

# Resources



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## Child Care and Children's Development

**In Canadian research, the National Longitudinal Survey of Children and Youth (NLSCY) compared two groups of children where one was in group care and the other was at home with a parent. They found 40% of kindergarten children from group care had high communication skills whereas only 25% of those at home with parent had the same level of skill. The same results were found with learning skills, in that 38% of children who were in-group care were higher than the 24% of home care. They found that these results carried over to grade one.**

*(Doherty, G. (2000). Issues in Canadian Child Care: What does the research tell us? Research Connections Canada, 5, Ottawa: Canadian Child Care Federation. p. 37)*

**Using the NLSCY data on the long-term effects of child care, Canadian researchers found that children who were in out-of-home group care scored higher in language understanding than those children who were not receiving child care.**

*(Kohen, D. & Hertzman, C. (1998). The Importance of Quality Child Care. Ottawa: Human Resources Development Canada, in Doherty, G. (2000). Issues in Canadian Child Care: What does the research tell us? Research Connections Canada, vol. 5, p. 39)*

**In international research, a British longitudinal study used a large sample (Ss 4,863) to compare the effects of group experiences in children to those who had no experiences. At 5 yrs, the children who had previous group experiences scored better on tests of cognitive functioning. At the age of 10 years, children with group experiences had larger vocabularies and better thought organization.**

*(Osborn, A.F. & Millbank, J.E. (1987). The Effects of Early Education: A Report from the Child Health and Education Study. Oxford, Eng.: Clarendon Press, in Doherty, G. (2000). Issues in Canadian Child Care: What does the research tell us? Research Connections Canada, vol. 5, p. 38)*

**Researchers from Concordia University (1992) found that children with group care experience were more social and less withdrawn and non-participatory. As time went on, the differences were maintained in those children who had participated in high-quality centers.**

*(Jacobs, E.V., Selig, G., & White, D.R. (1992). Classroom behaviour in grade one: does quality of preschool day care experience make a difference? Canadian Journal of Research in Early Childhood Education 3: pp. 89-100.)*

**In a review of 19 international studies, 58% found that out-of-home group care benefited child development on one or more of the following areas: peer relationship skills, language skills, cognitive functioning, turn-taking, direction skills, attention span.**

*(Adapted from Doherty (1996) The Great Child Care Debate: The Long-Term Effect of Non-Parental Child Care. Toronto: Childcare Resource and Research Unit, University of Toronto, in Doherty, G. (2000). Issues in Canadian Child Care: What does the research tell us? Research Connections Canada, vol. 5, p.40)*

**Young children in full-time child care spend as much as 9 hours a day, 5 days a week in that situation. For infants and toddlers, this represents more of their waking hours that those spent with their family.**

*(Doherty, G. (2000). Issues in Canadian Child Care: What does the research tell us? Research Connections Canada, 5, Ottawa: Canadian Child Care Federation. p. 34)*

**Research has shown that a poor quality child care environment, that is, one lacking in verbal or other stimulation, hinders the development of middle-class children even though their family environment is not lacking in stimulation.**

*(Howes, C. (1990). Can the age of entry into child care and the quality of child care predict adjustment in kindergarten? Developmental Psychology 26: 292-303, in Doherty, G. (2000). Issues in Canadian Child Care: What does the research tell us? Research Connections Canada, vol. 5, p. 34)*

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## First Ministers' Meeting Communiqué On Early Childhood Development

Ottawa - September 11, 2000

### Introduction

First Ministers, with the exception of the Premier of Quebec<sup>1</sup>, agree on the importance of supporting families and communities in their efforts to ensure the best possible future for their children. Every child should be valued and have the opportunities to develop his or her unique physical, emotional, intellectual, spiritual, and creative potential.

*First Ministers affirm* their commitment to the well-being of children by setting out their vision of early childhood development as an investment in the future of Canada. Canada's future social vitality and economic prosperity depend on the opportunities that are provided to children today.

*First Ministers recognize* that parents and families play the primary role in supporting and nurturing children. Communities, businesses, non-profit organizations, professional networks, associations, volunteers and governments also make key contributions to the well-being of children. Governments have shown leadership by taking steps to address key children's issues in their jurisdictions, individually and in partnership.

The early years of life are critical in the development and future well-being of the child, establishing the foundation for competence and coping skills that will affect learning, behaviour and health. Children thrive within families and communities that can meet their physical and developmental needs and can provide security, nurturing, respect and love. New evidence has shown that development from the prenatal period to age six is rapid and dramatic and shapes long-term outcomes.

Intervening early to promote child development during this critical period can have long-term benefits that can extend throughout children's lives. Governments and other partners currently provide a range of programs and services to effectively support early childhood development. The challenge is to build on existing services and supports, to make them more coordinated and widely available.

*First Ministers* therefore agree to work together so that young children can fulfill their potential to be healthy, safe and secure, ready to learn, and socially engaged and responsible.

In support of this common goal, governments will improve and expand early childhood development programs and services over time. Governments will work with families and communities to help meet the needs of young children and their families. Governments will report regularly on their progress and will continue to build knowledge and disseminate information to parents, communities and service providers to help them to give children the best possible start in life.

## Objectives

Focussing on children and their families, from the prenatal period to age six, the objectives of this early childhood development initiative are:

- to promote early childhood development so that, to their fullest potential, children will be physically and emotionally healthy, safe and secure, ready to learn, and socially engaged and responsible; and
- to help children reach their potential and to help families support their children within strong communities.

## Four Key Areas for Action

To meet the objectives set out above, First Ministers agree on four key areas for action. Governments' efforts within this framework will focus on any or all of these areas. This will build on the priority that governments have placed on early childhood development and the investments that governments have already made.

