics Canada & Council of Ministers of Education, 2003
- <sup>43</sup> Canadian Council on Social Development, 2006
- <sup>44</sup> Kymlicka, 2006
- <sup>45</sup> His Highness, the Aga Khan, 2006, p. 3
- <sup>46</sup> Aydemir & Skuterud, 2005

- <sup>47</sup> Abdurrahman, Wen-Hao, Corak, 2005
- <sup>48</sup> Jackson, 2001
- <sup>49</sup> Children of visible-minority immigrants and first-generation immigrants who arrived as young children are more likely than their parents to report discrimination. Ironically this is a positive, younger peoples' greater expectation of equality makes them more likely to report bigotry. (Reitz & Banerjee, 2007).
- <sup>50</sup> Statistics Canada, 2003.
- <sup>51</sup> Li, 2001.
- <sup>52</sup> Reitz, 1990
- <sup>53</sup> Fong & Ooka, 1999
- <sup>54</sup> Hou & Ricot, 2003
- <sup>55</sup> Murdie & Teixeira, 2000
- <sup>56</sup> Massey & Denton, 1993
- <sup>57</sup> Canadian Population Health Initiative, 2004
- <sup>58</sup> Canadian Paediatric Society, 2002
- <sup>59</sup> Aydemir et al, 2003
- <sup>60</sup> Canadian Population Health Initiative, 2004; Greenwood, 2000
- <sup>61</sup> Blackstock & Bennett, 2003
- <sup>62</sup> McKenzie, 2002 in Blackstock & Bennett, 2003
- <sup>63</sup> Ehrlich, 2000; Diamond, 2005; Wright, 2004
- <sup>64</sup> Van der Gaag, 2002
- <sup>65</sup> Timbergen, 1969
- <sup>66</sup> Dickens, Sawhill & Tebbs, 2006
- <sup>67</sup> Helpman, 2004
- <sup>68</sup> Young & Mustard, 2007
- <sup>69</sup> World Bank, 2006, page XI
- <sup>70</sup> World Bank, 2006, p. 75
- <sup>71</sup> Wright, 2004, p. 132

# CHAPTER THREE

## HOW ARE CHILDREN DOING?

... *What gets measured improves and what gets measured gets attention...*  
— Charles S. Coffey<sup>1</sup>

Evaluations of child well-being are not new. A century ago, the recognized importance of pregnancy and infancy on the health of mothers and children led to the adoption of local and national measures of maternal and infant mortality. The findings catapulted public hygiene onto the policy agenda. Safe drinking water legislation was passed and public health units formed; first to teach baby care to mothers, then to deliver mass immunization programs. These efforts slashed mother/child death rates. While still in use, and still useful, these measures are inadequate to appraise the quality of children's lives today. A broader approach is required that is able to gauge the conditions of early childhood on health, learning, and behaviour. Children's well-being is still influenced by their physical and socio-economic environments. New population-based assessments provide the data needed to inform the actions of today's policy makers.

Child population health appraisals are also watchdogs for democratic accountability. Governments must determine how well they are meeting their national and international obligations. Canadians want to know if their investments in children are making a difference. Communities want to know what has gone wrong and what is going right for young children in their neighbourhoods.

Since the 1999 *Early Years Study* recommended the development and implementation of population-based evaluations, much has been revealed about Canada's young children. This chapter compiles and reviews the tools, their use, and their stories.

The first section discusses longitudinal surveys and their role in measuring children's development. The National Longitudinal Survey on Children and Youth has now completed six cycles of data collection. The L'Étude longitudinale du développement des

Child population health appraisals are democratic watchdogs revealing how well governments are meeting their national and international commitments. They demonstrate returns on taxpayer investments and expose inequities between groups and regions.

# NATIONAL LONGITUDINAL SURVEY OF CHILDREN AND YOUTH, STATISTICS CANADA

## SURVEY COMPONENTS

**Household:** Basic demographic information (for example, age, gender and marital status) for each household member and his/her relationship to everyone else in the household.

**Adult:** Information is collected about education, labour force participation, income, adult health (including chronic conditions, restrictions of activities, maternal pregnancy history, and depression scale), family functioning, neighbourhood safety, social support and socio-demographic information (including immigration, ethnic background, language profile and religious affiliation).

**Child:** Information is collected about the child's health, development (social, emotional, cognitive, language and motor), activities, behaviour, and relationships with others. Also included are questions about parenting style, child care information and custody arrangements. A medical-biological section is completed for children in the 0 to 3-years-old age group, including gestational age and birth weight. For children under 2, information about delivery, general health at birth, the use of specialized services after birth, biological mother's pregnancy and delivery and

breast-feeding experiences are collected. Questions about the mother's return to work are also asked.

**Direct Assessments:** The interviewer conducts three direct assessments of children's skills and abilities.

Peabody Picture Vocabulary Test - Revised (PPVT-R) measures receptive or hearing vocabulary. A child is asked to look at pictures on an easel and identify the picture that matched the word the interviewer reads out. (A French version of the test Echelle de Vocabulaire en Images Peabody was developed for the NLSCY.)

Number Knowledge Assessment measures a child's understanding of the system of whole numbers. It includes twenty-two items to assess children's understanding of quantity (e.g. more or less), number sequence, and simple arithmetic. The test continues until the child fails to answer three questions in a row and takes about 10 minutes to complete.

"Who Am I?" measures children's development level. It includes copying and symbol tasks. The child is asked to copy shapes and complete a set of writing tasks including printing their name, some letters, numbers, words and a sentence.

enfants du Québec (ÉLDEQ), is following a large sample of children from birth into school. It includes measurements of children's home, child care and other environments.<sup>2</sup>

The second section considers new measures of early development. The Early Development Instrument captures developmental outcomes at age five and is used widely across Canada and elsewhere. On the horizon are measures to assess children's development at 18 months.

The third section describes community early child development reporting.

The fourth considers integrated measures of development. The integration of health, education and social service databases deepens our understanding of how our social experiences and early environments set developmental trajectories that track forward.

The final section considers the next steps in developing an infrastructure to monitor early child development.

## 1. Longitudinal Surveys and Birth Cohort Studies

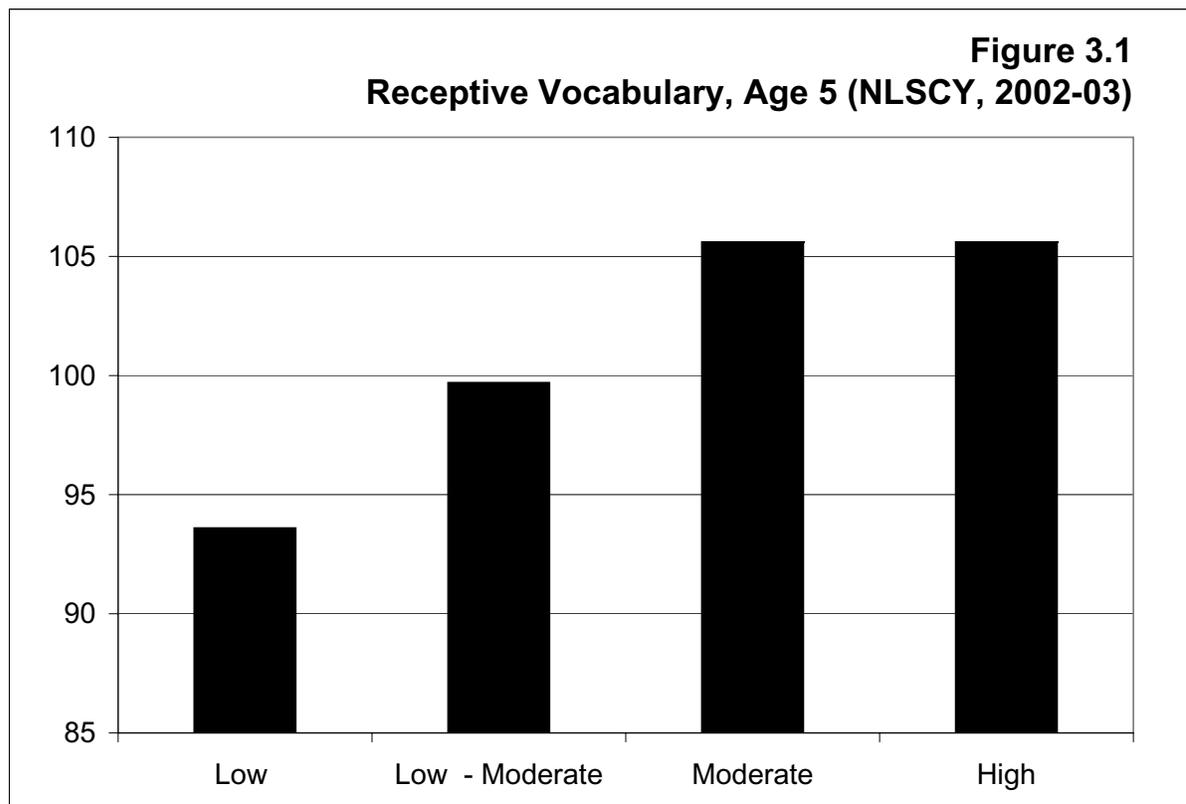
Longitudinal surveys and birth cohort studies that track development across early childhood, school years, adolescence, and into adulthood, create a platform for life course research and policymaking. Longitudinal surveys track a representative sample of children across time. Population-based birth cohort studies track a group of babies born in a specific time period. Combined with national surveys, surveillance systems and Census information, longitudinal and birth cohort studies produce data sets that allow researchers and policy makers to monitor children's development.

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

Begun in 1994, the NLSCY collects information about factors influencing a child's social, emotional,

cognitive and behavioural development and monitors the impact of these factors on the child into adulthood. A large, randomly selected sample of over 22,000 children are revisited every two years. Data are collected through interviews of parents, teachers and children. In households, the person most knowledgeable about the child is interviewed. In the majority of cases this is the mother. The interviewer also does direct assessments of number and vocabulary skills in the developmental level of four and five-year-old children.

Cycle 1 (1994 - 95) included children newborn to age 11. In Cycle 2, the NLSCY expanded to emphasize early child development. A new cohort of children from birth to one year was added each cycle. They are followed for three cycles until the children are 4 to 5 years old. The NLSCY Cycle 6 sample consisted of children ages 0 to 5 years (4,684) and 10 to 21 years (11,178). In Cycle 7, children will be followed until they are 6 - 9-year-olds.



(Thomas, 2006)

Socio-economic gradient apparent for language development at age 5 years.

The data from the NLSCY provides an overview on how children are doing in Canada and are particularly useful in monitoring early child development. The *1999 Early Years Study* reported on findings from the Cycle 1 NLSCY and illustrated the socio-economic gradient for children's outcomes. The data from NLSCY Cycles 2 to 5 continue to show the same patterns.

Figures 3.1 and 3.2 show the socio-economic gradient measures for vocabulary and behaviour in Cycle 5 of the NLSCY. The graphs indicate that children in the lowest income families are not doing as well as those in the next income group who, in turn are not doing as well as those in more affluent families.

***Determining Vulnerability in Children***

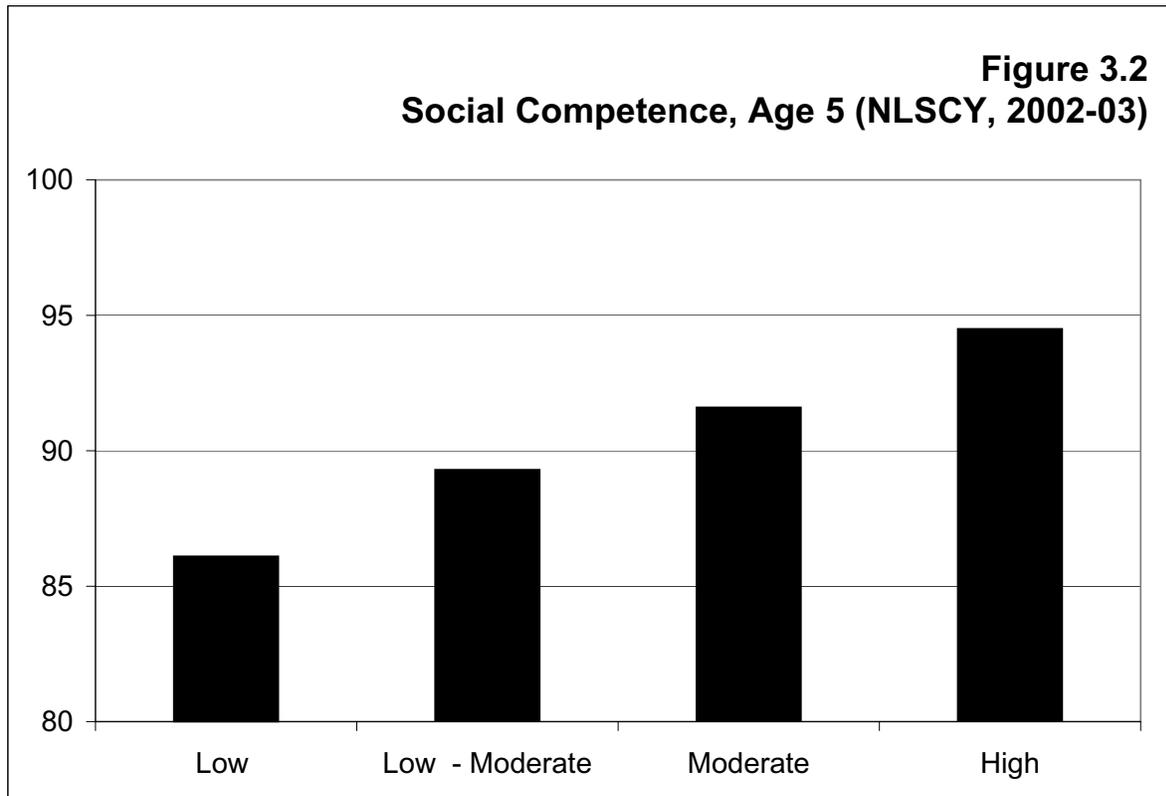
Children “at-risk” are more likely to have difficulties related to their biological makeup or the environments they live in. Researchers have identified and calculated the types of risk and their likely affect on

children's development. Being ‘at risk’ is not a solid prediction. It does mean that children in these circumstances are more likely to develop problems later in life than those who do not.

“Vulnerable” children have a developmental difficulty such as obesity or poor language skills. They may have problems getting along with other children, meeting challenges, regulating their emotions, attending to tasks or learning new concepts and skills. Childhood vulnerability during the early years seems to increase the likelihood of problems in later life.

*About one quarter of Canadian children less than six years old are “vulnerable”. They have physical, social/emotional or cognitive difficulties likely to cause problems in later life.*

Doug Willms has analyzed NLSCY data for vulnerable children (those with a behaviour, physical or communication difficulty) aged 4- to 6-years in

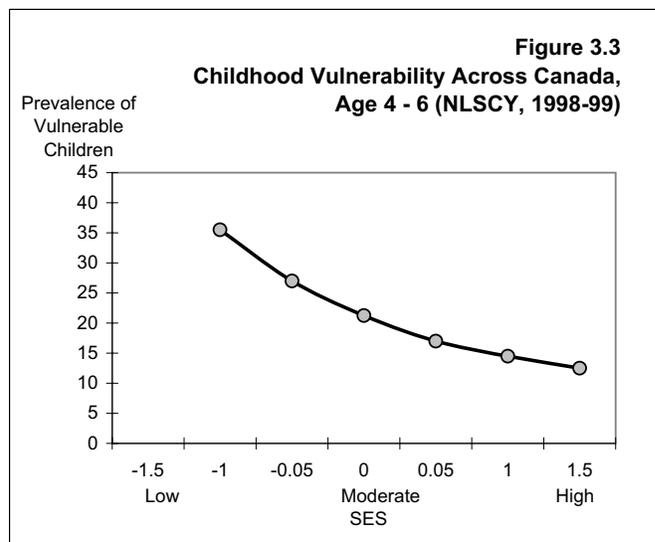


(Thomas, 2006)

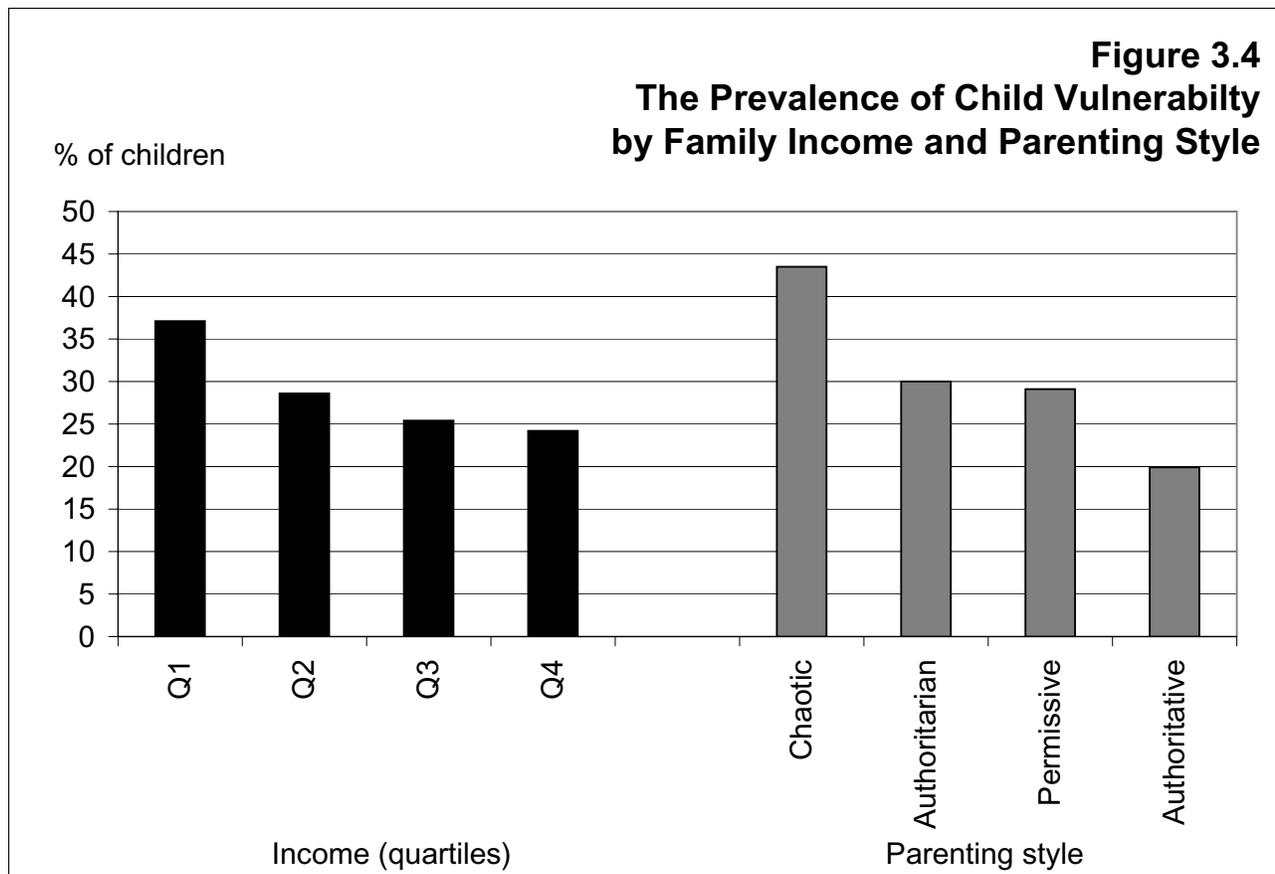
Socio-economic gradient pattern evident for social competence.

relation to the socio-economic status (SES) of the children's families.<sup>3</sup> The SES measure for these analyses combines family income, mother and father occupation and mother and father education. Children who grow up in poverty are more likely to have problems before entry to Grade 1, than children who are living in more affluent families. However, the results are a gradient. In actual numbers, the NLSCY data show that more than 70% of vulnerable children in Canada live in non-poor families. The majority of vulnerable children are found in moderate income, two-parent families success in Grade 1 less likely.

Figure 3.4 again shows that children (aged 2- to 11- years) who grow up in poverty are more likely to have problems before entry to Grade 1, than children who are living in more affluent families. However, parenting styles seem to have a larger impact.



(Willms in Mustard & McCain, 2002)  
Childhood vulnerability at 4 and 5 years is a socio-economic gradient.



(Chao & Willms, 2002)

Family income is associated with childhood vulnerability, but parenting styles seem to have a larger impact.

### ***Families Have a Powerful Impact on Children***

NLSCY data reinforce other research findings outlined in Chapter 1. Socio-economic circumstances influence outcomes for children, but so do parents and families. Data analysis found family violence and maternal substance abuse and depression has a strong and negative impact on children regardless of the family's socio-economic status.

- » Heavy drinking by mothers is related to negative parenting practices and children's behaviour and emotional problems. (Drinking heavily is defined as 5 or more drinks on more than 12 occasions in the past year.<sup>4</sup>) While heavy drinking is a problem for a small percentage of mothers (3.5%), its influence on children is powerful. Their children have more emotional problems, separation-anxiety, hyperactivity, aggressiveness, and are more likely to commit property crimes. Heavy drinking mothers report fewer positive interactions with their children compared to non and moderate drinking mothers. They also appear to be more hostile and ineffective in their parenting.
- » Children under five of depressed mothers were twice as likely to display behavioural problems. Over half of this effect could be accounted for by measures of family functioning and parenting styles. Single parents are three times more likely to be depressed than mothers in two parent families. Income is also a factor. In 1998, approximately 20% of children in families with household incomes less than \$20,000 lived with a depressed parent (usually a mother). This compares to just over 5% of children in households with incomes over \$40,000.<sup>5</sup>
- » In 2000, approximately 8% of children aged 4 to 11 witnessed physical altercations between adults in their homes. Findings from the NLSCY 1998-1999 show exposure to violence in the home is related to increased aggression in children. Children aged 6 - 11 years were twice as likely to have high aggressive behaviours as those who had not (32% versus 16%).<sup>6</sup>

Conversely, the NLSCY findings show that parent mental health and well-being can buffer the effect of family income. Regular parental engagement, daily reading, and non-punitive discipline positively impacts on children's development.<sup>7</sup>

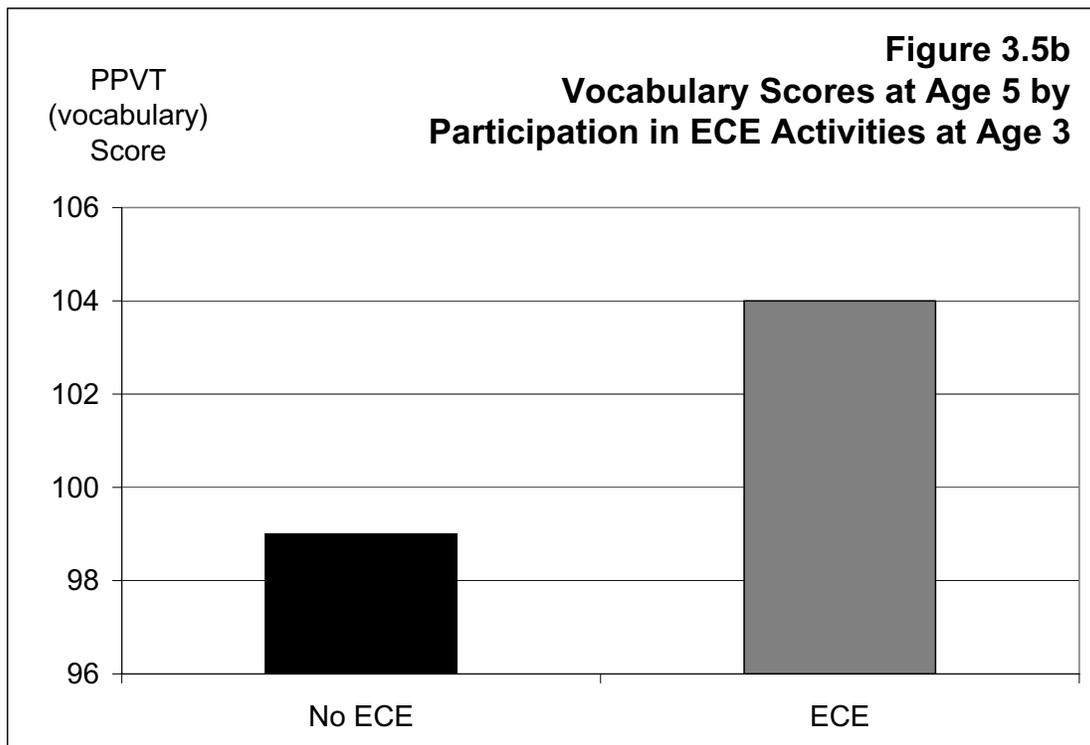
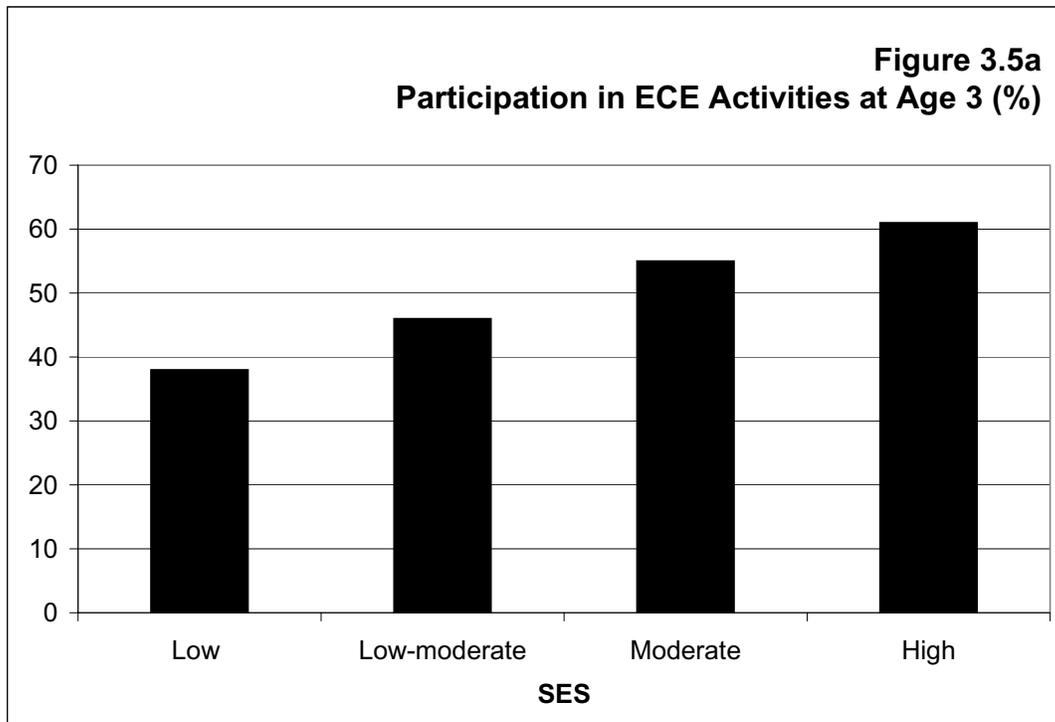
### ***Parenting Styles Produce Different Outcomes***

Punitive discipline is also related to aggression in children, although children will respond to changes in parenting style over time. Children living in punitive home environments were more likely to be aggressive at age 2 to 3 years and at age 8 to 9 years. Children whose parents changed their approach and became non-punitive in the intervening six years scored as low in aggressive behaviour as those whose parenting environment was non-punitive at both ages. And children whose parents became more aggressive over the six years scored as high on aggression measures as the children whose parents were punitive at both ages.

### ***Neighbourhoods and Communities Influence Children's Outcomes***

Statistical techniques allow researchers using the NLSCY data to separate family circumstances from neighbourhood influences. Analyses find disadvantage seems to be concentrated in low-income neighbourhoods. Children in low-income families become more disadvantaged when their families live in poor neighbourhoods. Children's verbal language abilities decline and behaviour problems increase. Conversely, children of low-income families do better if they live in more affluent neighbourhoods.<sup>8</sup>

Participation in community recreational and early childhood activities illustrates how inadequate economic resources reduce children's opportunities for success in formal school and life. NLSCY Cycle 5 (2004-05) data show at age 3, **Figure 3.5a**, over 60% of more-affluent children take part in one or more organized early childhood activities (for example, nursery school, playgroup, child care centre, family literacy program), compared to only 38% of children in low income families.<sup>9</sup> **Figure 3.5b** illustrates that at age 5-years, vocabulary scores are higher for children who did participate in at least one early childhood activity at age 3-years.



(Thomas, 2006)

Children's participation in ECE activities outside the home at age 3 seems to enhance language development.

At age five, 67% of all Canadian children 5-years-old in the most affluent families take part in at least one organized recreational activity.<sup>10</sup> Only 20% of children from low-income families participate in these activities. Participation in organized recreational activities at age 5 years is linked to higher vocabulary, communication skills, number knowledge and symbol use scores, particularly for lower income children.

### *L'Étude longitudinale du développement des enfants du Québec (ELDEQ)*

L'Étude longitudinale du développement des enfants du Québec (ÉLDEQ) began in 1998 with 2000 Quebec families with at least one child under 5 years. It is collecting data on: socio-demographic characteristics; maternal health during pregnancy and birth history; parental lifestyle and health; family functioning; parent-child interactions; child temperament; motor and social development; behaviour; sleep patterns and nutrition; and type and quality of child care, kindergarten, and primary school. The study is following the cohort of children until at least elementary school.

At five months, characteristics about the sex and well being of the child are collected and a detailed profile of the mother and family compiled. To date ELDEQ results show that children's early development in kindergarten can be predicted at five months by their mother's education level.<sup>11</sup> Family income, relationships and the child's sex are also important factors.

The seventeen-month assessment collects data about children's emotional maturity, health, visits to healthcare specialists, social competence, and cognitive development. At 17 months, children's ability to

#### Factors influencing child outcomes

- » Social economic status
- » Maternal health
- » Family dysfunction
- » Parenting styles
- » Neighbourhoods

attend (for example, listen, focus, pay attention) and the numbers of visits to healthcare specialists, predicts their readiness for school at age five years. Thus, developmental problems can be identified at 17 months.

## 2. Measuring Early Child Development Before Grade One

Investigators often measure child development at the time of school entry to examine the relationship between a child's school readiness and performance in the school system. They conclude that the results from readiness to learn tests in kindergarten can predict 60% or more of the variance in Grade 3 tests.<sup>12</sup>

Both the notion of testing young children and the tests themselves have been much debated. If readiness means specific skills a child must demonstrate before school entry, then assessing readiness may act to keep young children from entering school or restrict their placement. There is also concern about tests that rely on a narrow range of 'academic' skills that do not reflect the child's holistic development.

Early development distinguishes children's "readiness for school learning" from skill performance. It can be a meaningful approach to describe a suite of cognitive and social skills, knowledge and dispositions, and personal experiences that children bring when they enter Grade 1.<sup>13</sup> A measure of readiness for school learning can be a reasonable proxy for measuring early brain development. Kindergarten is a universal institution attended by the majority of children, which makes it a practical time to take a measure of development.

The 1999 *Early Years Study* identified the shortage of information, particularly at the community level, about early child development outcomes. The limitations of existing school readiness assessments raised the need for a viable, affordable measure of early outcomes.

### 2.1 Early Development Instrument

The Early Development Instrument (EDI) was developed by Magdalena Janus and Dan Offord and re-

leased in 2000. It assesses community outcomes in child development in respect to health, learning, and behaviour.

The EDI has the following characteristics:

- » The EDI is completed by kindergarten teachers based on several months of observation.
- » While reliable at an individual level, the EDI does not provide a diagnosis of a child's developmental problems.
- » It provides a population level measure – results can be interpreted for groups of children.
- » The results may be used to identify the weak and the strong sectors of a community.
- » The results can be used by communities to mobilize for improved child outcomes.

The Early Development Instrument assesses five child developmental domains:

### **1. Physical health and well-being**

- » Above the 90<sup>th</sup> percentile, a child is physically ready to tackle a new day at school, is generally independent, and has excellent motor skills.
- » Below the 10<sup>th</sup> percentile, a child has inadequate fine and gross motor skills, is sometimes tired or hungry, usually clumsy, and may have flagging energy levels.

### **2. Social Competence**

- » Above the 90<sup>th</sup> percentile, a child never has a problem getting along, working, or playing with other children; is respectful to adults, self-confident, has no difficulty following class routines, and is capable of pro-social behaviour.
- » Below the 10<sup>th</sup> percentile, a child has poor overall social skills and exhibits regular serious problems in more than one area: getting along with other children; accepting responsibility for their own actions; following rules and class routines; and showing respect for adults, children, and others' property. He or she lacks self-confidence and self-control,

finds it difficult to adjust to change, and is usually unable to work independently.

### **3. Emotional Maturity**

- » Above the 90<sup>th</sup> percentile, a child almost never shows aggressive, anxious or impulsive behaviour, has good ability to concentrate, and is often helpful to other children.
- » Below the 10<sup>th</sup> percentile, a child has regular problems managing aggressive behaviour, is prone to disobedience, and/or is easily distractible, inattentive, impulsive, usually unable to show helping behaviour towards other children, and is sometimes upset when left by the caregiver.

### **4. Language and Cognitive Development**

- » Above the 90<sup>th</sup> percentile, a child is interested in books, reading and writing, rudimentary math, is capable of reading and writing simple sentences and complex words, and is able to count and recognize numbers and geometric shapes.
- » Below the 10<sup>th</sup> percentile, a child has problems in both reading/writing and numeracy, is unable to read and write simple words; is uninterested in trying, is often unable to attach sounds to letters, has difficulty remembering things, counting to 20, recognizing and comparing numbers, and is usually not interested in numbers.

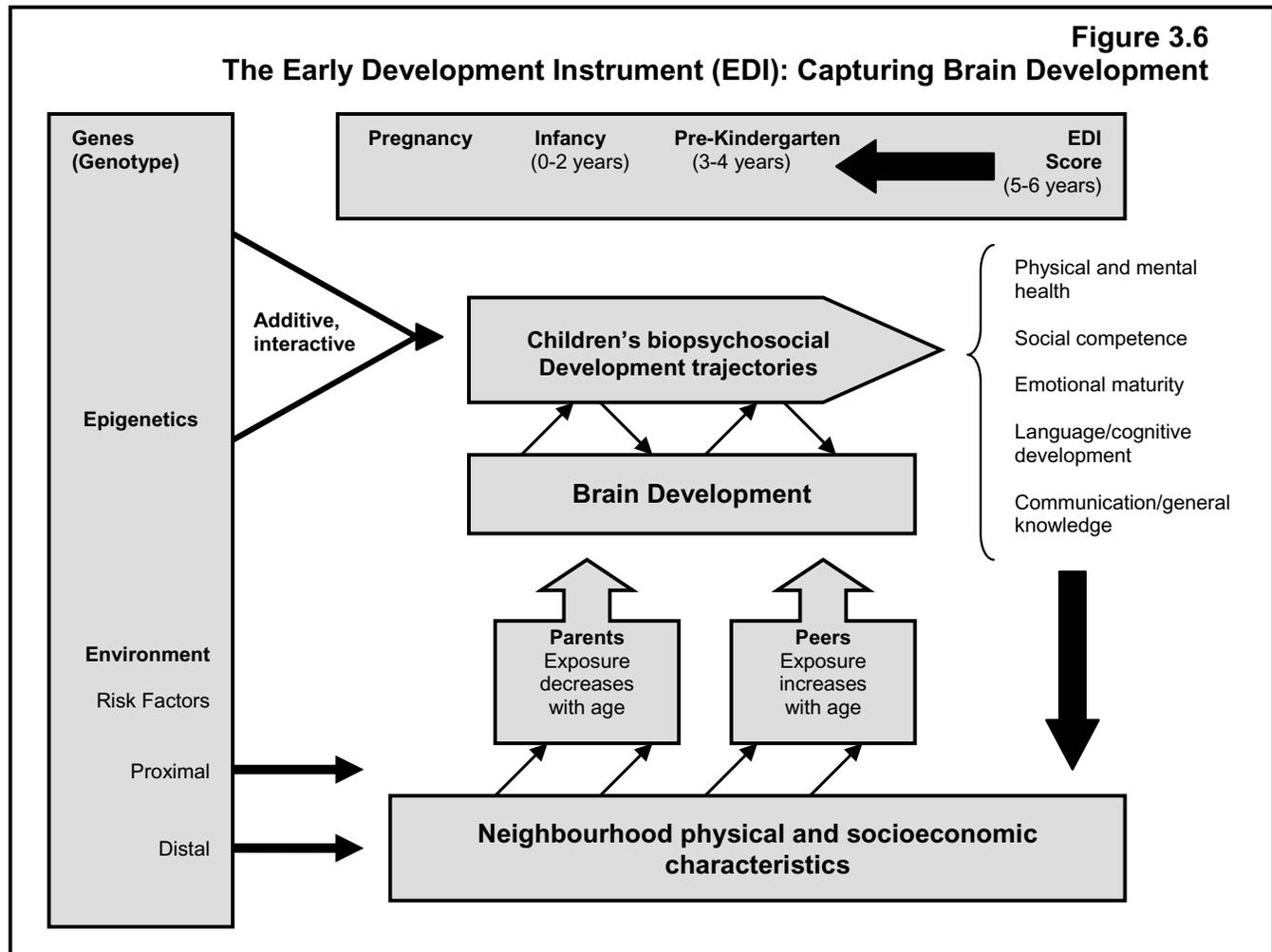
### **5. Communication Skills and General Knowledge**

- » Above the 90<sup>th</sup> percentile, a child has excellent communication skills, can tell a story and communicate with both children and adults, and has no problems with articulation.
- » Below the 10<sup>th</sup> percentile, a child has poor communication skills and articulation, limited command of English, has difficulty talking to others, problems understanding and being understood, and has poor general knowledge.

