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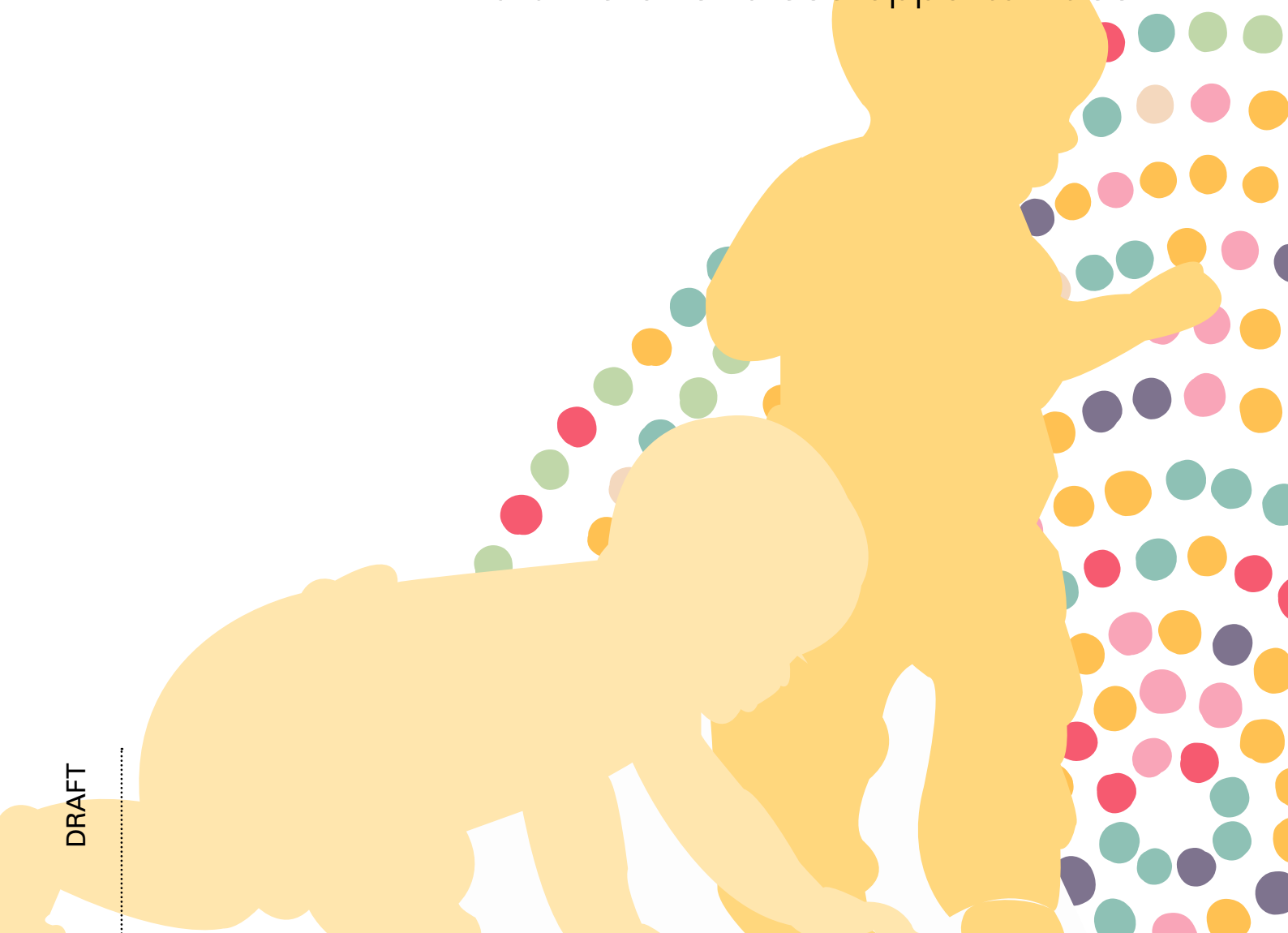
INTERNATIONAL
STEP by STEP
ASSOCIATION

MODULE 1

THE EARLY CHILDHOOD YEARS

a time of endless opportunities



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CONTENTS

KEY MESSAGES

- A child´s early years are critically important as they provide the foundation for the rest of life. During early childhood, patterns of behavior, competency, and learning are initiated and established; socio-environmental factors begin to modify genetic inheritance; brain cells grow in abundance; and biological pathways for handling stress arise.
- Children learn more quickly during their early years than at any other time in life. They need love and affection, attention, encouragement and mental stimulation, as well as nutritious food and good health care to develop their full potential.
- The quality of care received during the first few years of life - including health care, nutrition, social interactions and stimulation – can have a long-lasting effect on brain development.
- Brain development in the early years affects physical and mental health, learning, and behavior throughout the life cycle.
- Just as positive early experiences build healthy brain architecture, adverse (or negative) early experiences can weaken it.
- Early childhood development (ECD) programs that comprehensively address children´s basic needs of health, nutrition, emotional and intellectual development offer all children the base for developing competence and coping skills later.
- Promoting early childhood development is one of the most effective strategies to realize children´s rights, to reduce the socio-economic gaps between population groups (rich and poor, urban and rural, and mainstream and minority ethnic groups) and to advance equity and inclusion for children and for society as a whole.

LEARNING OUTCOMES

The aim of this module is to enhance and up-date your knowledge on the fundamental importance of the child´s first years of life, especially from conception to three years. Particular attention is placed on brain development which has a critical influence on neurobiological pathways that affect health, learning and behavior during the life cycle.

A large number of research studies show that what is done or not done in early childhood has long-term ramifications for both individuals and societies. It is more equitable and cost effective to invest in ECD programs, which can enhance children's potential, than it is to pay far more lately to try to correct what could have been prevented.

By completing this module, you will develop a good understanding of:

- What is child development
- How the foundations for the individual's development are laid in the early years
- Developmental domains
- Brain development in the early years
- The importance of nurturing, secure, stimulating, predictable and responsive relationships for young children

1

INTRODUCTION

THE EARLY CHILDHOOD YEARS

Early childhood is the most important developmental phase in a human being's life. Most experts are agreed that early childhood spans the period from conception to the age of eight years. The period from conception to age three is critically important for the growth and functioning of the brain. For this the child needs good nutrition and health care, secure attachment to a primary caregiver and stimulation. In the years from 3-6 the child is ready to develop pre-literacy and pre-numeracy skills, to engage in group activities, gain a stronger sense of self, explore, play with peers, and build confidence; this is the stage when children, particularly children from disadvantaged families, benefit the most from participating in preschool. By the age of 6 children are ready to participate in formal education in primary school. If the transition from preschool to school between the ages of 6-8 is smooth, children are likely to get into the rhythm of schooling with greater ease and achieve and succeed in formal education.