1. **Promote Healthy Pregnancy, Birth and Infancy**  
Prenatal, birth and infancy experiences have a profound effect on the health and well-being of infants and young children, and contribute to continuing good health. This priority addresses needs related to the prenatal, birth and infancy periods and includes supports for pregnant women, new parents, infants and care providers. Possible examples are prenatal programs and information, and infant screening programs.
2. **Improve Parenting and Family Supports**  
Parents and families have the primary responsibility for the care of their children. This priority addresses the needs related to positive parenting and includes supports for parents and caregivers. Possible examples are family resource centres, parent information, and home visiting
3. **Strengthen Early Childhood Development, Learning and Care** Quality early childhood development, learning and care have been shown to promote physical, language and motor skills; and social, emotional and cognitive development. This priority includes supports that promote healthy development, provide opportunities for interaction and play, help prepare children for school and respond to the diverse and changing needs of families. Possible examples include preschools, child care and targeted developmental programs for young children.
4. **Strengthen Community Supports**  
Communities make key contributions to the well-being of children through formal and informal networks. This priority includes supports to strengthen community capacity to meet the needs of children and families from a healthy community perspective. Possible examples include supports for community-based planning and service integration.

**Governments recognize that effective approaches to supporting early childhood development are:**

- focussed on prevention and early intervention;
- intersectoral;
- integrated; and
- supportive of the child within the family and community context.

Early childhood development programs and services should be inclusive of:

- children with different abilities; and
- children living in different economic, cultural, linguistic and regional circumstances.

**Working Together to Meet Children's Needs**

Governments will work together in full respect of each other's responsibilities, recognizing that provinces and territories have the primary responsibility for early childhood development programs and services. Each government will determine its priorities within this framework.

Governments will work with the Aboriginal peoples of Canada to find practical solutions to address the developmental needs of Aboriginal children.

Governments will ensure effective mechanisms for Canadians to participate in developing early childhood development priorities and reviewing outcomes.

**Funding**

First Ministers agree that ensuring effective early childhood development is a long-term commitment to our children's future. First Ministers agree that investments for early childhood development should be incremental, predictable and sustained over the long term. First Ministers are committed to helping all sectors of society support children in their early years and to making incremental investments in this area.

First Ministers recognize that this initiative builds on the significant provincial/territorial investments already made in early childhood development and agree on the need to ensure flexibility to address local needs and priorities. This initiative also complements existing important federal investments for children and families.

**Public Reporting**

First Ministers believe in the importance of being accountable to Canadians for the early childhood development programs and services that they deliver. Clear public reporting will enhance accountability and will allow the public to track progress in improving the well-being of Canada's young children. Regular measuring of, and reporting on, early childhood development provides governments and others with a powerful tool to inform policy-making and to ensure that actions are as focussed and effective as possible.

Therefore, First Ministers commit their governments to:

- report annually to Canadians on their investments and their progress in enhancing programs and services in the four areas described above, beginning with establishing a baseline of current early childhood development expenditures and activities. Governments will begin reporting within one year and will strive to continue to improve the quality of reporting over time;
- develop a shared framework, including jointly agreed comparable indicators to permit each government to report on progress in improving and expanding early childhood development programs and services within the areas for action described above. The framework will be developed in a manner that recognizes the different starting points and pressures in each jurisdiction and is informed by their diverse priorities. Examples would include indicators of the availability and growth of programs and services related to pregnancy, birth and infancy; parenting and family supports; early childhood development, learning and care; and community supports. Governments will report on the results of this work by September 2002 and annually thereafter, beginning with the development of indicators in areas identified as priorities by jurisdictions, and expanding with the overall development of early childhood development programs and services; and
- make regular public reports on outcome indicators of child well-being using an agreed upon set of common indicators to be developed by September 2002 related to the objectives established for early childhood development. This could include currently available indicators (such as children born at healthy birth weight and infant mortality); and newly developed indicators (such as a measure of the proportion of children who are ready to learn when they start school).

*First Ministers* agree that governments will consult third parties to assist, as appropriate, in developing indicators and assessing progress on early childhood development.

The purpose of performance measurement is for all governments to be accountable to their publics, not to each other. The amount of federal funding provided to any jurisdiction will not depend on achieving a given level of performance.

### **Knowledge, Information and Effective Practices**

Research, knowledge and information are the foundations of evidence-based decision-making and are critical to informed policy development. Dissemination of information and sharing of effective practices can create a more knowledgeable public on issues of child development and can promote the enhancement of early childhood development programs and services.

Governments agree to work together, where appropriate, on research and knowledge related to early childhood development, share information on effective practices that improve child outcomes and work together to disseminate the results of research.

### **Next Steps**

First Ministers direct Ministers responsible for Social Services and Health to begin implementation as soon as possible of the commitments and priorities outlined above.

Government of Canada. *New Federal Investment to Accompany the Agreements on Health Renewal and Early Childhood Development* September 11, 2000 Announcement. Accessed 2003-10-15 from [http://socialunion.gc.ca/news/110900\\_e.html](http://socialunion.gc.ca/news/110900_e.html)

## Giving Children a Healthy Start: We're All in This Together

Dana Brynelsen

*This article first appeared in Family Connections (Fall 2000), published by the BC Council for Families.*

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The past few years have seen an explosion of interest in child development and the role of the environment in the early years. Those who remember *Megatrends*, John Naisbitt's book of the '80s, might view this current interest as a contemporary megatrend. The media attention to this topic is significant. Both *Newsweek* and *Time* have had special editions devoted to infants and young children. Local newspapers carry numerous articles, some focusing on the adverse consequences of poverty on the young developing child, others on what we believe to be important contributors to healthy development. Recent links have been established that indicate our national economic growth is tied to the health of our youngest citizens. Business leaders are now joining government policy makers, researchers, community leaders and parents in pressing for more resources to encourage early development. Young children are in the spotlight.