Children are deemed vulnerable if they are in the bottom 10 percentile in at least one of the EDI five subscales. This indicates they have a developmental social-emotional, cognitive or physical problem that is likely to interfere with their success in school.

The EDI was first piloted in 1998 in three sites in southern Ontario. Over a two year period it was modified and used with over 40,000 children across Canada. In 2000, the EDI items were finalized. Since then, it has been used in all Canadian provinces. Currently British Columbia, Manitoba and Ontario have full coverage.<sup>14</sup>

The validity and reliability of the EDI continue to be monitored on an ongoing basis. Analyses demonstrate that its structure is robust and validity meets acceptable psychometric standards.<sup>15</sup> The EDI data are collected for individual children, and EDI scores correlate reliably with other similar measures of child development. They are also predictive of later outcomes including academic achievement in primary school. However, the EDI is not designed to be a tool to diagnose individual delays or developmental problems. The EDI's strength is allowing the aggregation of individual data to the group or community level, which makes it possible to integrate child development outcomes with other



(Adapted from Mustard and Young, 2007; Tremblay 2006)  
The EDI is a proxy measure of children's early brain development.



Map 1

sources of data about children, families and communities.<sup>16</sup>

**Map 1** illustrates EDI completion across Canada over the past five years.

The EDI has now been applied widely across Canada. The brown shading in Map 3 represents sites where EDI has been completed (minimum of 10 students sampled). The Canadian EDI database includes over 400,000 five-year-old children who are in Senior Kindergarten and another 50,000 four-year-old children in Junior Kindergarten.<sup>17</sup> Approximately 50% of all Canadian children are now assessed on the EDI measurement before entry to Grade 1.

The Offord Centre for Child Studies (OCCS) at McMaster University, is the national repository of the EDI in Canada and where the majority of the data are stored. Once data have been collected and analyzed, each site receives a report of demographics, descriptions in perspective with other sites, behavioural profiles of children with the highest and lowest scores and school-level reports.

The EDI has been adapted for use in seven countries<sup>18</sup> and projects are ongoing in others. Renamed the AEDI (Australian EDI), it was slightly

modified and has been used for over three years in 62 communities.<sup>19</sup> In the U.S. and Chile, the EDI served as a population-level indicator for a communities; in Kosovo as an evaluation tool; and in New Zealand, Jamaica and Holland, as an outcome measure of child development.

In a project carried out in collaboration with World Bank, teachers of over 500 children in Kosovo completed the EDI. The findings were similar to those found elsewhere. Children who did not have access to early childhood programs had lower school readiness in several areas than those who did.

### ***Documenting the Socio-economic Gradient at School Entry***

The EDI data collected across Canada and elsewhere to date confirms a wide variation between children's abilities and development prior to entry to Grade 1.<sup>20</sup> Data from EDI matches that from the NLSCY, demonstrating that about one quarter of all children are vulnerable when they enter Grade 1.

Further analyses of EDI data collected across Canada and additional data on measures of children's socio-economic circumstances (measured by family

income) repeat the gradient effect found in NLSCY data and discussed earlier. As indicated in **Figure 3.7**, about 32% of kindergarten children in the poorest families are vulnerable (that is, scoring in the lowest 10<sup>th</sup> percentile in at least one of the EDI subscales) while about 14% are children in the most affluent families are vulnerable.

The highest proportion of children experiencing at least one serious learning or behavioural difficulty is found in the lowest socio-economic group. Each step up the socio-economic ladder, the proportion of children having difficulties declines, but there are still a significant number of children at each step, including the top one. There is no socio-economic threshold above which all children do well. Just as was the case with the NLSCY data, because of the size of the middle class, the largest number (rather than the highest percentage) of children with serious difficulties are in moderate income families. The socio-economic gradient pattern found in EDI results is similar to that found in the NLSCY data that considers childhood vulnerability. In this assessment, 80% of the vulnerable children were found to live in families who are not in the lowest income group. A higher proportion of children in the poorest families were vulnerable, but the total number of children in more affluent families is greater.

The same gradient patterns are found in Australia, Jamaica and Kosovo. Different indicators of socio-economic status are used. Australia used a disadvantage index (**Figure 3.8a**). Jamaica used an asset index that assessed the number of specific assets (**Figure 3.8b**) in a family and

divided the children into four quartiles. In Kosovo, socio-economic status is based on household financial situation in relation to the ability to buy food and clothes (**Figure 3.8c**).

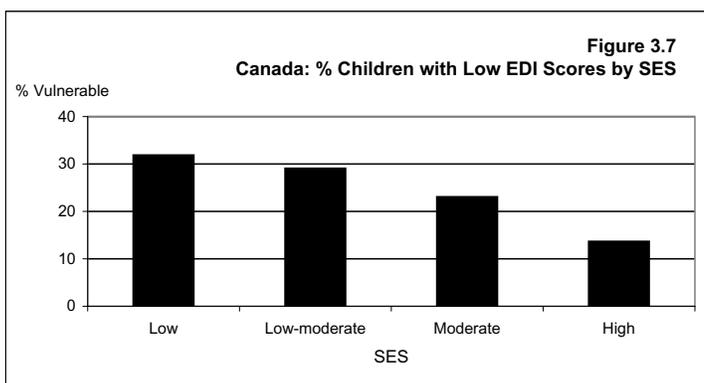
### 3. Community Early Child Development Reporting

Provincial/territorial reporting provides a broad overview of children’s developmental outcomes. Community child development reporting complements the overview and builds evaluation capacity at the local level where children and families live. Community reporting assesses how well children are doing within their environmental context and the impact of local programs. An environmental scan of the socio-economic status, demographics and resources of a community, combined with aggregated assessments of child outcomes, and program evaluations provide a multi-dimensional measurement perspective. Measurements can be taken at various stages of development. Birth outcomes, preschool developmental tools and the EDI provide child outcome data that can be combined with other community-level information about resources and neighbourhood characteristics.

This level of information ‘takes the temperature’ of how children are doing within a given community, suggests some associated factors and can be used to determine resource allocation and set benchmarks for improvements. Systematic reporting of community data can track progress within and between communities. By measuring, analyzing, and interpreting child development and community-level data, parents and communities can modify outcomes and reduce gaps among different groups of children. Ongoing monitoring indicates if advances are being made.

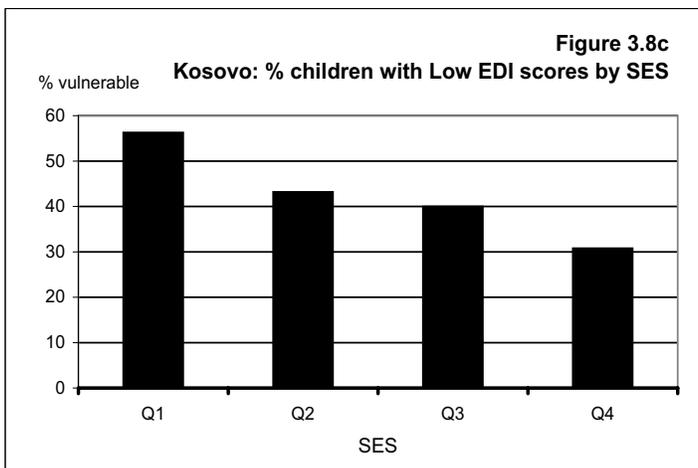
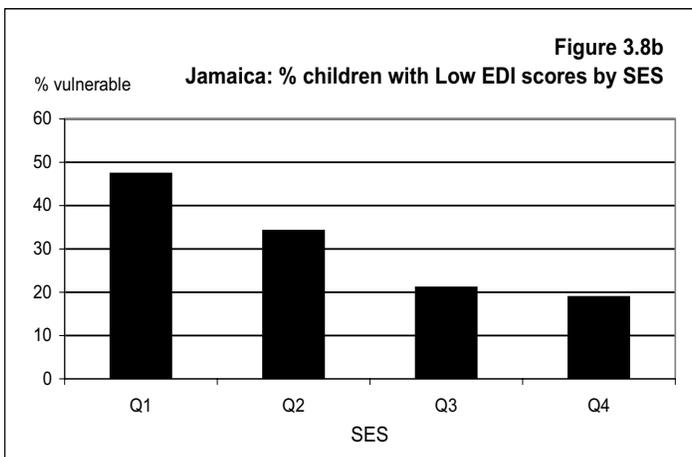
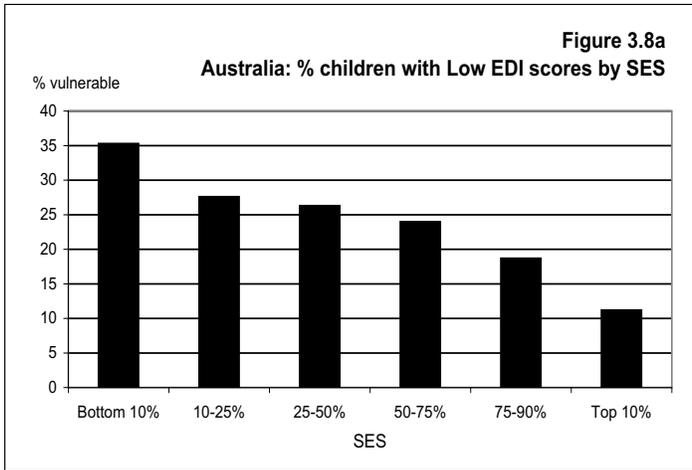
#### 3.1 The North York Prototype and Understanding the Early Years

North York, Toronto, was one of the three sites that piloted the EDI in 1998. The project was



(Offord Centre for Child Studies, 2007)

Canadian EDI data show a socio-economic gradient effect in children’s early development before entry to Grade 1.



(3.8a, 3.8b, 3.8c: Offord Centre for Child Studies, 2007)  
EDI data from other countries show the same socio-economic gradient effect as the Canadian data does.

housed in the Early Years Action Group (EYAG), a vibrant cross-sector collaboration including the English public school board. The group also piloted a community mapping study that reported on community resources that were available for young children and their families including schools, libraries, recreational areas, and early childhood programs. EDI and community mapping data were combined with Census data. Despite similar socio-economic circumstances, kindergarten children living in neighbourhoods with fewer community resources were more likely to have poorer cognitive, social, emotional, and physical development than those living in neighbourhoods with more libraries, parks and early childhood programs.

**Figure 3.9** illustrates the comparisons of resources available across the three communities.

Parks, recreational areas, libraries, pre-school programs and parenting programs are plentiful in neighbourhood A. Neighbourhoods B and C have fewer resources available. The EDI showed that the children in neighbourhood A had fewer developmental problems (measured by the EDI subscale) than those in the other two neighbourhoods. The percentage of children who were vulnerable – that is scoring in the bottom 10th percentile in any one or more domains – was greater in neighbourhood B and C for all five subscales.

The results suggested that opportunities and resources in a neighbourhood influence children's development independently of socio-economic circumstances. They also point to the complexity of early child development and value of this kind of analysis. They raise questions and become conversation starters about where and how to allocate resources. For instance, who takes part in early childhood programs and other community resources before starting kindergarten? Are there groups of young children and their families who have not accessed the resources available in neighbourhood A during the early years? How many

children having difficulty on the language and communication domains speak English as a second language? What kinds of supports could the school put into place in kindergarten and the primary grades to support groups of children with these EDI profiles?

### 3.2 Understanding Early Years, Combining Data Sets

The work of the North York, Early Years Action Group was a prototype for Understanding Early Years (UEY), a federally initiated and funded research project. UEY provides information from EDI, community-level NLSCY data, and community mapping. Its aim is to better inform decisions about policies and programs for young children and their families. It began with 13 sites in its first two phases and has expanded to include an additional 50 communities across Canada.

Research findings consistently show that opportunities and resources in a neighbourhood influence children’s development independently of the socio-economic circumstances the population.

The 2005 report on the first UEY sites<sup>21</sup> identified the value of the initiative in describing the needs and strengths of communities with different economic, social, and physical characteristics, and about how the community was working to improve their young

The Early Years Action Group was a pioneer in piloting the EDI tool and mapping those data with community resources and socio-economic data. They introduced community early child development reporting to Canada and the rest of the world.

Fraser Mustard

children’s outcomes. Findings point to family income, parental education and employment as important determinants of early childhood outcomes. But other factors, such as approaches to parenting, engagement in learning activities, the family’s use of available resources, neighbourhood social capital, and social support also influenced children’s development.

The report concludes that it is difficult to measure changes of both the determinants of early childhood outcomes and the outcomes themselves, at the community level. UEY is attempting to measure many aspects of the dynamics between children, family and neighbourhood that need additional inputs and strategies. It suggests that the UEY measurement process be viewed as an infrastructure upon which other local measurement initiatives can be built. Used in this

**Figure 3.9**  
**Neighbourhood Comparison: Selected Neighbourhoods, North York, Ontario, 1999**

| Resources available within communities surrounding schools | Neighbourhood |      |      |
|------------------------------------------------------------|---------------|------|------|
|                                                            | A             | B    | C    |
| Preschool programs (playgroups, child care programs)       | Yes           | None | None |
| Drop-in, parent and family resource centres                | Yes           | None | None |
| Parenting classes, parent relief and family support        | Yes           | None | None |
| Enrichment programs                                        | Yes           | None | Yes  |
| Libraries, literacy programs and toy libraries             | 3 to 4        | 1    | 1    |

(Adapted from Human Resources and Social Development Canada, 2001)  
Community early child development reporting in Canada began with the comparison of EDI results in three neighbourhoods in 1999.

way, it can provide an opportunity for applied research within communities that examine the effects of specific interventions, programs, and policies.

### 3.3 Cross-Canada Comparisons

The Offord Centre for Child Studies has compared EDI results in four of Canada's largest cities: Montreal, Toronto, Winnipeg, and Vancouver. Geographically aggregated Census data are correlated with the children's neighbourhood location via postal code. Socio-economic status is determined by the use of the Social Risk Index (SRI)<sup>22</sup>, a composite index based on nine socio-economic indicators of risk.

The distribution of EDI measured vulnerability in school readiness and social risk has been computed for four cities across Canada and is illustrated on Maps 2 through 5. The maps illustrate the relationship between low EDI scores and social risk. The green areas indicate communities scoring low on the SRI; yellow shows moderate risk and red is high.

Of particular interest are neighbourhoods where the relationship between social risk and school readiness is unexpected.<sup>23</sup> Areas with high social risk, but showing low overall EDI vulnerability are outlined in blue and those with low social risk and high overall vulnerability are outlined in purple. Based on consistent research findings, it is reasonable to conclude that neighbourhoods with a high social risk, yet low vulnerability, may be benefiting from more early childhood and other community programs that better prepare children for entry into school.

For example, in Montreal, where more than 60% of all preschool children attend regulated child care programs, several high risk neighbourhoods are doing better than would be expected from their SRI scores. In Winnipeg, the results follow a more expected pattern. Neighbourhoods with moderately high to high social risk scores are also showing a high percentage of vulnerable children.

Neighbourhoods that are socially cohesive, despite social or economic risks, seem better able to prepare their children for school. This may explain why neighbourhoods with low social risk have high rates of vulnerability among children at school entry. Economic advantage does not necessarily translate into social cohesion.

### 3.4. Early Child Development Mapping in British Columbia

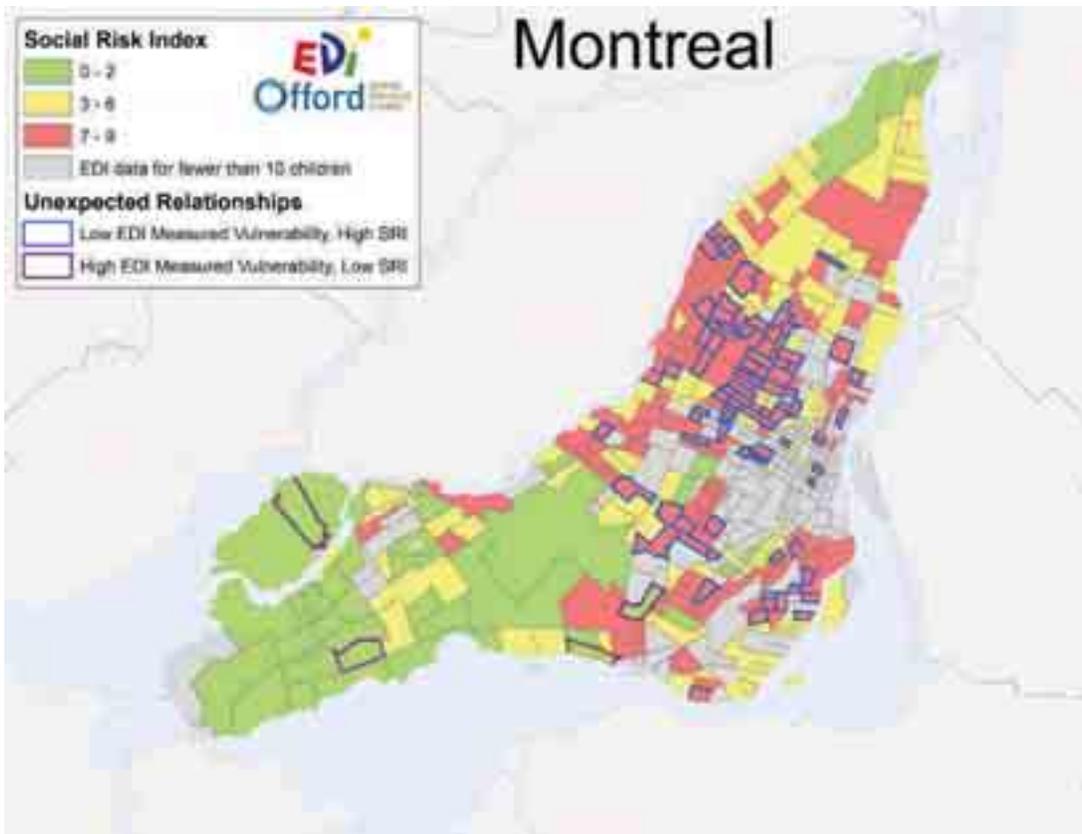
The British Columbia Atlas of Child Development charts new territory about the geography of opportunity for young children in Canada.<sup>24</sup> The Atlas presents a visual summary of early child development trends across neighbourhood, school districts and provincial geographies in B.C.. Colour maps depict information about the many intersecting environments in which B.C. families live and young children grow, including the socio-economic, community and policy environments. The Early Child Development Mapping Project at the Human Early Learning Partnerships (HELP), which produced the Atlas, aims to understand development in British Columbia neighbourhoods. Academic, government, and community partners cooperate to develop neighbourhood-based maps related to EDI data, socio-economic factors, and community assets and resources.

From 2000-2004, 59 geographic school districts in British Columbia completed the EDI comprising 93-100% of the age 5 kindergarten cohort. In some districts, 40% of children showed vulnerability. Working with local communities in the school districts, HELP identified a cross-section of 469 neighbourhoods for further analysis. Distributions of vulnerability across neighbourhoods ranged from 2-59%.

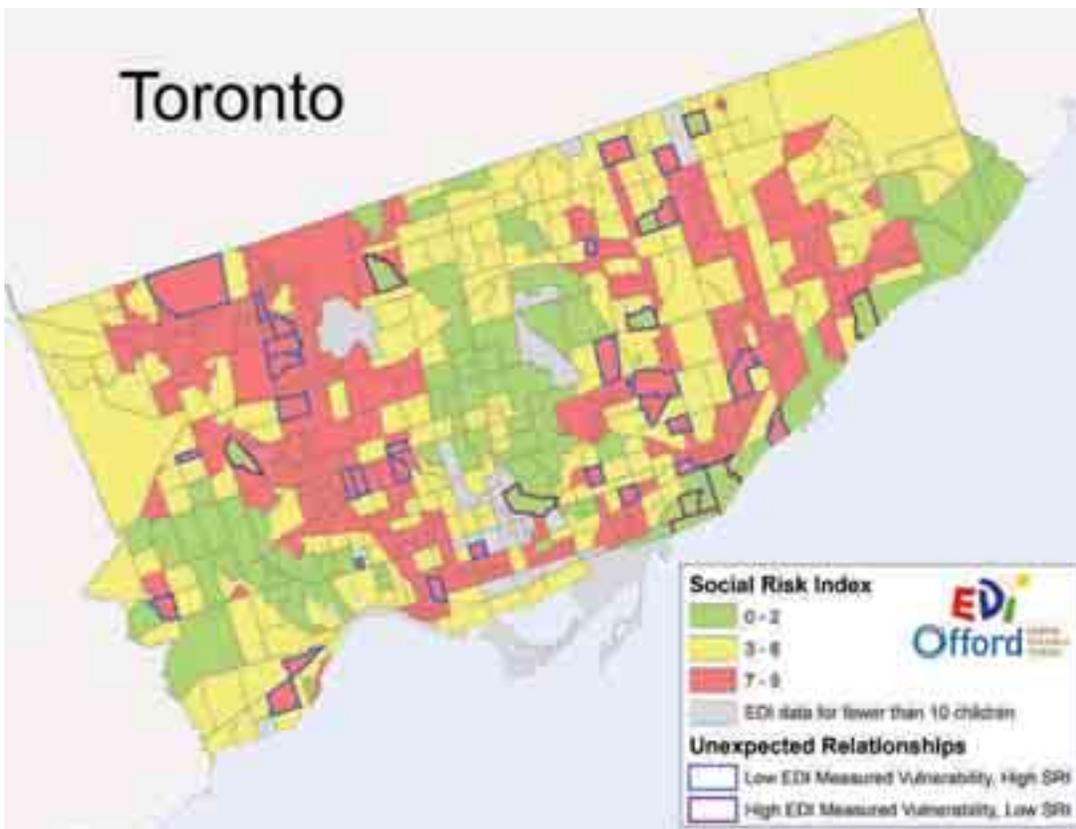
The Atlas illustrates a visual summary of the impact of community and neighbourhood characteristics on child development and readiness for school.<sup>25</sup> Colour maps layer 2004 EDI results with 2001 Census data to describe the social and economic circumstances of school districts and communities. **Map 6** illustrates EDI results across British Columbia and is a cartogram. Each school district retains its approximate geographical shape but is sized according to the number of children who live there. The side bar listing of the percentage of vulnerable children indicates that vulnerability cuts across all school districts, ranging from 14% in West Vancouver to almost 44% in the Central Coast school district.

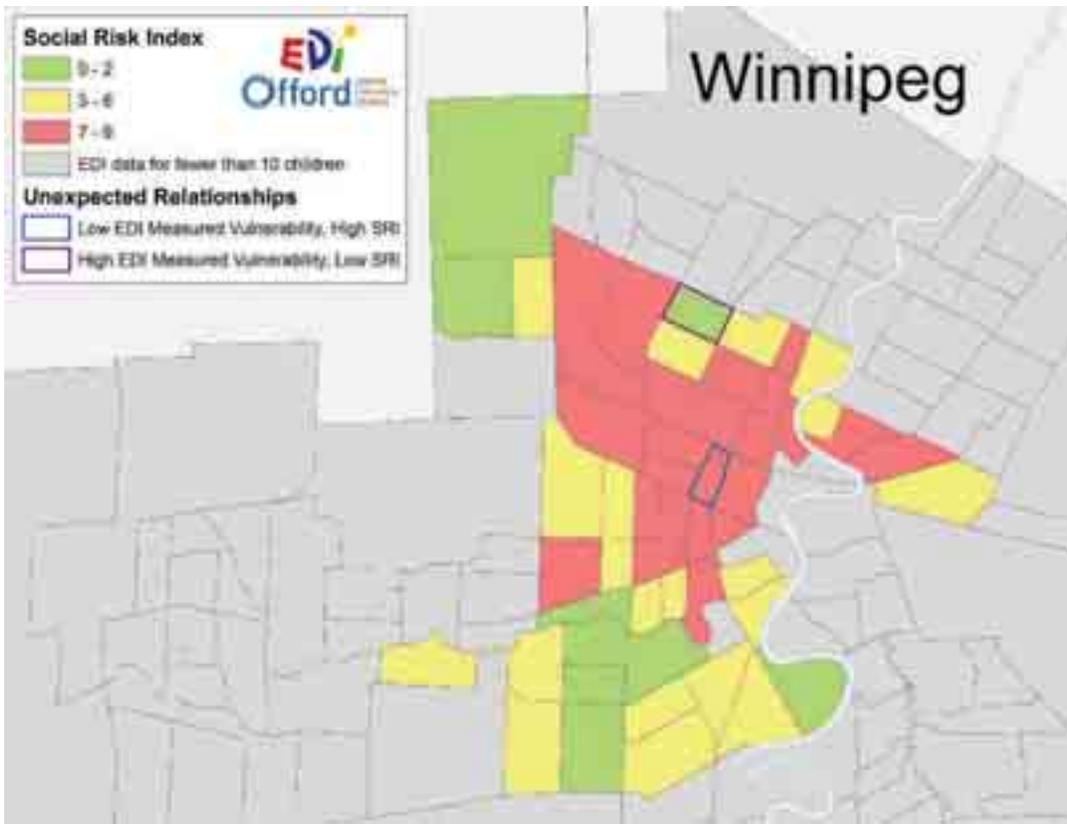
**Map 6** shows the relationship between socio-economic status and EDI results. In this case, a green background shows areas where overall children did well on EDI assessments, yellow indicates moderate

Map 2

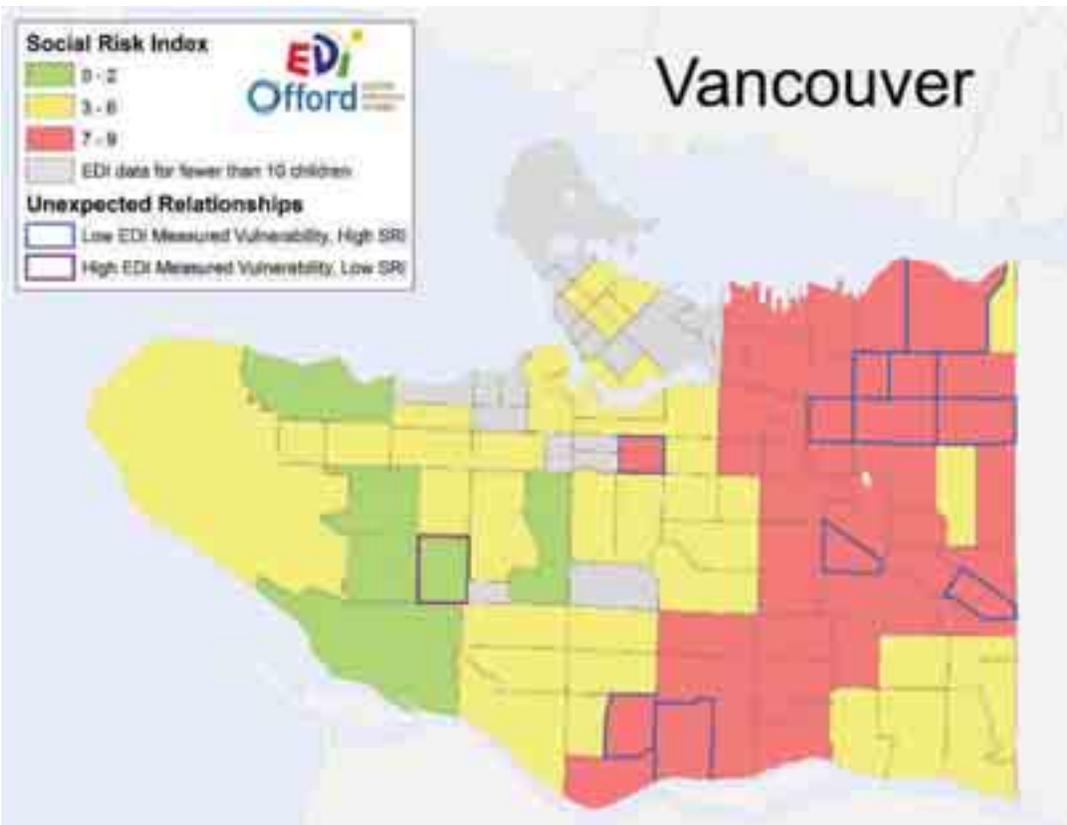


Map 3





Map 4



Map 5

numbers of children with low EDI scores, and red indicates large concentrations of vulnerable children. A Social Risk Index is used as the SES measure. The SES measure for each district is represented in a circle that is an overlay on the EDI results. The green circles indicate high SES (and low social risk); yellow circles are moderate SES (and moderate social risk); and, the brown circles are low SES (and high social risk).

Vernon and Central Okanogan school districts are red circled on the **Map 6**. Both districts have a green circle, indicating higher SES. Central Okanogan, while having a higher SES measure, is mid-range on the EDI vulnerability scale. Vernon, as a school district, does well on both measures. It has a high SES and low EDI vulnerability. Central Okanogan and Vernon have relatively low social risk but Central Okanogan has a higher proportion of children with developmental difficulties prior to entry to Grade 1.

**Map 7** breaks these Vernon and Central Okanogan school districts into neighbourhoods allowing for a closer examination. Vulnerability is evident across neighbourhoods in Vernon and Central Okanogan and the general pattern of higher social risk associated with higher rates of vulnerability is evident (for example, Central Kelowna). Vulnerability is more concentrated in higher risk areas, but the map shows vulnerable children are present in all neighbourhoods. The pattern is broken by a few neighbourhoods with low social risk but higher vulnerability (for example, Black Mountain and Peachland) and ones with high social risk but lower vulnerability (for example, Vernon Central). Proportionally, both school districts have approximately an even number of low and high SES neighbourhoods. Central Okanogan has more neighbourhoods with high EDI vulnerability.

Neighbourhood maps in British Columbia allow community residents, school districts, and early childhood programs, to identify patterns and trends in children's early development in the immediate local context. In British Columbia, cross-sector coalitions have used the EDI mapping results to initiate new programming, advocate for policy and funding changes, and monitor the impact of major

economic downturns on young children prior to entry to Grade 1.<sup>26</sup>

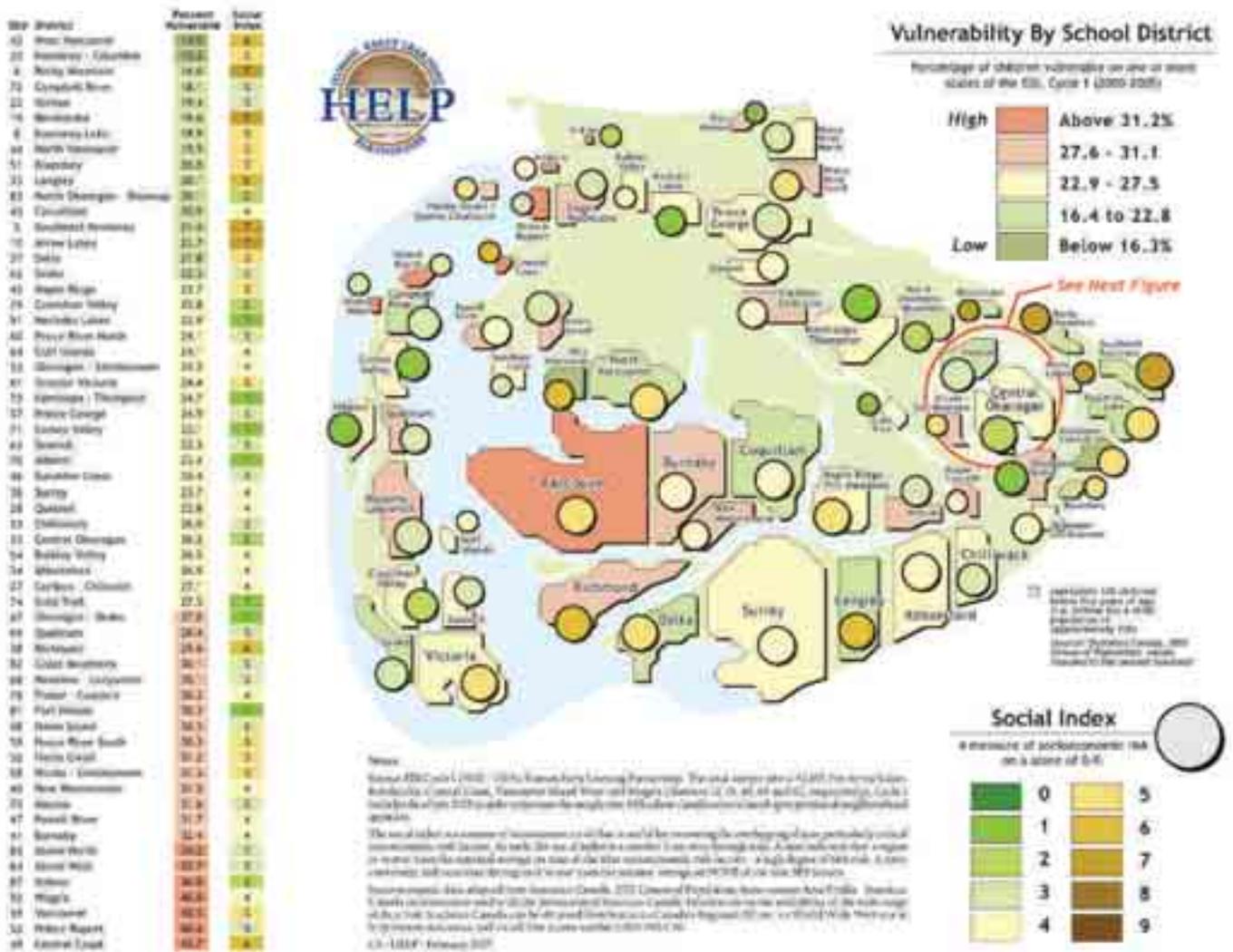
**Map 8** compares two neighbourhoods in downtown Vancouver: Strathcona and Grandview-Woodlands

In 2000, Strathcona had one of the city's highest percentages of vulnerable children at 53.2 %. The percentage rose to 75 % in 2004. A neighbouring community (Grandview-Woodlands) has a similar socio-economic profile. EDI data found 55.2 % of kindergarten children were vulnerable in 2000. In contrast to Strathcona, the percentage of vulnerable children dropped in Grandview-Woodlands to 37.8 % in 2004. Both neighbourhoods remained poor and plagued by the suite of problems accompanying poverty in urban environments.

What accounts for two similar communities producing such different outcomes? There is no definitive answer, but HELP Director, Clyde Herzman, offers some possible explanations.