The early years are a period of immense vulnerability and opportunity. What is done or not done during these special years can have a life-long impact on the individual's health, behavior, ability to form relationships and success in education and employment.

This module *The Early Childhood Years: A Time of Endless Opportunities* presents key information on early childhood development. It will describe how all children (especially the most vulnerable and disadvantaged) and their families need support for optimal growth and development. Nurturing care within the context of stable, predictable and affectionate relationships is essential, as much as physical care and nutrition, for healthy early child development.

Data show that in 12 of the 29 countries in the Central and Eastern Europe and the Commonwealth of Independent States (CEECIS) region, nearly half of the children are at risk of not developing to their full potential because of stunting (retardation of physical growth) and poverty (UNICEF, 2011). It is estimated that 5.9 million children under five years of age are at risk of not reaching their full potential – that is 26 per cent of the 22 million children of that age group (UNICEF, 2013). Another point to be noted is that this region has the largest number of children under-three who live in residential institutions; being institutionalized has a detrimental effect on the child's growth and development as even the best institutions cannot provide the one-on-one nurturing care that infants require.

Self-assessments: Early Childhood Development

1. Early childhood spans the years:
A. 0-5
B. 3-6
C. 0-8

2. What is the most critically important age span in a person's life for the optimal growth and functioning of the brain?
A. Conception to three years of age
B. 3-6 years of age
C. Primary school age
D. Secondary school age

3. What does a child from birth to three years of age need for the brain to grow and develop?
A. Good nutrition
B. Good health care
C. Secure attachment to a primary caregiver
D. A stimulating environment
E. All of the above

4. Investing in services that support families to give children the best start in life:
A. not the obligation of governments
B. is the best investment a nation can make in the wellbeing of its citizens
C. is an unaffordable luxury in most countries

5. True or False:
More than 20% of children in the CEECIS region are at risk of not developing to their full potential.

6. Early childhood is a period of:
A. very rapid growth and development
B. innocence
C. stresses and strains

ANSWERS:

1. C **2. A** **3. E** **4. B** **5. TRUE** **6. A**

Reflection and discussion

Do you think that the early childhood years are important? Why?
Why do you think nurturing relationships are necessary during infancy and the early years?
What do you know about early brain development?

II

WHY EARLY CHILDHOOD IS A TIME OF ENDLESS OPPORTUNITIES

Early childhood lays the critical foundations for health, learning and behaviour across the life course. During the first years of life children change from dependent and helpless newborns into walking, talking, and active problem-solving children. This dramatic change process occurs due to the complex interplay between nature and nurture, genes and environment. The nurturing qualities of the environment and the human relationships children develop with parents, caregivers, family and community have one of the most significant and lasting impact on children´s development.

Child development is the gradual emergence of child´s capacities to see, hear, speak, move, think, and solve problems. All children develop similar abilities, but at different rates, depending on their genetic background and environmental conditions. Pre-conception factors such as the mother´s age and iron status also influence the child´s development. The social and physical environment in which children are reared tends to influence whether they will develop a sense of curiosity, enthusiasm for learning and confidence in themselves.

The process of development requires particular inputs to occur during particular periods of time. It is the responsibility of the adults caring for the child, including parents, families, health care providers, teachers, social workers and others, to make these inputs.

1. WHAT ARE DEVELOPMENTAL DOMAINS?

In the early years children do not only grow in terms of height and weight. They develop in several areas or domains. In general, these domains include:

- **Physical development** - includes mastering movement, balance and developing the unfolding ability to use the body's big muscles (e.g. those that are in the back and legs and necessary for running, jumping and climbing stairs) and small muscles (e.g. those that are in the fingers and necessary to pick up small objects or hold a pencil); these are respectively known as gross motor development and fine motor development.

- **Social and emotional development** – is the child's ability to form and maintain relationships. Young children learn to make friends, participate in group games, show empathy for others, cooperate, and understand the concepts of taking turns and fairness as well as of what is acceptable and not acceptable in social situations. Children develop confidence, self-esteem and emotional control.

- **Cognitive development** – refers to the increasing ability to learn and think in more and more complex ways. In the early years, children develop curiosity and learn to ask "how?" and "when?" and "why?" questions. Their attention span increases, they learn to focus on tasks and solve problems, they learn to recognize colors and read numbers and letters.

- **Communicative development** - includes the ability to understand language and to express needs, thoughts and emotions verbally. During the early years children go from babbling to speaking one or two words to speaking in full sentences. The child learns to describe experiences, talk about the past, the present and the future, and participate in conversations. The child develops a love for listening to stories and being read to from story books.

- **Adaptive skills** – refer to the child's developing abilities to adapt to the surrounding environment and adjust to routines. By the end of the early childhood years most children are able to dress, eat, bathe, brush their teeth and go to the toilet without adult assistance. They learn also to use spoons and forks to feed themselves, help put away their toys and books and follow simple routines such as when to sleep, when to play and when to eat.

Additional resources – Learn More

The internet offers many wonderful resources to learn about early childhood development. Please explore different websites. Here are some suggestions.

Encyclopedia on Early Childhood Development
Importance of early childhood development
http://www.child-encyclopedia.com/importance-early-childhood-development/complete-topic

Center on the Developing Child at Harvard University (CDC/Harvard)
InBrief: The Science of Early Childhood Development
https://www.youtube.com/watch?v=WO-CB2nsqTA
InBrief: The Foundations of Lifelong Health
https://www.youtube.com/watch?v=o_mCNW4kb6M

2. WHAT ARE DEVELOPMENTAL MILESTONES?

Skills such as taking a first step, smiling for the first time, and waving "bye bye" are called developmental milestones. Children reach milestones in how they play, learn, speak, behave, and move (crawling, walking, etc.). Children reach developmental milestones in the different domains of development in the same sequence. In gross motor development a child usually proceeds from rolling over, to sitting, to crawling, to standing and then to walking.