It has long been accepted that both nature, our genetic makeup and constitution, and nurture, our physical and social environment, transact in complex ways to influence our development. We are each born with an individual biologic potential. The degree to which this will be expressed depends in part on our childhood experiences. Controversies, however, exist as to which contributes most to our eventual outcome, to what degree and in which ways. As a society, we tend to lean in one direction or another depending on the research interests of the day and other social forces. Today we do have new research that gives us knowledge to alter downward trajectories for some young children and growing social concern for those children whose futures are severely compromised by poverty and lack of opportunity. We have been here before.

In my career, which now spans five decades, I've seen interest in young children come and go, albeit with nothing of the magnitude of today's interest. In the sixties (which I do remember) Hunt challenged the notion that intelligence was "fixed" and he and others argued that the environment of the child in the early years could have significant impact on later intellectual functioning. His work converged with other researchers who studied the outcomes of children raised in the extremely deprived environments of orphanages and institutions and with animal studies that compared animal outcomes from enriched versus deprived environments. Believing in a connection between mild mental handicap and poverty and that mild mental handicap could be "cured" by providing enriched environments, the American government began a war on poverty and implemented the first of the Head Start programs in 1965. These early childhood programs (initially summer programs) provided children of low-income families with an intensified curriculum in the form of "a middle class experience". The intent of these early intervention preschool

programs was to raise the IQ scores and performance levels of children living in severely deprived communities to prepare them for the school experience. These programs and other early education research initiatives met with modest success but early promises that short-term environmental manipulations could "cure" mental handicap and have a significant and lasting impact on intellectual development were not met. Clark and Clark published *Early Experience: Myth and Evidence* (1976), which challenged the notion that the early years were critical for later development and argued that all developmental stages of childhood were important. The first wave of post-war enthusiasm faded.

The early '80s brought another wave of interest in nurture and the role of experience in early human development, particularly for middle class families, and Super Baby programs emerged with promises to parents that "all babies are potential geniuses". Flashcards and early reading kits became the rage for some families who had the financial resources, time and interest to invest in this. This era was filled with publications such as Doman's *Teach Your Baby Math*, Engelmans' *Give Your Child a Superior Mind* and Ludington-Hoe's *How to Have a Smarter Baby*. Researchers expressed concerns that these "pressure cooker" approaches to child development could do more harm than good, and this too passed.

Today's interest is heightened in part by new longitudinal research that links early childhood experiences to later adult outcomes. Lives that begin in adversity are more likely to end in adversity. Income inequities and other practices that contribute to poverty place an increasing number of Canadian children at very high risk of adverse outcomes. Today, one child in five in Canada lives in poverty. Conversely, the opportunities provided by healthy, secure early years increase the odds of continuing to live a longer, healthier and more productive life. We also know much more about what does make a difference for young children and the importance of providing children with nurturing and developmentally encouraging environments right from the start. Our reality in Canada is that many children, particularly those living in poverty, do not reach their full potential in this society because such environments are not consistently available to them. It is critical to understand that it is what parents do with their children, not their socio-economic status, that determines child outcome. However, it is very difficult to provide developmental support for your child when your rent is unpaid and your child is hungry. The following describes in brief what we mean by nurturing and developmentally encouraging environments and what we need to do to ensure more children have access to them. We will look at this in relation to the child, the family and the community.

### The Child

It is important to acknowledge first that child development depends to a very large degree on the child's genetic make up and constitution. There are significant individual differences from child to child. As a friend said to me once: "I thought I was a terrific mother until John was born." Her first-born son was a sweet-natured, easygoing child, a delight to be around, and very easy to parent. Her second son, John, was challenging, very much his own person, and very difficult to parent well. In our concern about environmental influences on the child, it's easy to overlook or to diminish the impact of heredity, the nature side of the equation. We risk doing a great disservice to children and their parents by ignoring these individual differences. When traits, behaviours or developmental problems in young children are seen as originating from environmental influences alone, we can create unrealistic expectations for change or blame parents for child outcomes rather than offering our understanding and support.

Environmental factors that contribute to child development which are potentially modifiable

include the mother's pre- and post-conception health, her nutrition during pregnancy and avoidance of harmful agents such as cigarettes and alcohol, quality prenatal care, strong economic and social supports and freedom from stress and anxiety. After birth and in the early months and years of a child's life, the quality of the relationships that develop between the infant and the mother, the father and other significant family members is key to healthy growth and development. These loving relationships support the development of the child as a social and communicative being and influence all other aspects of development as well. Parents who are sensitive to the child's cues and who respond consistently in warm and loving ways establish patterns of interaction that positively influence language and cognition. The importance of this earliest nurturing and developmentally encouraging environment within the family context cannot be overestimated.

As children grow and their worlds expand, they need social and physical environments that encourage safe exploration and learning. Such environments are created when parents and other significant adults in the child's life encourage and support child-initiated learning that follows the child's lead and interests. Direct instruction has a place in this environment but is of most benefit when the child is developmentally ready to learn a new skill, has an interest in it, and is positively supported by the parent or caregiver in working toward and attaining the goal. Rich language environments in which infants and young children are interactive partners with parents are also key to early learning. The traditional language play between parents and children that emphasizes songs, rhymes and stories is very important. Reading to infants and young children should be a part of daily family life. However, there is no research to support the early introduction of academic subjects like reading instruction to young children. In fact, evidence from Europe suggests that children who are first introduced to formal reading instruction at age seven, by age 12 outperform those children who receive formal instruction starting at age four. Of course, there will be some children who are very keen to read at an early age and, like other interests demonstrated by the young child, this should be fostered.