*"In early 2002, (between 2000 and 2004 EDI collections) the provincial government reduced access to child care subsidies for mothers on social assistance. This affected the children who were captured in the 2004 EDI collections. In Strathcona 80% of three- to five-years-old whose child care fees had been covered by subsidies could no longer attend. The largest contribution to increased vulnerability came from the 'Communication Skills and General Knowledge' scale, which relates to the experiences of children in preschool and child care programs.*

*Mothers on social assistance lost their child care subsidies in Grandview-Woodlands. However the community was served by a neighbourhood hub of early childhood programs providing strong coordination with programs not at the central site. The hub drew on its diverse funding sources, including stable public operating dollars that were not tied to fee subsidies. The strength of the integrated collection of early childhood programs allowed staff and community members to react to EDI data and make continued program coverage for the children a priority, whereas Strathcona's stand-alone agencies lacked the capacity."*



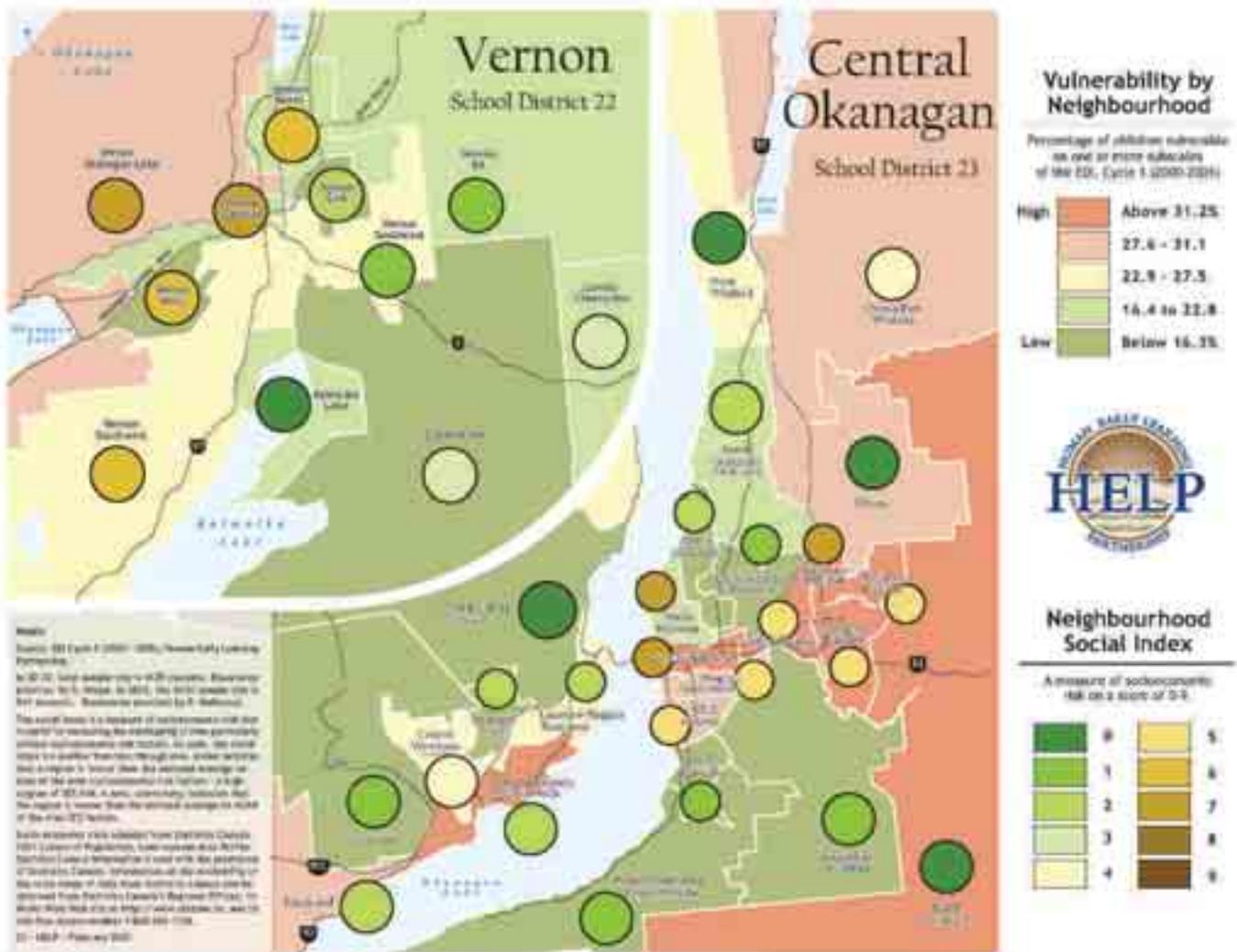
Map 6

Temporal contrasts like Grandview and Strathcona demonstrate just how sensitive young children are to their environments. Such comparisons allow program planners and communities to work backwards to understand what has taken place in the early years of a cohort of children. Importantly, the EDI was able to quantify within a few short years the fallout of policy changes at a community level. Such findings are critical to public policy analysis. Much social policy change takes years to manifest, well beyond the lifespan of most governments. The ability to measure results or show the trajectories of political initiatives within an election cycle provides a powerful advocacy tool.

The EDI combined with socio-economic and resource data is providing information to community

cross-sector coalitions that include school boards, local governments, community agencies, regional offices of the province, public health, and community residents throughout British Columbia. Community early child development reporting allows an emphasis on “lifting up” or flattening the gradient for all children while reaching those who are most vulnerable across different neighbourhoods.

The Atlas points to an understanding of early development that transcends the boundaries of any single policy envelope including education, health, child care, welfare, or justice - to see how the interrelations between these areas influence children before they reach age six. The EDI is a central data source, providing information about children’s development at the neighbourhood level that can be understood in



Map 7

the context of the child’s social ecology and physical geography.

### 3.5 Using EDI Data to Improve Outcomes for Children

The compelling visuals of EDI and other information offered by maps have captured a wide audience. In the 10 years since the EDI was first piloted it has become a tool that can be used to both monitor and adapt public policies.

#### *Benchmarks in the City of Toronto*

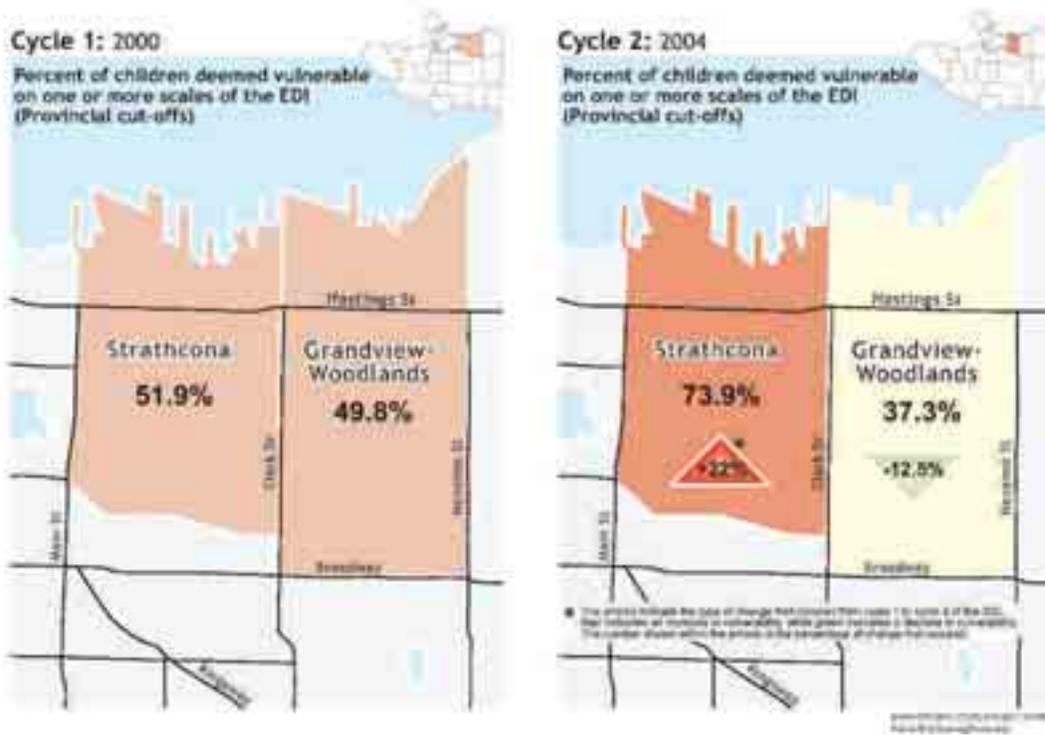
In 2005, the City of Toronto Council adopted a major policy and program initiative called “Best Generation Yet” (BGY). The major focus of BGY is to direct the development of a ten-year plan for comprehensive,

integrated, inclusive and high quality services to improve the well being of children in Toronto. The service planning and allocation process is underpinned by twin principles of universality and equity

Much social policy change takes years to manifest, well beyond the lifespan of most governments, but young children respond quickly and powerfully to their environments. The capacity of the EDI to measure child outcomes at a community level and show the trajectories of political initiatives within an election cycle makes it a powerful advocacy tool.

## Vulnerability by Neighbourhood Strathcona and Grandview-Woodlands

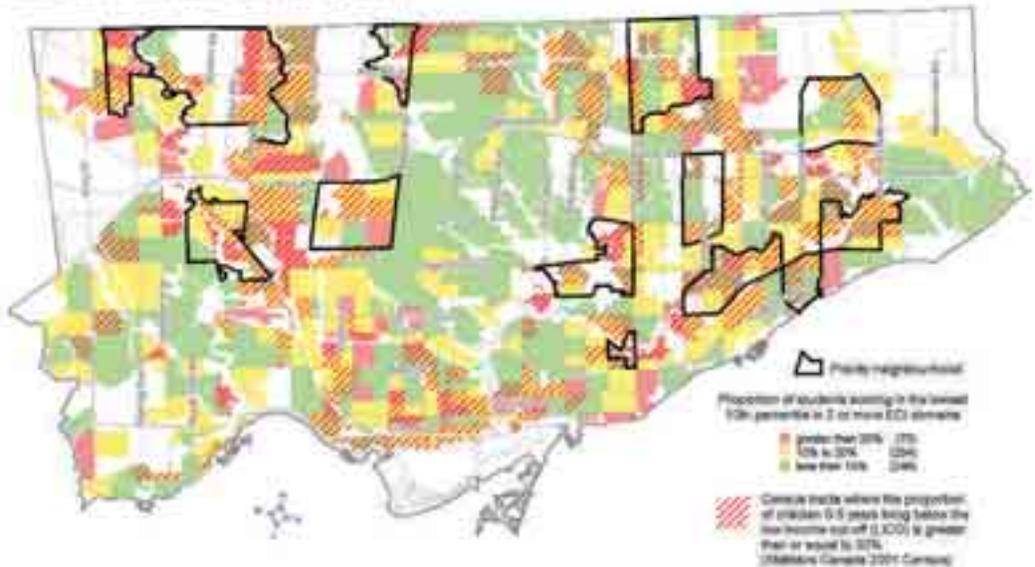
Map 8



## Early Development Instrument (EDI) - Spring 2005

### EDI & Low-income cut-off (LICO)

Map 9



The City of Toronto has used the EDI to identify vulnerable communities. Based on the findings, City Council has adopted child outcome “benchmarks” that represent what it wants and expects to achieve for its children.

of outcomes. Recognizing that all families require some measure of public support during their children’s developmental years, BGY also accepts that in order to achieve equitable outcomes for all children, some communities require more intensive interventions than others.

Since 1996, the city has periodically published a *Report Card on Status of Children in Toronto*<sup>27</sup>. Through mapping of demographic data, services and outcomes, the Report Card repeatedly illustrated the impact of income gradients on developmental, educational and health outcomes was repeatedly presented in these documents. Recently, the EDI data became available to the City’s four school boards (although the existing EDI data cover only approximately two-thirds of all kindergarten children in Toronto).

**Map 9** shows the proportion of children who are vulnerable. Because of the large numbers of children with English as their second language, Toronto defines vulnerability as scoring below the 10<sup>th</sup> percentile on at least two EDI dimensions.<sup>28</sup> The map illustrates the relationship between high levels of child poverty and high incidence of low EDI scores. The crosshatched areas, indicating higher than average levels of child poverty, are closely, but not exclusively matched by the red coloured areas showing the incidence of children with low EDI scores. Exceptions can be found on both sides of the spectrum: areas of high child poverty have children doing well on EDI scores and children in some fairly affluent areas doing less well. Analyses could provide several possible explanations, including other demographic characteristics (such as level of parental educational achievement, parental time with children) and the availability of early childhood and community programs.

Toronto has adopted child outcome “benchmarks” that represent what it wants and expects to achieve for its children. In 2005, the City Council adopted the 80<sup>th</sup> percentile of each of EDI’s five domain as the benchmarks for each of the city’s neighbourhoods. The use of specific domain data allows various partners to address those areas that are part of their legislated or sector mandate in order to develop concrete plans and resource allocation strategies for individual communities or the city as a whole.

### ***The Cost of Not Doing Enough in British Columbia***

In British Columbia, researchers have collected EDI data across the province at two points in time and can identify changes in kindergarten children’s vulnerability. The percentage of vulnerable children at risk on any scale increased in 31 B.C. school districts and decreased in 16 districts.

During the same period, the child care subsidy and operating fund budgets in the province have fluctuated; sometimes being cut, other times being increased. The provincial government has also allocated some, but not all, of the federal early child development dollars to a range of early years programs and initiatives. Several cross-sectoral groups and school districts have initiated new early child development initiatives, many located in neighbourhood schools.<sup>29</sup> The question that arises as the new EDI results are reviewed: Why are the EDI scores not going up in more communities?

Closer consideration reveals other trends. Social assistance eligibility and benefit levels have changed. The lumber industry, the prime employer in many communities, is in decline<sup>30</sup>. The resulting economic and social stress is not being offset by relatively small increases in programs and funding. Many of the new early childhood programs have been short-term or offered on a drop-in basis, which according to the research outlined in Chapter 1, is not enough to impact children’s early development. Interestingly, in several of the school districts where the EDI scores did increase, integrated models and more intensive early childhood programming is evident.<sup>31</sup>

## 4. Integrating Databases

Consistent measures of early child development can be linked to other measurements of health, educational and behaviour outcomes over the life course. It is possible to construct crosswalks between health, early child development and education databases that integrate population-wide, person-specific data at national, provincial, and community levels. Linking early child development outcome data with education, health, and social service administrative databases is key. It allows scientists, policy makers and communities to better understand the relationships among developmental outcomes, demographic characteristics, cultural factors, and socio-economic circumstances at the community level.

### 4.1 ECD Outcomes at School Entry Predict Social and Academic Outcomes

EDI findings indicate that schools with the greatest proportion of children entering school with poor development have poorer test results in higher grades. British Columbia's Foundation Skills Assessment (FSA) found poorer results in grades 4 and

7 in schools where children showed lower EDI scores at school entry. Similar findings were obtained in Toronto.<sup>32</sup> Grades 3 and 6 literacy tests were poorest in schools where the greatest number of kindergarten-aged children showed low EDI scores.

From a population-based assessment, these schools were not able to substantially improve the literacy levels of their students between Grades 3 and Grade 6.

In British Columbia, researchers at HELP can now link EDI data with the data sets for the Grade 4 FSA results. This allows researchers to study the developmental trajectories of children from school

Vulnerability at school entry is closely tied to poor school performance. The greater the number of vulnerabilities indicated by EDI assessments of kindergarten children, the less likely they are to participate in Grade 4 province-wide testing, and the more likely they are to perform below expectations.

**Figure 3.10**

**The Cost of Vulnerability: % of Children with EDI Scores 'Not Passing' Grade 4 Standardized Assessments**

| <b>A: # of EDI vulnerabilities showing at school entry</b> | <b>B: % of children failing to meet FSA expectations in Grade 4</b> | <b>C: % 'Not Passing' (Column B plus children that did not write the test)</b> |
|------------------------------------------------------------|---------------------------------------------------------------------|--------------------------------------------------------------------------------|
| <b>Results of FSA Numeracy Assessment</b>                  |                                                                     |                                                                                |
| 0                                                          | 7.5                                                                 | 12.3                                                                           |
| 1                                                          | 11.8                                                                | 22.2                                                                           |
| 2-3                                                        | 18.7                                                                | 33.8                                                                           |
| 4-5                                                        | 27.5                                                                | 55.6                                                                           |
| <b>Results of FSA Reading Assessment</b>                   |                                                                     |                                                                                |
| 0                                                          | 13.6                                                                | 17.8                                                                           |
| 1                                                          | 26.7                                                                | 33.9                                                                           |
| 2-3                                                        | 29.5                                                                | 43.1                                                                           |
| 4-5                                                        | 48.4                                                                | 68.3                                                                           |

(Hertzman, 2006)

Birth weight is an important but insufficient measure to predict performance in school. Researchers found little difference in low birth weight across SES groups. Yet the gap in school performance grows dramatically by Grade 3, and is startling by Grade 12. At this age, children in low SES groups are dropping out of school and failing grades at rates almost five times than those of their higher SES peers.

entry to Grade 4. **Figure 3.10** shows the comparison of children's EDI results in kindergarten compared to their Grade 4 test results.

The FSA in Grade 4 includes a reading test and a numeracy test. In **Column A** of **Figure 3.10**, the children are divided according to the number of EDI subscales they were vulnerable on in Kindergarten (0, 1, 2-3 or 4-5). Column B shows the % failing to meet the expectations of the test compared to the total number of children who wrote the test. The provincial EDUDATA includes a database of all of the children who have a Kindergarten EDI score, are still living in the province, and should be taking the Grade 4 FSA test. When the data from the FSA scores are linked to this database, it is possible to calculate the percentage of children who did not pass the test against the total numbers of children who should have taken the test. Column C, "Not Passing," indicates those who failed the test *plus* those who did not write it (due to illness, truancy, or because they were held back in a lower grade). The gap between the percentage failing and the percentage 'not passing' grows bigger as the numbers of EDI vulnerabilities grows, probably indicating that absence due to illness is a small factor in the gap.

The pattern is clear – increased vulnerability in kindergarten increases the likelihood of problems in Grade 4. Vulnerability at age five does not determine performance on Grade 4 assessments, but is certainly a contributing factor.

Further research on the sample again found that neighbourhood plays a significant role. Low EDI scorers living in affluent communities were more

likely to overcome their early difficulties and meet expectations on the Grade 4 test than those living in disadvantaged communities. With few exceptions this pattern held throughout the province.

## 4.2 Linking Health and Education Data in Manitoba

The Manitoba Centre for Health Policy (MCHP) at the University of Manitoba, relies on the Population Health Research Data Repository to describe and explain patterns of health, income, education, employment, and social status. It is a longitudinal database that can link health care, education, and social service data.

The following set of graphs (see **Figures 3.11** to **3.13**) are a powerful example of what is possible when administrative data bases are linked with child outcome measures and socio-economic data to provide a population-based analysis. Most surveys and testing evaluating school performance in Canada include only children who actually write the test. As the B.C. analysis of EDI scores and Grade 4 testing indicated, this can underestimate gaps in educational achievement.

The comprehensive databases at MCHP allow the comparison of population data with student enrolment, high school course marks, and standard test scores for children in grades 3 (limited years) and 12 in Winnipeg. **Figure 3.11** considers birth outcome data for all children born in Manitoba in 1984. Notably there is little difference between the SES groups and no gradient: 84% of the newborns in the low SES had normal birth weights compared to 82% in the high SES group.

**Figure 3.12** considers the performance of Winnipeg youth on a 2001-02 Grade 12 language arts standards test and its association with socio-economic status. Students are motivated to perform well on the test. It comprises 30% of their final mark on a course necessary for their secondary school certificate. The graph on the left shows what schools see when they review the test results. For students present to write the test, there is some gradient effect but it is relatively shallow - about 92 % of the Grade 12 students from affluent families pass compared to 76% of those in the low SES group—a 17% gap.

However when these data are cross-linked with population data from health datasets, it makes it possible to include all Winnipeg youth who should have written the test, had they progressed through school “on time”. With these youth included, the results are striking. A very steep gradient appears. Only 27% of youth in the low SES group passed the test on time compared to 77% in the high SES. Where did all the youth in the low SES group go? Almost 20% of these youth had dropped out of school and another 35% were in a lower grade and not yet eligible to write the test.

This same pattern is found as early as Grade 3 testing. **Figure 3.13** shows Grade 3 performance on a provincial language arts standards test. The pass/fail rate based on the Grade 3 children who wrote the test ranges from 83% in the lowest SES group to 94% in the high SES group. However when the full population of eight-year-olds who should be writing the test is considered, only 50% in the lowest SES group passed, compared to 84% in the high SES group.

## 5. Next Steps

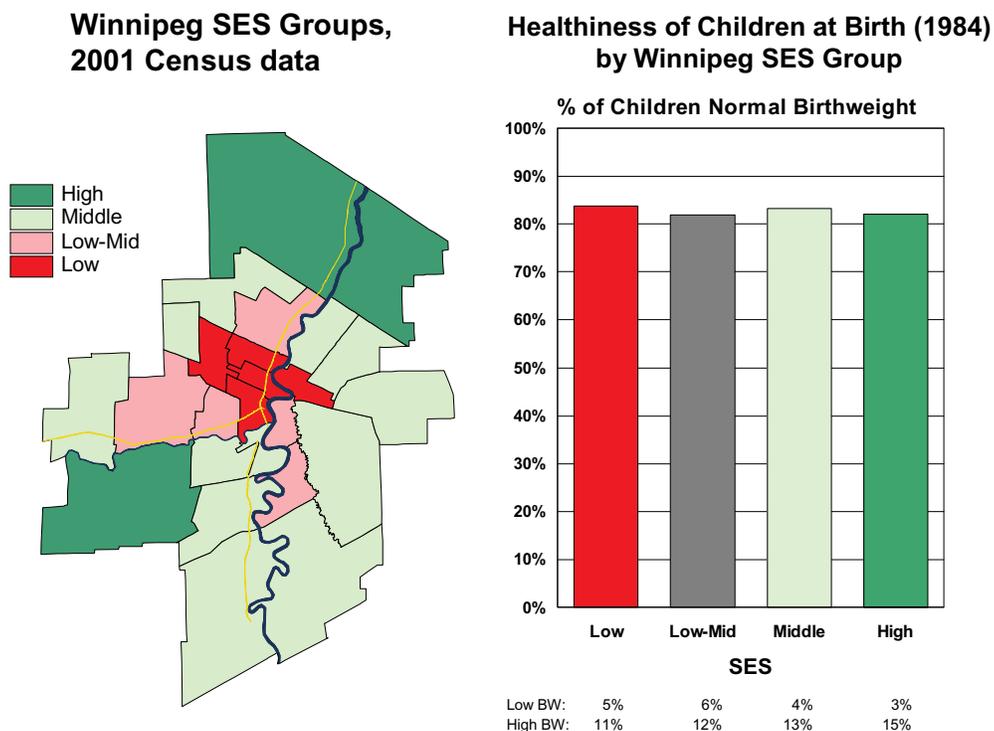
The development of the EDI, its application in community early childhood development reporting, and the power of linked datasets have exploded since the 1999 *Early Years Study*. A child’s early development is sensitive to socio-economic and environmental factors that contribute to inequalities in health, education and life. Comprehensive population-based assessments combined with other data can guide the creation of responsive public policies.

Clyde Hertzman, Director of the Human Early Learning Partnership (HELP) in British Columbia has identified seven uses for the EDI as a measure central to community early child development reporting:

### *1: Monitoring the state of early child development at the level of the population*

Mapping of EDI results at the neighbourhood level engaged public interest. The notion of the socio-economic gradient begins to seem real. It shows

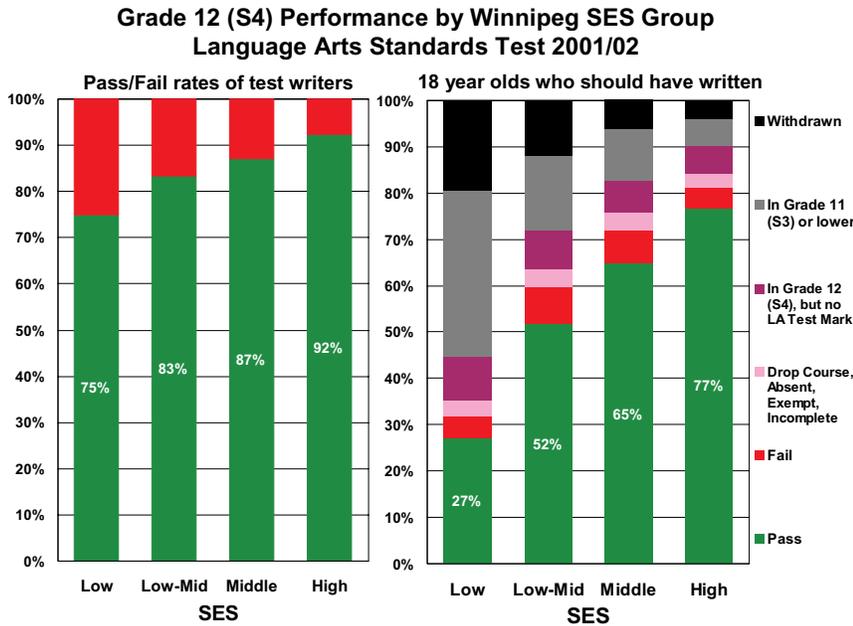
**Figure 3.11 The Cost of Vulnerability**



(Brownell et al, 2006)

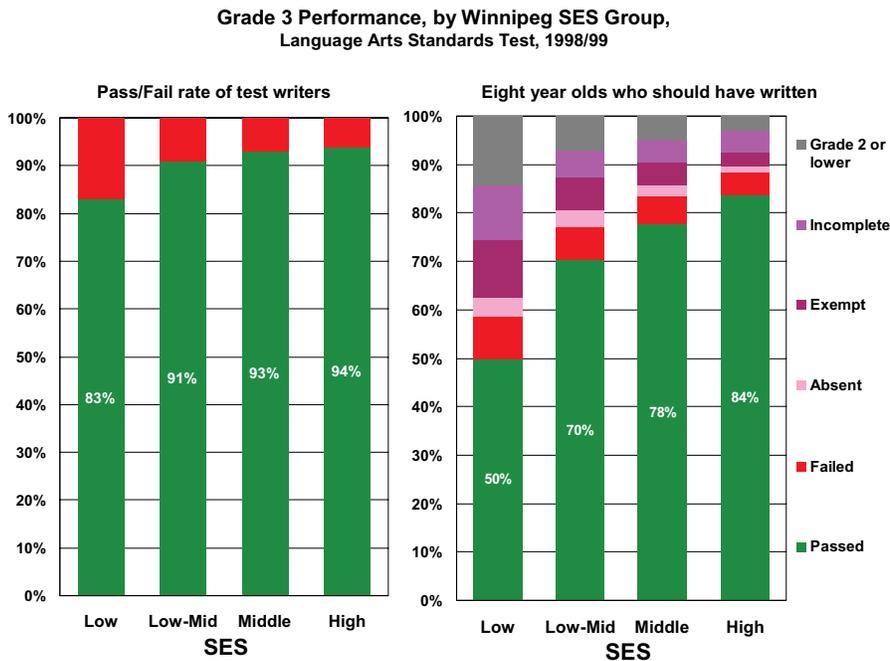
that numerically, most of the vulnerable children are in the middle classes. Mapping of EDI with SES data and information about community resources points to determinants at the family and neighbourhood level.

Figure 3.12



(Brownell et al, 2006)

Figure 3.13



(Brownell et al, 2006)

**2: Identification of resilience in communities that support child development**

Population data showing the relationship between an outcome, such as EDI, and SES identify communities with unexpected outcomes. Communities that are outperforming expectations for their SES have something happening that is worthy of investigation.

**3: Evaluating change in early child development over time**

EDI is allowing communities and governments to see if children’s outcomes are improving over time and if inequalities are growing or shrinking.

**4: Understanding the state of ECD in special populations**

From the late nineteenth century until the 1980s, Aboriginal children were taken away from their communities and put into residential schools. Aboriginal communities are still recovering from this. Infant mortality rates have gone down, yet the EDI rates have not improved. Examining EDI scores reveals two stories. First, that on average, the level of vulnerability for Aboriginal kids is higher than in non-Aboriginal communities. In each community, some children are very vulnerable, while others are not. Some may even be doing better than their non-Aboriginal counterparts. Thus EDI can be used to help answer

the question: “Why do some groups of children from disadvantaged backgrounds do better than others from similarly disadvantaged backgrounds?”

### **5: Create the basis for international comparison**

We have demonstrated that when the EDI is used in widely differing countries around the world, the data can be compared from country to country as long as neighbourhood areas are defined in a roughly similar way.

### **6: Anchor developmental trajectories**

By linking EDI data with educational and health datasets, the EDI can predict developmental trajectories and the cost of vulnerability.

### **7: Inform community development and public policy for early child development.**

Inter-sector community groups are using EDI to better understand the dynamics of early child development within their communities. EDI data also provide facts to support advocacy efforts to improve the level of investment and direction of public policy. Governments can use EDI data to set goals and targets for improving early child development that can be tied to investment and policies.

The next steps are to build a strong, interconnected approach to monitoring the well being of young children:

- » Expand application of the EDI and community early child development reporting
- » Develop and implement an 18<sup>th</sup> month measure that can be widely applied across populations
- » Merge population-based measures of early child development and program evaluation approaches to monitor the implementation of early childhood programs and policies and their impact on children, families and communities.

## **5.1 EDI and Community Early Child Development Reporting**

The consistent application of EDI across Canada would significantly increase the ability of communities, provinces and territories to monitor early child development at entry to Grade 1 with the same degree of rigor that is in place for monitoring birth outcomes

and high school graduation rates. It would also allow communities to learn from each other and to tailor actions to their particular needs.

The EDI should not be considered as a replacement for ongoing child assessment through observation and documentation or for screens intended to identify individual developmental problems. Nor is it a diagnostic tool. Continued refinement and analysis is warranted. Nevertheless, the EDI is a strong valid and reliable instrument that can be used now to build a pan-Canadian approach to early child development reporting.

## **5.2 A Population-Based 18 Month Measure**

Experiences during the infancy and toddler period have a significant effect on brain development and the pathways that effect health, behaviour, and learning. Assessment during the toddler stage (18 months) would be valuable in picking up, from a population perspective, poor development in communities. The advantage of identifying challenges at this early stage of development is that programs can be initiated to improve outcomes. Findings from Quebec’s longitudinal survey identified specific behaviours at 17 months that predict later problems.

The report and recommendations of the Report of the Expert Panel on the 18 Month Well Baby Visit identifies the role of the primary health care system as a mechanism to reach all young children and their families that coincides with the last of the early immunization series.<sup>33</sup> The Panel recommended an enhanced, universal 18 month well baby visit which would include a developmental review, discussion about healthy child development, information about parenting and community early childhood settings, and referrals to early intervention services as needed. The next step could be an aggregation of data collected at this visit to build a population level assessment of development at 18 months.

## **5.3 Evaluating the Quality and Effectiveness of Early Childhood Programs**

Communities want to measure the impact (developmental, social, and economic) of early childhood programs on different children, families and neighbourhoods. Science points to the right things to do,

but communities need to know about how to do the right things right at an affordable cost.

Community early child development reporting offers a platform for evaluating program quality and effectiveness, but additional measures are also needed. It is difficult to identify effective program-level practices and mechanisms for program replication, diffusion, dissemination, and scale-up, using EDI and SES data alone.

Further development of infrastructure is needed to monitor programs and assess their influence on children's early development. This requires addressing the gaps identified in the Understanding the Early Years evaluation, including mechanisms to determine program quality and identify who gets how much of what in a community. Finally, tools that can monitor system building and reach across the traditional boundaries of early childhood programs are essential.

Communities need to measure the impact (developmental, social, and economic) of different types of early childhood programs on different children, families, and communities, including the following:

- » Exploit the opportunity of natural experiments as early childhood programs evolve in 14 provinces/territories and First Nations communities to measure cost-effectiveness and community-level developmental outcomes.
- » Promote operational studies that develop innovative methodologies that can link individual program implementation with community and federal/provincial/territorial EDI assessments.
- » Monitor availability, quality, and utilization of early childhood programs.
- » Identify effective program-level practices and mechanisms for program replication, diffusion, dissemination, and scale-up.

## 6. Conclusions

- » One-quarter of Canada's children between birth to age 6 are experiencing some learning or behavioural difficulty. These problems in the early years have been shown to correlate with later difficulties in school performance, social adjustment and health.
- » Where families fit on the economic ladder contributes to children's developmental outcomes, but income is not the whole story. Many children in low-income families are doing just fine, and some children living in affluence are not doing well. New data collection methodologies document other influences on child well being.
- » Community initiatives and public policies aimed at improving outcomes for children can be supported by suitable outcome measures. Reliable data and analysis can provide direction to public policy development. Regular assessment and reporting on initiatives is an important component of democratic accountability.
- » Since the release of the *Early Years Study*, the reporting of early child development outcomes in context of demographic and socio-economic information has dramatically increased providing a more effective mechanism to inform policy development.

Researchers continue to define the attributes of effective ECD programs, and educators and policymakers are confronting the challenges of scaling up successful programs - regionally and nationally.

Mary E. Young, 2007<sup>34</sup>

## NOTES

- <sup>1</sup> Coffey & McCain, 2002
- <sup>2</sup> Tremblay, 2006
- <sup>3</sup> McCain & Mustard, 2002
- <sup>4</sup> Pihl et al, 1998
- <sup>5</sup> Somer & Willms, 2002
- <sup>6</sup> Moss, 2003
- <sup>7</sup> Willms, 2002
- <sup>8</sup> Kohen, Brooks-Gunn, Leventhal & Hertzman, 2002
- <sup>9</sup> Thomas, 2006
- <sup>10</sup> Thomas, 2006
- <sup>11</sup> Tremblay, 2006
- <sup>12</sup> Rock & Stenner, 2005
- <sup>13</sup> Goelman & Hertzman, nd
- <sup>14</sup> Janus, 2006
- <sup>15</sup> Janus & Offord, 2007
- <sup>16</sup> Janus, 2006
- <sup>17</sup> ibid
- <sup>18</sup> Mustard & Young, 2007. Australia, USA, Chile, New Zealand, Kosovo, Jamaica, the Netherlands.
- <sup>19</sup> <http://www.rch.org/au/australianedi/>
- <sup>20</sup> Janus & Duku, in press
- <sup>21</sup> Willms, 2005
- <sup>22</sup> Social Risk Index (SRI) is a composite index based on nine socio-economic indicators of risk, first used by Connor (2001), and has since proven a functional and convenient tool to investigate a cumulative measure of possible factors associated with the school readiness of children. Using nine comprehensive indicators of social risk, and designating those with a rate higher than the national average as contributing to the overall risk, the SRI varies from zero (0), indicating no social risk, to nine (9) indicating the highest risk.  
The 9 indicators are:
  - Rate of households with a low-income status
  - Unemployment rate
  - Proportion of individuals without a high school diploma
  - Proportion of families with children headed by a lone parent
  - Proportion of the population with no knowledge of either English or French
  - Rate of recent immigration (1996 to 2001)
  - Rate of those moving in the past year
  - Rate of home ownership
- Proportion of income from Government Transfer payments
- <sup>23</sup> Other possibilities encourage further investigation of the “off-diagonal” relationships. In areas with an older population, high rates of Government Transfer Payments may be indicative of retirees receiving a government pension, and thus not be an indicator of social risk. The maps shown here are intended to serve as an illustrative example and a starting point rather than conclusive evidence.
- <sup>24</sup> Kershaw et al, 2005
- <sup>25</sup> Kershaw et al 2005
- <sup>26</sup> Human Early Learning Partnership and Ministry of Education, 2007; Kershaw et al, 2006; Mort, 2004
- <sup>27</sup> <http://www.toronto.ca/children/repcard.htm>
- <sup>28</sup> Toronto has elected to use scores below the 10<sup>th</sup> percentile on two subscales of the EDI to identify vulnerable children. This is in part to accommodate the numbers of children who are newcomers to Canada and/or learning English as a second language. Many of these children may be low on a single subscale (e.g. communication and learning) but are not likely to have difficulties as they progress through their school years.
- <sup>29</sup> Human Early Learning Partnership & Ministry of Education, British Columbia, 2007
- <sup>30</sup> Natural Resources Canada, 2006
- <sup>31</sup> Human Early Learning Partnership & Ministry of Education, British Columbia, 2007
- <sup>32</sup> City of Toronto, 2003; Founders’ Network, 2004
- <sup>33</sup> Ontario Children’s Health Network & Ontario College of Family Physicians, 2005
- <sup>34</sup> Young, 2007, p.3

# CHAPTER FOUR

## CHAOS

What early childhood programs are offered in Canada? Who has responsibility for their funding and operations? How much do governments invest? What supports are available to parents with young children? This chapter answers these questions and describes some international initiatives. The first section provides an inventory of early child development programs. The second examines public policy directions and the third calculates how much Canada invests in early child development. The chapter concludes with an overview of programs and policies in selected jurisdictions outside Canada.

### 1. Programs to Support Early Child Development

Historically, programs for young children and formal education have developed separately, with different systems of governance, funding streams, and training for staff. Public education is the oldest and strongest institution, and was established throughout most of Canada by the end of the 19<sup>th</sup> century. Other early childhood services were slower to develop. Often placed on the welfare side of social policy, many were founded as charitable responses to child and family distress. As such, they sometimes retain a stigma. While positive public perception protects education as an entitlement of children, the fragmentation that plagues child care and family support services impedes recognition of their universal value and contributes to their languishing on the sidelines of public priorities.

The realization that children can be 'cared for' and 'educated' at the same time has not entered the thinking of most policy makers. As far as governments are concerned child care is a welfare service. Education is a public service. Early Childhood Educators and teachers may share the same goals for children, but legislated training requirements, professional organizations, teaching methods, philosophy, service location and curriculum differ.

*Emily Noble, President Elementary Teachers Federation of Ontario (2004)*

However, analysis put forward by established institutions such as the World Bank, and by economists, neuro, behavioural and social scientists documenting early childhood as a critical period to invest in the development of future human capital are resonating. In addition, evidence from brain research has prompted concern about the conditions for infants and preschoolers because of the extraordinary neurological development that occurs in this period.

Eight years after the first *Early Years Study* popularized the above findings, interest and investments in early child development in general, and early learning and child care in particular, have expanded. Income transfer programs have improved, particularly with the introduction of the National Child Benefit for low-income families and the extension of parental leave under Employment Insurance. Overall, public investments in early childhood services have increased. There are more programs, but, outside Quebec, Canada's early childhood landscape remains highly fragmented and families face an ever-expanding maze of unconnected options, diverse eligibility criteria, and payment requirements. Transforming this patchwork into a coherent, universally-accessible system of early childhood programs remains unfinished business for Canadian policy makers.

### 1.1 Early Childhood Programs

The following is a brief listing of current programs that are potential components for a system of early child development and parenting programs for young children and their families. 'Program' is used in a very generic sense to denote an activity or service that is provided for children from the prenatal period to six-years. Several of the services listed are not exclusive to young children (e.g. child welfare or public health). Others, such as children's mental health centres, do not fit neatly into any category.