Click below to see age related milestones:

2 months	(http://www.cdc.gov/ncbddd/actearly/milestones/milestones-2mo.html)
4 months	(http://www.cdc.gov/ncbddd/actearly/milestones/milestones-4mo.html)
6 months	(http://www.cdc.gov/ncbddd/actearly/milestones/milestones-6mo.html)
9 months	(http://www.cdc.gov/ncbddd/actearly/milestones/milestones-9mo.html)
1 year	(http://www.cdc.gov/ncbddd/actearly/milestones/milestones-1yr.html)
18 months	(http://www.cdc.gov/ncbddd/actearly/milestones/milestones-18mo.html)
2 years	(http://www.cdc.gov/ncbddd/actearly/milestones/milestones-2yr.html)
3 years	(http://www.cdc.gov/ncbddd/actearly/milestones/milestones-3yr.html)
4 years	(http://www.cdc.gov/ncbddd/actearly/milestones/milestones-4yr.html)
5 years	(http://www.cdc.gov/ncbddd/actearly/milestones/milestones-5yr.html)

Download the milestone checklists (http://www.cdc.gov/ncbddd/actearly/pdf/checklists/all_checklists.pdf)

(More information you can find in the Module 13 on Developmental Monitoring and Screening)

III

WHAT FACTORS AFFECT EARLY CHILDHOOD DEVELOPMENT

Reflection and discussion

A. In your experience as a home visitor, list the factors that might affect early childhood development besides health care?
B. What are the reasons for differences in children's development?

1. GOOD NUTRITION AND PROPER HEALTH CARE

Good nutrition is vital for a child´s grow and development. The diet of a pregnant woman and that of a young child should be varied and nutritious. It should include essential nutrients such as proteins and essential fats to help a child´s body grow and have energy, vitamin A to help a child resist illness, iodine to help ensure the healthy development of a child´s brain, and iron to protect child´s mental and physical abilities.

Exclusive breastfeeding on demand for the first six months, continued breastfeeding for two years or beyond, as well as timely introduction of safe and nutritious foods at the age of six months provide optimal nutrition and health benefits for young children. Feeding time offers also an important opportunity to provide affection and emotional stimulation.

In order to guarantee good nutrition and proper health care, the home visitor should inform parents and caregivers about:

i. how to ensure that the child gets enough nutrients, such as iron and vitamin A;
ii. how to avoid anemia and parasitic diseases in children over six months of age;
iii. necessary immunization and schedule to follow;
iv. why deworming is important; and,
v. how to prevent and/or manage common childhood illnesses.

Infants who have completed their immunizations on time and are receiving proper nutrition, health care, love and affection have an increased chance to survive and thrive. They are able to concentrate on exploring, learning and developing social, emotional, cognitive, language and motor skills.

2. NURTURING SOCIAL ENVIRONMENTS

Babies learn rapidly from the moment of birth. They grow and learn best when responsive and caring parents and other caregivers give them affection, attention and stimulation. These help young children to develop a sense of trust and security that turns into confidence as they grow.

Children learn quickly when they feel loved and secure and when they interact and play with family members and other people close to them. Children´s minds develop rapidly when they are talked to, sung to, read to, hugged and cuddled; when they see and hear familiar faces and voices; and when they have the opportunity to handle different objects. Even if the child is not yet able to understand words or even if a child has a disability, parents and caregivers should talk, sing and read to their babies and young children. These early interactions help to develop emotional, social and language skills and learning capacities. These interactions are to the mind what nutritious food is to the physical body.

Children who feel loved and secure usually do better later in life as they are more self-confident, have good self-esteem and are able to cope more easily with life´s challenges. Babies and small children need constant

attention. They should not be left alone as it puts them at risk of accidents and the lack of interaction can delay not only their mental development but also their physical development.

(You can find additional information in the Modules on "Attachment" and "The Art of Parenting").

3. OPPORTUNITIES TO PLAY AND LEARN

Play is an intrinsic, innate behavior as well as a major vehicle for learning and development. It is grounded in everyday life processes. Throughout the world, children play alone and in groups, actively creating meaning and exploring their environment. Children play because it is fun. Through play, human beings discover, test and integrate ideas, develop mental and physical skills.

Playing, both unstructured and structured, lays the foundation for a child´s development of future learning and life skills. It helps children to:

i. develop their knowledge, experience, curiosity and confidence;
ii. learn by trying things, comparing results, asking questions and meeting challenges;
iii. develop the skill of language, thinking, planning, organizing and decision-making; and
iv. strengthen the bond with her/his parents and caregivers.

Thus, play can influence the development of social competence, intelligence, language development and creativity. Encouraging children to play and explore help children get ready for school.

Stimulation, play and being included in play with other children and adults are very important for children with disabilities or chronic illness, such as children with HIV. It has long been recognized that children who are deprived of opportunities to play, miss essential opportunities for the development of life skills. Children need a variety of simple play materials that are suitable for their stage of development and learning. Water, sand, cardboard boxes, wooden building blocks, and pots and lids are just as good for facilitating child´s play and learning as toys bought from a shop.

(You can find additional information in the Module 6 "The Art of Parenting – Love, Talk, Play, Read").

Children are constantly changing and developing new skills. Caregivers should notice these changes and follow the child´s lead. As long as the child is protected from danger, struggling to do something new and difficult is a positive step in child´s development. Responding to and encouraging children helps their development.

Play has been elevated to the status of a protected "right", according to the UN Convention on the Rights of the Child (CRC – article 31), because of its essential role in child development and because of its potential as a tool for peace building.

Additional resources – Learn More

The Science of Early Childhood Development
The Science of Early Child Development (SECD) is a knowledge mobilization initiative designed to make current research accessible to anyone interested in learning more about the profound impact of the early years on lifelong health and well-being.