Children with developmental delay or disability and their families need access to the same encouraging environments as all children do. In addition, family-centred special services like Infant Development Programs, Supported Child Care and a range of therapy interventions must be available from the time the delay or disability is detected. Many children at risk also benefit from such special services.

### **The Family**

What do families, in particular parents of young children, need to support healthy child development? Parents need to feel valued and supported in their very challenging role as parents. It is a sad reality in Canada that many parents do not feel valued and this is particularly true for those who struggle with difficult financial circumstances. Margaret Mead said that, as a society, we have isolated the nuclear family and expect one or two adults to take on child-rearing roles and responsibilities, including financial, that were once shared by many more people. Friends who travel to countries where young children are valued and where parents have broad community respect and support comment how rarely, if ever, they hear a child cry. When children fuss, eager hands stretch out to nurture and comfort. What do we offer? An American father visiting here with his young children was refused entry to a hotel dining room and redirected to a cafeteria. He made a Human Rights complaint and was ridiculed in our press for doing this. We don't value young children in our society and they and their parents are ostracized in many social settings. On a more positive note, I recently saw a sign outside a restaurant at the Vancouver Airport that said

"Children are Very Welcome Here". We need more signs like that in Canada. Let us remember that parents are "raising the future" for our whole society.

Parents also need access to information that can guide them in making good choices for their children. The recently created Parent Help Line by Invest in Kids is an excellent example of a parent-friendly information service. Family Resource Centres available in many communities in Canada provide a broad range of necessary parenting supports. Too often, however, we do not recognize, let alone acknowledge, the wealth of information parents have about their individual children, their skills in parenting and their successes in providing nurturing and developmentally encouraging experiences for their children, often in the face of significant obstacles. These tremendous accomplishments need to be celebrated! Carl Dunst, a well known researcher in child development, has recently started a project called The Power of the Ordinary. He states: "Everyday child life is made up of ordinary but powerful family and community experiences. The many good things parents and families do each and every day with their children often go unrecognized despite their importance for growth and learning." His project staff are travelling throughout North America videotaping and photographing the ordinary but powerful experiences making up the fabric of everyday child life.

Parents need time and energy to devote to young children. We live in a society where both are in short supply. Employment demands, schooling or struggling to make ends meet on a limited income can drain parental capacity. A range of other nurturing and developmentally encouraging learning environments that are community-based are needed to enhance parental efforts. All parents need such supports. However, community-based efforts are of particular importance for families who struggle with poverty. Until we address fundamental inequities in our society, children who live in poverty must have preferential access to community services. Increasingly, however, these services are available only to those families with significant financial resources and the children and families who need them most do not get them.

### **The Community**

Our "communities", however we define them, have a huge role in providing young children with nurturing and developmentally encouraging environments. Beyond a welcoming attitude (and one sign to date is not enough), how well parents do in their parenting role depends to a large degree on community supports available to them. Caring for young children can be very isolating unless communities work to connect families with supports. Neighbours, extended family, friends, shopkeepers, and librarians all have a potential role to play in supporting the young family. Parent-Child Mother Goose is an excellent example of a community activity that fosters close relationships between parents and reduces the stresses of parenting on your own.

Starting with pregnancy, workplace demands can impact significantly on child outcome. France reduced low birth weights; associated with adverse developmental outcomes for some young children, by 50% when they introduced paid pregnancy leave for women in stressful or physically demanding jobs. Child outcomes are also adversely affected by workplace stresses that create tensions for parents between home and work responsibilities. Some employers have developed innovative strategies to support staff in their child rearing capacity and research shows benefits to both the employer as well as to the child. Most have not, however, and some employers bitterly resent any time their staffs take away from work to care for their children. This must change.

We need a range of full and part-time quality childcare options available to support working parents, at home parents, and students. High quality childcare, particularly for children whose parents cannot provide them with consistently nurturing and developmentally appropriate learning opportunities is also a critical component of necessary community support. For some children at significant risk for school failure, high quality childcare is considered by many to be the single most important factor necessary to alter developmental outcomes. In most of Europe, childcare is seen as a national and community responsibility, and in many countries all children are entitled to these services. However, in some European countries children living in poverty or in high risk communities are eligible to attend special child care settings which have smaller class sizes, more play materials, and well paid, specially trained teachers who have access to expert support. When parents are not able to provide enough developmental support to ensure their young children are getting what they need, the community is there to offer these enriched services. As a result, many more children are better prepared at school entry and, in the long term, there are substantial economic benefits for the countries providing these early learning opportunities. Unfortunately, research in Canada reveals the reverse experience for young Canadian children. Enriched environments are almost exclusively available to those children whose families can pay high fees for them. Although there are some stunning exceptions, the child at risk is typically served by poorly trained and poorly paid staff in crowded centres or is not in a child care setting at all.

Communities also offer a host of other learning opportunities for young children but these too are often not accessible to the families who need them most. A parent was recently quoted as saying, "What I need is a bus pass; what I get is a parenting program I don't need and can't get to anyway." Other community services run by municipal parks and recreation departments tend to cater to families with older children or adults. Our little park down the street has a wonderful pool for children from infancy up to middle childhood. Many families come in July and August, the only months it is open. They would come in June and September as well but our Parks Board policy supports longer pool hours only for pools adults or tourists use, not pools that attract families with young children. In addition to signage, we need government policies that shift existing resources so that our youngest community members and their families can get their fair share. Initiatives such as the Child and Youth Friendly Communities sponsored by the Society for Children and Youth of BC need our support.