#### *Prenatal, Postnatal, and Infancy*

Federal, provincial, and local governments in Canada invest in a range of programs, services, and information campaigns to promote healthy pregnancy, birth, and infancy. Some programs are directed at reducing

- » Ayesha lives in downtown Toronto. She goes to Kindergarten in the local public school every morning and goes home at lunch with a neighbour, a regulated family child care provider, who cares for five children in the afternoon. Her mother or father picks her up around 5:30 p.m.
- » Carmen is four months old. She lives in a small village outside Halifax. Her mother receives maternity/parental leave benefits and is staying at home to care for Carmen for six months. Carmen and her mother meet other parents and infants in a local church basement every Friday morning. The group grew out of a prenatal support group offered by the local public health department; the parents set up space on the floor with equipment and play materials provided by public health.
- » Simon lives in Calgary. He is three-years-old and goes to a nursery school three mornings a week. His father works a night shift and his mother works at the shopping mall Friday nights and all day Saturdays. One parent is at home with Simon all of the time except for Friday night when he stays with his grandmother.
- » Carla is twelve months old and goes to a child care centre at the university where her dad works. She is often there by 8:00 a.m. and is picked up around 5:00 p.m.
- » Elisheva is a four-year-old with a severe disability. She can sit only with support, cannot speak, and needs to be fed. For a year, she has been in a municipally-operated child care centre where a specially trained teacher provides the extra help that allows her to be part of her group. Her mother and father are in the labour force.
- » Ian's parents are both professionals working full-time. Almost every day, Ian goes to a community-based child care centre run by a parent board. His special group of friends includes Tyson, whose mom is struggling to move from welfare to work, Katie, whose parents are both autoworkers, and Liam, a psychiatrist's son.

» Jessica, who is two and a half, goes with her mother and younger brother to a family resource program two or three mornings a week. Sometimes her mother stays and sometimes she will leave for a couple of hours and then come back for Jessica and her brother.

Ayesha, Simon, Carla, Ian, Elisheva, Carmen, and Jessica are all in early child development settings. Although the funding, management, and administration of the programs differ, their activities are similar. The children are all exploring rich social and physical environments that support their healthy development.

The physical environment in each program is designed for children. Carla's infant room has a large open play area with lots of soft cushions and pillows. The wall is lined with a cruising rail for beginning walkers and there are low shelves with several bright toys for shaking, poking, pushing, and pulling. Jessica's favourite time at the family resource centre is circle time, when a staff or parent reads stories from picture books, and all the children and parents join in songs and play. Ayesha's Kindergarten, Simon's nursery school, Ian and Elisheva's child care, and Carla's infant room have a circle time too. Simon often plays in the dramatic play centre at his nursery school; there are

dress-up clothes and lots of dishes and pots and pans. Simon likes to pretend he is a busy chef at a big restaurant. Ayesha's Kindergarten looks a lot like Simon's nursery school. Her favourite place is the art easel with its fresh pots of paint.

Adults in the programs both educate and care for each child. They build responsive relationships, respectful of the child's growing competence. Early educators ensure children's needs for food, physical safety, sleep, and toileting are met as they develop settings that encourage play among the children.

Children do not come to an early childhood setting merely to do their 'learning.' Rather, they 'live' in these settings for several hours each week. Just as they discover at home how the toilet flushes, how round things roll and square things stay put, or how soothing it is to hear dad's voice sing them to sleep, each hour in an early childhood setting is filled with new information and experiences.

Children are part of families, and child development centres provide a 'handshake' to families by creating a community of and for families with young children. Trained staff act as a ready resource to answer the many questions parents have, to model effective parenting practices, and link parents to other community resources if required.<sup>1</sup>

risks associated with exposure to alcohol and tobacco. Others provide information and support to promote healthy birth and infancy. Prenatal, postnatal, and early infancy programs may be delivered in conjunction with other child development programs. An example is the federally-funded Canada Prenatal Nutrition Program that provides nutritional supplements and counselling to pregnant women in adverse socio-economic circumstances.

### ***Regulated Child Care Centres***

Child care centres provide developmental programming for children from as young as three-months to twelve-years of age. Regulated child care is the

anchor of Canada's early childhood programs, although less than 15% of children attend.<sup>2</sup> The majority of programs focus on preschool children, with almost half of all spaces (357,421) targeted at this age group.<sup>3</sup> The demand for child care far outstrips supply.

Child care centres are designed to provide developmental opportunities for children as they accommodate the schedules of working and student parents. Programs are typically operated by non-profit parent boards or community agencies. Depending on the province, commercial operators control a greater or lesser percentage of the service.<sup>4</sup> A small number of programs, often sponsored by unions and/or employ-

ers, offer extended hours or emergency care to accommodate non-traditional work hours.

Child care regulations vary by province and territory and relate primarily to health and safety, staffing ratios, and training requirements. Public funding is largely restricted to limited subsidies for low-income families. With the exception of Quebec, programs operate mostly on parent fees. Because of its labour-intensive nature, fees are very high, even though staff are notoriously underpaid. The population served by child care is therefore polarized with higher income earners able to pay the fees and low income families eligible for subsidies.

### ***Nursery Schools***

Nursery schools (also known as preschools) offer a two- to three-hour group educational experience for preschool children (two- to six-years-old). Programs primarily serve children with an at-home parent or supplement the care of child minders. With the exception of Saskatchewan and Quebec, nursery schools are regulated under the same legislation as child care centres and must meet similar standards. They are operated by various agencies, commercial operators or parent collectives. Parent fees provide the funding. A small number, targeted to at-risk families, are publicly operated or subsidized.

### ***Family Child Care***

Family child care refers to care for small groups of children, usually in the home of the care provider. Government regulations, policies, and funding shape the organization of regulated family child care in each province and territory. Each jurisdiction imposes minimal standards, usually confined to health and safety and limits on the number of children per home. Six jurisdictions have no training requirements. The others stipulate 40–60 hours of courses. Providers, whether contracted by an agency, individually licensed or operating outside regulations, work as independent contractors and are paid a fee per child. Fees may be set by an agency or the province (Manitoba), but are more commonly negotiated with the parent. As an incentive, some jurisdictions allow regulated providers to take in more children, and therefore receive more payments than their unregu-

lated counterparts. Regulated caregivers remain a small minority of the sector and most family child care operates informally, outside of public monitoring.

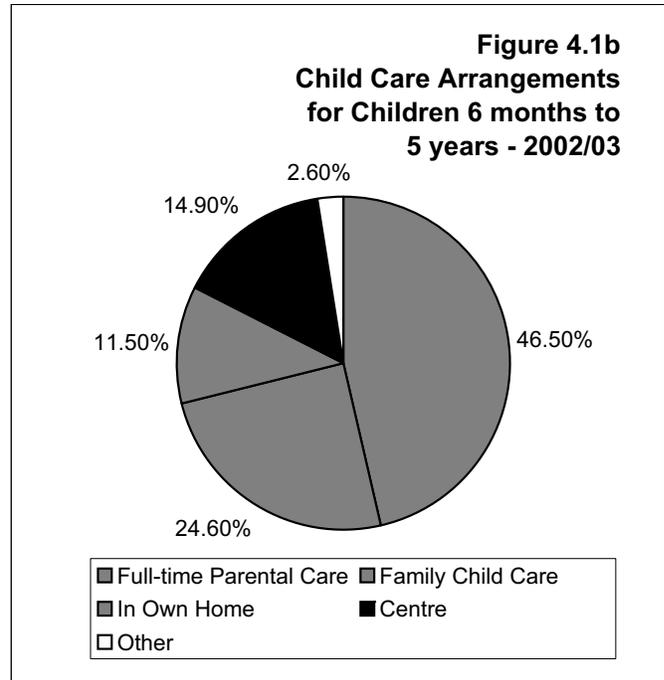
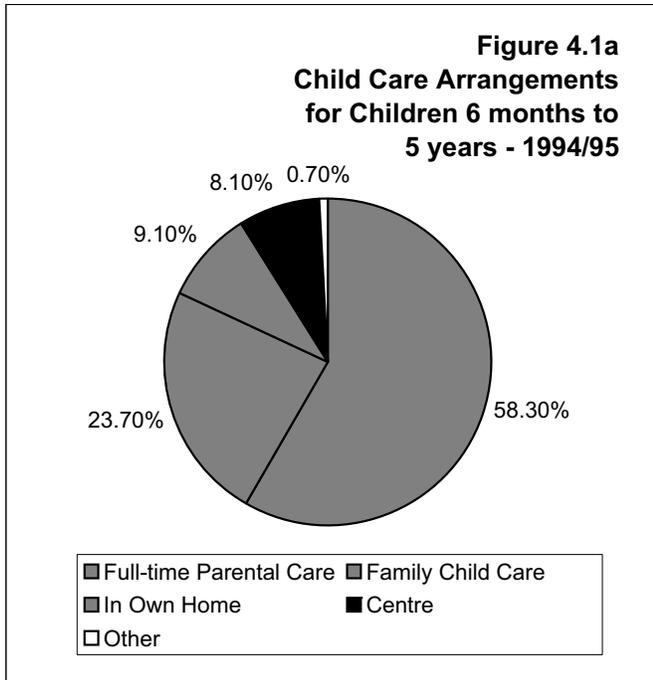
The service is largely used by modest-income, working parents. Due to its informal status there have been few quality assessments. A review of regulated family child care found quality was generally lower than in centre-based settings.<sup>5</sup>

### ***Kindergarten***

Kindergarten is offered through the publicly-funded school system and operates under provincial/territorial education legislation. The exception is Prince Edward Island, where the province funds Kindergarten, but it is delivered in child care centres and nursery schools. Legislation governing Kindergarten sets out requirements for children's minimum age, the number of instructional days and hours, and teacher qualifications. It may also provide guidelines for an adult-child ratio and maximum group size.

Kindergarten provides educational and social experiences for five-year-old children in preparation for formal schooling which begins at age six. Programs operate during the standard school year either for two to three hours a day, or for the full school day, every other day. New Brunswick, Quebec, and Nova Scotia have universal, full-day Kindergarten. Other jurisdictions offer a limited number of full-day programs targeted to at-risk children. Except for New Brunswick, attendance is voluntary. Fees are not typically charged.

Ontario also provides public Kindergarten to four-year-old children. While not universally available in other jurisdictions, Quebec, Winnipeg, Saskatchewan, Nova Scotia, and British Columbia, offer limited programs for four-year-olds in high-needs neighbourhoods. Kindergarten is a popular. Across Canada, approximately 90% (383,000) of five-year-olds attend and 121,000 four-year-olds are in Junior Kindergarten or preschool. This is an 85% attendance rate for regions where programs are available.<sup>6</sup> Kindergarten and child care closely intersect. Most Kindergarten-aged children have parents in the labour force. In response, boards of education will lease space in their schools to licensed child care programs.



(Adapted from Bushnik, 2006)

Almost 60% of children ages 0- to 6-years are in some form of regular nonparental care in Canada.  
The use of child care centres for nonparental care is growing.

### ***Family Support Programs***

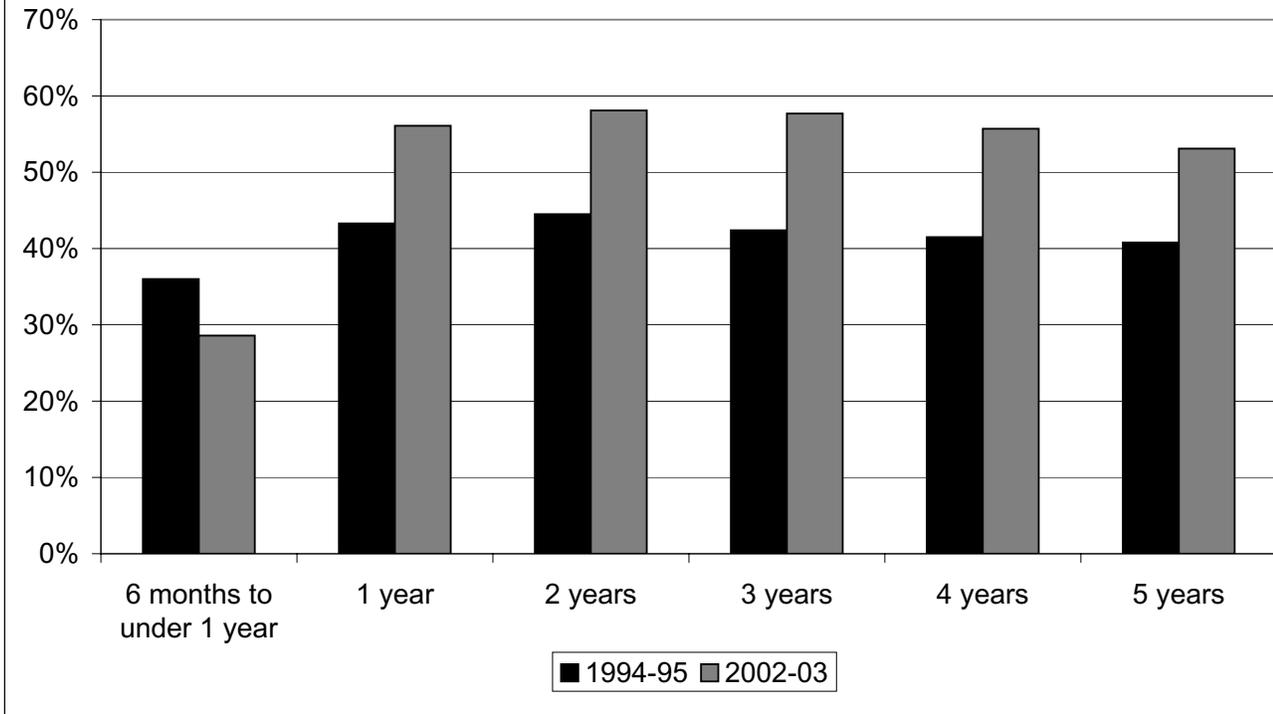
Family support programs are designed to complement a family's existing strengths and resources, address existing problems, and/or aim to prevent them. They also aim to provide opportunities for young children's early learning and development. Family support programs include centre-based programs and home-visiting programs.

There are approximately 2,500 family resource programs operated by small community agencies or as part of larger child care, education, community, health, social service, or child welfare organizations.<sup>7</sup> Philosophically, children and families are seen as part of their communities and the emphasis is on prevention and wellness and the need for social networks. Parenthood is viewed as a stage of adulthood, cultural diversity in child rearing is honoured, and play is recognized as essential to child development. Services include parent support and education, book and toy lending, family literacy activities, support and

training for caregivers, and, resources for early childhood educators and social service professionals. Some agencies focus on families of children with special needs, recent immigrant or refugee families, or parents with substance abuse problems. Programs are not government-regulated although funding flows from a number of federal and provincial ministries, such as health, education, or social services. Fees, if they exist, are nominal.

Home-visiting programs are delivered through public health departments as an extension of universal visits or telephone calls to all families with newborns. They are designed to identify and support families at risk during the mother's pregnancy, at birth, and anytime up to age six. Home visits from peer or family home visitors (experienced mothers who live in the community), as well as from public health nurses, are offered to young children vulnerable to developmental problems.

**Figure 4.2**  
**Proportion of Children 6-months to 5-years**  
**in Nonparental Care in Canada**



(Bushnick, 2006)

A drop in the use of nonparental care for children under 1-year-old and an increase of nonparental care for children over 1-year-old has accompanied the introduction of expanded parental leave.

### ***Early Identification and Intervention***

Early identification and intervention programs include compensatory programs designed to ameliorate family or community risks that are usually associated with disadvantages and services designed to identify and treat developmental problems early in children’s development.

Early identification and intervention services draw on the knowledge and expertise of early childhood education, child and family development, education, health, and social services to support families with children who have developmental challenges or who are at risk of developmental delays due to disability or negative environmental conditions. Approaches often include a home-based component, assessment, program planning (family service

plans and individual program plans), and specialized equipment. Programs focus on improving parents’ and other family members’ abilities to nurture and stimulate their children, reduce the child’s vulnerabilities, and increase the likelihood of success in formal schooling. While intervention may include a child care or nursery school, specific supports are also offered to other family members including counselling, language or job training, housing, health, or other community referrals.

Intervention programs also support the participation of children with special needs in mainstream programs. Advances in child development suggest children, with and without developmental challenges, benefit from participation in inclusive programs. “Inclusive” means including “children with

### **Community Action Program for Children (CAP-C)**

is a federal government initiative involving community coalitions that deliver services to families with children up to six-years-old who are living in conditions of risk. The initiative includes home visits, early childhood enrichment programs, parent training, nutrition education, counselling, collective kitchens, and traditional Aboriginal healing programs. There are approximately 500 CAP-C projects offering more than 2,000 programs in over 3,000 communities across Canada. Over 100,000 children, parents, and other caregivers visited CAP-C projects in 2002<sup>9</sup>.

disabilities in the same programs they would attend if they did not have disabilities.”<sup>8</sup> Inclusive programs not only accept children with disabilities, but also they facilitate their full participation.

Each province and territory organizes the structure of its early intervention programs and services and determines how they are funded. If parent fees are charged, they are nominal.

### ***Early Childhood Programs for Aboriginal Children***

Funding for on-reserve programs is a federal responsibility, although a few off-reserve “Head Start” programs also receive federal funding. The First Nations/Inuit Child Care Initiative funds child care in designated communities. Head Start, Kindergarten, and pre-Kindergarten programs for children living on reserves address school readiness. Ontario, Alberta, and New Brunswick have partnerships agreements with the federal government to provide child care and Head Start programs to Aboriginal children. Some provinces regulate programs, while in others, First Nation governments are responsible.

### ***Infrastructure Supports***

There are few infrastructure supports for early childhood programs. Provinces are responsible for post-

secondary training programs, policy development, and quality monitoring. Recent federal/provincial/territorial agreements suggest that provinces should report their early childhood development spending and program development annually, although few do. In addition to Aboriginal programs, the federal government directly funds child minding for new immigrants taking English or French classes and child care and resource programs on military bases. A \$100 million federal research and development program was eliminated in 2006.

## **1.2 Family Income Support Programs**

Income transfers programs play an increasingly important role in family support. These measures reduced family economic vulnerability by almost 9%.<sup>10</sup>

### ***Parental Leave***

In 2000, the federal government amended the Employment Insurance Act, increasing the maximum length of paid parental leave from 10 to 35 weeks. Parental benefits are available to biological and adoptive parents and may be shared by the parents. Unemployed, self-employed and student parents are not eligible. For biological parents the combined maternity (17 weeks) and parental benefits are paid for one year. Payments replace 55% of earnings up to a maximum of \$413 a week. Data suggest that eligible parents are spending a significantly longer period on leave following the birth or adoption of a child. In 2001, 61% of new mothers received benefits, compared with 54% in 2000, and 52% in 1995<sup>11</sup>. The share of parental claims made by fathers increased from 11.1% in 2001–2002, to 15% in 2004–2005.<sup>12</sup> Men stayed on parental leave for a much shorter period however; the median claim for men who shared parental leave with their spouse in 2004–2005

Aboriginal Head Start programs are based on an American model of early childhood programming designed to stop the cycle of poverty by providing comprehensive education, health, nutrition, and parent involvement services to low-income children and their families.

was 10 weeks, compared to 23 weeks for women who shared the leave. Employment Insurance payments for maternity and parental leave more than doubled from \$1.2 billion in 1995, to \$2.792 billion in 2005.<sup>13</sup>

### ***Child Care Expense Deduction***

The Child Care Expense Deduction (CCED) provides a deduction for income tax purposes from a parent's income of up to \$7,000 for each child under 7-years-old, \$4,000 for each 7- to 16-year-old child, and \$10,000 for each child eligible for the disability tax credit. According to the Canada Revenue Agency, in 2003 over one million parents claimed the deduction. There is no data available for children by age. Total claims were \$3 billion, with tax rebates of \$545 million.<sup>14</sup>

### ***The Canada Child Tax Benefit***

The Canada Child Tax Benefit (CCTB) is a tax-free monthly payment made to eligible families to help with the cost of raising children under 18-years-old. It pays a maximum of \$2,372 for the first child and \$2,172 for each subsequent child. The amount is reduced if a family claims the Child Care Expense Deduction. The full benefit is paid to families with net incomes under \$36,378 and disappears around \$60,000, depending on the number of children.

The National Child Benefit (NCB) is part of the CCTB and is intended to encourage the labour market participation of low income parents. Those with net incomes under \$20,435 receive an additional \$40 a month per child (approximate). The benefit ends when families reach about \$26,000 in earnings. Under the NCB, the federal government supplements its CCTB payments. In turn, some provinces, territories, and First Nations reduce their payments to families receiving social assistance by an equal or partial amount. Provinces and territories are to use their social assistance savings to pay for new and enhanced benefits and services for low-income, working families. The program has been critiqued for its punitive treatment of families on social assistance. Barriers to work for these families often go beyond financial incentives to include chronic health conditions and disabilities. For single parents, the absence of affordable child care is not remedied by a modest stipend.

The CCTB also includes the Child Disability

Benefit (CDB) which pays up to \$191.66 per month for children under 18-years with a severe and prolonged impairment in mental or physical functions. The cutoff thresholds are the same as for the CCTB. Canada spends \$9.2 billion combined on the CCTB, NCB, and CDB.<sup>15</sup>

### ***Universal Child Care Benefit***

The Universal Child Care Benefit (UCCB) was instituted in 2006 to replace the federal/provincial child care agreements and the annual \$249 Young Child Benefit paid for children under seven-years-old. The UCCB is a taxable allowance paying \$100 a month for each child up to six-years-old. The program costs \$2.4 billion. It has been criticized on a number of fronts. It is misnamed because the voucher is not enough to offset actual child care costs. Because it is a taxable benefit based on the income of the lowest earning parent, it disproportionately rewards higher income and single earner, two parent families to the detriment of single parent and low income families.<sup>16</sup>

## **2. Public Policy Directions**

The 1990s witnessed a progression of international and joint federal/provincial/territorial agreements (excludes Quebec),<sup>17</sup> that have moved the focus from discrete, targeted programs to frameworks, policies, and funding intended to expand rights, benefits, and programs for all young children and their families. Efforts were in part designed to better define the roles and responsibilities of the federal and provincial/territorial governments. The agreements reflect the overall consensus that the federal government would assume primary responsibility for income transfers to families while provinces/territories would play a more active role in service provision.

### **2.1 Influence of the United Nations Convention on the Rights of the Child**

The 1990 United Nations Convention on the Rights of the Child came into force on September 2, 1990. It sets out the civil, political, economic, social, and cultural rights of children. In May 2000, two additions were adopted covering the treatment of children

in armed conflict, and a protocol on the sale of children, child prostitution, and pornography. Canada and most member countries of the UN have ratified the document. Two notable exceptions are Somalia and the United States. The convention has prompted a number of domestic actions. For example, new penalties have been imposed for sexual exploitation of children at home and abroad and family court judges are now obliged to consider the opinions of children in matters affecting them.

### ***The National Children's Agenda and the Federal/Provincial/Territorial Early Childhood Development Agreement***

In 1997, the National Children's Agenda (NCA) launched a federal/provincial/territorial dialogue on a comprehensive strategy for children. In May 2002, Canada participated in the UN General Assembly Special Session on Children. The Assembly adopted *A World Fit For Children*, a declaration and plan of action that includes four priority areas: promotion of healthy lives; provision of quality education; protection against abuse, exploitation, and violence; and combating HIV/AIDS. Canada's version, *A Canada Fit for Children*, released in 2004, outlines a plan of action around four central themes: supporting families and strengthening communities; promoting healthy lives; protecting children from harm; and promoting education and learning.

### ***Early Child Development Agreement***

The NCA led to the 2000 Early Childhood Development Initiative (ECDI). The federal government committed \$500 million annually by 2007-2008 through the Canada Health and Social Transfer (CHST) to fund programs for children under six-years-old targeted at: supports during pregnancy, birth, and infancy; parenting resources; child development programs; and community planning and service integration. The last directive was a clear response to the recommendations in the *Early Years Study*.

Several critiques have been made of the initiative. Reporting is left to individual provinces and territories, providing scant accountability for the funding. Independent analysis found spending outside the designated areas. Many provinces cut or eliminated

their own spending on early childhood programs without penalty.<sup>18</sup> There is not enough money to encourage investment in 'big ticket' items, such as child care programs. Rather than the new money leveraging integration across early childhood services as recommended in the *Early Years Study*, it tended to spawn new, lower cost programs, adding to an already uncoordinated mix.

### ***Multilateral Framework on Early Learning and Child Care***

In response to critiques of the ECDI, a framework to improve access to child care services was launched in 2003. The Multilateral Framework Agreement on Early Learning and Child Care (ELCC) is designed to promote early childhood development and support the participation of parents in employment or training. By the fifth year, the federal government will transfer \$350 million annually to the provinces and territories, primarily for direct services for children under six-years in settings such as child care centres, family day care homes and nursery schools. While funding under this agreement was more directed than the ECDI, the same critiques were leveled. The framework provided no encouragement for service integration and the amount fell far short of the demand. In some jurisdictions there was no, or even negative, growth as provinces took federal funding while cutting their own child care spending.<sup>19</sup>

### ***Foundations – Quality, Universality, Accessibility and Developmental***

"Foundations" was a \$1 billion annual federal program announced in 2004 to expand child care services based on the principles of quality, universal inclusion, accessibility and developmental programming, or, as it was popularly called, 'QUAD.' A series of bilateral agreements were signed with each of the provinces. Two years of funding were transferred. The 2005 election resulted in a change of government and the termination of the agreements and all funding by March 2007.

### ***Aboriginal Communities***

Canada's Aboriginal communities struggle to sort through a jumble of early childhood initiatives that

sometimes compete for participants and attention in local communities. Thirteen federal government departments are involved in the delivery of programs on-reserve. Health Canada, Human Resources and Skills Development Canada, Social Development Canada, and Indian and Northern Affairs Canada are working together to develop options to improve the integration and coordination of federal-funded Aboriginal childhood programming. The four departments have completed an environmental scan, developed community planning pilot projects, and developed evaluation tools with community input. The findings are being used to develop recommendations for a more integrated approach, or 'single window,' to early childhood programming.

## 2.2 A Tangle of Roles and Responsibilities

Canada's early childhood services remain immature. There are pockets of innovation and increased levels of investment, but service overlap prevails alongside large gaps. The Organization for Economic Cooperation and Development (OECD) has labelled Canada's early childhood services an "uncoordinated patchwork of stand-alone, vulnerable service providers" with good reason. Provincial programs for early

### A FRAGILE PATCHWORK OF PROGRAMS

Across Canada, early childhood programs fail to respond adequately to the needs of modern families or the new science documenting the importance of early childhood experiences to later health and well-being. In every region of the country parents confront the consequences. Nowhere are there enough programs to meet demand. For families with non-traditional work hours or living in rural and isolated communities, services are almost non-existent. Quality is questionable, yet programs are often too expensive for most families to afford. Public financial support is inadequate and unstable. The result is a patchwork service of poorly resourced, stand-alone service providers, ill-equipped to meet the demands placed on them, and vulnerable to changing political winds.

childhood operate under a number of legislative and regulatory frameworks and administrative structures. Funds flow from different levels of government and different branches within the same government. Moreover, roles and responsibilities are in flux because of public sector restructuring. In fact, the most consistent characteristic of policy governing this age group may be chaos.

Early child development programs are divided into distinct streams: Kindergarten; child care; public health; early identification and intervention; and family supports. Although each has the prime goal of promoting the healthy development of children during their formative years, they operate under separate legislative mandates and with varying levels of public funding. See **Appendix A Federal/Provincial/Territorial Ministerial Responsibility** and **Figure 4.3**.

Parallel streams impede, rather than enhance, access for families. Margaret McCain identified the problem during consultations for the *Early Years Study*<sup>20</sup>: "Most communities could name a long list of early childhood programs but overlapping mandates, disjointed service hours and eligibility barriers left many parents unaware of what services were available or what they offered."<sup>21</sup> The YWCA's audit<sup>22</sup> of early childhood programs in four diverse communities (rural, large urban, suburban and a mid-size town) revealed similar challenges.

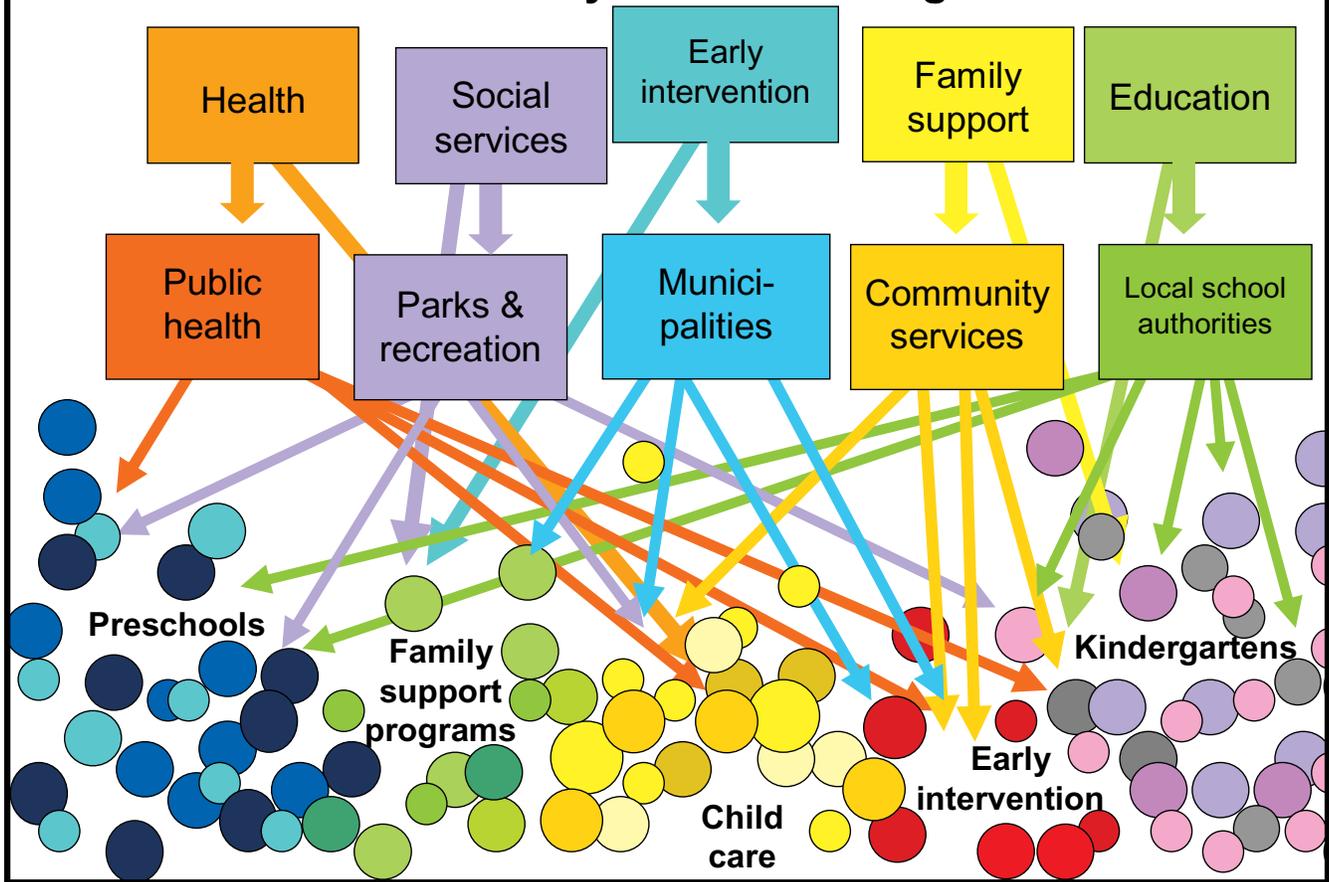
## 2.3 Early Childhood Program Integration

Internationally, the trend is towards the integration of early childhood programs. Nine OECD countries<sup>23</sup> have now combined their early education and child care systems for young children under one government department. Their experience shows that greater progress is made when a central vision guides early childhood policy, and a dedicated ministry is charged with translating the vision into reality. Which ministry this may be is not as important as its capacity to be child-focused and to build a philosophy and practice that embrace, the contributions of all relevant ministries, local authorities, and parents. Various analyses show the advantages of bringing policy-making under one 'roof':

- » More coherent policy and greater consistency

**Figure 4.3**

**Chaos: Early Childhood Programs in Canada**



The numbers of early childhood programs have increased over the past decade, but they remain disorganized and scattered across communities.

across sectors, in terms of regulation, funding and staffing, curriculum, and assessment

- » More effective investment in young children, and higher service quality
- » Smoother transitions between early childhood and formal schooling
- » Improved public management of services, leading to better access for parents

The OECD review of Canada’s early childhood services identified the problems created by the two solitudes: education and child care. It stressed the need to “build bridges between child care and Kindergarten education, with the aim of integrating early childhood education and care both at ground level and at policy and management levels.”<sup>24</sup>

**Barriers to Integration**

Healing the rift between the early childhood streams faces real obstacles.<sup>25</sup> The field is rife with jurisdictional, funding and regulatory divisions, auspice, professional differences, and public perception divides.

**Jurisdictional Divisions**

The policy, planning, and delivery of early childhood services are a provincial/territorial responsibility. Yet early childhood involves issues that transcend jurisdictional boundaries. Public opinion is behind a national response to address the shortage of early child development programs, and different federal governments have indicated a willingness to be involved. Provinces and territories have been keen to

accept federal funding, providing guidelines are not mandatory, presenting obstacles for public accountability. Responsibility for early childhood is housed in at least 13 different federal departments. These divisions are frequently replicated at the provincial/territorial level, adding to the difficulties of system development.

### ***Funding and Regulatory Silos***

With the exception of Prince Edward Island, Kindergarten is almost exclusively publicly delivered. Family support and early intervention services operate with different guidelines, depending on who is funding and responsible for their operations. Separate legislation governs the funding and operation of child care and nursery schools. Kindergarten and family support programs operate largely with public funding. Child care is reliant on parent fees.

### ***Auspice: Commercial, Non-Profit, and Public Delivery of Child Care***

Child care is the only early childhood stream where a sizeable portion of the programs are commercially-operated. The large presence of commercial operators and their concentration in some jurisdictions (Alberta, New Brunswick, Newfoundland) present policy challenges. The differing economic priorities and mandates of public, community-operated, and for-profit programs are barriers to integration. The availability of unrestricted public money to expand child care can attract operators whose primary motivation is entrepreneurial, rather than community service. For example, the announcement of the federal Foundations program raised interest among some American daycare chains to expand into Canada.<sup>26</sup>

### ***Professional Divide in the Early Childhood Workforce***

Large differences in pay levels, working conditions, and professional status obstruct the recruitment and retention of a qualified workforce for most child development programs. The workforce is divided by educational requirements, professional affiliations, pay, and working conditions. The requirements of a university undergraduate degree and plus professional

training for Kindergarten teachers are similar across jurisdictions. Provincial/territorial qualifications for other types of early child development programs vary from no training requirements to one- or two-year diplomas. Depending on the jurisdiction, teachers can earn two to three times the salary of an early childhood educator. Teachers have access to an education ministry and local school board to support their work; ECEs largely rely on the scant resources of their operating agencies.

## **2.4 Positive Efforts**

The coordination of planning and delivery of early childhood services has intensified as governments increasingly move from direct service delivery to regulating and funding community providers. Some jurisdictions are reorganizing the delivery of early childhood programs to reflect the new research and international developments.

### ***Healthy Child Manitoba Act***

Established in 1999, Manitoba's Healthy Child Committee of Cabinet is a standing committee comprised of eight ministers. It remains the only standing cabinet committee in Canada dedicated to the well-being of children and youth.<sup>27</sup> It has established a budget process designed to allocate provincial expenditures to evidence-based investments in early childhood development. In 2001, Manitoba began funding Parent-Child Coalitions across the province to anchor government policies in communities through partnerships. Equally important are their advocacy efforts on behalf of children. In 2006, the government tabled legislation to entrench the Healthy Child structures within government and the community.

### ***Saskatchewan Early Learning***

Saskatchewan has amalgamated responsibility for child care, pre-Kindergarten, and Kindergarten under its education ministry. Despite the cancellation of the federal/provincial child care agreements the province is proceeding with plans to expand half-day pre-Kindergarten to all four-year-olds. The programs are operated by school divisions and enhanced by partnerships with child care and other human service agencies. They are capped at 16 children, staffed by

school teachers, and designed to support child development and parenting capacity.

### ***Ontario's Best Start Plan***

Best Start is a 10-year strategy to expand child care and parenting supports in convenient locations for parents. In partnership with school boards, public health units, municipalities and child care and children's services providers, the plan is to:

- » Integrate pre-school, Junior Kindergarten, Senior Kindergarten, quality child care, public health, and parenting programs into a seamless system that supports families and children.
- » Provide early and on-going screening of Ontario's children to identify potential issues, needs, and risks.
- » Following the elimination of federal ELCC funding after 2006–2007, Ontario spread its final federal payment over four years. To date the program has: funded 15,000 new child care spaces, mainly in schools; streamlined subsidy eligibility; and established panels to enhance well baby visits, enhance professional recruitment and retention, and develop an integrated early learning curriculum.