Video clip: Long Reach for Early Childhood

http://www.scienceofecd.com/pages/the-long-reach-of-early-childhood
How I Learn - Child Development Milestones
https://www.youtube.com/watch?v=7hn0O_L6lfI

Self-assessment – Early Childhood Time of Endless Opportunities

1. It's recommended that at a minimum a mother should breastfeed and then begin to introduce solid, nutritious food in addition to breastfeeding at:
A. 1 week of age
B. 3-4 months of age
C. 6 months of age
D. 12 months of age

2. What do parents/primary caretakers need to be informed about in order to provide good nutrition and proper healthcare for their infant?
A. How to ensure that the infant gets enough nutrients such as iron and vitamin A
B. How to avoid anemia, parasites, and worms
C. Ensure the child receives all immunizations in the national immunization plan
D. How to prevent and/or manage common childhood illnesses.
E. All of the above

3. What do infants need from caregivers to learn?
A. Structure and discipline
B. Affection, attention, responsiveness, and stimulation
C. Computer games
D. Worksheets

4. True or false: Parents/primary caregivers should talk, sing, and read even to young infants.

5. Play contributes to which developmental areas in children from birth to three years of age?
A. Social competence
B. Intelligence
C. Language development
D. Creativity
E. Life skills
F. None of the above
G. All of the above

ANSWERS:
1. C2.E **3.B** **4. TRUE** - These kinds of interactions help children develop emotional, social, and language skills as well as learning capacities **5. G**

IV

THE BRAIN DEVELOPS VERY RAPIDLY IN THE FIRST THREE YEARS

The early years, especially the first three years of life, are very important for building the baby´s brain. Everything she or he sees, touches, smells, tastes or hears helps to shape the brain for feeling, moving, thinking and learning.

1. THE GROWING BRAIN

Brain development is genetically influenced, but modifiable by the quality of the environment, as human babies are born immature. Biologically, they are considered 'fetus outside the womb for the first nine months of their lives'. Their brains have, approximately, one quarter of the size of adult brain. At birth, a baby has 100 billion brain cells or neurons, which are not as yet connected in circuits. In the first three years of life the brain forms connections between brain cells – through dendrites - and a single neuron can connect to as many as 15,000 other cells. Dendrites do not touch one another; the spaces between them are called synapses. Electrical impulses are carried across the synapses through chemicals called neurotransmitters. The formation and strengthening of circuits forms the foundation of emotions, motor skills, behavior control, logic, language and memory. Circuits that are used repeatedly become more efficient and those that are not used fade away.

Millions of connections are made between billions of brain cells in the early years

Reflection and discussion

What do you know about the relationship between early experiences and brain development? According to your experience, what are the possible impacts of institutionalization of young children for their development?

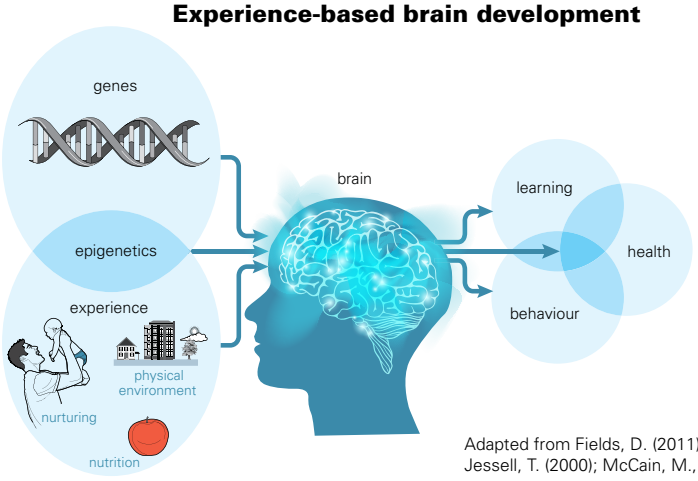
2. THE ROLE OF THE CAREGIVER

Nature has given us, all sort of physiological mechanisms and neurochemical regulatory processes (hormones and neurotransmitters) to ensure a close caregiver-infant relationship for the first couple of years. In this way the dependent baby can receive all kinds of experiences that are necessary for developing the architecture of the emerging brain. The closeness between the primary caregiver, usually the mother, and her infant is one of the most relevant experiences for survival and healthy development of the young child. Therefore, primary caregivers are fundamental in the whole process of early brain development as they are the main source of security, food, stimulation and learning for babies and young children. Their gestures, facial expressions and behaviors stimulate and regulate how the baby´s brain will develop and function.

Children begin life ready for relationships that drive early brain development. The brain is "experience expectant" which means that it is programmed and ready to receive experiences. An infant is born with the ability to be interested in faces and to initiate non-verbal communication with others. When an adult responds to an infant's intense gaze, smiles, or babbling a chain of back-and-forth exchanges is set up. These back and forth exchanges are central to the wiring and sculpting of the infant's brain circuits. The interaction between genes and experience is like the serve-and-return game of tennis or ping-pong. The active ingredient in this play is the repetitive interaction between children and their caregivers. How a child relates to his or her caregiver, and vice versa, is critical in the formation of the child's brain architecture. As stated by the National Scientific Council on the Developing Child, "(…) relationships are the 'active ingredients' of the environment's influence on healthy human development. They incorporate the qualities that best promote competence and well-being – individualized responsiveness, mutual action-and-interaction, and an emotional connection to another human being" (NSCDC, 2004, p.1).

The brain's architecture depends on experience, as shown in the figure below (McCain, et al, 2011, p. 39). The earliest experiences beginning at conception and continuing after birth throughout the early years of childhood shape the brain's architecture and biological systems for life. As early as in gestation, the environment of a fetus (which includes nutrition, pollutants, drugs, infections, and a mother's health, well-being, and level of stress) influences how genes are expressed and how the brain's architecture and function are set. Genes listen to the environment and, in response to the body's internal and external environment, differentiate various structures and functions. It is much like building a house, where a strong foundation has to be built to support a functioning structure.

Experience-based brain development



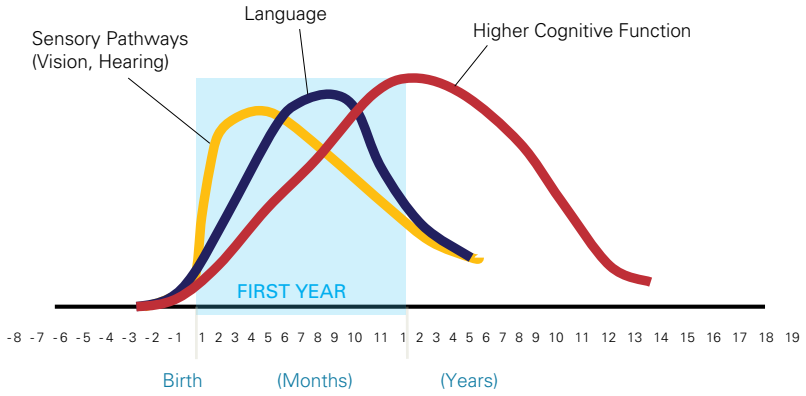
Adapted from Fields, D. (2011); Kandel, E., Schwartz, J. & Jessell, T. (2000); McCain, M., Mustard, J.F. & Shanker, S. (2007).