In closing, I would like to quote from the late Dr. Paul Steinhauer, a wonderful Canadian advocate for children: "In Canada, we view children as the possessions of their parents; in Europe, they are seen as the future." Here's to our future! Let's make a difference for Canada's children and start making the changes needed to ensure all our children get the best possible start in life.

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## It's a Stressful Life

Talaris Institute, Retrieved from [http://www.talaris.org/spotlight\\_stressfullife.htm](http://www.talaris.org/spotlight_stressfullife.htm)

Let's face it; stress is a part of life. And modern life seems to present us with more of it than ever before. Adults struggle to balance work and family life. Adolescents are stressed about school, relationships, and the future. When our well-being is in some way threatened, our bodies react with what we call a stress response—we feel anxious or stressed out!

Babies are no exception. When their basic needs for food, touch, and loving care are neglected, infants show signs of a stress response.

Too much stress, researchers are beginning to discover, may affect babies' physical and mental health, not only now but later in life. During the early months and years of life, some researchers think that babies develop the foundations of their stress response system. The way this system develops may shape how these children react to stressful situations for years to come. Too many stressful situations early on may set a pattern for the way we respond to stress in later years (**Cicchetti & Walker, 2001**).

### You know it when you feel it

For such a common word, stress is very complex. What's stressful to one person may not be stressful to another. Even scientists studying it don't always agree on what it is. In general, stress is a combination of *events that we find threatening and our responses to those events*.

Much of the leading scientific work on stress so far has been conducted with animals, but these results, though informative, can't be directly applied to humans. Some research has been done with adults, and even less with children and infants. Even so, scientists are beginning to come up with clues that may help us understand stress in ways that may help improve the health of our children.

To understand how stress affects us, it's helpful to have an idea of how we respond to threatening situations.

### Fight or flight

When we feel threatened—whether by something like speaking in public or as serious as facing a mugger—most of the body's regulatory systems switch on. The brain directs the release of several stress hormones in the body, including one called cortisol. As a result, we might experience some combination of:

- Sweaty palms
- Rapid or shallow breathing
- Pounding heart rate
- Loss of appetite

This is not always a bad thing. In fact, it's essential to survival. In the short term, high levels of stress hormones not only get us ready to fight or run away, they may improve certain types of memory, so we'll recognize similar threats in the future.

We seem to handle short-term episodes of stress well. It's when stress hormone levels are high for a long time that health problems begin to occur. Chronic stress and high cortisol levels have been linked to changes in nerve cells and the brain, to problems with memory and learning skills, to the suppression of the immune system, and to behavioral problems (**McEwen, 2000**).

### **Studying babies, neglect, and stress**

When it comes to stress and babies, the stakes may be even higher. Studies with rats and monkeys show that neglectful care early in life and a lack of parental support when an infant is distressed has a powerful influence on the ways their stress response systems develop. If stressful conditions like these continue during early development, they may set in place a lifelong pattern for higher levels of stress hormones (**Gunnar, 2001**). Also, these studies show that living in a deprived environment with little personal contact and few things to see or touch can result in higher stress hormone levels. On the other hand, when little ones receive consistent, nurturing attention from caregivers and the opportunity to explore their world, they are more likely to develop healthy stress response systems.

It's hard to conduct stress experiments on humans—especially children. Subjecting babies to parental neglect and threatening situations and then measuring the levels of their stress hormones is unthinkable. But a study of children adopted from Romanian orphanages found that the longer a child lived under extreme conditions, the higher his or her stress hormones measured, even six and a half years after adoption (**Gunnar, Morison, Chisholm & Schuder, 2001**).

### **Stress early and often?**

In this study, scientists studied three groups of children, all of them 6 to 12 years old and living with families in western Canada. One group had been adopted after spending **more than eight months** of their early lives in orphanages. Members of the second group had been adopted from the orphanages when they were **four months old or younger**. And members of the third group were born in Canada and raised in their original families.

Parents took samples of their children's saliva on three days when nothing unusual was scheduled: once in the morning, again at noon, and finally within a half-hour of bedtime. After analyzing the saliva samples, the scientists found that *the children who spent more than eight months in orphanages had significantly higher average levels of cortisol than either the children adopted earlier in life or the Canadian-born children*. And the longer the children had lived in orphanages, the higher their average levels of cortisol.

The study was a small one. And more research is needed before scientists can say for sure that living in stressful situations early in life causes children to have higher levels of stress hormones later on, or even that increased hormone levels always lead to health problems. But, the researchers noted, their results are consistent with studies in rats that point to a sensitive time in early development when the response to stress may be set.

Many questions about stress and its effect on babies remain unanswered, but one encouraging finding is emerging: How parents and other caregivers treat infants may in fact help **lessen** the impact of early stress (**Gunnar, 2000**).

Finally, keep in mind that the brain is more resilient than many of us realize. Chronic stress may have a bad short-term effect on the brain, but there's evidence that only extreme conditions cause permanent change or damage (**McEwen, 2000**).

You can't shield your baby from everything that might cause stress. But you can help your baby through stressful times, often just by doing what comes naturally.

- Get to know your baby and try different ways to soothe her. One baby may be soothed by baths, another may like to be cuddled, and some prefer rocking.
- Try to identify stressful situations for your baby.
- Don't assume that letting a baby deal with stressful situations on his own will make him a "tougher" adult.
- Attend to your baby's needs by providing a warm and supportive environment and responding to your baby when he needs you.
- There is no such thing as spoiling babies with love and attention.
- Encourage your baby to experience new and exciting things, but be there to provide a calm, supportive presence so that the child experiences success in her exploration of the world.
- Recognize serious traumatic experiences when they happen, and don't ignore them. There's some evidence that help given soon after trauma may be effective in preventing brain changes that may be harder to treat later in life (**Cicchetti & Walker, 2001**).