## **3. Public Investments in Early Childhood Development**

The international evidence comes from industrialized and developing countries and is supported by a wide range of researchers in disciplines from neuroscience and microbiology, to education, economics, and public health. It costs less to get it right in the first place than it does to take remedial action later. The returns on investment in the early child development period exceed investment in any other period of human development.

### **3.1 Public Financial Investment in Early Child Development**

In 2004, the federal government transferred an estimated \$13.3 billion to all families with children through the Child Care Tax Deduction, Child Tax Benefit, National Child Benefit, and maternity/parental leave programs. Approximately \$8.2 billion went to families with children six-years and under.

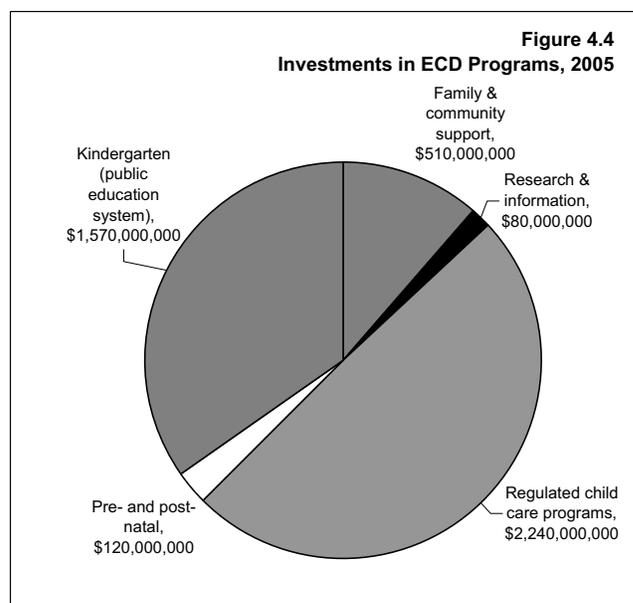
The overall size of public (provincial/territorial) investment in early child development programs was \$4.5 billion, including designated funding from the federal government. If Quebec spent on early childhood programs at the same rate as the rest of Canada, total public contributions would drop almost \$750-million.

Early child development:

- » Is the foundation of human capital formation
- » Has the highest rate of return in economic development
- » It is the most cost-effective way to reduce poverty and foster economic growth.
- » It costs less to get it right in the first place than it does to take remedial action later. As noted by Bruner, Floyd and Copeland (2005), "school unreadiness is expensive".

### ***Public Investment Imbalance***

A comprehensive early child development system requires at least the same kind of investment that is



(Friendly & Beach, 2005;

Government of Canada, 2004, 2005)

The estimate of total federal, provincial and territorial investment in early childhood programs has increased with new federal contributions.

made when children enter school. In Canada, the gap remains substantial. Even taking into account universal Kindergarten programs, overall public spending on children 0- to 6-years is less than 40% of what is spent on children once they enter school.

**OECD Recommends Increased Investment in Canada’s Early Child Development Programs**

Canada’s contribution to early child development programs for children from 0- to 6-years-old lags behind that in all other OECD countries at 0.25% of the GDP. Again, if Quebec’s contribution is removed, the percentage for the rest of the country falls to less than 0.2%. By comparison the United States spends 0.5% of the GDP on early childhood programs and Denmark invests 2%.

The OECD review team made four broad recommendations following their study of Canada’s early child development programs, focusing on the need for infrastructure and investment:<sup>28</sup>

1. Strengthen the present federal/provincial/territorial agreements and focus them as much as possible on early childhood development services.
2. Encourage provincial governments to develop, along with the major stakeholder groups, an early childhood strategy with priority targets, benchmarks and timelines, and with guaranteed budgets

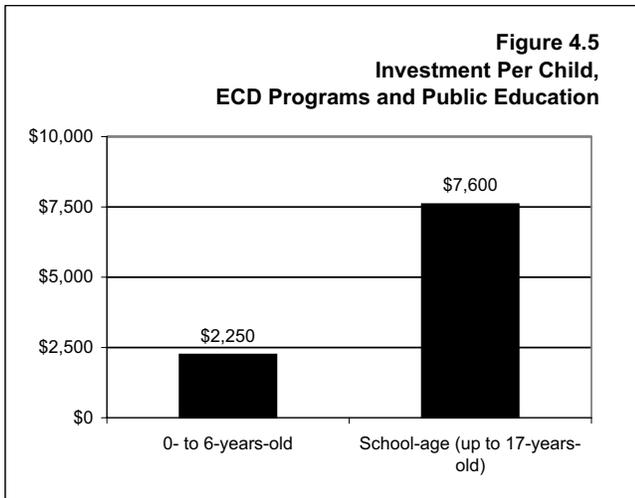
3. Build bridges between child care and Kindergarten education with the aim of integrating early childhood programs at ground level and at policy and management levels.
4. Effectively fund a universal early childhood system for 1- to 6-year-old children, delivered by a mix of public and community providers, governed by local public authorities. Substantially increase public funding of services for young children, ensuring the creation of a transparent and accountable funding system, and affordable access for parents.

**4. Quebec: A Stand-Alone Example**

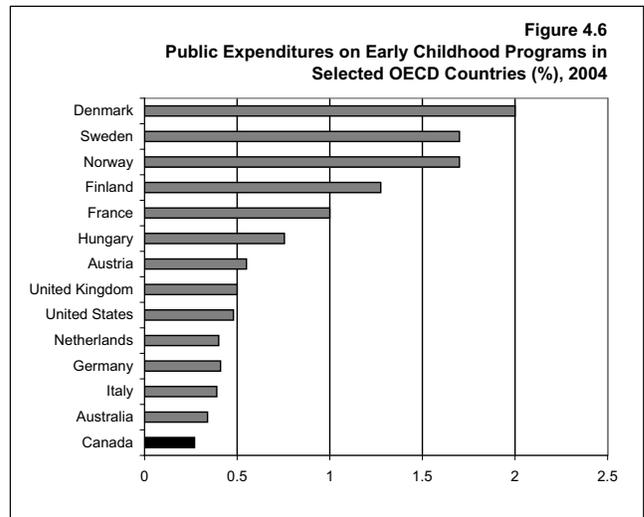
Quebec’s early childhood system is unique in Canada. In 1997, Quebec revised its family policy away from sizeable payments to parents on the birth of children, to a multi-pronged approach: maternity/parental leave for employed and self-employed parents covering up to 75% of salary (instituted in 2005); a progressive child allowance; and low-cost child care.

**Maternity and Parental Leave**

Quebec’s parental benefits include self-employed parents and provide higher levels of income replacements. Parents have two payment options: 70% of



(Statistics Canada, 2006) Despite Canada’s increased investment in early childhood programs, expenditures are far less for children under 6 years of age.



(Adapted from OECD, 2006) Canada’s investment in early child development lags behind every other industrialized country.

their average weekly earnings for the first 25 weeks and 55% of their earnings for the remaining 25 weeks; or 75% of average weekly earnings for a maximum of 40 weeks. The earning threshold is \$52,500, compared to \$39,000 under the federal EI program, making maximum payments in Quebec \$757 a week against the \$413 maximum elsewhere. Current EI eligibility criteria for benefits are based on working a minimum of 600 hours in the previous 52 weeks. Under Quebec's plan, eligibility is determined by minimum gross annual earnings of \$2,000. Unlike the federal EI program, there is no waiting period for benefits. Quebec is the only jurisdiction in Canada that designates a period for the parent who did not give birth (5 weeks). The intention is to encourage fathers to become active participants in child rearing. The program has not operated long enough to evaluate its influence. It can be expected that the more generous eligibility and payment levels will encourage Quebec parents to spend more time at home with their new babies.

### *Network of Children's Centres*

Funding for its network of over 900 children's centres is also exclusive to Quebec. Programs receive 87% of their operating costs from government and parents pay a flat fee of \$7 per day (originally \$5). Children of parents on social assistance are entitled to free enrollment for 22.5 hours a week. The policy objectives are to facilitate a work-family balance, encourage the labour force participation of parents, particularly those on social assistance, and foster children's readiness for school. Fueled by high demand, the system has gone through a rapid expansion and now serves nearly 235,000 children in 178,000 spaces. Another 35,000 children are waiting for openings. The goal is 200,000 spaces by 2008. About 64% of young children were in regulated child care in 2004 compared to 10.8% in Ontario.

Ministry jurisdiction is divided by age groups. Children 0- to 4-years are the responsibility of the Ministry of the Family and are served by *Centres de la petite enfance*, or CPEs. Each CPE provides both group and family child care for up to 300 families. The majority of programs (80%) are operated by parent boards (at least 2/3 must be parent users). A

new government elected in 2003 included for-profit operators in its expansion plans. At age five children begin school full time. When 12 or more parents request it, the education ministry requires school boards to provide out-of-school programs. Quebec has taken steps to improve program quality by establishing curriculum expectations and by raising staff qualifications, wages, and benefits. For-profit programs operate under the old guidelines.

### *Challenges to Quebec's System Building*

Child care services are being restructured. Parent fees have been raised by \$2 a day, \$40 million was cut from the \$1.3 billion child care budget, centres are not allowed to build up reserve funds and a preference is being shown for commercial centres and family child care. In addition to labour strife, Quebec's children's network is now showing other signs of stress.

#### **IGNORING INVESTMENTS IN EARLY CHILDHOOD INEFFICIENT**

This allocation of costs across the different stages of human capital development does not appear to match terribly well with the allocation of public and private benefits. The evidence seems to show that the greatest "externalities", i.e. public benefits, come from ECD and the early years of schooling. . . . we as a society have progressively increased public funding for secondary schooling, and similarly for PSE . . . , while largely leaving it to families to bear the cost of ECD. From an economist's perspective, this trend is inefficient. We would in fact achieve a more efficient allocation of resources by reducing the relative share of costs borne publicly for PSE and even secondary schooling, while increasing relative share of costs of ECD borne publicly.

*David Dodge, Bank of Canada*

*Speech to the Sparrow Lake Alliance, May 2003*

- » The original vision for CPEs included plans to forge links with health and social service centres (CLSCs) in local neighbourhoods. CLSCs provide direct health care, pre- and post-natal and family supports, and early identification and intervention programs. Except for isolated examples these links are not being made.
- » ECE college programs are under-enrolled, pointing to an ongoing staff recruitment challenge.
- » CPEs are posting deficits as parents default on fee payments.
- » Programs are refusing children with special needs because funding does not cover costs.
- » Quality is deteriorating. A study shows only a quarter of programs are meeting objectives. Quality is most problematic in for-profit centres, 27% of which were graded inadequate as opposed to 7% of non-profit centres<sup>29</sup>.
- » Children from low-income, working families are less likely to attend *any* kind of child care. There is also a significant quality gap; children from poorer families are more likely to be in for-profit programs (20% vs. 9% of children from more affluent families.<sup>30</sup>

The later problems are exacerbated by the service design. It is difficult to establish and maintain parent-run programs in low-income and transient communities. CPEs are refusing expansion funding, calling it inadequate to provide quality programming. Commercial programs are taking up the unallocated dollars. There are plans for another type of family care provider, individually licensed and self-regulated, who will operate outside the support and monitoring of the CPEs.

Child outcome data are not yet available; however the program has proven to be cost-effective and is credited with decreasing family poverty and enhancing gender equality.

- » Quebec's maternal labour force participation has gone from below the national average to above.<sup>31</sup> The income of working mothers working has led to a decline in economically vulnerable families.
- » Tax revenues from maternal income now cover 40% of the cost of the child care program, and is expected to rise to 50% within 5 years.<sup>32</sup>

## 5. Other Jurisdictions

### 5.1 Cuba: Prioritizing Mothers and Children

Cuba was the first nation in the Western Hemisphere to implement maternity leave, providing 12 fully-paid weeks in 1963. Pregnant women now receive 18 weeks at full pay, plus an additional 40 weeks at 60% pay while their job is held. The country's Maternal Child Health Program lowered infant mortality to 5.8 per 1,000 live births in 2004, a record low for the region (Canada's infant mortality rate is 5.1/1000 live births).<sup>33</sup> There is an explicit continuum of care for pregnant women and babies, including regular consultation with health teams. Prenatal nutrition is prioritized by pre- and post-natal health care which is universally delivered through community clinics.

Cuba's tradition of prioritizing limited resources to child/maternal health can be found in its early childhood services. Despite its developing nation status, most Cuban preschoolers have access to a group program, including:

- » Full day programs for children 1- to 5-years-old (previously from 6-months) to support working parents. Teachers have university-level qualifications. About 1/3 of pre-schoolers attend.
- » Kindergarten for 5-year-olds provides a transition to formal schooling.
- » Programs for younger children include home-visits for children from 0- to 2-years and unique "park preschools". Developed with the support of UNESCO these are resourced but non-formal play groups for children aged 2- to 4-years and their parents.

### 5.2 Chile: Challenged by Education Privatization

Chile is an example of political will battling regressive institutions. President Michelle Bachelet (2006) announced a comprehensive five-year plan for early childhood development, beginning with the provision of publicly-funded health clinics for young children and expectant mothers; universal Kindergarten for children 4- to 5-years; guaranteed child care for the bottom 40% of families; and intervention programs for children with disabilities or those vulnerable to socio-economic risk<sup>34</sup>. Still in its infancy, the program

is challenged by the legacy of dictatorship and the imposed economic restructuring of developing countries during the 1980s. Education was privatized, leaving Chile with a tripartite system which offers excellent private schools for 8% of students, subsidised private schools for another 42%, and underfunded municipal programs for the remaining 50%. Not surprisingly the poorest neighbourhoods have the worse schools and fewest options. Scandals regularly reveal operators who falsify enrolment to get more money, charge illegally for materials, and advertise non-existent facilities<sup>35</sup>. Building a quality child development system attached to a dysfunctional educational structure will be challenging. Taking back state control of education would require a constitutional amendment.

### **5.3 United Kingdom: Rapid Expansion Overwhelms Communities**

Sure Start<sup>36</sup> was established in 1999 as part of the government's commitment to reduce child poverty. It is targeted to disadvantaged communities to provide family support, advice on children's development, health services, and early learning opportunities for children. They operate alongside other early childhood initiatives, including a new child care strategy, and existing universal preschools for 3-year-olds offered by school districts.

Sure Start evaluations highlighted three key characteristics:<sup>37</sup>

- » Reaching families, particularly hard-to-reach families, requires sustained efforts. Flexible child care options helped.
- » A shared vision and clarity of purpose in what partnerships were meant to accomplish was key.
- » A new delivery model for integrated early childhood programs is emerging in some of Sure Start Local Programs - particularly where there was a strong and skilled program manager and an integrated strategy of outreach and centre-based services.

To date, the impact of Sure Start on child and family outcomes is mixed.<sup>38</sup> Participation in Sure Start programs seems to improve the quality of parents' interactions with their children, particularly in moderately disadvantaged families as compared to

more disadvantaged families. In other words, families with relatively higher levels of human capital seem to be better able to take advantage and benefit from Sure Start activities. Sure Start Local Programs that successfully instituted a holistic, integrated approach reported better child and family outcomes. Sure Start research is compatible with other evaluations finding targeted programs less effective than integrated, universal strategies that provide special outreach to disadvantaged families.

### **5.4 Sweden: Changing Governance**

In 1998, state responsibility of Sweden's child care services was moved from the Ministry of Health and Social Affairs to the Ministry of Education and Science to promote better partnerships between early childhood programs and primary schools. The new administrative structure has not altered the Swedish approach to early childhood programming. Compulsory schooling in Sweden does not begin until children are 7-years-old. At age-six children have a 'transition' or preparatory school-readiness year, but pedagogy for children under five-years focuses on play-based learning and social and emotional development. The 'schoolification' of early childhood seen in North America is soundly rejected by the Swedes, yet Swedish youngsters have high rates of school completion, and adult literacy ranks among the top in the world.<sup>39</sup>

The country is also re-examining program access and quality. As part of its labour market goals, preferred enrolment in early childhood and after-school programs is given to the children of working parents, limiting access of the most vulnerable children (those whose parents are unemployed or unemployable, new immigrants, etc). Steps to address inequities include a half-day, free program for new immigrant and refugee children (who now comprise 18% of the population) and universal full day programs for four- and five-year-olds.

Municipal control over program spending and monitoring has led to variations in quality and access. This is particularly true during economic downturns when program rationalization tends to penalize vulnerable and less civically-engaged families. The education ministry is now negotiating with municipi-

policies to develop more consistency in service provision, curriculum, and staffing standards.

Sweden spends about 2% of its GDP on early childhood programs. Services are complemented by generous family benefits, Sweden's child poverty rate is 2.4%, the lowest in OECD countries. Parental leave is flexible and pays 80% of earnings for a year, plus an additional 90 days at 60%.

## 6. Conclusions

While interest in early childhood development has produced more public spending on programs, there is little accountability for the funding, and, with a few exceptions, little progress has been made in pulling the service strands together into a coherent system.

Early childhood policy is a complex field. While primarily concerned with the development and care of young children, early childhood programs are also linked to: women's employment and equality of opportunity; child and family poverty; social cohesion; labour market quality and supply; children's health; and social welfare. In addition to supply and equity of access, policymakers must support program quality while considering the impact on related initiatives, including taxation and child benefits, parental leave, and measures to promote work-family balance. These policy challenges are not an excuse for inaction. Canada has fallen seriously behind other OECD countries who are taking steps to support early childhood development.

Child benefits, family leave and early childhood programs are the three prongs of a sound family policy. Canada has made relative progress on the first two. What is missing is the policy framework for an early childhood system outlining a common vision, consistent goals, and clearly-defined roles and responsibilities for governments and communities.

## NOTES

- <sup>1</sup> Beach & Bertrand, 2000
- <sup>2</sup> Bushnik, 2006
- <sup>3</sup> Friendly & Beach, 2005
- <sup>4</sup> Friendly & Beach, 2005
- <sup>5</sup> Doherty, 1999
- <sup>6</sup> Friendly & Beach, 2005
- <sup>7</sup> Family Resource Programs Canada, 2005
- <sup>8</sup> Irwin, 1995, p. vii
- <sup>9</sup> Public Health Agency of Canada, 2002
- <sup>10</sup> Canadian Council on Social Development, 2006
- <sup>11</sup> Marshall, 2003
- <sup>12</sup> Canada Employment Insurance Commission, 2005
- <sup>13</sup> Canada Employment Insurance Commission, 2005
- <sup>14</sup> Government of Canada, 2005
- <sup>15</sup> Government of Canada, 2005
- <sup>16</sup> Battle et al, 2006
- <sup>17</sup> Quebec receives funding from F/P/T initiatives but is not required to sign onto or agree to the guidelines. F/P/T agreements also note the special status of aboriginal peoples to develop appropriate programs to address their needs.
- <sup>18</sup> Friendly & Beach, 2005
- <sup>19</sup> Friendly & Beach, 2005, p. 207; Anderson, 2005; Kershaw, 2007
- <sup>20</sup> McCain & Mustard 1999
- <sup>21</sup> Atkinson Charitable Foundation, 2004
- <sup>22</sup> Mayer & Fahreen, 2006.
- <sup>23</sup> The four Nordic countries, Iceland, New Zealand, Slovenia, Spain and the United Kingdom.
- <sup>24</sup> OECD, 2004 p. 7
- <sup>25</sup> Penn et al, 2004
- <sup>26</sup> Leonhardt, 2006
- <sup>27</sup> PEI, has a non-permanent committee of 7 cabinet members.
- <sup>28</sup> OECD, 2006, p. 303
- <sup>29</sup> Jappel & Tremblay, 2005
- <sup>30</sup> ibid
- <sup>31</sup> Roy, 2006
- <sup>32</sup> Baker, Gruber, & Milligan, 2006
- <sup>33</sup> Health Canada, 2003
- <sup>34</sup> Bachelet, 2006
- <sup>35</sup> Scott, 2006
- <sup>36</sup> Halfron et al, 2003; Ministry for Children, Young People and Families, 2004; Tunstill, Allnock, Meadows, McLeod, 2002
- <sup>37</sup> Sure Start Research Team, 2005a
- <sup>38</sup> Sure Start Research Team, 2005b
- <sup>39</sup> OECD, 2005

# CHAPTER FIVE

## THINKING BIG... STARTING SMALL

The *Early Years Study* by Margaret McCain and Fraser Mustard not only electrified scientists working in the area of early child development, it became a tool and motivator for communities to take action on behalf of their children and families.

The study documented how a mobilized community and a collaborative network of programs can make all the difference in the lives of families. Community efforts gathered in this chapter provide a powerful story that can be told by people throughout Canada, whether in Niagara, Cape Breton, or Prince Albert, or around the world.

Mothers receiving social assistance have acquired the skills and confidence to lead parent school councils into new alliances. Grandparents have become the supporting backbone and welcomed volunteers in early child development programs. Business people have lent their expertise to kick start innovative community projects. Foundations have identified early child development as a priority funding area. Community agencies have committed their brightest staff and significant resources to develop and showcase model programs. These each provide excellent examples of leadership, not from authority, but from the ability of communities to adapt to a challenge.

In the preparation of the first *Early Years Study*, the co-chairs and reference group visited 14 communities across Ontario. The *Early Years Study 2* turns to the communities that Fraser Mustard has visited in the intervening years and to the experiences of the Council's Community Fellows.

The eleven inaugural Community Fellows of the Council for Early Child Development are leaders in community development (see **Appendix B - Fellows**). Their initiatives are found in diverse regions of Canada. As they work to integrate various service streams and bureaucracies and forge new partnerships with the business, philanthropic, and nonprofit sectors, the Community Fellows are challenged to function simultaneously as change agents, innovators, social marketers, evaluators, economists, early childhood advocates, and policy experts. The Council's Community Fellows' Program is designed to build these capacities.

This chapter synthesizes the cumulative information and advice from the experiences of the Community Fellows and from Dr. Mustard's work with the Council's six strategic actions that inform the recommendations in Chapter Seven of this report.

The motto is to think big about early child development as the first tier of human development and start small in local communities to establish sustainable change.

The following story illustrates the big impact from small changes.

### **A Best Start School/Community Partnership**

Our Early Years Centre began in 2005 with a request to schools to declare surplus space suitable for an after-school or preschool program. Holy Name of Jesus School had two empty classrooms; who would have known those unused areas could be transformed into a luxurious children's centre. Chosen as a *Best Start!* demonstration site, the centre now offers a parent/child program for families with infants and preschoolers; after school activities; a full day program for children whose parents are in the workforce and a free half day 'Kindergarten readiness' program for 3 year olds. The centre has brought many added opportunities for the school community. Additional found space now houses a beautiful, fully-equipped nutrition room hosting a breakfast club and youth cooking classes where parent volunteers join students from Grades 6 to 8 to teach safety in the kitchen while emphasizing healthy eating alternatives.

The centre has become a meeting place for parents to access information and resources and to build their own social networks. I personally benefit; I now regularly see my nieces and their children who participate. The feedback has been overwhelmingly positive. Parents appreciate the staff's homework support in the after school program, allowing for more quality family time on school nights. The architect who designed the facility was an immigrant to Canada. She confided that it was through an early years' program that she received the support, encouragement and friendships she needed.

We at Holy Name of Jesus School are looking forward to the untapped opportunities that will unfold as we outreach to families in our commu-

nity. The partnerships have begun and will continue to flourish.

— *Jenny Frappa, Principal of Holy Name of Jesus Catholic School*

## **1. Leadership and Vision**

The experience of the Community Fellows tells us that service integration needs to be framed, not as just an early childhood issue, but as an issue that relates to health and well-being across the life course. Also, it is helpful to link community activities with academic evaluations and expertise, which can provide vision, leadership, and prestige to community-based efforts. Visibility at multiple levels is important for building the constituency required to achieve local buy-in and sustainability from the beginning of the initiative.

### **In the Words of a Fellow ...**

My role as a Fellow has been an integral part of the development of Best Start in Hamilton, indistinguishable to some degree from our growth as a community. Initially as co-chair of the Network and lead for primary care engagement, I have brought the evidence of the importance of the early years and how 'experience gets under the skin'; urged thinking of 'dose effect' and the quality of evidence for programs and not focusing solely on issues such as the number of visits. The Network is supporting the development of champions in the community, in education and child care who can take the message, as respected colleagues, to their groups to effect change. The breadth of the network is demonstrated by our chair, Paul Johnson, the director of an agency for the homeless which believes that to obliterate homelessness we must improve the conditions of early childhood.

— *Dr. Jean Clinton, Hamilton, ON.*

### **Local Government as a Community Leader**

Kamloops, British Columbia Mayor Terry Lake recognizes the problem of child care funding—and resulting lack of child care spaces—isn't one

that just affects parents, business is hurting too. In June 2006, Kamloops Council sent a letter to Ottawa asking the federal government to live up to the child-care agreement it signed with the province. That hasn't happened, and as a result Kamloops will see the closure of its child care resource office. Lake said with the province facing a large surplus, he'd like to see Victoria fill the funding gap. Kamloops Council agreed and will be contacting the appropriate provincial officials. In addition, it is getting back to Ottawa with an accounting of the fallout from killing the child care agreement. Council is also taking a proposal to the Kamloops Chamber of Commerce, asking that its members take advantage of pending tax credits available to businesses and organizations to create new child care spaces.

## 1.2 Leveraging Change

Inspired by Fraser Mustard's work with the World Bank, financier George Soros committed \$100 million to early childhood programs in Eastern Europe as a strategy to support democratic societies.

### Step-by-Step

The Soros preschools were established by the International Step by Step Association as models of integrated care for young children and their families, linking education, medical, and social services. But when it came time to turn over program operations, there was no one to accept responsibility. Community agencies did not exist and state education is still centralized, unstable, and politicized. Soros moved to establish NGOs to run the programs. This was a new concept for countries with no history of civil society. Twenty-seven of the 30 Step-by-Step programs are now operated by independent early childhood organizations trained in leadership, administration, governance, accountability, and public relations. The programs now exist not only as model of excellence in early child development, but as beacons for democratic advancement.<sup>2</sup>

## Toronto First Duty

Toronto First Duty was conceived at a roundtable convened by the Atkinson Charitable Foundation in 1999. The gathering responded to developments surrounding the release of new federal funding to the provinces and territories for early childhood services. In many jurisdictions, particularly in Ontario, the money was scattered across targeted programs with little impact or accountability. Motivated by the main recommendation of the *Early Years Study* to consolidate existing community services for children and families as the base for a system of early learning, care, and parenting programs Atkinson launched its *Million Dollar Challenge*. The call to put the vision into action was answered by the children's advocate for Toronto City Council. During a time when Council was reducing funding to other programs, Councillor Olivia Chow secured \$3 million to add to Atkinson's contribution. The Toronto District School Board and key community agencies join in, and Toronto First Duty was born.<sup>3</sup>

## 1.3 Political Leadership Makes a Difference

In 2006, Manitoba Minister Tim Sale, founding Chair of the Healthy Child Committee of Cabinet and enthusiastic proponent of the "organic" structure of parent-child coalitions was given the *Exceptional Contribution to Early Childhood Development* medal by the Centre of Excellence for Early Childhood Development.

The commendable progress that has been made in the ECD initiative in Manitoba is a tribute to the commitment of the provincial government and the energy and effort of our various communities. The mutually supportive and respectful partnership that has evolved among all parties has resulted in the establishment of a strong network of supports and services for the children and families of our province. What we need now, to further realize the capacity of our future citizens, and thus benefit our entire society, is the involvement, support and leadership of those outside the immediate ECD community e.g. the business and corporate community. The strength they can lend to the ECD efforts in our province could lead to

the establishment of structures that will guarantee that “no child is left behind.”

— *Reddy Strini, retired educator and chair of the ECD Advisory Committee*

## 2. Building Social Capital

What is perhaps most striking about the emergence of a “community building approach” is how each site views their initiative as a new frontier. As pioneers of this new frontier, communities simultaneously recognized that to achieve the desired outcomes it is important to link the building of human capital with the building of social capital. Therefore, the ‘theories of change’ that are emerging are focused on community-level factors like the levels of ‘collective efficacy’ and ‘social cohesion’ that also must be developed and sustained as important components of any new initiative that is considered, planned, and implemented.

As each initiative shares its community building perspectives, it appears the goals are being framed more broadly than improved service delivery for improved outcomes. The very task of community building, which attempts to integrate bottom-up and top-down approaches and utilizes both formal program and informal associations and relationships, enhances the assets available to all community members. Such efforts will help to build a continuum of services and relationships, and will strengthen the fabric of a particular community that can span generations.

### *Connecting Within and Among Communities in Manitoba*

Following the release of the *Early Years Study*, Fraser Mustard visited Manitoba, delivering the compelling findings of early brain research. That momentous visit led to the creation of Healthy Child Manitoba (HCM), a province-wide strategy to support positive parenting, improve children’s nutrition and physical health, promote literacy and learning, and build community capacity. Activities are carried out through 26 regional and cultural parent-child coalitions comprised of parents, school divisions, the early

childhood community, health professionals, and other social service agencies. Each coalition plans its activities based on local assets and needs, determined through community consultation. Province-wide data from the Early Development Instrument (EDI) is used by coalitions in their planning processes. Don Walmsley is chair of the North Assiniboine Coalition:

The coalition has proven to be a good vehicle to springboard other initiatives including pre-school speech service and children’s therapy. The addition of a resource coordinator has enabled some interesting, sustainable services to families, including a regular newsletter and Mother Goose and Rock and Read programs. Partnerships among agencies have brought new shared resources. In addition, the coalition has successfully secured grants both for new programs and to allow existing programs to try new initiatives. The impact has been positive. The challenge is to find and sustain a broad representation at the table and I believe it will continue to challenge us in the future.

Dr. Mustard’s work in British Columbia also sparked new initiatives.

### **Cross-sectoral community coalitions in British Columbia**

Every community in British Columbia has established intersectoral community coalitions that involve not only the ECD community, but also representatives of multiple related agencies, such as schools, health, social services, municipal services, and business. EDI data allows the coalition to analyze local needs and plan collaboratively for re-allocation of resources and to advocate for new resources and programs.

These efforts have generated hundreds of grassroots, school, and community-driven, early-childhood projects. Health, social services, and other community agencies are centralizing services in schools and other sites with a view to providing integrated services for families. Preschools and other child support services are now invited into public schools with a view to

integrating with school services, maximizing the use of facilities, improving the transition between age levels, and preventing the closure of neighbourhood schools. Community foundations have been established to provide ongoing community-raised funding targeted to meeting emerging ECD needs. Hundreds of simple but creative projects are thriving—such as Qualicum’s travelling literacy bus that boasts a staff of volunteer seniors who coach parents and read to children.

In some communities, projects are systemic and are now a part of the fabric of rich, coherent, and integrated community offerings. In other communities, coalitions and individual agencies are in the early stages of development and are choosing to sponsor pilot projects in a careful, methodical way. Evidence of successful interventions has already been documented.

— *Janet Mort, British Columbia*

Community networks promote the sharing of program innovation.

Our Healthy Lifestyles Committee prioritized obesity and type 2 diabetes among young children. There are limited opportunities for parents and caregivers of preschool children in the downtown area to participate in physical activity. The response was “Wiggle, Giggle & Munch,” a physical activity and nutrition program for preschoolers and their parents that can be delivered in different sites, to different groups of parents/caregivers, and in different formats. The coalition developed a ‘how-to’ booklet and leadership training to encourage other agencies, and church and community organizations to offer the program. Our experiences have been shared with the Healthy Children, Healthy Futures Task Force.

— *The Downtown Coalition in Winnipeg, Communities 4 Families*

## **2.1 Parents Need to be Included, in the Program and on Coalitions**

Early child development programs focus primarily on the development and well-being of children. The involvement and support of parents and families in the program is an element of quality that maximizes the children’s experiences. There is reciprocity to parent involvement in their children’s early learning. Educating parents not only benefits them and their children, but it is one of the most effective means of raising awareness and increasing public understanding of early childhood programs when they share what they learn with other parents.

The St. David’s Centre in Hamilton offers an extensive parent library, including literacy kits for the parents to borrow for home use. Parents can also become involved at the planning and decision-making level and their role on the Advisory Board and soon-to-be convened Community Advisory Board is essential for ensuring consistent attention to parents, as well as, local needs. Along with staff, the parents review a quarterly parent survey which informs program improvement and direction. The parents’ comments say it all:

*I am amazed at the amount of development that occurs in the first five years of life. Thank you for educating us, the parents.*

*Thank you for providing my child with the tools required to enter and succeed in JK.*

*The Centre is much appreciated as we have no neighbours or family with young children. This is our best resource to socialize with other kids. Thank you.*

*Thank you for providing programs to teach me about: non-verbal communication, nutrition, reading, and positive reinforcement. I really like that there is a place where my son and I can go instead of always watching Treehouse on TV.*

There is also a need for leadership training and mentoring to ensure that parents and other community members have the skills and capacity to participate in the work of planning and decision-making. This will also require developing a common vocabulary and mutual respect with parents and other community members.

Capacity building is the foundation for the Central Region's work. Agency leaders working with parent organizers build capacity within the community and provide a network of support, knowledge, and expertise. The Elm Creek Early Years Committee is an example of this new approach. In 2002, a small group applied to the regional coalition for funding to offer one Mother Goose and one Rock and Read program. They also approached Prairie Rose School Division for funding. Working with coalition partners they completed their application and fulfilled their reporting requirements. The experience gave them the confidence to take on building a child care centre and the contacts to start their own early years committee.

— *Kathy Wightman*, Healthy Child Coalition,  
*Manitoba Central Region*

### ***Organize for Outreach to Families***

It is important to focus on existing settings where families and community members go to receive various services. This includes making even small changes in how they operate, which helps to jumpstart the process of change. This enables initiatives to bring services to young children and parents rather than waiting for families to track them down. Environmental scans and community utilization information can help identify where parents and children are and what they need.

“Getting It Right at 18 Months, Making it Right for a Lifetime” focuses on early identification of the child's developmental health needs and helping parents make the right connections to available community supports. The premise is the most effective way to help link parents with

young children to services and to other parents is to integrate child development information, developmental reviews and evaluations into the routine contacts that families already have with health, social service and education services. A pilot to test the approach is underway in Niagara Falls, Ontario.

The partnership includes a family health team, public health and preschool speech services. The nine physicians and three nurses see approximately two hundred 18 month old children per year. Rather than the standard 15 minute visit, a 40 minute session is scheduled. While in the waiting room, parents complete the Nipissing District Developmental Screen, an education tool that focuses the parent on their child's ability, development and strengths, and is a guide for conversation about the child and parent/child relationship. Doctors use the Rourke Tool, an evidence based infant/child health maintenance guide to facilitate assessment of child development. Physician-encouraged reading programs like “Reach out and Read” developed by the Boston Medical Centre are employed.<sup>4</sup>

Data is recorded and gathered by the regional public health department to determine a baseline for 18 month visits prior to the introduction of the assessment tools on a wider basis. Following the pilot the model will be refined for replication across the region and in other communities. The project was undertaken without funding from the province, yet it is informing experimentation with new delivery models. It is a classic demonstration of how starting small can make a big difference.

— *Anne Biscaro*, *Niagara Falls*

## **3. Building Professional Teams**

Early childhood development's connection to human capital development, health, and community organization challenges the natural and social sciences disciplines to work together in new ways. Inter-professional education acknowledges the need for both unique and common approaches to challenges. Collective problem solving changes the odds in

favour of successful outcomes by adopting proactive, rather than reactive approaches. Systemic change requires vision, mechanisms for communication, and support for front line staff to forge new ways of working. The process is not simple, but as collaborative understanding and action increases, the frustration of professionals and clients decreases. Inter professional collaboration simultaneously nurtures the development of human capital, the skills and knowledge of individuals, and social capital which is embodied in the enhanced relationships among people.

Professionals can let their personal biases and interests interfere with the coordination of services. Thus, it is important to build in incentives for people and organizations to act in a new way. Such incentives need not necessarily be financial, but would emphasize how integration can result in improved services and outcomes. There is also a need for meaningful opportunities for staff/user dialogue and the role of service users as agents of community change.

### **Professional Team-Building in Prince Albert, Saskatchewan**

The Human Services Integration Forum was established a decade ago at the assistant deputy minister level to enable their counterparts at the regional level, the Regional Intersectoral Committees (RIC), to meet client needs that went beyond the scope and capacity of single sectors. The RIC provides the infrastructure and guidance for Prince Albert's 'Understanding the Early Years' initiative and for a range of initiatives focused on children and youth in the region. This structure facilitated the development of an integrated human services practicum in Prince Albert, that allows nurses, pharmacists and family physicians to learn about the 'Circle of Care' in a range of settings including education, health, justice, social services, civic government, the community sector and in First Nations communities.

Students are encouraged to operate through a number of professional perspectives to build a collective determination of a person's condition and develop a holistic response. Their experi-

ences have reached outside the classroom to influence different practices in the field. Increasingly services are being wrapped around clients who are active participants in their care.