3. FROM SIMPLE TO COMPLEX

By the age of three years, the brain reaches 80 per cent of its adult weight. At this age, the brains of children are 2.5 times more active than the brains of adults, and they remain this way throughout the first decade of life. The development of a young child´s brain affects physical and mental health, capacity to learn, and behavior throughout childhood and adult life.

Scientists tell us that the brain's basic circuits are wired first and then increasingly complex circuits are built later. That is, simple skills develop initially and increasingly complex skills are built on this foundation. For example, the sensing pathways of vision and hearing develop before language, and language develops before cognition. Critical periods exist during which the brain must receive certain inputs. In humans, critical or sensitive periods for input vary by developmental task. For instance, in the first three to four months the brain requires visual and auditory stimulation for the child to develop depth perception and acquire the sound of language. Six months to three years is a critical period for language development. Children´s higher level of thinking such as reasoning and problem-solving develops from about 10 months through the early primary grades. Children who do not have required responsive inputs during sensitive or critical periods are less likely to develop their full potential.

Neural Circuits are wired in a bottom-up sequence



Source: C. A. Nelson (2000)
Slide by Centre on the Developing Child, Harvard University

Among children, differences in their development appear very early. For example, by an infant's first year the parts of the brain that differentiate vocal sounds are becoming specialized to the language to which the baby is exposed and are already starting to lose the ability to recognize important distinctions of sound in other languages. Hart and Risley (1995) showed that word accumulation, or vocabulary, begins very early in life and that clear differences are apparent at 36 months of age among children from different social groups. The researchers observed that children growing up in professional families heard an average of 2,153 words per hour, whereas children in working class families heard an average of 1,251 words per hour and children in poor families on welfare heard an average of 616 words per hour. At age three, children in professional families had a vocabulary of 1,100 words, compared with children in working class families who knew 750 words and children in welfare families who knew 500 words. A similar pattern is found in developing countries, showing the increasing gap in language skills for children from 36-72 months based on socio-economic status. As children grow to school age and enter school, the differences get larger in the absence of intervention. Language development is particularly important as almost all of formal education is conducted through language; if children's foundations for language development are weak, they may not be able to benefit optimally from education.

Video clips

1st Core Concept - Experiences Build Brain Architecture
https://www.youtube.com/watch?v=VNNsN9IJkws

2nd Core Concept - Serve & Return Interaction Shapes Brain Circuitry
https://www.youtube.com/watch?v=m_5u8-QSh6A

3rd Core Concept - Toxic Stress Derails Healthy Development
https://www.youtube.com/watch?v=rVwFkcOZHJw

Brain Hero
https://www.youtube.com/watch?v=s31HdBeBgg4

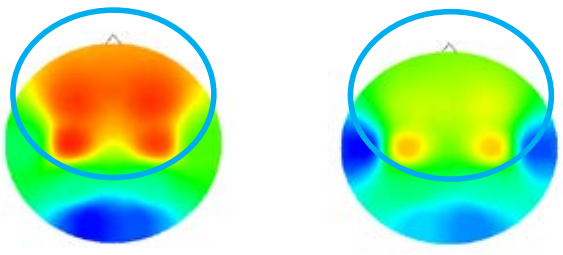
4. THE EFFECTS OF STRESS

Just as positive early experiences build healthy brain architecture, adverse early experiences can weaken it. Factors that cause stress such as abuse, neglect and poor nutrition can result in certain genes being turned on or off. This affects how the individual develops and what gets passed down to the next generation. Early stimulation is also very important. In a study of brain activity in children using electroencephalograms (EEGs), researchers showed that a child who had had a nurturing family upbringing exhibited greater electrical power (i.e., impulses) than another child who spent the early years of life institutionalized in extremely neglectful conditions in an orphanage. Greater impulses indicate more brain activity, as shown in the figure below.

Stress plays an important role in early brain development. Laboratory studies with mammals such as rats show that when their mothers are unresponsive, infant rats have) have abnormal responses to stress in adulthood, such as an increased likelihood of addiction. Studies of interventions in infant rats that consist of stroking their skin show that the likelihood of addiction later can be reduced simply by two weeks of tactile stimulation. Many hospitals now use touch therapy for newborn human babies to encourage their better health. Pediatricians already know that premature infants gain more weight when their daily therapy includes touch, in addition to nutrition.

Children who are exposed to high levels of stress, often called "toxic stress," may have impaired abilities to think and to control their emotions. Toxic stress may occur when the child is physically or emotionally punished, is exposed to violence, is neglected or abused, is raised in extreme poverty, or lives in families with mental illness, such depression or substance abuse. Low levels of stress do not harm children, particularly if they have a loving and responsive caregiver. The stresses to which individuals are exposed early in life modify their ability to moderate and control responses to stress later in life. So, adults who were poorly nurtured in early life tend to retain sustained levels of stress hormones long after situations that cause arousal. Insufficient stimulation and neglect experienced early in life can affect the development of the brain and predispose lifelong emotional and cognitive problems.

Profound deprivation affects brain power



POSITIVE RELATIONSHIPS EXTREME NEGLECT

Source: C. A. Nelson (2008); Marshall, Fox & BEIP (2004).
Slide by Centre on the Developing Child, Harvard University

1. Positive stress: that which is moderate and short lived, causing brief increases in heart rate or mild changes in stress hormone levels. Sources of positive stress can include things like the challenges of meeting new people, dealing with frustration or being immunized.

Positive stress is regarded as an important and necessary aspect of healthy development that occurs in the context of stable and supportive relationships.

2. Tolerable stress: that which is severe enough to disrupt brain architecture if unchecked, but is buffered by supportive relationships that facilitate adaptive coping and mitigate the damaging effects. Sources of tolerable stress can include the death or serious illness of a loved one, a frightening injury, parental divorce, or a natural disaster. Tolerable stress generally occurs within a time-limited period, which gives the brain an opportunity to recover from potentially damaging effects.

3. Toxic stress: that which is severe and prolonged in the absence of the buffering protection of supportive relationships. Sources can include things like physical or emotional abuse, chronic neglect, severe maternal depression, parental addiction, or family violence. Toxic stress disrupts brain architecture and leads to lifelong problems in learning, behaviour, and both physical and mental health.

From: http://www.albertafamilywellness.org/brain-development-addiction/positive-tolerable-toxic-stress

(Additional information you can find in Modules on "Attachment" and "Safeguarding".)