References:

McEwen, B. S. (2000). *The neurobiology of stress: from serendipity to clinical relevance*. Brain Research, 886, 172-189.

Gunnar, M. R., Morison, S. J., Chisholm, K., & Schuder, M. (2001). *Salivary cortisol levels in children adopted from Romanian orphanages*. Development and Psychopathology, 13, 611-128.

Gunnar, M. R. (2000). *Early adversity and the development of stress reactivity and regulation*. The Minnesota Symposium on Child Psychology, vol. 31, 163-200.

Cicchetti, D., & Walker, E. F. (2001). *Editorial: Stress and development: Biological and psychological consequences*. Development and Psychopathology, 13, 413-418.

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## Quantity and Child Care

Ratio, group size, and care provider education have been referred to as the “iron triangle,” or the three elements that most influence child care quality. However, in the 1990 study, The Rusty Triangle, researchers found that even under ideal ratios, group size and staff training, a centre could receive a poor score on provider sensitivity. After undergoing an accreditation process, the participating educators became more self-aware and reflective and the score increased. The iron triangle could not sustain quality by itself.

### Ratios

The Canadian Child Care Federation suggested adult to child ratios for quality child care programs are: 1:3 for infants (birth to 12 months) in a group of six, 1:4 for toddlers (12 to 24 months) in a group of eight, 1:5 for two and three-year-olds in a group of ten children, and 1:8 for 4- and 5-year olds in a group of sixteen. Quebec permits a ratio of 1:5 for infants and 1:8 for toddlers; in both cases this is two children above the Federation’s recommended level for the age group.

### Group Size

While the Federation suggests no more than six infants in a group, British Columbia permits groups of 12, Manitoba and Yukon permit groups of eight, and Nova Scotia does not specify a ceiling on group size.

### Staff Education

No jurisdiction [in Canada] requires a two-year post-secondary ECCE credential for every teacher working in a centre. A study of 48 centres in the four Atlantic provinces reports a trend towards an association between higher scores on the Early Childhood Environment Rating Scale (ECERS) and teachers with higher

levels of early childhood care and education (ECCE) training.

### Characteristics of Quality

According to researchers, there are a few reoccurring and defining characteristics of quality child care:

1. Physical settings that protect children’s health and safety
2. The number of children, based on age and developmental level, that allows for the educator to provide individual attention
3. A group size which does not overwhelm the children
4. Pre- and in-service education related to child development and child care provision
5. A centre director who has formal ECCE education and training in administration
6. Higher remuneration levels and working conditions for the providers

Developing an infrastructure to support quality childcare would take sustained commitment, planning, resources and probably considerable time. It would need:

1. Parent and public information and engagement
2. A national policy framework
3. Predictable, assured, adequate levels of funding
4. Mechanisms for professional and workforce development
5. Mechanism of quality assurance
6. Ongoing support for child care practitioners
7. Collaborative planning and across-system linkages
8. Research and development

### References

- Canadian Child Care Federation (1993). *National Statement on Quality Child Care*. Ottawa: Author.
- Doherty, G. (2000). Elements in Quality, *Research Connections Canada*, 1, Ottawa: Canadian Child Care Federation, p.6 in Kaiser, B. and Sklar-Rasminsky, J. (1999) *Partners in Quality Issues* Ottawa: Canadian Child Care Federation, p.4.
- Doherty, G. (2000). Issues in Canadian Child Care: What does the research tell us? *Research Connections Canada*, 5, Ottawa: Canadian Child Care Federation. P. 42-62.

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## White House Summit on Early Childhood Cognitive Development

Address by Dr. Patricia K. Kuhl

Co-Director, Center for Mind, Brain, and Learning

Born to Learn: Language, Reading, and the Brain of the Child

July 26, 2001

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I want to thank First Lady Laura Bush, Secretary of Education Rod Paige, and Secretary of Health and Human Services Tommy Thompson, for convening this Conference. It calls attention to the country's most precious resource, our children.

I'm delighted to be here today to talk about early learning and the brain. It is an extraordinary time for this field. In the past decade, great progress was made in a variety of scientific fields -- genetics, biotechnology, and computer science. In this decade, a scientific information explosion is taking place in a new field -- early learning and brain development. We are studying the science of learning, and it is changing how we view a child's mind, and how we view a child's education.

There are three factors contributing to our fascination with children's learning.

Academic: The 1990s was the "Decade of the Brain." New technology was developed that allowed scientists, for the first time, to examine a living brain. It's not always been like this. When I was a graduate student we only had access to the secrets of the brain when it was sliced and viewed under a microscope. Now, we have all seen magazine articles picturing a brain that is "lit up" while its owner thinks, looks at a picture, or listens to music. If you're listening to me talk, I know which areas of your brain are activated. The new techniques are revealing, in a tangible way, how the brain really works.

Society: At the same time, studies of infants and children are showing that they learn more, and learn earlier, than we ever imagined. Children learn in novel ways that we hadn't predicted or expected -- I'll provide an example shortly. Studies show that from the earliest ages, children's brains code information that they see and hear. This happens automatically, without explicit instruction. These findings have been picked up by magazines, newspapers, and television documentaries -- and the public has a voracious appetite for it.

Business and industry have also taken notice of the new information about early learning. They know that children's learning will be influenced by technology and by the products that business provides. Education itself is undergoing a major transition, which is changing the face of the classroom. These factors all contribute to a growing interest in children's learning.

I want to tell you about four new developments that make a difference to children. First, I

will describe new studies that reveal the incredible learning skills of young children. Second, I will tie infants' early language skills to reading readiness. Third, I will describe the developing brain. And fourth, I will describe new partnerships between researchers and educators that are bringing the research results into the nation's classrooms. There's a big gap between the neuron and the chalkboard, but the bridge can be crossed if the right people work together.