In 2006 a Community Summit gathered government and community representatives from the economic and social sectors. Two action plans emerged—one that could be enacted immediately without new resources and one that would evolve over time and require new investments. The focus was on youth targeting the issues of homelessness, addictions, and housing using four drivers—partnership development, coordination, communication and sustainable funding—with education as the mechanism to stimulate development.<sup>5</sup> The sectors and agencies within the community, along with the University of Saskatchewan, participate in the success of the program. Its lessons are shared in Paper 73 that can be found at [www.mcdowellfoundation.ca](http://www.mcdowellfoundation.ca).

— *Linda Nosbush, Prince Albert, Saskatchewan*

### **Supporting the Early Childhood Workforce in Manitoba**

A quality early childhood workforce is central to the success of any child development strategy. Manitoba has implemented a variety of training supports and initiatives. Public funding now ensures that two-year diploma trained early childhood educators (ECE) start their careers earning \$27,000 to \$30,000 a year. Further measures include:

- » Tuitions grants of up to \$4,000 a year for first-year ECE diploma students.
- » A college workplace training program pays for substitute teachers to enable staff in group and family settings to attend college two days per week and work three days a week while still receiving their full salary/payment.
- » A recruitment incentive grant of up to \$3,000 for ECEs with diplomas and degrees to return to child care.
- » An annual \$250 training grant for child care assistants (CCA) and family child care providers.

- » An expansion of competency-based assessment training (CBA) options, which provides an alternative to the formal education system. CBA programs allow child care staff to demonstrate competency in areas relevant to child care in order to acquire trained ECE status. This includes a new *Early Childhood Educator/Internationally Educated Qualifications Program*, which enables individuals with post-secondary education from other countries to work toward and achieve trained ECE status and to seek employment in Manitoba.

### **Professional Team-Building in Toronto**

At the Bruce/WoodGreen Early Learning Centre located in Bruce Public School in Toronto, the early childhood and parenting program is planned and delivered by a core teaching team of early childhood educators, Kindergarten teachers, parenting workers, and educational assistants using a common curriculum and shared resources and space. Integrated staffing allows a child/adult (teacher or ECE) ratio approximating the requirements of the province's child care legislation and is well below the 20 children/teacher cap proposed for children in Kindergarten. Team direction is jointly provided by the centre director and school principal. The partners support the teaching team in a variety of ways. Staff take part in one another's professional development. They access the expertise of the school board's early years department and superintendent. WoodGreen Community Centres provides resource teachers. The City's children's services department monitors quality. The nutrition program is operated by the school through the Foundation for Student Success. Toronto Public Health delivers additional parenting programs and early identification and referrals. The Child Development Institute offers social skills groups. Children with special needs and families requiring additional assistance are linked by the centre to the partner with the most appropriate extended programs.

## **4. Neighbourhood Schools a Community Base**

Community groups emphasize the importance of using existing resources and facilities rather than creating new ones. Schools are a public resource and should be used to their maximum potential for the benefit of the community. The school as the hub for early childhood services has additional advantages. It makes the transition to school easier for children, promotes collaboration among teachers and other early childhood professionals, and encourages parents' involvement in the schools.

### **Families Need Full-time, Full-Year Options**

All families need non-parental care for their young children but they don't want to choose between early child development and custodial child care. The concept is to establish programs that provide stimulating environments for children, at the same time as they support parents to participate in their children's early learning, earn a living, further their own education, care for other family members, or contribute to their community.

Public dialogue has shifted understanding of the connection between child development and care. In 1999 the *Early Years Study* reported on public polling that found the public equated the term 'child care' with child minding or looking after children. The term 'early childhood education' was associated with programs such as preschool or Kindergarten. Eight years later, polling reports that 70% of all respondents view child care as primarily a developmental program, rather than babysitting.

### **Toronto First Duty: Care and Development at the Centre**

TFD was premised on child care, with its full-time/full-year delivery as the core of an early childhood service system. From this foundation a full range of flexible child, parent/child, and specialized services are offered. Neighbourhood schools are chosen as the preferred site for early childhood and family centres. Schools are already established centres for children from 4-years-old through secondary school and with a new vision

and a few modifications they could become the neighbourhood focus for children and families from conception onwards.

### **Manitoba's Early Learning and Child Care in Schools Policy**

Early learning and child care services are the centerpiece of Manitoba's growing early child development system. The Manitoba government has led an innovative, inter-sectoral, evidence-based approach to ECD policy and program development through the Healthy Child Manitoba strategy that links child care to other community and government partners. The new policy is based on the knowledge that strong partnerships between schools and early learning and child care centres are important to promote early child development and commits to making schools the primary site for centres and establishes the criteria and process. Almost 40% of Manitoba's licensed child care facilities (full-time preschool, school age, and nursery school) are located in schools.

In partnership with communities, the province is working to ensure better access to universal programs. Over 6,600 more spaces have been funded since 1999 and a new policy for part-day nursery school has enabled more children to participate in quality programs prior to school. With the need for every elementary school in Manitoba to offer school age services, options that best reflect the needs of school age children will be explored. The province is also piloting a number of board governance projects to explore new ideas for organizing and supporting child care within communities.

## **5. Providing Evidence**

The process of gathering needed evidence about why coordinated services are important and what an effective integration process looks like is a key part of garnering support.

### **Documenting the Evidence at Toronto First Duty**

An extensive research component was attached to the Toronto First Duty demonstration sites. The project that blends child care, family support, and Kindergarten into one seamless program showed tangible benefits for the children involved, researchers found. There were significant improvements in vocabulary, number knowledge, and reading among children in the seamless setting. Another key finding was that Kindergarten teachers, early childhood educators, and parenting support staff worked well together in the integrated settings. Evaluations also found that parents spoke more to their child's Kindergarten teacher, and were more likely to help their children learn at home. The integrated programs were no more expensive to operate than traditional service delivery but offered better quality and more flexible access for parents.<sup>6</sup>

## **6. Supporting Communities: Breaking Down Service Silos**

Service collaboration is happening but it seems dependent on the personalities involved and the level of trust developed. Some communities have all sectors pulling together and sharing resources, while others are having trouble overcoming barriers that separate agencies and sectors/systems (for example, education, health, social services). But even the most collaborative efforts keep running up against systemic issues that are impossible for a single community to address.

Time and again, communities find inherent difficulties in having to work around the unique requirements of different programs or systems to integrate programs. Some develop an 'outlaw' consciousness where they will do what needs to be done and deal with whatever protocols have been broken later, or find the money from another funding source or category.

## **Taking Initiative: the Fisher River Cree Nation**

Federal consultations on integrating early childhood services for Aboriginal communities sparked the Fisher River Cree Nation's Sheila Murdock to take a plan to her band council. The elected leaders immediately saw the advantage of a single location for families to access all the available early childhood services. Murdock's proposal was timely; the band had federal funding to build an Aboriginal Head Start program. A flexible funding agreement with Indian and Northern Affairs Canada, along with a health transfer agreement meant there was leeway to reorganize resources. Knowing Ottawa could take years to act on its integration plans, Murdock thought, "why wait?"

With chief and council behind the proposal, she went out to mobilize community support. There was strong consensus to connect the child development centre to the school. To convince school officials, a gymnasium was added to share with the school's children.

Murdock says the 'hub' approach to offering early childhood services has helped to breakdown access barriers. For example, child care had only been available to parents who were working or in school. With the outreach program and the new centre "all young children in our community will benefit from participating in the early child development hub".

Murdock is proud of her community's achievement and shares the story with other First Nations communities. "In some ways," she notes, "we are ahead of the mainstream ECD sector in the province, which is now starting to show interest in piloting ECD hub models. We decided what was needed and didn't wait for governments to see what needs to be done."

## **7. Respect Differences**

Communities vary in their cultural, ethnic, and linguistic diversity. There are differences among rural and urban regions. Aboriginal communities demand that their young children be nurtured in the values and

languages of the First Nations. The linguistic and cultural integrity of the Francophone community, which has historic rights in this country, must also be assured. Small rural, remote and northern communities are looking for ways to meet the early learning and care needs of their children and their families.

There are differences, but what binds communities into nations and nations into countries are shared values. For many, it is the desire that all children have opportunities to be the best they can be. Whatever the dissimilarities between communities, the needs they identified to realize this goal are remarkably alike: quality child care for working and non working parents; drop-in play groups; parenting advice; recreation programs; toy and book lending sources; responsive and inclusive services for children with special needs; family supports in areas such as nutrition or mental health; and stronger links with health, education and social services families. What communities want is essentially the same.

### **An Inclusive Approach in Hamilton**

Kindergarten teachers and child care staff at the St. Helen's child development and parenting hub meet regularly to discuss the needs of a four-year-old child with autism. They want to develop and maintain a holistic approach to the child and his parents. Their consistency is paying dividends. The child's language, communicative intent, and behaviour have all dramatically improved. Very importantly, his mother has been encouraged to be an advocate, is supported to take a more proactive approach to her child's needs, and is delighting in his growth.

### **Francophone Early Childhood and Family Centres in Manitoba**

Early Childhood and Family Centres are designed to strengthen the linguistic and cultural dimensions of the minority francophone community in Manitoba. Located in schools of the *Division scolaire franco-manitobaine*, the programs integrate early learning, care, and parenting supports. Early screening and intervention assist the child before school entry, particularly with language development. The centres significantly

contribute to the concept of community schools. The school is open for all parents and children, not only those of school age. The Early Childhood and Family Centres reinforce the vitality of the Francophone community, offering more opportunities to live and speak in French. Children develop a sense of belonging to their language community from a very young age. Anglophone parents in mixed language families can benefit from programs and services that assist them in supporting their child in a Francophone context.

### **Working for Change in Rural, Remote, and Northern Communities**

Rural Voices is a virtual support network disseminating knowledge and best practices in early childhood education and care in rural, remote, and northern communities. The program operates with two volunteer co-managers, Community Fellow, Carol Gott and co-manager Jane Wilson, and is hosted by a community organization in rural Manitoba. Communities Achieving Responsive Services (CARS) was created to respond to the many requests Rural Voices receives to help the development of early learning and care supports in communities. The CARS process works by focusing on infrastructure changes that improve how organizations operate internally and/or with other organizations to create a service delivery model that blends supports and services for families in a defined geographic area. With funds from the federal Rural Secretariat's Models Program, CARS is being adapted for use by other communities.

## **8. Employers Can Support Early Child Development**

Employees are also parents, but few workplaces acknowledge this reality. Much can be done in the workplace to support parenting. There are employers who not only understand the importance of early child development for the workforce of tomorrow, but also understand that family-friendly policies create more loyal and productive employees today. They

should be encouraged to use their influence in the business community to create change.

## **9. Targeted Efforts Work Best Within Universal Programs**

Those who provide services for at-risk families walk a fine line. Families can be stigmatized and humiliated by singling them out for service, or they can be missed by offering a service to everyone that does not take into account barriers to participation for disadvantaged families. A small fee, a requirement of protective equipment, the 'right' shoes, or poor transportation can create obstacles some families can't surmount. Often, an agency's catchment area bars families from outside the neighbourhood from participating. Despite the advantages of mixed income neighbourhoods; a middle class community can be isolating to a family that can't participate in the offered activities.

Research indicates the most successful early years strategies provide service within a universal context. Programs implemented for all children with provisions to include those with special needs due to income, race, language or disability promote inclusion by providing equitable opportunity.

### **Supporting At-risk Families in Community Settings**

The Edmonton Early Intervention Program serves families with 0- to 3½- year-old children with delays in two or more areas. It has recently adopted an evidence-based best practice model based on the research of Dr. Carl Dunst. It involves a family-centered, strengths-based model offered in collaboration with community agencies in community settings (for example, public library, YMCA). Staff work with families to develop plans and goals achieved through focusing on the family and child's strengths. Specialized professionals consult with front line staff who in turn supports families to integrate the strategies into their daily activities. Families are encouraged to take part in community based play groups to help develop their social networks. Through this model families learn about develop-

## WHAT IS “SOCIAL CAPITAL”?

The central premise of social capital is that social networks have value. It refers to the Collective value of all “social networks” [who people know] and the inclinations that arise from these networks to do things for each other.

### HOW DOES SOCIAL CAPITAL WORK?

Social capital emphasizes not just warm and cuddly feelings, but a wide variety of specific benefits that flow from the trust, reciprocity, information, and cooperation associated with social networks. Social capital creates value for the people who are connected and - at least sometimes - for bystanders as well.

### SOCIAL CAPITAL WORKS THROUGH MULTIPLE CHANNELS:

- a. Information flows (e.g. learning about community services, jobs, public events, candidates for public office, developing and exchanging ideas in any venue, etc.) depend on social capital
- b. Norms of reciprocity (mutual aid) are dependent on social networks.
  - » Bonding networks that connect people you know, or know of – family, friends, members of the same congregation, club, workplace, school, agency, etc. sustain particularized (in-group) reciprocity.
  - » Bridging networks that connect individuals who are diverse (people you don't know, or have few opportunities of getting to know) sustain generalized reciprocity
- c. Collective action depends upon social networks (e.g., the role of parent councils in fighting school closures) although collective action also can foster new networks, such as the development of regional parent/child councils.
- d. Broader identities and solidarity are encouraged by social networks that help translate an “I” mentality into a “we” mentality.

### WHAT ARE SOME EXAMPLES OF SOCIAL CAPITAL?

Social capital in action is found wherever people voluntarily come together to share a common purpose and include support groups; sport or walking clubs; community theatre and gardens; churches; parent drop-ins; schools; bridge clubs; political parties; civic associations, and even bars. The motto in Cheers “where everybody knows your name” captures one important aspect of social capital.

### WHAT IS YOUR SOCIAL CAPITAL?

- » How many of your neighbors' first names do you know?
- » How often do you visit with friends or family?
- » Do you volunteer at your local school; help out senior citizens; fundraise for the women's shelter?
- » Do you trust your local police?
- » Do you buy from local merchants?
- » Do you know who your elected officials are?
- » Do you attend or participate in local cultural, sports or community events?
- » Do you sign petitions or attend neighborhood meetings?
- » Do you think you can make a difference?

Adapted from Robert D. Putnam (2000). *Bowling Alone: The Collapse and Revival of American Community*.

ment, integrate development promoting activities into their lives, increase positive engagement with their children, and increase their social and community connections. When considered in the larger community context this model demonstrates the elements necessary to create communities that support and inform parents and promote strong early childhood development.

### **Supporting Homeless Mothers and Children in Toronto**

Beatrice House is a program for women and children who are without permanent housing. What makes this program unique is its focus on early child development. It started from a simple question posed by Fraser Mustard; how to support children during period of intense family crisis? In addition to accommodation, Beatrice House provides early child development program for the children and counseling and access to education and job training for the mothers.

The early child development program is open to both residents and community members and strongly encourages parents to be involved in the programs as their schedule permits. Beatrice House has also built a close relationship with the local school to create the link between home and school and to support the transition of the family to the new school. The program's transformation to an integrated program serving both high needs families and the community was a slow and careful process. A key element of the transition was becoming part of a larger system—in this case the YWCA. This brought greater staff support, improved staff wages, and stronger program delivery expertise. In return, this greater support and stability improved program quality for the children.

### **10. Early Child Development Initiatives Must Include All Children, Including Those Who Are Living With Special Difficulties and Challenges**

More than 76,000<sup>7</sup> children spend some time in protective care each year across Canada. Most live in

foster homes. They are often disconnected from their communities and neighbourhoods, as well as their family environments. These children are often at the margins of early childhood programs, yet their need to belong and participate is clear. Some provinces are making changes to shorten the timeframe young children are left in limbo, but in the interim, a quality early child development program could begin to compensate for their challenged circumstances.

### **11. Innovation in Program Delivery Requires Investment**

Transforming existing programs—child care, family support programs, early intervention, family health programs, and Kindergarten—into community-based hubs is time-consuming. It requires change in staff roles and may require new skills. Time to develop relationships and protocols is essential. Funding support for transforming how programs are structured helps to build sustainability.

Existing mandates and government funding streams are typically not suited to innovation, but community leaders are. By starting small, this kind of leadership can demonstrate a new vision for governments.

#### **Peel Success By Six: Leading Innovation**

Success By 6 Peel is a collaboration of more than 45 partners in business, labour, education, recreation, health, social services, and government. It supports the community to support its families with young children through the integration of services. Initiatives include:

- » **Mobile units** is an initiative developed in response to the lack of services in high growth neighbourhoods. Mobile units staffed by qualified ECEs and parent educators bring resources, information and programs to families.
- » **Best Start** – through the Best Start Network it maximizes the use of limited new funds to promote the integration of child care, education, and parenting programs.
- » **Neighbourhood project** brings together Ontario Early Years Centres, Region of Peel

Children's Services, libraries, and health to provide programming in a school to facilitate school readiness.

## 12. Financial Incentives, Governance, and Accountability

Service integration depends on consideration of existing structures so that new efforts do not interfere with them, but rather, build on them and facilitate flexibility and coordination. It is important to ensure that sufficient resources and flexibility are actually moved to the community and to encourage and sustain engagement of communities in planning and implementation.

Bringing programs together has been made easier by a position created in the school division tasked with shining the spotlight on early childhood and community school partnerships. Our journey has been about creating a community of learners through which we have come to see our common goals and values. With that vision established the emphasis is on what participants can offer rather than on what they own. The challenge is a limited economic base in small rural communities for members to draw on. We have reached the limits of our ability to expand parent/child programming without new investments.

—Trish Ward, *Early Childhood Matters Coalition, River East and Transcona Coalitions, Manitoba*

## 13. Replicate Success

### From Toronto First Duty to Toronto's Best Start

TFD consolidates regulated child care, Kindergarten and family support programs into a single, accessible program delivery platform that is located in primary schools and coordinated with early intervention and family health services. The TFD design is now reflected in the Ontario government's Best Start strategy. It's core ele-

ments are incorporated into the *Toronto Vision for Children: Best Start Plan*.

The training and assessment tools developed for TFD are now in use by Best Start. The original partners, the City of Toronto and Toronto District School Boards, have been joined by the French and Catholic school boards, community agencies and Public Health to expand early childhood service integration and change the way programs are delivered throughout the region. TFD continues to inform the ongoing implementation of Best Start.

The original TFD demonstration sites are now under Toronto Best Start as models of integration and are being joined by other sites as integration leaders. The Bruce/WoodGreen Early Learning Centre continues to receive project funding to serve as a laboratory for Toronto Best Start. Its mandate is to showcase the 'year ten' vision of Best Start to track community outcomes, and to push further towards a fully integrated curriculum and program delivery model.

## 14. Conclusions

Communities have demonstrated their willingness to participate, learn, share, and innovate but they need more than opportunities to create a collective vision ; they need the mandate and resources to realize it. Senior governments are responsible for creating an infrastructure that promotes the sharing of best practices through professional training, research, data collection, and distribution of accessible information. They alone have the policy and financial levers to take up the best and most effective community models and promote replication.

### NOTES

<sup>1</sup> Ontario government early years plan. Described in Chapter four.

<sup>2</sup> Mayer, 2004

<sup>3</sup> Adapted from TFD Steering Committee, 2005

<sup>4</sup> Reach Out and Read, 2007

<sup>5</sup> Uniting to Heal, 2007

<sup>6</sup> Corter et al, 2006

<sup>7</sup> Centre of Excellence for Child Welfare, 2007

# CHAPTER SIX

## INVESTING IN EARLY CHILDHOOD DEVELOPMENT

The evidence is compelling and overwhelming: well-funded, integrated, child development and parenting programs improve the cognitive and social functioning of all children. If properly linked to labour, health, and social services, early childhood programs can deliver additional outcomes, such as enhanced maternal employment, less family poverty; better parenting skills and greater family and community cohesion. Quality early childhood programs are not only good for children and families, they are good for the bottom line. Focused public spending on young children provides returns that outstrip any other type of human capital investment.

This chapter documents why Canada should take the long overdue step to establish a national framework of early childhood programs. It describes the principles and features governing good quality service provision; provides a costing for a universal and comprehensive system and makes recommendations for actions.

### 1. A Life Jacket for Humanity

Economists, biologists, and social scientists agree early child development is a prime time investment opportunity for society. As economist, Jacques van der Gaag notes:

*Human development broadly defined, is the overarching objective of most international and multinational development programs. Because human development is so closely linked to early child development, investing in ECD is the natural starting point for these programs and for the public policy that frames these programs.<sup>1</sup>*

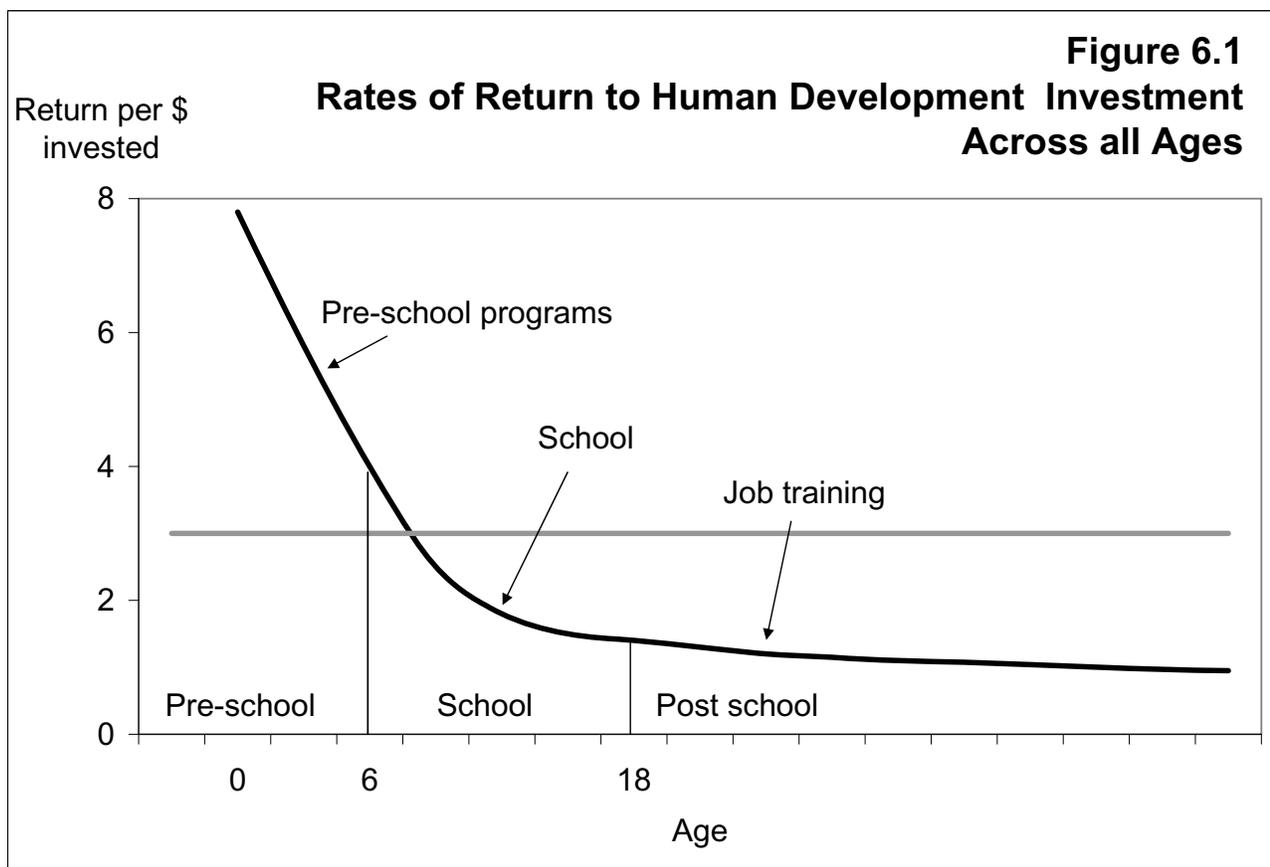
Canadian economists Cleveland and Krashinsky<sup>2</sup> maintain that an early childhood

A market approach to service provision has pitfalls. Early childhood programs provide universal benefits, but not all families can afford market costs. Some of the most disadvantaged children and those in remote and rural communities are often missed. A child can not be compensated for opportunities lost in a poor quality program.

system provides a public good, as important as public education. Like schools, early childhood programs contribute to the general health of children, further educational achievement and enhance labour market availability and stability and social cohesion. A market approach to service provision has pitfalls, they argue. Early childhood programs provide universal benefits, but not all families can afford market costs. Some of the most disadvantaged children and those in remote and rural communities are often missed. A poor quality program can not be returned or exchanged; therefore the child can not be compensated for the harm caused by an inadequate placement. Government involvement is necessary to provide equitable opportunities for all children and is justified by the fact that benefits delivered to society are greater than the costs.

Van der Gaag links the benefits of early childhood programs to human development to promote a population's health, educational attainment, social capital, and to promote equity.<sup>3</sup> Other scientists confirm his conclusions:

- » Early child development programs help to overcome socioeconomic disparities by leveling the playing field for all children before they enter primary school. Programs reach not only children but their families by allowing parents to develop their own productive skills in the workplace or by pursuing training or education.<sup>4</sup>
- » ECD programs reduce demand for remedial education interventions targeted to young school drop-outs or adults with poor basic skills. The latter are far more costly and, according to the research, of limited benefit.<sup>5</sup>



(Cunha et al., 2005)

A dollar invested in early childhood yields three times as much as for school-aged children and eight times as much for adult education.

- » The development of the brain in the early years is a key factor affecting risks of physical and mental health problems in adult life. Effective intervention in early childhood reduces risks and is therefore likely to improve the overall health of populations.<sup>6</sup>
- » Early childhood is an effective time to transmit the skills and values needed in an increasingly diverse and globalized world. It is in early childhood that a person's permanent view of society and learning are absorbed and the basic life skills acquired, such as co-operation with peers, autonomy, creativity, problem-solving and persistence.<sup>7</sup>
- » There is no other period in child rearing in which parents are so involved. Early childhood programs therefore provide a timely occasion to engage parents in their children's development and learning, a key factor in school success.

### 1.1 Return on Investment

The view that investments in early childhood programs are justified by the returns provided to society as a whole is supported by the research of James Heckman, a Nobel prize-winner in economics. His work with Flavio Cunha demonstrates that early childhood provides an unequalled period for the development of human capital. Heckman and Cunha present human development as a dynamic process that is ongoing throughout a lifetime.<sup>8</sup> Each stage of life underpins the next. **Figure 6.1** shows how investment in the foundation stage of early childhood is therefore of major importance.

They calculate that the return on investments in primary and secondary education is about 3:1 in contrast to at least 8:1 for early child development programs. (This does not factor the additional effects of early child development on physical and mental health in adult life.) The specific value of investing in early child development has been noted by other economists. Van der Gaag,<sup>9</sup> estimated every \$1 invested in early childhood programs, provides a minimum return to society of \$3 making early childhood a very effective time for investments. Savings are most pronounced for disadvantaged children.

Evaluations of targeted programs in the United States calculated an almost 17:1 return.<sup>10</sup> Cleveland and Krashinsky's cost-benefit analysis revealed a 2:1 return scaled up for the entire population.<sup>11</sup>

In one paper Heckman states:

*We cannot afford to postpone investing in children until they become adults nor can we wait until they reach school—a time when it may be too late to intervene.*<sup>13</sup>

#### EDUCATION SAVINGS FROM ECD INVESTMENTS

A New York study estimated the medium-term cost-savings from early childhood programs in reducing the incidence of special education, preventing grade repetition, and reducing teaching turnover and school vandalism. Overall, they found the benefits would offset 62% of the costs of a universal early childhood program through reduced education expenditures of \$828-million or a 2.8% reduction in the state school budget.<sup>12</sup>

Business joins experts in neuroscience, biology, population health, behavioural and social science in recommending universal education programs for young children:

*The principle of free education for school-age children is already entrenched throughout the rich world; there would be nothing incongruous about extending it further down the age range.*<sup>14</sup>

The evidence is overwhelming; the time for Canada to develop its own system of early child development and parenting programs is overdue.

## 2. Early Child Development and Parenting Centres

The best early child development interventions take place in comprehensive, integrated programs that combine nurturing and care, nutrition and stimulation. They focus on the whole child and involve families and communities. They begin early, preferably during pregnancy, and are sustained through primary school. Ludwig and Sawhill summed up the approach:<sup>15</sup>

- » Intervene early
- » Intervene often
- » Intervene effectively

### *Early Childhood Development and Parenting Centres*

Early child development and parenting centres are at the core of an integrated framework of activities and supports for the prenatal period and for children from birth to six-years and their families. The centres are key initiatives to create a new “tier” for the early period of development, before the public education “tier”. Their approach is both intergenerational and cross-cultural. Programs support the growth and development of parents; prepare the next generation for parenthood and enhance its ability to function as contributing members of society. They provide a meeting place for the families, setting the foundation for pluralistic societies.

### **2.1 Principles Governing Program Development**

The *Early Years Study* outlined the ingredients of a successful early childhood program.

- » Every child and family may attend. Programs are available, affordable, equitable, and optional.
- » Nurturing relationships, responsive interactions and purposeful play accelerate early learning and leverage opportunities during the early sensitive periods of brain development.
- » The parent/child relationship is the most powerful influence on children’s early development particularly in the first two years. Respectful, reciprocal partnerships with families and communities strengthen the ability of early childhood settings to meet the needs of young children.

## **A DAY IN AN EARLY CHILD DEVELOPMENT AND PARENTING CENTRE**

It’s 9:00 on Monday morning at the Early Child Development and Parenting Centre in Ferndale School in Saskatoon. A group of four-year-olds is busy building an extensive structure out of oversize blocks. Sophia was one of the first arrivals at the centre. Her dad dropped her off at 7:00 on his way to work. Sophia’s grandma will join her at 2:30 for story and music circle before taking her home. Morgan just arrived with his mom, Priscilla and baby sister, Pauline. Priscilla glances over at the group, while she sits on the couch enjoying a coffee and chatting with another mother. At her feet Pauline mouths a squishy book while watching one-year-old Timothy pull himself up on the cruising bar he uses to build his confidence while learning to walk. Mohammed usually doesn’t join his friends until the afternoon. His mom dropped him off early this morning so she could help her sister who just got out of hospital. Priscilla will take Pauline home for a nap after the public health nurse’s visit; she wonders if Pauline is fussy because she’s teething. Morgan will stay for lunch and more afternoon fun until his dad arrives at 5. Morgan loves it when his and Mohammed’s dad kick around the soccer ball with their friends. Before leaving dad will check in with Morgan’s teacher and review the home activity bag.

There are several other play rooms for young children in the school set up for different activities and age groups. Throughout the day, parents, caregivers, siblings—both younger and older—join the children and staff for stories, snacks, and games. Favourite visitors are the music lady, who can make an instrument out of anything; Mr. Bob and his five dogs; Mrs. Michaels who shows the children how to use grinding stones to make the flour for the best fry bread; and Jackie Flowers who was a short stop with the Montreal Expos.

The centre is a community gathering place. Its advisory committee includes parents, staff, and early childhood specialists from the school board and community. Above the door its mission is posted: “At every age children are capable learners; parents and teachers are co-learners, guides, and partners.”

- » Respect for diversity, equity, and inclusion are prerequisites for honouring children’s rights, optimal development and learning.
- » Early childhood programs are proactive: reaching into their communities to connect with families; disseminating the knowledge of early child development and the benefits of quality programs; connecting the early childhood environment to the community and acting as key advocates for children and families.

*Early learning revolves around relationships and children’s deepest relationships are with parents and other family members....Effective early childhood programs have specific goals to support and increase parent’s active participation in their children’s early learning. Most families welcome information about early development and how to extend learning opportunities at home.*  
 – Janette Pelletier<sup>16</sup>

## **2.2 Components of an Early Child Development and Parenting Centre**

**Problem-based Play:** Programs optimize development of neural pathways during all periods of early childhood from infancy to grade one. Environments that promote learning through play-based, problem-solving offer children an array of opportunities to explore, discover and create. Consistent play opportunities with other children provide rich sensory stimulation that the young child absorbs and integrates into core brain development. The curriculum and pedagogical approach promotes children’s active participation in environments designed to support problem-based play.

**Parenting:** The ability of parents and other family members to respond to and stimulate their children from birth builds the child’s core competency and coping abilities. Families need ‘just in time’ access to parenting and child development information and guidance from trusted sources. The participation of parents, other family members, and home caregivers is guided by the staff. Participation strengthens the involvement and engagement of parents in their own child’s early learning and development. In turn, they are able to transfer their understanding and knowledge to other parents and caregivers. Informal conversations, family events and structured sessions provide venues for information, specialized equipment, toys, and learning resources. Centres are linked to home visiting and home care satellites to extend their reach into the community and provide a platform for the delivery of early identification and intervention services.

**Full Year/Full Time Options:** Programs are designed to accommodate the different and changing needs of families. To enable all families to participate programs offer a flexible range of parent/child and child-only enrolment options, including part-time, full-time, occasional, and respite care. Flexible enrolment permits parents to pursue work, training, or the care of other family members and allows a smooth transition to work from parental leave for parent and child.

**Prenatal & Postnatal Supports:** Expecting and new parents benefit from child birth and child development information, group discussions, and workshops offered in accessible environments connect them to neighbourhood/community resources.

### **Child development professionals as researchers:**

Working as co-teachers, the teacher is first and foremost that of a learner alongside the children. The teacher is a teacher-researcher, a resource and guide as she/he lends expertise to children. Within such a teacher-researcher role, educators carefully listen, observe, and document children’s work and the growth of community in their classroom and are to provoke, co-construct, and stimulate thinking, and children’s collaboration with peers. Teachers are committed to reflection about their own teaching and learning.

*From Principles of Reggio Emilia*

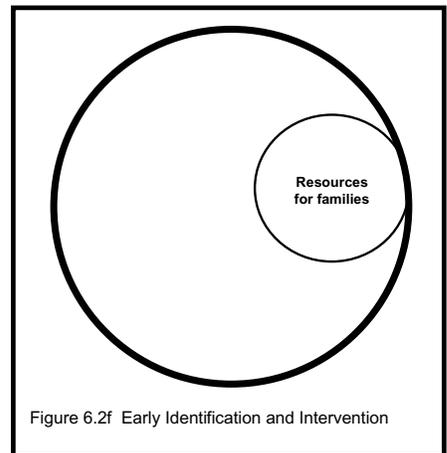
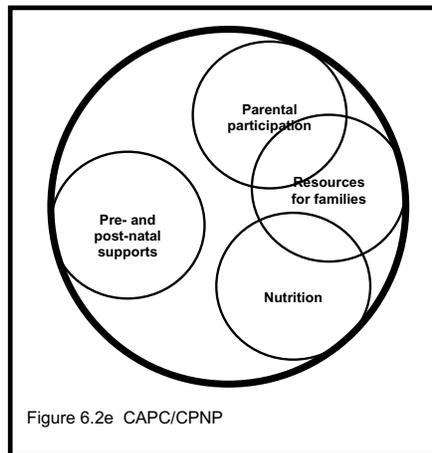
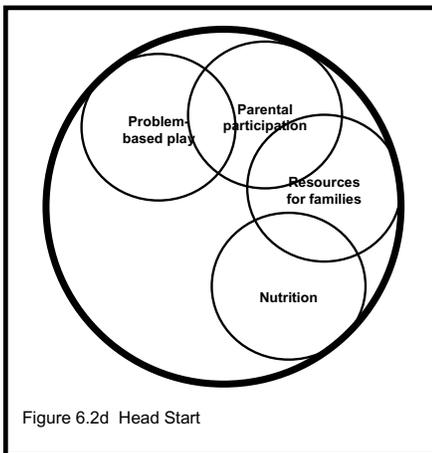
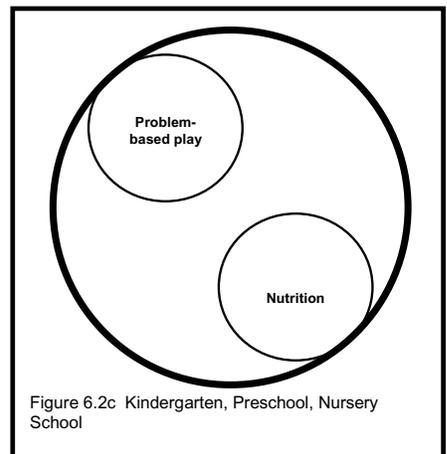
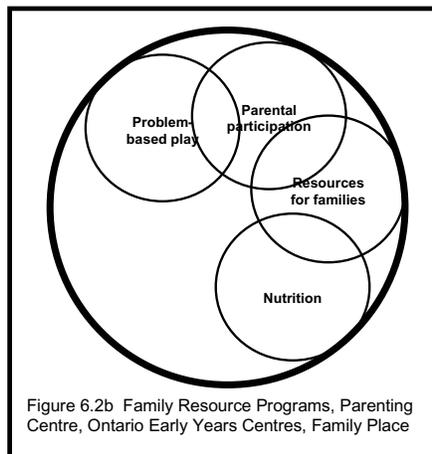
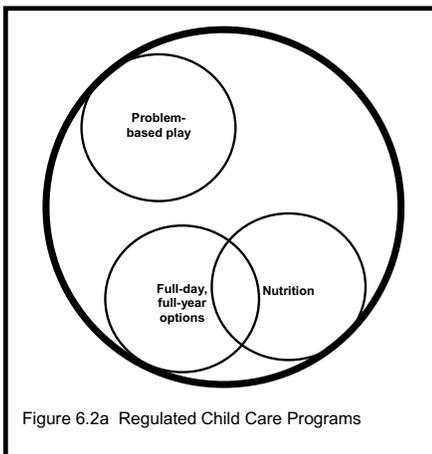
**Health, Safety and Nutrition:** Programs meet the highest health and safety standards and promote healthy behaviours in children and families. Optimal early child development begins with adequate nutrition from conception on. Prenatal programs can provide nutritional information and supplements (as necessary) to pregnant women and new parents. Food and cooking programs provide nutritious meals to children and demonstrate practices for children and parents to take home.