Additional resources – Learn More

Center on the Developing Child at Harvard University
http://developingchild.harvard.edu

Encyclopedia on Early Childhood Development
Information sheets on Brain:
http://www.child-encyclopedia.com/sites/default/files/docs/coups-oeil/eyes-on-brain-development-in-children-structure.pdf
http://www.child-encyclopedia.com/sites/default/files/docs/coups-oeil/eyes-on-brain-development-in-children-stimulation.pdf

Video clips

Changing Brains - http://changingbrains.org/
The University of Oregon Brain Development Lab provides a series of free video clips on brain plasticity, imaging, vision, motor system, attention, language, reading, math, music and emotions and learning.

The Importance of Early Childhood Development - Brookings Institution - https://www.youtube.com/watch?v=7qmkxytBeDs
Early Childhood Development (ECD) spans from the moment of conception until the beginning of primary school, and includes physical well-being, and cognitive, linguistic, and socio-emotional development. Investing in ECD leads to happier children, more equal societies, and prevents higher costs further down.

Self assessments – Brain Development

1. What percentage of their adult brain size are infants born with?
A. 10%
B. 25%
C. 50%
D. 100%

2. Match the following nouns with their definitions:

1. Neurons	a. The connections between neurons
2. Dendrites	b. How messages are sent across synapsis
3. Synapsis	c. Nerve cells
4. Neurotransmitters	d. The spaces between the dendrites

3. True or false: When brain circuits are not used, they can transmit messages more quickly.

4. Why do we say the infant is born 'experience expectant'?
A. They expect to be kept warm.
B. They are born with the ability to be interested in faces.
C. They initiate non-verbal communication.
D. b and c

5. What percentage of the brain's weight in adulthood, is the three year olds' brain' s weight?
A. 30%
B. 50%
C. 80%
D. 100%

6. "Critical periods' of brain development are when :
A. Parents/caretakers must be quiet around their infants.
B. Parents/caretakers must teach their children the alphabet.
C. The brain must receive certain inputs in order to develop.

7. The critical period for the child to develop depth perception and acquire the sound of language is :
A. During the first 3 months of life
B. After the first year of life
C. After the first three years of life

8. What is the critical period for language development?
A. Birth to three months
B. Six months to three years
C. Three years to six years

9. True or false: Children who have larger vocabularies at 3 years of age do better in school.

10. Which of the following can increase risck of toxic stress in children?
A. Being physically and psychologically abused.
B. Watching violent behavior at home or in their surroundings.
C. Chronic neglect.
D. Being raised in a family where the mother or father is suffering from mental illness.
E. All of the above.

11. True or false: Toxic stress can affect children's development.

12. Positive stress for young children:
A. Occurs when they meet new people.
B. Occurs when they deal with frustration.
C. Occurs when they are spanked.
D. a and b

13. True or False: It is easier and more effective to rewire an adult's brain circuitry, because adults have developed many different strategies to learn than to shape a baby's developing brain circuitry.

ANSWERS:

1. **B**
   25%, by age three, the young child's bra<in will have reached 80%, a truly amazing rate of growth.
2. **1. c 2. a 3. d 4. b**
3. **FALSE**
   They fade away – process of pruning
4. **D**
   They are born with the ability to be interested in faces and to initiate non-verbal communication with others.
5. **C**
   By the age of three the young child's brain is 80% of the adult size. See what I added there.
6. **C**
   There are times when the brain must receive certain inputs in order to develop.
7. **A**
   During the first three months of life the brain must receive visual and auditory stimulation for the depth perception and acquiring sounds.
8. **B**
   Six months to three years.
9. **TRUE**
   Almost all of formal education is conducted through language and if children's foundations for language development are weak, they may not be able to benefit optimally from education.
10. **E**
    When children are physically or emotionally punished or abused, exposed to violence, are chronically neglected, are raised in extreme poverty, or lives in families with mental illness.
11. **TRUE**
    It modifies children's ability to moderate and control responses to stress later in life. It disrupts their brain development and predisposes them to lifelong physical, emotional, and cognitive problems.
12. **D**
    Positive stress is moderate and short lived stress that includes things like meeting new people and dealing with frustration. It is regarded as important and necessary aspect of healthy development.
13. **FALSE**
    The infant's brain is more 'plastic' because circuits that naturally fade away when not used are much harder to rebuild.

V EARLY INVESTMENTS ARE THE MOST EFFECTIVE

Reflection and discussion

What do we mean by "early investments"? Who should make these investments?
Do poor children benefit more than their more affluent peers from ECD interventions? If so, provide possible reasons.
Is early childhood development a child's right?

As noted earlier, over time, circuits in the brain that are not used fade away. Those that are used become stronger and increasingly difficult to alter later. This declining plasticity means that it is easier and more effective to influence a baby's developing brain architecture than it is to rewire parts of an adult's brain circuitry. In other words, if children can enjoy positive conditions for healthy physical and psycho-social development right from the start, they are likely to develop optimally and achieve their full potential; if they experience deprivation, neglect or violence, they are unlikely to achieve their full potential.

All children should have the opportunity to grow up in environments that are conducive to the development of their brains. Some children need additional support – these include those who are from poor families, are developmentally delayed or disabled, live in rural or remote areas, those who belong to marginalized, ethnic minority groups, and others. Resources must be invested in the provision of child and family-centered health, education, welfare and protection services to ensure that all families can provide young children with opportunities to develop strong foundations for the rest of their lives. These services need to be backed by sound, evidence-informed policies. Investing in the early childhood years means that we can avoid paying for costly remediation services later.