Studies of infants and young children show that learning doesn't begin the day children enter school for the first time. Learning doesn't begin in first grade, or in Kindergarten. Learning begins in the first months of life. And parents, or caretakers, are our children's first teachers.

### **Language Learning**

The chief example I'll use today is language acquisition. Language is a hallmark of human beings, and scientists are beginning to understand exactly how the infant brain masters it. The surprise is that the infant brain acquires a tremendous amount of information about language in the first year of life before the infant can speak. Critical to today's discussion, this early learning plays a crucial role in laying the foundation for the ability to read. I'll use language as my primary example, but the kind of learning I'll describe is also true for other areas of cognitive development.

Language is made of building blocks -- the consonants and vowels that make up words. Every language uses a unique set of building blocks. Our studies show that, at birth, infants are what I like to call "citizens of the world." Early in life, infants can hear differences between all the consonants and vowels (the "building blocks") used in any language. Their abilities far exceed our own. As adults, we are no longer "citizens of the world." Instead, we are "culture-bound" listeners. We can hear distinctions between the sounds used in our own language but have great difficulty with the sounds of other languages, such as Mandarin Chinese or French. Infants can initially distinguish them all. But in order to learn a specific language, children have to learn the specific set of sounds used in that language. English is not Japanese.

To study this learning, I conduct studies in many different countries -- Japan, Russia, Sweden, Finland, and France -- testing infants and children from zero to five years of age. The studies show that by the age of 6 months, infants recognize the sound units used in their particular language. By 6 months, infants raised in Sweden respond in a very sophisticated way to the sounds of Swedish, and do not respond in that way to the sounds of English. American infants do the opposite -- they respond in that way to the sounds of English rather than those of Swedish. By 9 months, infants listening to English have learned which combinations of sounds are legal in English, and prefer them over ones appropriate for Polish or Dutch.

The learning going on isn't just simple memorization. Infants' brains make calculations based on the distribution of sounds they hear. It's as though infants are behaving like computers without their printers hooked up -- they store millions of bits of information before they can speak, simply by listening, and this tunes the infant brain to English rather than French. The amazing thing is that all of this happens so early in development. Before infants produce a single word, their little brains have mastered the sound patterns of language.

I want to show you how I conduct the studies. In this test a 6-month-old sits on her

mother's lap and is entertained by a person holding toys. At the same time, a sound repeats from a loudspeaker, in this case the vowel /a, a, a/. The baby's job is to turn toward the loudspeaker when the sound changes, in this case, from /a/ to /i/. When she turns correctly, she sees a toy light up.

As the infant brain masters its own language, something interesting happens. It becomes much more difficult for infants to distinguish the sounds used in a foreign language. I'll show you the results of a recent study I completed on American and Japanese infants. I tested them on two American English sounds, the /r/ and /l/ that distinguish English words like "rake" and "lake". The /r/ and /l/ sounds are not distinguished in Japanese, and Japanese adults have a great deal of difficulty with them, just as we do when we listen to foreign-language sounds.

I tested infants in the United States and Japan at two ages, 6 to 8 months, and 10 to 12 months. As shown in the slide, between 6 and 8 months, infants from the two countries are equally good at this task -- they perform well above chance. But by 10-12 months, just two months later, a big change has occurred. Infants in the US are getting much better at it, while the infants in Japan are considerably worse. Why does this happen? Because American children are listening to English and Japanese children are listening to Japanese. The baby brain is analyzing the sounds and discovering which ones the language uses. This early period is a "window of opportunity" for language, one in which the baby brain is learning at an extraordinary rate.

By 12 months of age, young infants are very focused on the patterns of their own language. They no longer respond to foreign languages like they did as young babies. Japanese babies no longer respond to the change from /r/ to /l/. The ability to distinguish foreign-language sounds has declined. Infants are becoming more adult-like and lose their status as "citizens of the world." They become more culture-bound, just like us. This specialization is essential for language learning, and illustrates how powerful early learning is.

By the time infants utter or understand their first words at one year of age, they have sorted out many of the components of language -- which sounds it uses, what sounds can be combined to create words, and the tempo and rhythm of words and phrases. The baby crib should have a sign on it: "Brain At Work" or "Scientist in the Crib"!

So if the brains of infants and children are altered by listening to us speak, what is it they are hearing? What kind of language do we use when we speak to children? We use what has been called "Motherese," or, now that we know fathers do it too, "Parentese," or, because you don't have to be a parent to produce it, "Caretakerese." Parentese is a unique, rather special sounding kind of speech we use when we talk to children.

It's definitely not your job interview voice. But infants and children love it. If you allow a young child to choose whether to listen to women speaking Parentese vs. those same women speaking to other adults, they will choose Parentese every time. It's the signal they prefer.

Parentese not only sounds better to children, we think it teaches them something. Parentese contains exaggerated, exceptionally well-formed phonetic units, and this makes it much easier for children to hear the essential differences. Language input to children is an enriched signal that makes it easier for children to learn. Keep talking to the baby brain.

## Language and Reading

What is the connection between early language and reading? Studies show that children who have language problems often have difficulty learning to read. Others have specific reading problems. Language and reading require the sound analysis I've been talking about. Typically developing children can hear the differences between the "p" in "pat" and the "b" in "bat" or the "t" in "tall" and the "d" in "doll," but research shows that children with reading difficulties have trouble with this. There is some evidence to suggest that exaggerating the sounds, just as we do when we speak Parentese, can help older children with reading problems, but research on these kinds of intervention methods is just beginning.

Early diagnosis of children at risk for later language and reading problems may become easier in the future. We have a new study that shows that infants' abilities to distinguish speech sounds at 6 months of age, tested just as you saw in the video tape, predicts later language abilities.