Figures 6.2a–6.2f show how current early childhood programs deliver some of the components of an early child development and parenting centre. Figure 6.3 illustrates an early child development and parenting centre that includes the functions and mandates of the current array of programs.

### 2.3 Design of a System of Early Child Development and Parenting Centres

Early child development and parenting centres are located in neighbourhoods, responsive to community needs and supported by a legislative and funding framework.

- » **Location:** Elementary schools are already centres for children; with a few modifications they can service children and families from pre-natal through to high school. Early childhood programs can be integrated into schools and serve as the hub for program delivery with other community spaces providing venues for overflow activities. In urban areas, most families should be able to walk to their centre. In rural and isolated areas, additional resources may be needed for transportation, and some program components may be delivered through home visits as part of a network of mobile vans.



- » **Early Childhood Professionals:** Knowledgeable, responsive early childhood professionals are essential to programs that are sensitive to the needs of young children and their families. Skilled staff are supported by pre- and in-service training in early child development and parenting supports; environments that encourage responsive, individualized attention to children and parents; and, compensations levels that reflect the value of the work. Existing ECE diploma and degree programs and primary school teacher education can be realigned to prepare an early childhood workforce and leadership to work in integrated settings. Specialized staff works in collaboration with child development professionals to meet the needs of vulnerable young children and their families. Professional early childhood teams jointly plan and deliver the program and link with early childhood or family support specialists as required.

*A planned program direction and specific learning goals for children and families are important. Quality early learning environments incorporate an informed understanding of what children are capable of learning and how they learn effectively. They have specific learning goals for children that support social competence, emotional maturity, attention, language, and thinking skills as well as the foundation knowledge and concepts needed for reading and understanding numbers.<sup>17</sup>*

- » **Local Authority:** An integrated local authority, including district school boards, public health

[I]t is important in my view that a government institution (or municipal institution) be given the mandate and authority to organize ECD with a clear performance criterion—and that is to raise readiness-to-learn scores for six-year-olds.  
- David Dodge, Bank of Canada

units and local governments, is mandated to oversee planning, monitoring and provide management. It is the mechanism that allows pooled program funding, joint staff and shared physical and program resources.

- » **Provincial/territorial Infrastructure:** A system of early child development centres requires adequate funding and a legislative framework that integrates existing responsibilities for child development and family supports services. Senior governments have responsibility for workforce development and can support quality through a research agenda and public accountability through data collection, monitoring and reporting.
- » **Funding:** Quality, sustainable programs require government funding. Public funding should cover the core operating costs, at least enough to ensure all children are entitled to a half day program and families provided with pre and post-natal and parent/child programming. Parents may be charged an affordable fee if their child attends beyond the half-day. To ensure equitable access fees are waived or reduced for low-income families.
- » **Measuring Progress:** Provincial population-based assessment, including birth outcomes, immunization rates, and EDI are essential to monitor local and provincial early child development performance. Systematic data collection and monitoring and a stable framework for research and evaluation provide accountability and supports quality.

### 3. Cost of a Universal Early Childhood System

*A substantial investment in early child development will be necessary if we are to improve the competence, health and well-being of our population.*

— Fraser Mustard

Expenditures on early childhood programs in OECD countries range from about 0.2% to 2% of GDP;

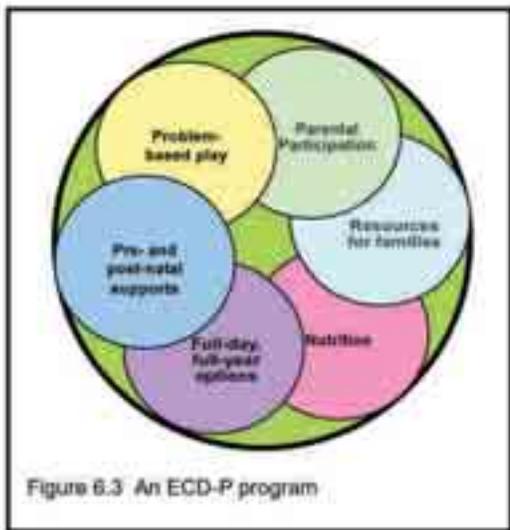


Figure 6.3 An ECD-P program

An Early Child Development and Parenting Centre combines the mandates and functions of current early childhood services into a single program, accessible to all families and children and with flexible participation options.

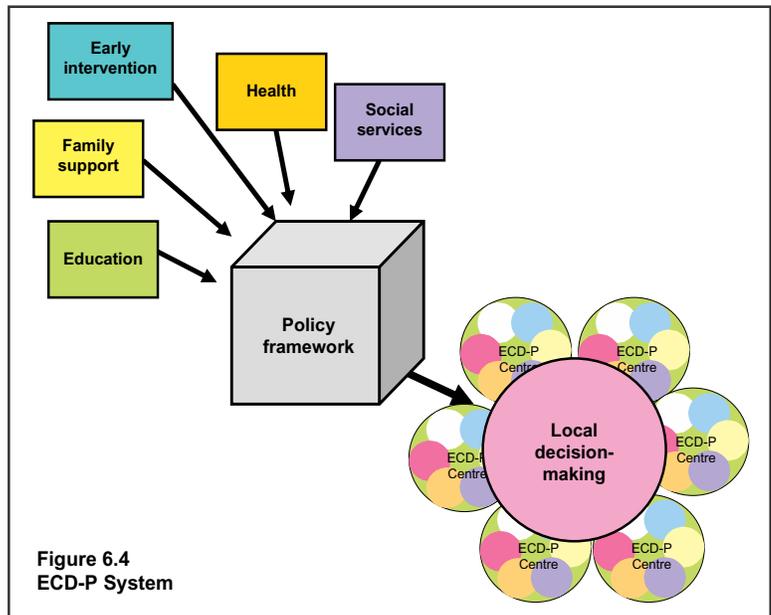


Figure 6.4 ECD-P System

**Design of a System of Early Child Development and Parenting Centres:** Ministerial responsibilities for early childhood are reflected in a single policy framework, which supports and directs the local planning and management of early childhood centres.

Canada is at the lowest end spending about 0.2%.<sup>18</sup> The European Union recommends its member states devote at least 1% of GDP to early childhood services. For Canada this represents about \$10 billion.

Financial projections and assumptions in the costing for a universal early childhood program are consistent with other costing, including those of the federal government<sup>19</sup> and an extensive cost benefit analysis study by Cleveland and Krashinsky.<sup>20</sup> Canadian governments now spend about \$4.5 billion on what are considered key components of the child development and parenting centres recommended in the *Early Years Study*.<sup>21</sup> About \$1.5 billion of this sum is the cost of kindergarten programs which is included in the ECD and parenting centre concept. There are approximately 2.06 million children aged 0- to 6-years in Canada. If spending in early childhood equalled the cost per child in primary school (\$7,600)<sup>22</sup>, about \$10 billion in new spending would be required. This is considered a reasonable, even modest, estimate. It includes improved workforce compensation and training. Based on current use patterns of kindergarten and family support programs, it is assumed that all families would attend regularly,

but not all would attend full time. Public costs could be reduced by financial contributions from parents who enrol their children for an extended day. Other estimates suggest parents directly contribute 20% of the total program costs.<sup>23</sup> To ensure equitable access, fees would be waived or reduced for low income families, with higher income earners paying a higher share.

Thus, new spending required to build a network of ECD and parenting centres, primarily based in schools, available for all families with young children, providing full- or part-time programming, would be about \$8 billion. Increases could be phased in over time but the benefits are likely to be realized quickly.<sup>24</sup> Costing analysis of Quebec children's centres, estimate 40-50% of the program is being recouped through the additional taxes paid by working mothers.<sup>25</sup> A steady decline in the rate of child poverty has reduced Quebec's income assistance costs.<sup>26</sup> A stricter accounting and more innovative use of resources available through federal/provincial agreements (Multilateral Framework, ECDI, NCB) are a ready source of expansion funds in some provinces; re-instituting funding earmarked for the fed-

eral/provincial early learning and child care agreements is another.

The private sector does not have primary responsibility for the creation and operation of early childhood services<sup>27</sup> but it does have a role. Philanthropic efforts have, and can continue to support innovation, research, and public education. Corporations contribute enormously by instituting family friendly workplace policies, and companies requiring extended or 24/7 production can sponsor programs to meet their workforce needs.

#### 4. Moving from Chaos to Coherence

*“During the Early Years Study we were confronted by the array of services—child care; drop-in play groups; nursery schools; kindergarten; head start; family resource and parenting centres among others. It may sound as if the field is covered but in fact it was a scattered with disconnected, poorly resourced programs. Few parents knew what services existed or what they did. In response, we mapped a plan to capture a community’s early years assets by blending them into a single program with a common mandate to provide early learning, care and parenting supports.”*

— Margaret Norrie McCain

The reorganization of early childhood and family support programs is indispensable to the success of new public policy initiatives. Increased investments in early childhood development are unlikely to produce its potential outcomes under the service status quo.

#### PUBLIC/PRIVATE PARTNERSHIPS IN EARLY CHILD DEVELOPMENT

Corporate/community partnerships are not a replacement for government involvement. The Child Care Fund of the Canadian Autoworkers and the “Big Three” auto companies is bigger than the children’s services budgets of some provinces—yet it cannot meet workforce needs. Union members are able to access company-paid subsidies to help offset the cost of programs in their communities but parents report few available openings. There is also less willingness to expand union/employer initiatives when governments don’t participate. The first centres for autoworkers’ children were partially built and operated with government support. When government contributions were eliminated, expansion plans were suspended.

*From interview with Peggy Nash, MP,  
former assistant to the president, CAW (2006)*

Step-by-Step is a network of 30 non-governmental organizations in former totalitarian regimes in Eastern Europe, Africa, and South America. The program introduces child-centred preschool models and replicates the new approaches through existing government teacher training systems. The program concentrates on the development of human capacity at all levels: civil servants; teacher trainers, program directors, parent advocates, teachers, and children. Supported by Hungarian-American financier George Soros, Step-by-Step aims to enhance civil society. By nurturing a culture of early childhood/family-centred programs as part of state education systems, a new generation will be created, able to promote and sustain democratic reform.

*From Educating Children for Democracy (2004)*

The Atkinson Charitable Foundation focuses on projects that evaluate the integration of child care, children’s services, and public education to catch the imagination of the public, and those who make policy. “Local government has little leeway to experiment. We are filling that void,” says ACF director Dr. Charles Pascal. “But it is not the job of business or foundations to fund essential services. Only senior governments have the resources and the responsibility to make universal early learning and care a reality.

*Voices for Children (2003)*

Communities have the basis for child development and parenting centres by integrating their kindergarten, child care, family support and intervention programs. In Chapter Five we discussed initiatives that bring these service strands together into seamless service hubs. We know from research and international examples that mature, successful early childhood systems are integrated.<sup>28</sup>

Integration represents a paradigm shift in the conception and delivery of early childhood services. Disparate programs are blended into a single comprehensive service designed to meet the needs of all families with children from prenatal to school entry. The model recognizes the different and changing needs of families depending on the ages, number or special needs of the children; and the parents' labour force participation, health, socio-economic status or other circumstances. It removes from parents the burden of identifying and seeking out different

programs as family life evolves. The integration of the early childhood assets of a community provides a stable platform for new investments to grow services.

Communities can take giant steps toward program integration, although it must be noted that turning a service patchwork into a system requires leadership from federal, provincial, and territorial governments. Senior governments must adopt a shared vision of early childhood promoted by a single legislative and funding framework. Local governance structures need to be resourced and mandated to provide planning, support to programs and accountability to parents, governments and the public.

It is more difficult to integrate existing programs than create new ones, but assessments indicate the efforts are worthwhile. The direct cost of providing integrated services are no higher than current delivery while providing improved program quality, greater access for families and enhanced parent participation.<sup>29</sup> Because integration involves structural change, it tends to be more stable. Other research suggests that by integrating early childhood programs, particularly with public education, their educational and developmental profile is enhanced contributing to their recognition as a mainstream public service entitled to public funding.<sup>30</sup>

Program coordination implies improved communication and resource sharing between service providers for the benefit of families. Coordination can either be a step towards integration or a 'safe haven' for agencies reluctant to relinquish their identities.

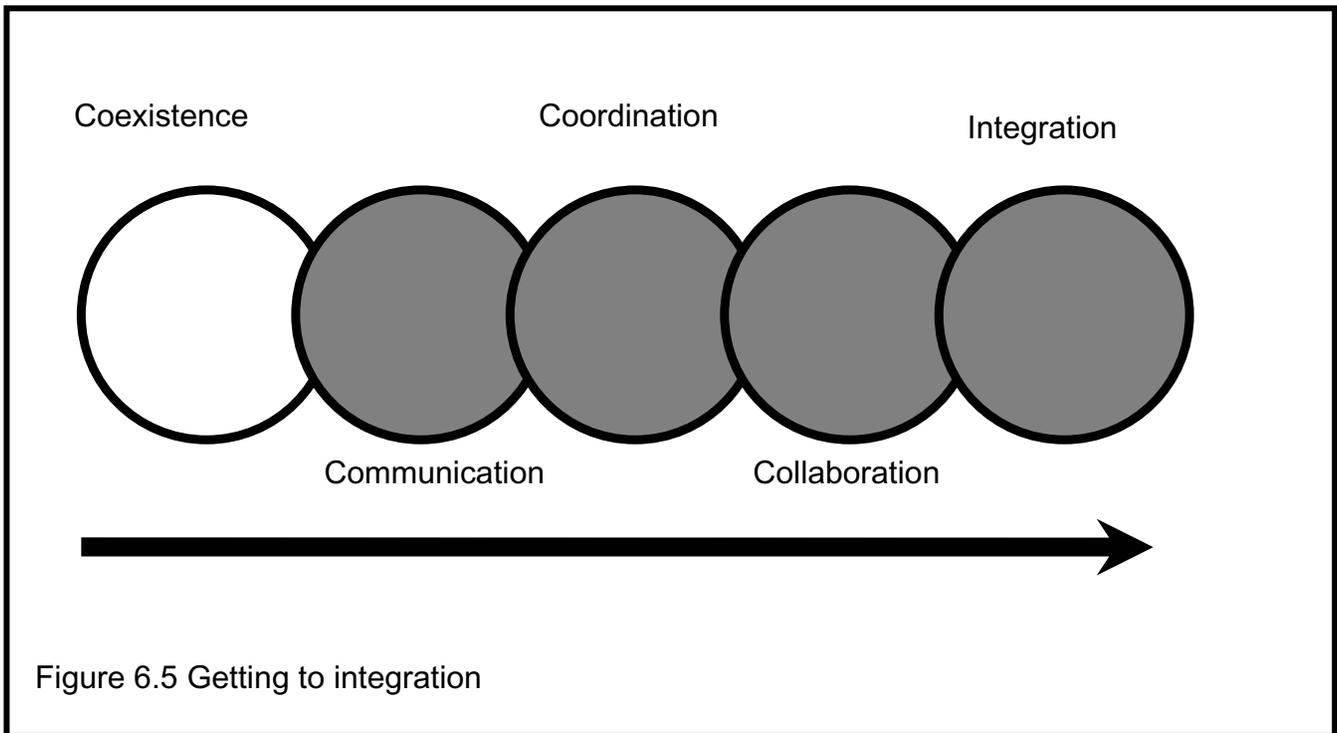
***Early childhood service integration defined:***

*Service integration, consolidation, collaboration, coordination are often used interchangeably. Integration implies it is a community-driven process intended to enhance community-capacity and social capital with the goal of providing a comprehensive range of supports contributing to the well-being of the whole child. Integrated programs recognize that all facets of the child's community contribute to his/her welfare and are interrelated—safety, nutrition, physical, and social/emotional health. From the parents' perspective, it means ready access to flexible, continuum of appropriate services. For policy makers*

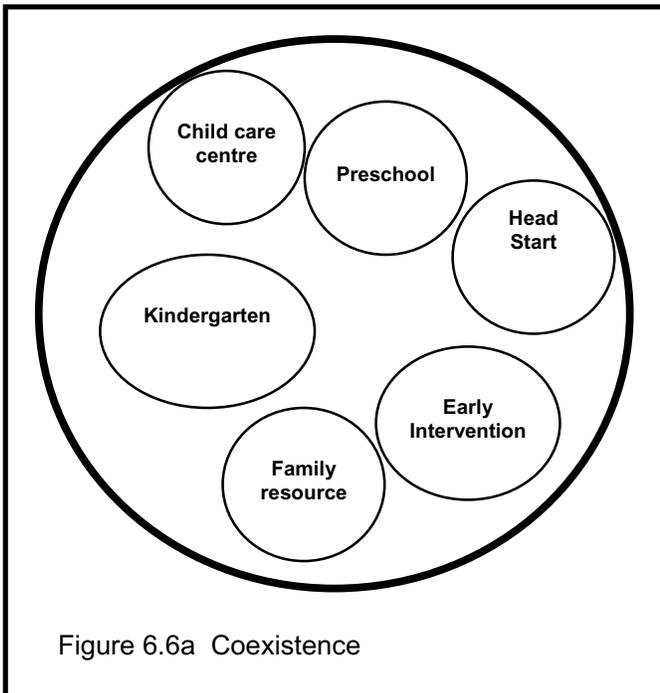
**WHY INTEGRATE EARLY CHILDHOOD SERVICES?**

"Today if a government wants to invest in the early years, it decides between child care, kindergarten, or parenting programs. It's a Hobson's choice because the child who benefits from improvements in her kindergarten can still be short-changed when she arrives at daycare. Integration therefore creates a foundation for new public funding. With integration also comes accountability. When Johnny is in grade five and can't read we expect the school system to respond. Yet, when a child in grade one is disruptive and unable to participate, what institution do we hold responsible, but more importantly where do we intervene?"

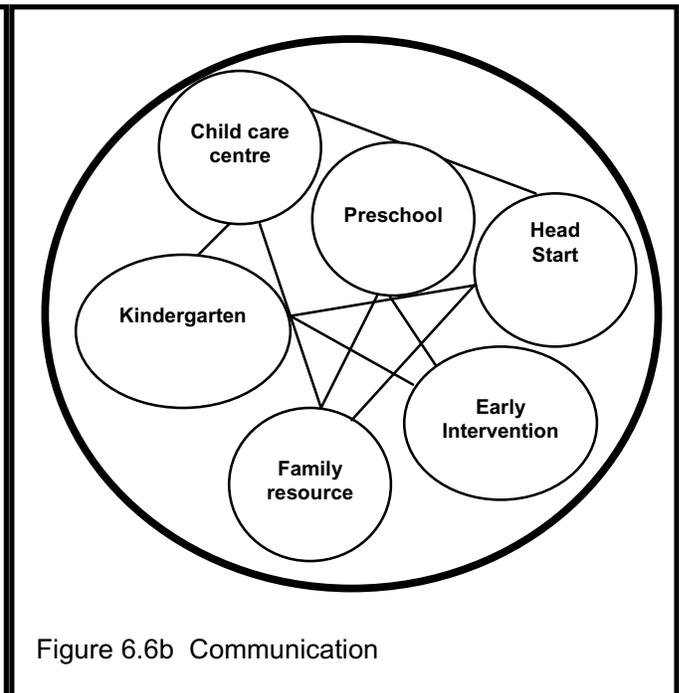
Dr. Dan Keating. From the Atkinson Letter, *The Early Years into Action, Toronto First Duty*. Feb. 2004.



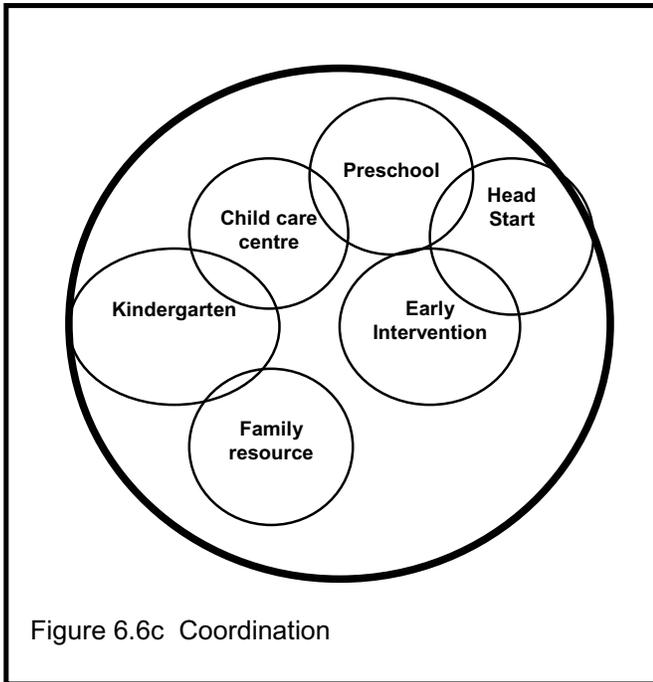
Communities will start at different stages but all can take steps toward integration. The path is not necessarily linear; depending on capacity, communities can jump one or several steps.



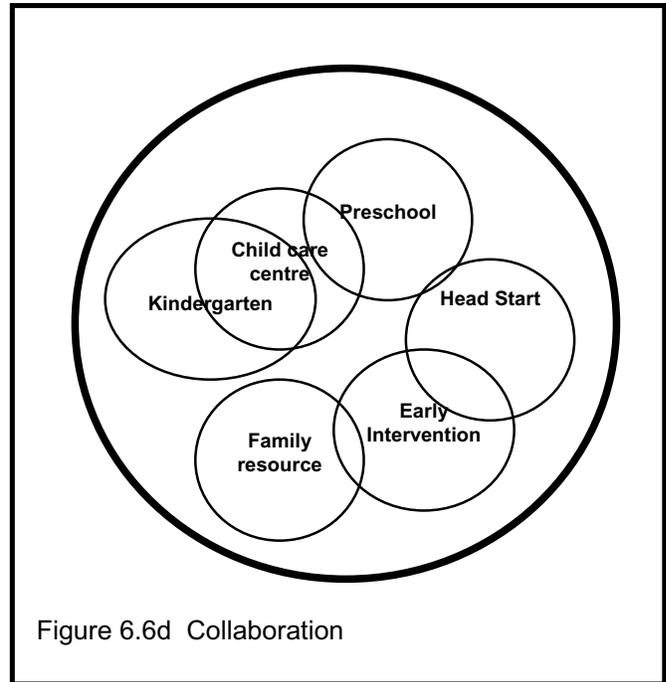
Coexistence describes early childhood and family programs that are located in the same building or neighbourhood but operate as distinct services. Families make separate arrangements to participate in each program.



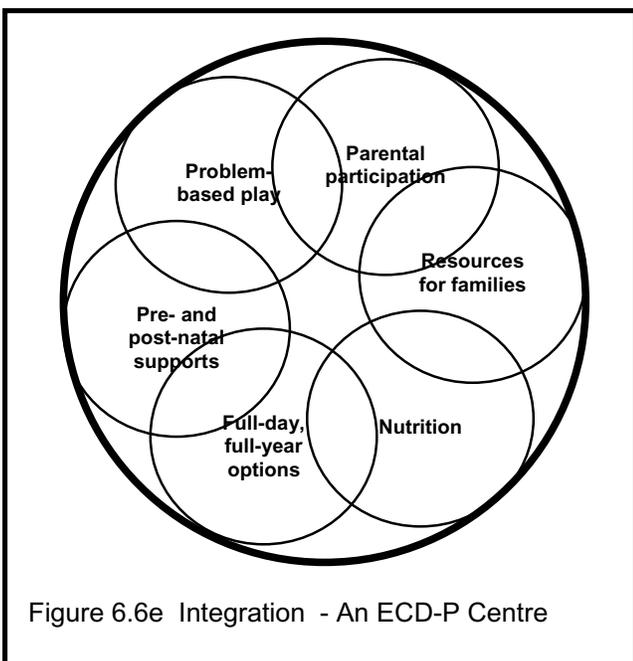
Communication describes programs that share information, are aware of and inform parents of the others' services, and coordinate schedules to avoid conflicts for families.



Coordination indicates using staff, space and schedules differently. For example, public health offers its services in kindergarten or child care programs. Kindergarten and child care staff hold joint parent interviews. Child care and family resource programs combine field trips, music or drama activities or participate in bulk buying.



Collaboration describes an expansion of joint activities and a clear influence on the operation of programs as roles and responsibilities emerge. Multi-use of space is made possible by licensing all early childhood and family environments. Management and administrative functions are consolidated; staff jointly plan and deliver activities; equipment and program supplies are purchased for common use.



Programs lose their identities to become a child development and parenting centre, offering a full and flexible range of full year/full time activities designed to meet the changing needs of families with young children.

and the public, integration provides accountability and a stable and effective base for new early childhood investments.

## 5. The Public Policy Levers

Today there is very substantial evidence about the best ways to spend on early childhood programs.<sup>31</sup> Program spending should promote quality, access, and accountability. Initiatives in Saskatchewan, Quebec, Manitoba, and Toronto show how governments can begin to reorganize their current early childhood service patchwork into a coherent platform to expand access and improve quality.

- » Provincial/territorial funding of early childhood services should be transformed to an operational funding model that flows funding directly to programs from the current mix of user fees and parent subsidies. It is well documented that public funding directed to programs (as in public education) is a fundamental prerequisite for program integration and for tackling quality and universality.<sup>32</sup>
- » The fragmentation of early childhood programs into ‘care’ and ‘education’ silos serves no one well—not children, parents, or taxpayers. Provinces/territories should develop and implement plans for integrating kindergarten, child care, and family supports into coherent system, as is the norm in countries with developed systems.
- » Good public policy requires that provinces/territories move beyond the current incoherent—even chaotic—approach that has delivered the proverbial Canadian “patchwork.” Accountability requires development of plans that include goals and objectives, timelines and targets, review and evaluation as they build towards an early childhood system that can meet the principles outlined earlier. While provinces and territories are in different stages of development, and may have different priorities for moving forward—all should be working towards achieving the same goals and objectives.
- » The OECD’s observation that “early childhood policy development in Canada is ably supported by a vibrant research community and stakeholder constituency” that should be given “obligatory

and legal status in development planning” should be acted on.<sup>33</sup>

- » Meaningful community participation is required to create the fundamental change required to support families with young children in a period of major socio-economic and environmental changes. Governments must find creative ways to work with its citizens and communities to establish early childhood programs which are sensitive to diverse family and community needs. Community involvement does not absolve governments of their responsibilities. Communities can only go so far to integrate and develop early childhood programs before running into a brick wall of legislative and funding barriers. Government involvement should ‘do no harm,’ but it should equip communities with a coherence policy framework and the resources necessary to do the job.

## 6. Other Components of an Early Child Development and Parenting Framework

Other components that support early child development and parenting include:

- » Increased parental and maternity leave and benefits
- » Family-friendly workplaces
- » Income transfers and tax incentives
- » Integrated, independent outcome measures
- » Community information networks.

### ***Increased Parental and Maternity Leave and Benefits***

Parental leave benefits protect and promote the health and well-being of the mother and her unborn and newborn child. They allow mothers to breastfeed their infants for a longer time promoting maternal/child health. Leaves facilitate the child/parent attachment essential for optimal brain development and the establishment of good parenting. Canada has doubled its leave policy since the release of the *Early Years Study*. This is a good start but there is room to improve benefit levels to ensure families are not economically disadvantaged. As in other countries, leaves could be more flexible, allowing easier transitions for parents returning to work.

### ***Family-Friendly Workplaces***

Family-friendly policies in the workplace help to bring about work-family balance and allow parents more opportunity to support children's development during the crucial early years.

In addition to extended parental and maternity leave and benefits, possible options include:

- » Flexible work arrangements such as part-time work, flexible hours of work, priority for day-shifts and opportunities to work at home
- » Unconditional paid leave days which can be used to attend to family responsibilities including the care of sick children
- » Flexible use of employee payroll benefits for early child development
- » Workplace child development and parenting centres particularly in companies with unique scheduling requirements.

Parents who are better able to meet family responsibilities are absent less and are more productive. The constant tension that many parents, particularly mothers, experience between meeting the needs of their young children and fulfilling work-related obligations creates stress levels that can lead to higher rates of absenteeism, work disruptions and expensive staff turnover.<sup>34</sup> Work schedules that allow parents to take part in their young children's programs are another example of a family-friendly work policy. Regular parent participation in early child development and parenting centres benefits parents who are able to learn from staff and from each other about how best to provide optimal nurturing and stimulation. Workplace policies can, and do, make a difference but they can not compensate for lack of consistent, quality programs for young children.

### ***Income Transfers and Tax Incentives***

American studies on the effectiveness of Early Head Start showed that 3-year-old children attending the program performed better in cognitive and language development, displayed higher emotional engagement with their parent and less aggressive behaviour. Compared with controls, Early Head Start parents were more emotionally supportive, provided more

language and learning stimulation, read to their children more, and spanked less.<sup>35</sup> Many of the benefits of early intervention were less evident by high school, particularly for minority children.<sup>36</sup> International research from France and the UK indicates that while early intervention mitigates against the effects of disadvantage, young children in poor socio economic circumstances have great difficulties catching up to their middle class peers. For this reason, preventing family poverty through tax measures, adequate income transfers, and labour force policies needs to be part of a comprehensive approach to early childhood development.<sup>37</sup> More egalitarian societies are also healthier and more cohesive. The *Early Years Study* suggested:

*"[R]educing the social distance or disparity between those at the top of the socio-economic ladder and those at the bottom can become a project for all sectors of society in building the new system and can build social capital."*

### ***Outcome Measures***

In Chapter 3, we demonstrated the value of the Early Development Instrument (EDI) as a population assessment tool. The stark difference in results when Manitoba linked its health and school testing data shows the further potential of such measures for practitioners and policymakers. There has been considerable progress made since the *Early Years Study* first argued for an independent institutional structure to develop and apply outcome measures for early child development, linked to health and school performance data; more can be done.

- » Further steps can be taken to expand and provide more consistent reporting. Only half the country is using the EDI; it in combination with other population level methodologies and reporting provides a country-wide picture of child outcomes and allows communities and policy makers to determine the impacts—positive and negative—of public policy and local actions.
- » Experiences during the infancy and toddler period have a very significant effect on brain development and the pathways that affect health, behav-

## WORKPLACE INITIATIVES THAT SUPPORT EARLY CHILDHOOD DEVELOPMENT

**Kanata Research Park Family Place** is located in a high-tech campus near Ottawa. The centre was built with funding by the developer and the city and is operated by a non-profit parent board, with employer and developer representation. The centre is licensed as a child care centre with 106 spaces providing full, part-time, and occasional care for children, 18-months to 12-years. Rather than transporting children to the local school, kindergarten is offered on site; pregnancy, birthing classes, and well baby clinics are delivered by public health nurses. Staff are chosen not only for their child development expertise but also their abilities to communicate with parents and involve them in program activities. Employers donate \$130,000 annually in operating costs. Expanded employer sponsorship has allowed the development of an emergency care program offered as an employee-benefit.

**The Copper House** is unique, in that it is completely owned and managed by Husky Injection Molding. Day-to-day management is the responsibility of the centre's director, while major decisions are subject to consultation and approval from senior Husky management. The set-up costs of the Copper House were 100% defrayed by the company without government assistance. The company and revenue from parent fees fund operations. Husky recruits a highly skilled workforce from around the world and considers the centre one of its most effective recruiting and retention tools. The centre accommodates any parent's schedule outside normal hours, at anytime, without prior notification. Husky also supports parents with flexible hours and work from home options, a parent-resource library, seminars and support groups. Children are served in a state of the art building with 94 licensed spaces

serving 175 children on a full-time, part-time, occasional or emergency basis. Husky's concern for the environment is transmitted to the children. They are taught how to recycle, compost, and garden on completely pesticide-free grounds. These and other activities are intended to teach children to integrate respect for their environment and their community into their daily activities.

**La voûte enchantée Child Care Centre** began in 1978 with one centre built by the National Bank of Canada (NBC). When the Quebec government instituted its new child care policy in 1998 another two programs were opened near the Bank's downtown Montreal headquarters. La voûte enchantée now operates 190 spaces under the direction of a not-for-profit board of directors with NBC representation. Like all Quebec parents, NBC employees pay a \$7 a day fee. The centre offers full, part-time and occasion enrolment Monday to Friday. A summer camp is offered for school-aged children. The bank considers helping employees to balance work and family an important part of its recruitment and retention strategy. Priority in job scheduling is given to parents and employees caring for elderly parents. The bank offers a flexible 37.5 hour work week, with the option of a 30 hours week, with full benefits. Job sharing is also possible. Employees have access to various types of short- and longer-term leave (up to a year) to deal with family responsibilities. Employees frequently take unpaid options to extended parental leave, or opt for shorter hours to support their transition back to work. Many combine their vacations with unpaid leave to cover summer school closures. Employee surveys indicate reduced absenteeism and improved job retention are due in large part to the child care centre and family benefits.

our, and learning. The 18-month medical check up is a universal point of contact for young children and their parents, and a valuable opportunity to determine, from a population perspective, the existence of poor development in communities. A universal screening tool would allow communities to intervene with appropriate programming and medical professionals can identify areas of concern and direct parents to resources.

- » Communities often want to measure the impact (developmental, social, and economic) of different types of child development programs on children, families, and communities. Community child development measurement promotes innovative methodologies that can link individual program implementation with community and federal/provincial/territorial assessments of early child development programs. But it is difficult to identify effective program-level practices and effective mechanisms for program replication, diffusion, dissemination and scale-up using EDI and SES data alone. Required is an assessment tool that would look at levels of integration and program development across the country and provide national reporting.

### ***Community-Based Information Networks***

Chapter 5 demonstrates the value of community planning and information networks in the development of social capital and improved early childhood program delivery. These networks increase public understanding of the importance of early brain development, promote information-sharing of best practices and are prime advocates for children and families. They are an excellent base on which to build the expertise, experience, and goodwill for new initiatives.

## **7. Conclusions**

- » Early child development is a prime time investment opportunity for society providing greater returns than any other period of life. Investments need to be substantial and sustained to promote equal opportunity for optimal development for all

children and produce the documented economic, health and social benefits. The involvement of the different sectors of society—public, voluntary, and private—in creating a system of early childhood programs will help build social capital, which is thought to be a key factor in long-term economic growth and the maintenance of tolerant democratic societies.

- » Early child development and parenting centres should be available, accessible, affordable, and optional for parents from all sectors of society. A system of centres will be built by integrating existing early childhood services and resources in a community to create a strong foundation for expansion.
- » Early child development and parenting centres must be sensitive to cultural, ethnic, linguistic, and other characteristics of communities and families, to all children's needs and abilities. They should make use of existing community space such as schools and be in locations accessible to families. Programs should be designed to meet the different and changing needs of families.
- » Canada needs a comprehensive family policy that includes:
  - A first “tier” system for children, as important as the elementary, secondary, and post-secondary education system. The system should consist of community-based centres, operating at the local level within a provincial framework
  - Improved and flexible maternity/parental leave benefits for parents
  - Family-friendly workplaces
  - Tax measures and income transfers to reduce the risks for children associated with low family income
  - Improved, integrated outcome measure of human development
  - Community networks to support innovation, share best practices and advocate on behalf of children and families

## NOTES

- <sup>1</sup> van der Gaag, 2002
- <sup>2</sup> Cleveland & Krashinsky, 2003
- <sup>3</sup> van de Gaag, 2002
- <sup>4</sup> Cunha & Heckman, 2006
- <sup>5</sup> Alakeson, 2004
- <sup>6</sup> Acheson, 1998
- <sup>7</sup> Ellis, Jackson, & Boyce, 2006
- <sup>8</sup> Cunha et al, 2005
- <sup>9</sup> Van der Gaag, 2002
- <sup>10</sup> Schweinhart, Barnes, & Weikart, 2005
- <sup>11</sup> Cleveland & Krashinsky, 1998
- <sup>12</sup> Belfield, 2004
- <sup>13</sup> Heckman, 2000
- <sup>14</sup> The Economist, 1998
- <sup>15</sup> Ludwig & Sawhill, 2006
- <sup>16</sup> Pelletier, 2006, Personal communication (Member of TFD Research Team, OISE/UofT.
- <sup>17</sup> Keating, 1998; National Research Council, 2001; Shonkoff & Phillips, 2000
- <sup>18</sup> OECD, 2006
- <sup>19</sup> HRDC, 2004
- <sup>20</sup> Cleveland & Krashinsky, 1998
- <sup>21</sup> Government of Canada, 2005; Friendly and Beach, 2005
- <sup>22</sup> The Nordic countries spend about \$8,000 (US)/child. Kagan and Rigby (2003) estimate the cost at about \$8,000 U.S. per child per year (3-6 years) for a school year, full-day program in which reasonable child-staff ratios are practiced, and a majority of certified educators are employed. The Committee for Economic Development (CED, 2006) proposes \$5,000 as a rough starting point for a child attending a part-day, part-year program.
- <sup>23</sup> Cleveland & Krashinsky, 1998; McCuaig, 2004; HRDC, 2004
- <sup>24</sup> A national child care strategy: Getting the architecture right now, the National Liberal Caucus Social Policy Committee in 2002 proposed ramping up to \$4.5 billion in the fifth year.
- <sup>25</sup> Baker et al, 2006
- <sup>26</sup> Campaign 2000, 2005
- <sup>27</sup> Bailey, 2006; Vancouver Board of Trade, 2002
- <sup>28</sup> OECD, 2006
- <sup>29</sup> Corter et al, 2006
- <sup>30</sup> Barnett et al, 2004
- <sup>31</sup> OECD, 2006
- <sup>32</sup> OECD, 2006
- <sup>33</sup> OECD, 2004, p.20
- <sup>34</sup> Duxbury & Higgins, 2003
- <sup>35</sup> Love et al, 2005
- <sup>36</sup> ibid
- <sup>37</sup> Freiler, Rothman, & Barata, 2004

# CHAPTER SEVEN

## PUTTING SCIENCE INTO ACTION

The Council for Early Child Development aims to make the science of early brain development accessible to communities. For knowledge to influence public policy, community-based understanding and initiative is required. Local expertise, leadership, and broad community support is necessary to build successful early child development and parenting centres. To this end, the Council helps communities partner with governments, business, labour, and philanthropic groups.