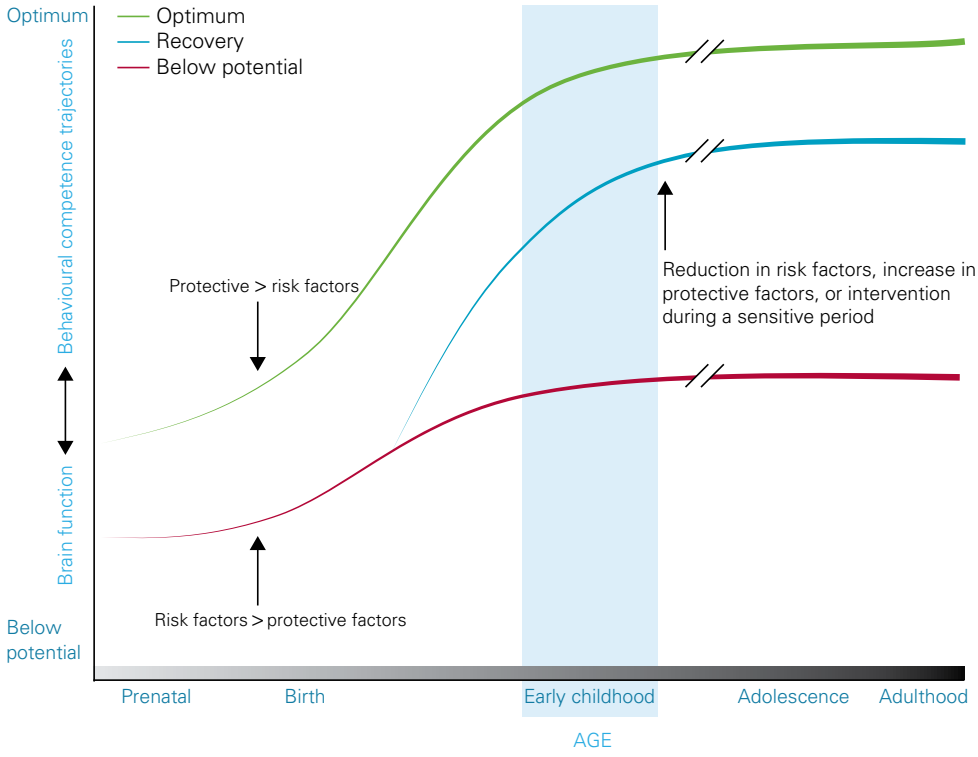
Studies conducted in Jamaica have demonstrated the positive effects of an early childhood stimulation and nutritional intervention in the developmental capacities of stunted children ranging in age from nine to 24 months. The psychosocial intervention consisted of weekly home visits by community health workers over a two-year period with the objective of improving mother-child interactions through play. The nutritional intervention consisted of providing food supplements. Stunted children receiving nutritional supplementation plus psychosocial stimulation developed in the same way as non-stunted children. Interestingly, those children who received only psychosocial stimulation did better than children who received only nutritional supplementation.

An experimental evaluation of the impact of the Jamaican intervention on long-term economic outcomes showed that the earnings of the stimulation group are 25 per cent higher than those of the control group and caught up to the earnings of a non-stunted comparison group. These studies provide rigorous evidence of the sustained benefits of home-based early childhood interventions, integrated into health services for young children, which may be an effective strategy for improving long-term outcomes for disadvantaged children. Psychological function of the mother and potential stressors in the environment should be taking into account when working with young disadvantaged children. The overriding message is to intervene early, intervene often, and intervene effectively.

VI REDUCING RISK FACTORS – REINFORCING PROTECTIVE FACTORS

Children who start behind, stay behind. Achievement gaps in early childhood tend to widen in subsequent years. It is very important to reduce these gaps early in life by reducing risk factors and reinforcing protective factors. Based on worldwide evidence, an article in the world renowned health journal the Lancet (Walker et al., 2011) identified several of the most important protective and biological and psycho-social risk factors (see the figure below). The negative effects of the risk factors can be mitigated or reduced by supporting the family and strengthening protective factors. If necessary support is not provided the child's development compromised (the red line in the figure above); but if adequate support is provided in early childhood the child's life long development track can be moved from the red line to the blue line, thus approximating the levels of children who are developing well (the green line).

Equity gaps begin early and widen progressively



Adapted from Walker et al., The Lancet, 2011

Protective factors
Good nutrition
Responsive & nurturing parenting
Safe and stimulating environment
Health care (prenatal, maternity, new born, infant)
Adequate family income

Biological risks
Chronic under-nutrition
Iron and iodine deficiency
IUGR
HIV infection

Psycho-social risks
Poor caregiver-child interaction
Maternal depression
Institutional rearing
Exposure to violence
Poor learning environment

Different studies have proven the positive effect that well-designed and intensive early stimulation programs can have on at-risk children. The High/Scope Perry Preschool and the Abecedarian Project are probably the most frequently cited studies. Baker-Henningham and Lopez-Boo (2010) reviewed ECD interventions in low-income countries and they found positive program impact for cognitive, socio-emotional and nutritional development as well as for schooling outcomes.

It is estimated that more than 200 million children under five years of age, in developing countries, do not reach their full potential due to early exposure to biological, psychosocial and contextual risk factors (Grantham-McGregor et al., 2007). Inadequate cognitive stimulation was the most important psychosocial determinant along with maternal depression and exposure to violence. A committee of international experts, in 2007, highlighted the urgent need of quality programs to support child development as being necessary to prevent or ameliorate the loss of developmental potential. They suggested that the most effective programs are those that "provide direct learning experiences to children and families, are targeted towards younger and disadvantaged children, are of longer duration, high quality and high intensity, and are integrated with family support, nutrition or educational systems and services" (Engle et al., 2007, p.229).

Helping all children have supportive home environments in which they can learn and grow is critical to set a strong foundation for child development. Successful strategies for promoting children's healthy development and readiness for school also include:

i. Encouragement of parents to interact with their children—through reading, listening, and talking;
ii. Parental support through home visits to create positive change in the caregiving environment in the home and to improve the lives of parents and children; and,
iii. Provision of preschool opportunities for all children—and, especially, for children at risk. These three strategies can help to counteract factors, such as poverty and family discord, which diminish everyone's potential in life. They are essential ingredients of comprehensive ECD programs to improve children outcomes.

(Additional information you can find in Modules on "Parental Wellbeing" and "The Art of Parenting").

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VII

EARLY CHILDHOOD DEVELOPMENT IS EVERY CHILD'S RIGHT

All children have the right to be raised in a family and to have access to quality health care, good nutrition, education, play and protection from harm, abuse and discrimination. Children have the right to grow up in an environment in which they are enabled to reach their full potential in life. It is the duty of parents, other caregivers and family members, communities, civil society and governments to ensure that these rights are respected, protected and fulfilled. You, as a home visitor, have an important role to play in this context by providing guidance, orientation and support to families to better care of their children.

The UN Convention on the Rights of the Child (CRC) tells us that a child has a right to develop to "the maximum extent possible" (Article 6). It also says that signatories should "…render appropriate assistance to parents and legal guardians in the performance of their child rearing responsibilities and shall insure the development of institutions, facilities and services for the care of children." (Article 18.2). The CRC foundation principles are non-discrimination, best interests of the child, right to life, survival and development, and respect for the views of the child.