The better infants are at distinguishing the building blocks of speech at 6 months, the better they are between 2 and 3 years of age, at other, more complex, language skills. Processing the building blocks of speech is essential. It's a bottleneck that most children get past, but that some do not. Since early speech skills predict later language skills, there is enormous hope that these tests will allow us to identify, very early, children who are "at risk" for later language difficulties. Early identification allows intervention.

## The Developing Brain

I'd like to turn to the brain itself now. When you begin to take seriously that infants are the best learners in the universe, you start to ask, "what's going on up there?" As I mentioned, the new technology allows us to see adult brains at work. Well, we are beginning to see the infant brain at work, and there's no more fascinating brain than that of the young child.

The interesting thing about the infant brain is the fact that it forms its connections after birth. The trillion or so neurons that we all have in our brains are largely in place at birth, but the cells can't talk to each other until they form neural connections that allow electric impulses to flow between them -- think of telephone lines connecting houses. These telephone wires, or synapses, begin networking in a complex and interesting process, after birth. As this slide shows, the brain of a newborn has relatively few synaptic connections between the neurons.

In the first years of life, up to age three, the brains of children are forming connections furiously. Newborns have relatively few. By one year, they have many more, and by the time they approach the age of three, estimates are that the child's brain has twice the number of connections as the adult brain. Furthermore, their synapses create three times more brain activity. Infants have far more synapses -- more connections -- than they will ever need. Once the brain is fully wired and all the connections are formed, the brain begins to "prune" excess connections, quite literally like a rose bush. Pruning some connections helps strengthen others. This pruning process continues to sculpt an individual's brain until the end of puberty.

So, we have behavioral studies showing incredible learning. We know the brain is wiring itself, and that eventually each brain will reflect the individual. We also have new studies

showing a strong correlation between what we measure in our behavioral studies and the activity we can measure in the brain itself.

We can measure activity in the infant brain by looking at the brain waves generated as the baby plays, looks at his mother, or listens to language. This baby is wearing a bonnet with sensors that record brainwaves from the scalp. He's listening to a new language and has no idea that we are recording his brainwaves as he plays and listens. We can see how his brain responds to the new language. Our tests indicate that early in life, the infant brain is very plastic and readily learns new information. This plasticity is remarkable and we believe it will lead to new ways of understanding how children best learn.

### **New Partnerships**

My final point relates to the new partnerships that are forming between researchers, business leaders, educators, and government agencies. When I met the President in 1998 he was still the Governor of Texas. The First Lady of Texas held a conference to talk about some of the issues we are raising today. I spoke to then-Governor Bush about the new research and what was needed to bring this information into the schools -- how we might bridge the gap between the neuron and the chalkboard. I told him that we needed to link research and education -- neuroscientists and developmental scientists had to cooperate with parents and teachers, those on the front lines of education. In order to do that I said we would need support not only from the NIH and NSF, but also from the private sector. Now, all across the nation, private groups are beginning to step forward. It's made an incredible difference, and we are very grateful.

The new partnerships are dedicated to scientific research, but also to disseminating that research. The public needs to know what the science shows about how children learn, and people also need to know what methods don't work, or what science hasn't yet tested. It's as important to explain that "Parentese" helps children learn as it is to say that doing flash card drills with a 6 month old WILL NOT cause them to read any sooner. The goal, in fact, is not to pressure children, but to help all children develop to their potential. Again, the research indicates that normal language interaction -- talking, reading, and playing with kids -- produces the brain changes I described. This kind of learning is entirely natural -- it doesn't require expensive learning aids, just a loving caretaker. The research that underpins this understanding is needed to help direct policy in this area. We need to communicate information from the nation's research laboratories to society.

At the University of Washington in Seattle, with the help of NIH, NSF, and the Talaris Research Institute, we have formed The Center for Mind, Brain, and Learning to make scientific discoveries and to disseminate them to parents, educators, and government agencies. The mission of our center is to conduct world-class research on early learning and the brain. But our goal is not only to make scientific discoveries; we will make sure that the research gets into the hands of parents and educators, and the public at large.

It is an extraordinary time, one in which great advances in the science of learning will take place. Universities, government agencies, the private sector, and the public, are all on the same page at the same time -- a rare event indeed. As represented by the President and First Lady, our leaders have a commitment to education. We think the coming years will be a dynamic and critical time for scientists and practitioners in the field of early learning and the brain. It should be a great decade for all our children.

## Background Reading

(1) Scientific articles by Dr. Patricia K. Kuhl show how important learning and early experience is to language development. Four excellent papers on early learning, language, and the brain are:

- Kuhl, P. K., Williams, K. A., Lacerda, F., Stevens, K. N., & Lindblom, B. (1992). Linguistic experience alters phonetic perception in infants by 6 months of age. *Science*, 255, 606-608.
- Kuhl, P. K., Andruski, J. E., Chistovich, I. A., Chistovich, L. A., Kozhevnikova, E. V., Ryskina, V. L., Stolyarova, E. I., Sundberg, U., & Lacerda, F. (1997). Cross-language analysis of phonetic units in language addressed to infants. *Science*, 277, 684-686.
- Kuhl, P. K. (2000). A new view of language acquisition. *Proceedings of the National Academy of Sciences*, 97, 11850-11857.
- Kuhl, P. K., Tsao, F. M., Liu, H. M., Zhang, Y. & de Boer, B. (2001). Language/Culture/Mind/Brain: Progress at the Margins Between Disciplines. In A. R. Damasio (Ed.). *Unity of Knowledge: The Convergence of Natural and Human Science* (136-174). New York: The New York Academy of Sciences.

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