The Council advances a six-point action plan, founded on evidence that:

- » Infancy and early childhood is the first and most critical phase of human growth. A child's earliest experiences shape brain development. Genes interact with experiences, creating a dynamic that affects lifelong health, learning, and behaviour.
- » Early childhood programs benefit children, parents, communities, and society through improved outcomes and enhanced quality of life for children. Effective programs are holistic, comprehensive, flexible, high quality, and supported by a shared vision, a common framework, and sufficient resources.
- » Neighbourhood schools are the natural location for quality early childhood centres in every community. Centres should involve children, parents, and the community; revolve around the power of play; provide full-time, full-year options, nutrition, and links to home-based and specialized services; and be staffed by a skilled, competent, and fairly-compensated workforce.
- » Community early child development reporting tracks progress, provides knowledge to communities, and accountability for social investments.
- » Investing in early child development is *boldly* investing in Canada's future.

### Point 1: Harness the Evidence

*Be informed about the science of early childhood development: share it, apply it, and act on it.*

There is expanding evidence that the quality of early experiences plays a significant role in children's social, emotional, intellectual, and physical development. The

findings from neuroscience and developmental research, economic analyses, and relevant studies of academic achievement, health, and behaviour need to be accurately and effectively conveyed to policymakers, practitioners, and the public.

Based on the synthesis of knowledge across disciplines, the importance of early child development seems so obvious. Nevertheless, many individuals still question whether the early years of brain development can have a profound effect on learning, behaviour, and health, and whether investments in intervention programs, without well-controlled evaluations, can be beneficial. Wilson has emphasized the necessity of integrating knowledge from the natural and social sciences to more fully understand the effects of the environment on health. In *Consilience: the Unity of Knowledge*, he notes in particular that the lack of a common language (polarization) among scholars “promotes, for one thing, the perpetual recycling of the nurture-nature controversy.”<sup>1</sup> As Chapter 1 documents, this controversy is being overwritten by the new science of epigenetics.

Ensuring optimal outcomes in children’s early development should be of interest to all families, communities, and governments. Stronger institutional capabilities are needed to build links among the sciences and to establish “new frameworks of understanding”.<sup>2</sup> In other words, the significance of brain development in early childhood and its implications for the future health and stability of a globalized world needs to ‘get out there.’

To produce change, knowledge must be handily packaged, readily understood, and disseminated widely. The knowledge base of early child development is being constantly refreshed. There is a need for reporting mechanisms that balance the rigours of the science with accessible formats. Dissemination strategies must also recognize the different applications of the science for educators, policy makers, practitioners, parents, and the public.

Fortunately, the web swims with reliable sources and their practical application for wide audiences. The following are but a few of the many sources that have been influenced by the *Early Years Study*:

- » *The Science of Early Child Development* is a resource curriculum that uses multimedia and

interactivity to make research come ‘alive.’ The resource consists of five modules: developmental health; brain development; genetics and experience; coping and competence; and communicating and learning. It was created by the Early Childhood Education program at Red River College in partnership with the Atkinson Center for Society and Child Development at the University of Toronto. It is a powerful tool for professors and trainers, for early childhood educators, advocates, and administrators.

- » *The Encyclopedia on Early Childhood Development* is produced by the Centre of Excellence for Early Childhood Development and funded by Health Canada. It is a source for policy makers, planners, and service providers, providing a compendium of texts written by leading experts on topics related to the social and emotional development of young children, from conception to age five. A simplified synthesis of topics provides key knowledge to practitioners and parents about why the topic is important, what is the most up-to-date knowledge about it, and what can be done to improve services, policies, and research.
- » *The World Bank* maintains an early child development team and website to assist its operational staff in designing early child development projects, increase lending for early child development, and support field practitioners in the design of early child development interventions. The Bank provides analytical frameworks, tools, and resources for effective implementation of early child development projects and monitors projects for best practices and lessons learned. The Bank partners with international experts, such as Fraser Mustard, to disseminate knowledge to policy makers and the international community.

Many knowledge sources for early child development provide a variety of techniques to reach broader audiences, including teaching modules, PowerPoint presentations, CDs, and online video and radio streams.

These can be applied in the practice of parents, professionals, and professional trainers. The science of early child development needs to be shared and is an appropriate topic for gatherings from conferences and boardrooms to community meetings and book clubs.

## Point 2: Connect Communities

*Good early childhood programs, schools, and services build vibrant communities that draw knowledge workers.*

Communities are important. They are where families live, practitioners work, and public policy hits the road and comes to life. Each community is unique, and has diverse cultural, linguistic, and socio-economic characteristics. Each has its own array of challenges and assets, making a ‘one-size fits all’ approach to early childhood programming a missed chance to effectively match resources with local needs. Yet communities share common challenges and opportunities. Exchanges among communities build energy, expertise, and accelerate action.

A community’s capacity includes all its resources that are, or should be, linked to early child development programs—schools, child care programs, family support, hospitals and other health services, social services, recreational programs, libraries, colleges and universities... and so on. Communities that come together to build on their strengths create social capital. Universal touch-points can be used within communities to connect families with young children to neighbourhood resources in an effort to develop and expand their social networks.

The PowerPoint developed on the *Early Years Study* allowed a broad range of facilitators to take it into classrooms, union halls, government offices, and boardrooms.

**Effective Outreach:** Recognizing few of the new immigrant families in the community had access to toys or books for their young children, the Erindale Child Care Centre rented space on weekends for adult ESL classes. The centre’s supervised child-focused environment enriched the children’s experiences while their mothers took classes in the staff room. This small initiative promoted the value of the program beyond the parents who used it. When the school where the centre was located moved to terminate the centre’s lease, immigrant agencies intervened on its behalf.

Raising the social capital of communities raises social cohesion and the level of trust and sharing through a recognition that we are all responsible, in some sense, for each other, and that we all share a responsibility for the next generation. Socially cohesive neighbourhoods are better places to live, characterized by less crime and isolation, more public and community spaces, and greater volunteerism and intergenerational reciprocity. There is also some evidence that regions with a large measure of social cohesion tend to be stronger and better able to cope with the challenge of changing economic and social pressures.

Community-driven initiatives do make a difference and local leadership and flexibility are essential to respond to diverse geographic, cultural, and ethnic realities. But the playing field between communities is not level. Timely and effective interventions by governments are essential if regional and ethno-cultural inequities are to be addressed.

Early childhood and other community development measures support communities learning about what does, and does not, work in their neighbourhoods, and allows them to compare results with others.

## REGGIO EMILIA: THE COMMUNITY CLASSROOM

The city of Reggio Emilia in Northern Italy devotes 10% of its budget to its early childhood education programs. The preschools grew out of three main features: a culture that values children; an intense commitment of a group of parents; and visionary leadership. The program has influenced early childhood practitioners around the world. The model draws on the lived experiences of children and families by extending the ‘classroom’ into the community—parks, hospitals, art galleries, museums, libraries, workplaces—and brings the community into the program through lay ‘teachers’, artists, and other contributors. Parents have meaningful involvement in the program, working with staff to plan and implement activities.<sup>3</sup>

### Point 3: Influence Public Policies

*[E]arly childhood development is a pragmatic issue, not an ideological one. Advocates come from the political right, left and in between. Governments representative of the political spectrum have taken the steps necessary to ensure an early learning program for every child. A solution in Canada is not contingent on a new government, a new leader, or a new mechanism.<sup>4</sup>*

The successes and challenges confronted by the Community Fellows outlined in Chapter 5 provide valuable lessons for policy makers. Community experience, combined with scientific evidence, equip decision makers with the tools needed to set policies and allocate resources. How new investments, policies, and programs are introduced is equally important to communities.

Piecemeal actions do not work. New resources for one early childhood stream can create competition between programs. In an effort to leave their mark, some governments have wiped out existing programs to create their ‘own’ new ones. Imposed planning and network models can destabilize those that have been operating effectively. The mobilization of communities to accept new initiatives, only to have the proposal downsized or withdrawn creates fatigue and apathy. These policy blunders validate the *Early Years Study* premise that consolidating the early years assets of communities create both social cohesion and a base for new investments. In this scenario there are no winners and losers, only more, and better, programming for families.

Depending on the jurisdiction, local governments may be excluded from a mandated role in early childhood service provision. Nevertheless, regional authorities can be strong and effective partners, in both advocating for children with higher levels of government and using their powers to remove barriers and support creative community initiatives. There is a consensus between business and local government regarding infrastructure investment in transportation, housing, and energy efficiencies. Urban renewal and expansion is an opportunity to link capital and social development. Children’s programs must be included when planning infrastructure needs. School boards, municipalities, and community agencies can lay the groundwork for more effective program delivery for young children and families.

### Point 4: Cultivate Leaders

*The views of one articulate and affluent banker, businessman, lawyer, or acolyte economist are heard in the corridors of political power before several thousand three-year-olds.<sup>5</sup>*

While Canada debates its approach to early child development, other countries surpass us. Most policy makers and influencers acknowledge the problem, but sector protectionism conspires to block a consensus on how to pull together piecemeal and under-funded programs into a coherent and comprehensive system of child development and parenting programs.

Business needs to understand that short- to long-term measures to reduce disparity by enhancing early childhood development is an effective business strategy. Failure to come to terms with this issue not only effects the bottom line, but it can move countries to the end of the line. Business is a powerful sector, with the capacity to influence government policy and public opinion. History has proven time and time again that shifts or changes in public policy don't usually *take off* until the business community rallies behind them.

But business is only one, albeit important, player. Powerful public institutions, such as health and education, are reluctant to release their grip on the public purse. Yet the sustainability of valued public programs, such as education and health, are dependent on healthy child development. It is therefore in the self-interest of these sectors to provide leadership promoting a comprehensive approach to early childhood development, and to co-operate in breaking down the barriers that stand in the way of a comprehensive systems approach.

Dynamic leaders take on social problems by bringing together people and resources to work towards a shared vision and to create viable solutions for their community. They catapult issues into the public realm and galvanize support. Leadership comes from different places and includes mayors, educators, health, church, business, and parents themselves.

**Develop and Promote Champions:** Consider involving elected officials or high profile personalities who are able to speak publicly about the benefits of early childhood development and program integration. Look for parent leaders and involve them from the start.

## Examples of Effective Leaders for Early Child Development

### *From Business...*

George Soros, Hungarian-America financier, philanthropist, and political activist:

*“My encounter with Fraser Mustard in the early 1990s was one of the factors that led me to invest, over time, nearly \$100 million in Step by Step—an early child development program in 28 Eastern European countries. The approach will take hold in some countries and will have a significant impact on the emergence of democratic, prosperous societies. It was a risk only a living donor could take.”*

David Dodge is an economist and Governor of the Bank of Canada. His position has given him considerable insight into the link between economic and human development.

*“[W]ith a small cohort of children to replace those retiring over the next two decades, it is more important than ever that the human capital of these children be developed as fully as possible if we are to raise the productivity of a future smaller labour force.”*

Charles Coffey is the former Executive Vice-President of government relations for RBC Financial Group:

*“More business leaders must step up to the plate when it comes to investing in the future generations—business leaders need to occupy seats at early childhood forums. They need to hear and discuss research findings—the business case. They need to hear... that employers increasingly find the availability of good early childhood programs is critical to the recruitment and retention of parent employees.”*

Thomas d' Aquino is President of the Canadian Council of Chief Executives. His 10-point plan to strengthen Canada's economic base starts with families and communities.

*"If Canada is to succeed in forging a creative economy, we cannot afford to waste the talents of a single Canadian. In this context, Canada needs to reduce the financial burden of raising children and preparing them for productive lives as global citizens. The federal government should start by reducing the steep clawback provisions of the Canada Child Tax Benefit that penalize families with modest incomes and by providing new support for child care ..."*<sup>6</sup>

### **From Government...**

Pauline Marois maintained the early childhood file in whatever ministerial post she held in the Quebec government, be it education, social services, or finance. In 1997, she convinced her Cabinet colleagues to adopt a bold new family policy with \$5 a day children's centres at its core. Today, the centres, Centres de la Petite Enfance, or CPEs, serve 65% of children 0- to 4-years-old and are an established part of Quebec's social infrastructure.

*"I took a chance. Don't wait for every detail to be in place before moving ahead."*<sup>7</sup>

Michelle Bachelet, a pediatrician, former political detainee, defense minister, and now President of Chile has made social justice the focus of her mandate. Among her first initiatives is a comprehensive program to improve maternal health and promote healthy child development.

*"The diagnosis is clear. Today we must move from discussion and analysis to concrete actions aimed at this important sector of the population. This is our task."*

In 2001, Toronto City Councillor Paula Fletcher was a school trustee faced with a common problem, as one of the elementary schools in her district was closing due to budget cuts. She mobilized the community of largely immigrant families and recruited Dr. Fraser Mustard to back a proposal to use the school to document the process of creating a child development and parenting centre.

*"Projects like this demonstrate the possible and keep the flame alive for a Canada-wide integrated early learning program."*

Roy Romanow is the former Premier of Saskatchewan and chair of the Royal Commission on the Future of Health Care in Canada ("The Romanow Report," 2000–2002) that investigated the sustainability of universal health care in Canada. He uses his stature to popularize the need for early childhood programs to improve health outcomes.

*"Good early learning and developmental supports are essential to improving all of the so-called "determinants of well-being" and a life well-lived."*<sup>8</sup>

The Honourable John Godfrey has chaired many federal posts but has made the welfare of children central to whatever portfolio he has held. In 1999, he proposed the development of an early childhood care and education program as a 'national project.'<sup>9</sup>

*"The goal of that National Project would be to make Canada the best country in the world for the care and nurturing of young children. If we could say that Canada had the best prenatal programs, the lowest rates of child abuse, and the best early childhood care and education programs, all of which culminated in the best rates of school readiness .... Not only will we reduce child poverty, we will also dramatically improve literacy rates, creating a solid base for future economic growth, and for employment success in the new economy."*

### *From the Community...*

Carol Gott fought red tape to bring a comprehensive early childhood programs to a rural Ontario community. Her efforts inspired the *Early Years Study*'s recommendation for child development and parenting centres. Through Rural Voices, Carol now volunteers in communities from Newfoundland and Labrador, to Nunavut as a resource for program integration.

Ted Whiteland is President of the Canadian Association of Principals.

*“It is to our collective advantage to promote the understanding of early brain development research... and to ensure the values of early child development become embraced as an integral component of the education of every child, just as traditional schools are currently.”*

### *From Institutions...*

The Canadian Auto Workers Union uses collective bargaining to bring together social and economic policy. Through the creation and growth of the Child Care Fund, the union provides quality early learning and care opportunities for parents with non-traditional work schedules and public education initiatives promoting the value of a comprehensive system of early education and care.

Centres for academic research, such as the Human Early Learning Partnership (HELP), the Childcare Resource and Research Unit and The Offord Centre for Child Studies, ensure their academic pursuits are accessible to the public, and timely and useful to inform public policy.

Private foundations and donors, including the Atkinson Charitable Foundation, the Lawson Foundation, the Changon Foundation, the McCain Family Foundation, the late Beland Honderich, and the Norlien Foundation, focus on initiatives that leverage innovation and promote effective communication and social change.

## Point 5: Monitor Results

***Data collection and analysis needs to be properly resourced. Poor data is worse than no data. While no data means no problem and no action, poor data creates big problems and bad actions.***

Communities need to know how their children are doing and if community environments are making a difference in early child development outcomes. By measuring, analyzing, and interpreting community-level information, communities can effect change and reduce gaps among different groups of children. Data collection and monitoring provides information so agencies can avoid duplication, provide services more effectively, and utilize the specialties of each partner to the greatest effect.

Close monitoring is necessary to ensure that all children have the opportunities to meet their full potential. The capability to measure how well young children are doing at various stages of their development exists. Birth outcomes, preschool developmental tools, and the Early Development Instrument (EDI) provide child outcome data that can be combined with other community-level information about resources and neighbourhood characteristics. Population data and longitudinal studies provide population-level data that are useful to track trends and consider local data in a larger context. Community data can be used to track and create change. Quality data collection and reporting is important to public accountability and building trust. The public is prepared to support early childhood initiatives but they need to be assured that funding is producing the intended effects.

### ***Program Quality Assurance and Accountability***

Programs must be monitored. It is important to track both program quality and children's progress. Indicators able to demonstrate that early childhood programs are having a positive impact on children's development will enhance support for public investments. Assessment must be scientifically-based and free from immediate political demands. Adopting the same quality monitoring instruments allow compari-

sons and provide consistent messages to parents.

Regular transparent evaluation processes involving all participants are indispensable tools. They reflect both successes and challenges and document progress for participants. Staff are particularly encouraged when improved outcomes for clients can be demonstrated.

Service providers must commit to program quality. Poor programs compromise children's future and alienate parents and the public. If insufficient resources make this impossible, operators and staff have an obligation to take decisive action to inform the public.

## Point 6: Join Up and Expand Existing Programs

*The reorganization of early childhood and family support services is indispensable to the success of new public policy initiatives.*

Increased investments in early childhood development are unlikely to fulfill their potential under the current service delivery status quo. Improved communication and co-ordination between sectors is a starting point, but systemic change comes through service integration. Integrating early childhood programs puts science into action in communities for children. Where successful early childhood service systems exist, they are integrated. In 1999, the *Early Years Study* didn't emphasize the link between early

**"But we're different":** Particularly in the beginning of the integration process these words will often be said. Everyone comes to the table with their unique service mission, culture, professional qualifications, employment contracts, and legislative framework. What we all have in common is a desire to see children reach their full potential.

— *Toronto First Duty: Guide to Early Childhood Service Integration* (2006)

childhood and education. Intervening studies and experiences from around the world has convinced us that early childhood must be the first tier and joined to public education.

The learning environment is where children and families experience the integrated

program. Linking the activities provided by the partners and developing a common pedagogical approach provides a consistent learning and care environment for children and more accessible entry for parents. A joint commitment to the application of effective practices enhances quality, and therefore, children's developmental opportunities.

Research indicates that it is harder to integrate than start new programs.<sup>10</sup> Different cultures, identities, professional training, etc., are real. Still, all early childhood services have as their core mandate the well-being of children and families. This approach, fueled by the scientific evidence, is the driver behind integration. Integration needs to happen on a system level, but progress can be made neighbourhood by neighbourhood, program by program.

Service integration is not a cost-saving exercise. It is designed to use existing resources more effectively to the benefit of children and families. It also provides a solid foundation for new investments. Early childhood programs must be holistic and available and include the core functions of child development, non-parental care, and parenting involvement and support. Specialized services are most effective when wrapped around a core system of universally accessible early childhood and parenting centres. The benefits for children at risk because of social or developmental delays are limited if problems are not identified until after they have become biologically embedded or there is no site to deliver the interventions.

### Unexpected Benefits:

Integrating early childhood services actually facilitates parent involvement by requiring professionals to speak to each other in a non-expert language that parents can relate to and understand.

At the beginning stages it is important to allow sufficient time for all partners to thoroughly understand their community, its needs, and the work of the various agencies. This information lays the groundwork for a common vision. As such, integration is both a process and a product. Mutual trust, willingness, and commitment of the partners are the most important drivers of successful service integration. Once these are in place many challenges can be overcome.

Early childhood service integration involves a transformation of culture, methodologies, and schedules. Making change requires leadership. At the program level this involves vision, charisma, and also decision-making power. In short, not only the agreement, but the time and enthusiasm of participating leaders are necessary.

Agencies justifiably seek increased funding to improve service quality and access, but new funding must be accompanied by reorganization. Agencies, users, professionals, and unions must be consulted but they also have a responsibility to break down barriers to integration.

Private funders can ensure their allocations support a comprehensive approach to service delivery rather than fostering fragmentation.

## A Final Note

*Global interdependency is posing formidable challenges for future generations and society. The workplace of the 21<sup>st</sup> century is becoming vastly different from that of even the 20<sup>th</sup> century. The new century is increasingly favouring a workforce consisting of individuals who are intellectually flexible, skilled at problem solving, emotionally resilient and well able to interact with others in constantly changing social environments and highly competitive economies. Maximizing the human potential is more important and necessary than ever before.*

—Mary Eming Young, *World Bank*<sup>11</sup>

In the intervening years since the *Early Years Study* significant understanding and a surplus of

**What the Research Says:** “Those involved in planning for and implementing service integration must be well-informed about the strengths and weaknesses of current service delivery and about cutting-edge efforts to reshape and integrate services. A vision for what the various interests want to achieve for children and families should be shaped from the knowledge they acquire.”

— American Academy of Pediatrics (1994). *Principles To Link By: Integrating Education, Health, and Human Services for Children, Youth, and Families: Systems That Are Community-Based and School-Linked*

knowledge has been generated about the significance of early childhood development. There is still a deficit of action. The well-being of children is so critical it warrants the commitment of government, institutions, service providers, and individuals. This does not mean everyone plays the same role, but everyone needs to play a role. The world’s future literally depends on it.

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## NOTES

<sup>1</sup> 1998

<sup>2</sup> Mustard, 2000

<sup>3</sup> Cadwell, 1997

<sup>4</sup> Coffey, McCain, 2002

<sup>5</sup> With thanks to John Kenneth Galbraith

<sup>6</sup> d’Aquino, 2006

<sup>7</sup> Marios, 2004

<sup>8</sup> Romanow, 2006

<sup>9</sup> Godfrey & McLean, 1999

<sup>10</sup> Corter et al, 2006

<sup>11</sup> Young, 2007

## Appendix A: Federal/Provincial/Territorial Ministerial Responsibility for early childhood programs in all jurisdictions, Canada – 2006

| Jurisdiction            | Program(s)                                                                          | Ministry/Department                                                                  |
|-------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Government of Canada    | First Nations and Inuit Child Care Initiative                                       | Human Resources and Skills Development Canada                                        |
|                         | Child/Day Care Program Alberta                                                      | Indian and Northern Affairs                                                          |
|                         | Child/Day Care Program Ontario                                                      | Indian and Northern Affairs                                                          |
|                         | Aboriginal Head Start in Urban and Northern Communities                             | Health Canada                                                                        |
|                         | Aboriginal Head Start On Reserve                                                    | Health Canada                                                                        |
|                         | First Nations Child & Family Service Head Start                                     | Indian and Northern Affairs                                                          |
|                         | New Brunswick First Nations Elementary Education (including pre-K and kindergarten) | Indian and Northern Affairs                                                          |
|                         | Child Minding                                                                       | Citizenship and Immigration Canada                                                   |
|                         | Military Family Resource Centres                                                    | Department of National Defense                                                       |
|                         | Child Care Expense Deduction                                                        | Canada Revenue Agency                                                                |
|                         | Maternity/Parental Leave Benefits                                                   | Human Resources and Skills Development Canada                                        |
|                         | Community Action Program for Children                                               | Health Canada                                                                        |
|                         | Community Prenatal Nutrition Program                                                | Health Canada                                                                        |
| Newfoundland & Labrador | Regulated child care (child care centres, family child care)                        | Department of Health and Community Services                                          |
|                         | Kindergarten                                                                        | Department of Education                                                              |
|                         | Kinderstart                                                                         | Department of Education                                                              |
|                         | Early Childhood Literacy Programs                                                   | Ministry of Children and Family Development                                          |
|                         | Family Resource Programs                                                            | Ministry of Children and Family Development                                          |
|                         | Early Intervention Services                                                         | Ministry of Children and Family Development                                          |
|                         | Healthy Baby Clubs                                                                  | Ministry of Children and Family Development                                          |
|                         | Mother Baby Nutrition Supplement                                                    | Ministry of Children and Family Development                                          |
| New Brunswick           | Child care (day care centres, nursery schools, community day care homes)            | Department of Family and Community Services                                          |
|                         | Early Childhood Initiatives Program                                                 | Department of Family and Community Services                                          |
|                         | Kindergarten                                                                        | Department of Education                                                              |
|                         | New Brunswick Head Start                                                            | First Nations of New Brunswick                                                       |
|                         | Early Childhood Initiative                                                          | Departments of Family and Community Services and Health and Wellness                 |
|                         | Children's Support Program                                                          | Department of Family and Community Services                                          |
|                         | Communities Raising Children                                                        | Departments of Family and Community Services, Education and Health and Wellness      |
|                         | Excellence in Parenting                                                             | Department of Family and Community Services and New Brunswick Public Library Service |
|                         | Infant - Parent Attachment Pilot Program                                            | Departments of Family and Community Services and Health and Wellness                 |
|                         | Talk With Me - Early Language Pilot Program                                         | Departments of Family and Community Services, Education and Health and Wellness      |
| Prince Edward Island    | Child care (early childhood centres, family day care homes, occasional centres)     | Department of Social Services and Seniors and Department of Education                |
|                         | Kindergarten                                                                        | Department of Social Services and Seniors/ Department of Education                   |

| Jurisdiction                    | Program(s)                                                                                                                             | Ministry/Department                                                              |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
|                                 | Best Start Home Visiting                                                                                                               | Department of Social Services and Seniors                                        |
|                                 | Newborn Auditory Screening                                                                                                             | Ministry of Health                                                               |
| Nova Scotia                     | Child care (child care centres, child development centres, family child care)                                                          | Department of Community Services                                                 |
|                                 | Child Care Information and Support                                                                                                     | Department of Community Services                                                 |
|                                 | Kindergarten                                                                                                                           | Department of Education                                                          |
|                                 | Healthy Beginnings: Enhanced Home Visiting Initiatives                                                                                 | Department of Health and Public Health Services                                  |
| Quebec                          | Centres de la petite enfance (CPEs including centres and family child care)                                                            | Ministère de l'Emploi, de la Solidarité sociale et de la Famille                 |
|                                 | Garderies                                                                                                                              | Ministère de l'Emploi, de la Solidarité sociale et de la Famille                 |
|                                 | Milieu scolaire (school-age child care)                                                                                                | Ministère de l'Emploi, de la Solidarité sociale et de la Famille                 |
|                                 | Maternelle and Pré-maternelle                                                                                                          | Ministère de l'Éducation du Québec                                               |
|                                 | Passe-partout                                                                                                                          | Ministère de l'Éducation du Québec                                               |
|                                 | Early Intervention Services at CLSCs                                                                                                   | Sante Quebec                                                                     |
| Ontario                         | Day Nurseries (child care centres, nursery schools, supervised private home day care, special needs resourcing)                        | Ministry of Children & Youth Services and Consolidate Municipal Service Managers |
|                                 | Senior and junior kindergarten                                                                                                         | Ministry of Education & District School boards                                   |
|                                 | Ontario Early Years Centres                                                                                                            | Ministry of Child & Youth Services                                               |
|                                 | Data Analyst Coordinators                                                                                                              | Ministry of Child & Youth Services                                               |
|                                 | Early Literacy Initiative                                                                                                              | Ministry of Child & Youth Services                                               |
|                                 | Maternal Health, Newborn and Early Child Development Centre                                                                            | Ministry of Child & Youth Services                                               |
|                                 | Healthy Babies, Healthy Children                                                                                                       | Ministry of Child & Youth Services and Public Health Units                       |
|                                 | Preschool Speech and Language Program                                                                                                  | Ministry of Child & Youth Services and Public Health Units                       |
|                                 | Infant Development                                                                                                                     | Ministry of Child & Youth Services                                               |
|                                 | Infant Hearing Program                                                                                                                 | Ministry of Child & Youth Services                                               |
|                                 | Autism Intervention Program                                                                                                            | Ministry of Child & Youth Services                                               |
|                                 | Aboriginal Fetal Alcohol Spectrum Disorder and Aboriginal Nutrition Programs                                                           | Ministry of Child & Youth Services and First Nations                             |
|                                 | Pregnant Women with Addictions                                                                                                         | Ministry of Child & Youth Services                                               |
|                                 | Prenatal and Postnatal Nurse Practitioner Services                                                                                     | Ministry of Health and Public Health Units                                       |
|                                 | Early Years Challenge Fund                                                                                                             | Ministry of Child & Youth Services                                               |
| Learning, Earning and Parenting | Ministry of Child & Youth Services                                                                                                     |                                                                                  |
| Manitoba                        | Child care (centres, nursery schools, family child care homes, group child care homes, occasional child care centres)                  | Manitoba Family Services and Housing                                             |
|                                 | Kindergarten                                                                                                                           | Manitoba Education, Citizenship and Youth                                        |
|                                 | Prekindergarten                                                                                                                        | Manitoba Education, Citizenship and Youth/Winnipeg & Frontier School Divisions   |
|                                 | Early Child Development Initiative                                                                                                     | Healthy Child Manitoba/School Divisions                                          |
|                                 | Parent-Child Centre Approach                                                                                                           | Healthy Child Manitoba                                                           |
|                                 | Healthy Baby                                                                                                                           | Healthy Child Manitoba                                                           |
|                                 | Baby First                                                                                                                             | Healthy Child Manitoba                                                           |
|                                 | Early Start                                                                                                                            | Healthy Child Manitoba                                                           |
|                                 | Children's Special Services                                                                                                            | Healthy Child Manitoba                                                           |
| FASD Prevention Strategy        | Healthy Child Manitoba                                                                                                                 |                                                                                  |
| Saskatchewan                    | Regulated Child Care Programs (child care centres, family child care homes, group family child care homes, teen student support family | Saskatchewan Learning                                                            |

| Jurisdiction                 | Program(s)                                                                                                                     | Ministry/Department                                                                   |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                              | child care homes)                                                                                                              |                                                                                       |
|                              | Kindergarten and Prekindergarten                                                                                               | Saskatchewan Learning                                                                 |
|                              | Kids First                                                                                                                     | Saskatchewan Learning, Health, Community Resources, First Nations and Metis Relations |
|                              | Community Solutions Program                                                                                                    | Saskatchewan Learning                                                                 |
|                              | Early Childhood Intervention Program                                                                                           | Saskatchewan Learning and Health                                                      |
|                              | Infant Mortality Risk Reduction                                                                                                | Saskatchewan Health                                                                   |
| <b>Alberta</b>               | Regulated Child care (day care centres, nursery schools, approved family day homes, drop-in centres, licensed drop-in centres) | Alberta Children's Services and Regional Child & Family Services Authorities          |
|                              | Kindergarten (Early Childhood Services)                                                                                        | Alberta Education                                                                     |
|                              | Special Needs Early Childhood Programs                                                                                         | Alberta Education                                                                     |
|                              | Parent Information Line                                                                                                        | Alberta Children's Services                                                           |
|                              | Parent - Child Literacy Strategy                                                                                               |                                                                                       |
|                              | Home Visitation                                                                                                                | Alberta Children's Services                                                           |
| <b>British Columbia</b>      | Fetal Alcohol Spectrum Disorder Initiative                                                                                     |                                                                                       |
|                              | Child care (group child care centres, preschools, family child care, emergency care, child minding, ski hill or resort care)   | Ministry of Children and Family Development                                           |
|                              | Child Care Resource and Referral (CCRR) Programs                                                                               | Ministry of Children and Family Development                                           |
|                              | Kindergarten                                                                                                                   | Ministry of Education                                                                 |
|                              | Strong Start                                                                                                                   | Ministry of Education                                                                 |
|                              | Ready Set Go                                                                                                                   | Ministry of Education                                                                 |
|                              | Family Place                                                                                                                   |                                                                                       |
|                              | Success by Six                                                                                                                 | Ministry of Children and Family Development                                           |
|                              | Children First                                                                                                                 | Ministry of Children and Family Development                                           |
|                              | Infant Development Program                                                                                                     | Ministry of Children and Family Development                                           |
|                              | Aboriginal Infant Development Program                                                                                          | Ministry of Children and Family Development                                           |
|                              | Early Hearing and Vision Screening                                                                                             | Ministry of Children and Family Development and Health                                |
|                              | Early Intervention Therapies                                                                                                   | Ministry of Children and Family Development                                           |
| <b>Northwest Territories</b> | Child care (day care centres, nursery schools, after-school care, family day homes)                                            | Department of Education, Culture and Employment                                       |
|                              | Kindergarten                                                                                                                   | Department of Education, Culture and Employment                                       |
|                              | Healthy Children Initiative                                                                                                    | Department of Education, Culture and Employment                                       |
| <b>Nunavut</b>               | Regulated child care (day care centres, nursery schools, family day homes)                                                     | Department of Education                                                               |
|                              | Kindergarten                                                                                                                   | Department of Education                                                               |
|                              | Young Parents Stay Learning                                                                                                    | Department of Education                                                               |
| <b>Yukon</b>                 | Child care (centres, family day homes)                                                                                         | Department of Health and Social Services                                              |
|                              | Kindergarten                                                                                                                   | Department of Education                                                               |
|                              | Child Development Centre                                                                                                       | Department of Health and Social Services                                              |
|                              | Healthy Families Program                                                                                                       | Department of Health and Social Services                                              |

## Appendix B: The Council's Board of Directors and Staff

### *Board of Directors*

Charles Coffey, Chair  
Jim Grieve, Vice-Chair  
Dr. Robin Williams, Vice-Chair  
Cathy Matthews, Secretary  
Dr. Stuart Shanker, President  
J. Fraser Mustard, Founder, Chair Emeritus, Treasurer  
Len Bolger  
Kelly Cameron  
Tom Carson  
Dr. Margaret Clarke  
Dr. Rod Fraser  
Dr. John Hamm  
Hon. Margaret Norrie McCain  
Ted Whiteland  
Dr. Cornelia Wieman

### *Staff*

John Doherty, Chief Operating Officer  
Eva Haralambidis-Doherty, Office Manager  
Allison Black, writer  
Alfredo Tinajero, researcher

## Appendix C: The Council's Community Fellows and Expert Advisors

One of the key roles of the Council is to provide leadership at the community level. To accomplish this task, the council has appointed 11 fellows from across the country. These individuals will serve to the end of 2007. They are as follows:

### *Fellows*

Anne Biscaro, Ontario  
Wendy Church, Manitoba  
Jean Clinton, Ontario  
Michelle Craig, Alberta  
Elena DiBattista, Ontario  
Carol Gott, Ontario  
Janet Mort, British Columbia  
Sheila Murdock, Fisher River Cree Nation, Manitoba  
Jim Mustard, Nova Scotia  
Linda Nosbush, Saskatchewan  
Joanne Schroeder, British Columbia

The Council's Expert Advisors are science and communication leaders who will guide and advise the Council in its collective efforts to harness the evidence and make its messages accessible to communities and they will work with the Council to develop an infrastructure to monitor early child development (ECD) in communities across Canada. The Expert Advisors are:

### *Expert Advisors*

Dr. Robin Williams, Chair, Ontario  
Fraser Mustard, Ontario  
Jane Bertrand, Ontario  
Leanne Boyd, Manitoba  
Dr. Margaret Clarke, Alberta  
Dr. Nancy Cohen, Ontario  
Claire Gascon Giard, Quebec  
Dr. Clyde Hertzman, British Columbia  
Dr. Donald Jamieson, Ontario  
Dr. Magdalena Janus, Ontario  
Nicole Lafrenière-Davis, Ontario  
Kerry McCuaig, Ontario  
Dr. Charles Pascal, Ontario  
Dr. Ray Peters, Ontario  
Jeff Reading, British Columbia  
Rob Santos, Manitoba  
Dr. Stuart Shanker, Ontario  
Mary Eming Young, Washington

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