Boys and girls have the same capacity for learning. Both have the same physical, emotional and social needs for attention, affection and approval. A father´s role is as vital as the mother´s in nurturing and caring for their children and protecting their rights.

A father should make daughters and sons feel they are equally important. Just like the mother, the father can help meet their child´s needs for love, affection, approval, encouragement and stimulation. All girls and boys should have their birth certificate in order to help ensure their rights to access basic services, such as health care, education, legal and social services.

(Additional information you can find in the Module 5 on "Involving Fathers").

Self-assessments

1. Children and families who may need additional support include:
A. Children from poor families
B. Children who are developmentally delayed
C. Those who live in rural and/or remote areas
D. Those from marginalized, ethnic minority groups
E. All of the above

2. What kinds of public investments contribute to young children being able to grow up in environments that are conducive to the development of their brains?
A. Teaching babies phonics
B. Child and family health, education, welfare, and protection
C. Nutrition programs
D. Responsive and nurturing parenting, safe and stimulating environments
E. All but a

3. True or false: Home visitors can help to reduce gaps in children's development by telling parents when they are doing something wrong.

ANSWERS:
1. E **2. E**

3. FALSE – Home visitors should provide guidance, orientation and support to families

Additional resources – Learn More

Human rights for children and women: How UNICEF helps make them a reality, UNICEF, 1999, available at http://www.unicef.org/publications/files/pub_humanrights_children_en.pdf

Bernard van Leer & UNICEF (2006). A Guide to General Comment 7: 'Implementing Child Rights in Early Childhood'. The Netherlands: BvLF
http://www.unicef.org/earlychildhood/files/Guide_to_GC7.pdf
The UN Convention on the Rights of the Child applies to all children under 18 - but its implementation poses particular practical challenges when it comes to young children. This book is a guide to implementing child rights in early childhood. It is based around the UN Committee on the Rights of the Child's General Comment no 7.

Summary

United Nations General Comment No. 17 on the right of the child to rest, leisure, play, recreational activities, cultural life and the arts (article 31), available at http://www.ipausa.org/pdf/IPASummaryofUNGCarticle31_FINAL.pdf

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VII

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Additional resources

There are a number of useful websites available which provide online materials and resources in the form of reports, articles, websites, and videos - about contemporary topics in ECD. We suggest you to visit:

Centre of Excellence for Early Childhood Development (CEECD)
http://www.excellence-earlychildhood.ca
This centre, based in Canada, aims to improve our knowledge of the development of young children, from conception to five years of age, through its Encyclopedia on Early Childhood Development.
www.child-encyclopedia.com (English)
http://www.encyclopedia-deti.com (Russian)

Information sheets on Brain:
http://www.child-encyclopedia.com/sites/default/files/docs/coups-oeil/eyes-on-brain-development-in-children-structure.pdf
http://www.child-encyclopedia.com/sites/default/files/docs/coups-oeil/eyes-on-brain-development-in-children-stimulation.pdf

Center on the Developing Child at Harvard University (CDC/Harvard)
http://developingchild.harvard.edu
This is an excellent resource on science of early childhood; understanding intervention; innovation; global child development; and foundations of lifelong health. It provides a range of media products designed to close the gap between what experts know about the science of early childhood and what the public understands and does about it.

The **InBrief series** provides brief summaries of recent scientific presentations and research on the science of early childhood development and early childhood program evaluation. These one-sheet briefs, designed to be printed on one page, front and back, are also available as a companion video series.

InBrief: The Science of Early Childhood Development
https://www.youtube.com/watch?v=WO-CB2nsqTA

InBrief: The Foundations of Lifelong Health
https://www.youtube.com/watch?v=o_mCNW4kb6M

InBrief: The Impact of Early Adversity on Children's Development
https://www.youtube.com/watch?v=chhQc0HShCo

InBrief: The Science of Neglect
https://www.youtube.com/watch?v=bF3j5UVCSCA

InBrief: Executive Function: Skills for Life and Learning
https://www.youtube.com/watch?v=efCq_vHUMqs

Video clips on Early Development

1st Core Concept - Experiences Build Brain Architecture
https://www.youtube.com/watch?v=VNNsN9IJkws

2nd Core Concept - Serve & Return Interaction Shapes Brain Circuitry
https://www.youtube.com/watch?v=m_5u8-QSh6A

3rd Core Concept - Toxic Stress Derails Healthy Development
https://www.youtube.com/watch?v=rVwFkcOZHJw

Building Adult Capabilities to Improve Child Outcomes: A Theory of Change
https://www.youtube.com/watch?v=urU-a_FsS5Y

Brain Hero
https://www.youtube.com/watch?v=s31HdBeBgg4

National Scientific Council on the Developing Child. (2007).
The timing and quality of early experiences combine to shape brain architecture. Cambridge, MA: National Scientific Council on the Developing Child, Working Paper No. 5.
http://developingchild.harvard.edu/library/reports_and_working_papers/wp5
This report summarizes in clear language recent scientific advances in understanding the importance of sensitive periods on brain development, and the implications of those findings for policy.

Changing Brains - http://changingbrains.org/
The University of Oregon Brain Development Lab provides a science program for non-scientists, featuring information and practical recommendations based on scientific evidence for parents, educators and policymakers. There are a series of free video clips on brain plasticity, imaging, vision, motor system, attention, language, reading, math, music and emotions and learning.

Bernard van Leer Foundation - http://www.bernardvanleer.org/
Oates J., Karmiloff-Smith A, Johnson MH, Eds. (2012). Developing Brains. Early Childhood in Focus 7.
http://www.bernardvanleer.org/Developing-Brains
This volume series aims to present an overview of the most significant areas of research in neuroscience and child development focusing on the powerful effects of early environments, both physical and social.

CRIN (Child Rights International Network) - http://www.crin.org
CRIN is a global network for children's rights. Its launches advocacy campaigns, leads international children's rights coalitions, and aims to make existing human rights enforcement mechanisms accessible for all. The website is a valuable resource for up-to-date information about national and international child rights laws, child rights mechanisms, and information on child rights in each country.

Science of Early Child Development (SECD) - http://www.scienceofecd.com/
Red River College in conjunction with the University of Toronto have created an online multimedia resource highlighting some of the most recent research into early human development and population health.

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