

Technical Support to implement reforms to support the development of family centred early childhood intervention services in Greece - ECI Greece

Grant Agreement n° 101048313

Family Centred ECI Training Package for Staff of ECI Services

PPT 5: Early developmental therapeutic intervention



Funded by the European Union via the Technical Support Instrument and implemented by EASPD, in cooperation with the European Commission's Directorate-General for Structural Reform Support



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Chapter 1

The development of the child

Life is characterized by 3 key moments:

Conception – Birth – Death

And 2 periods:

Prenatal period – Postnatal period

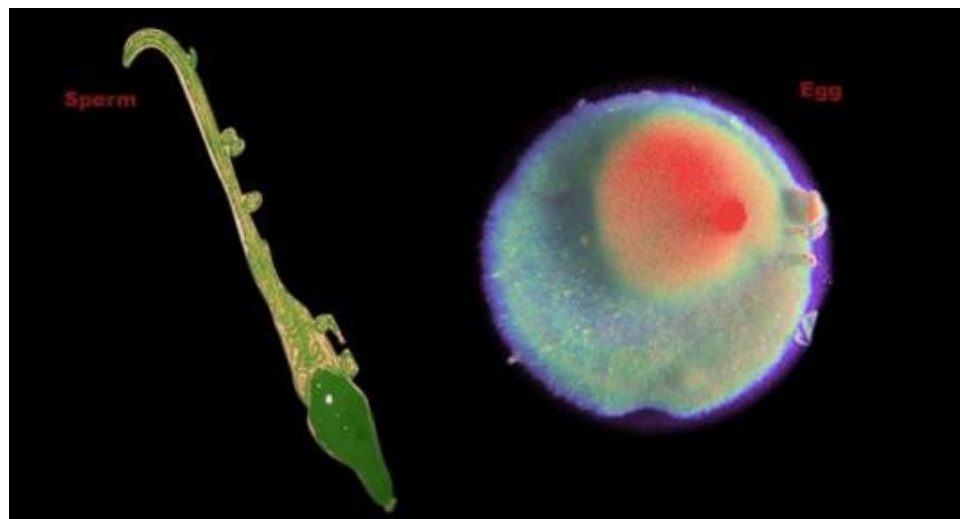


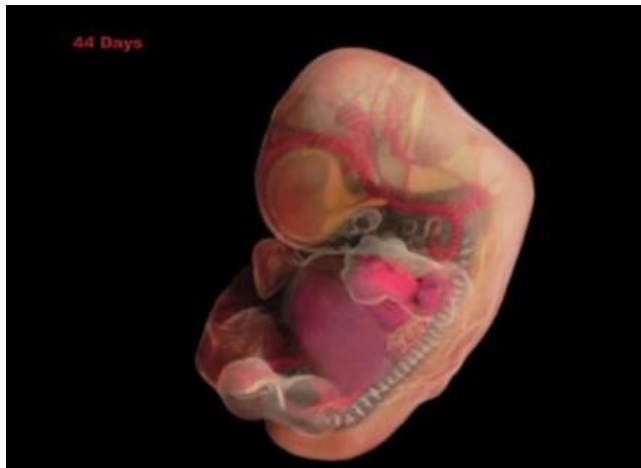
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From conception to birth



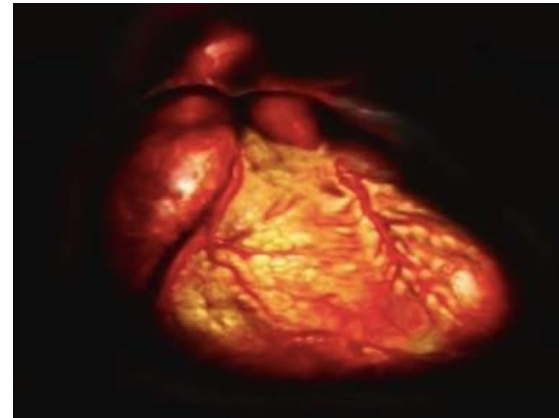
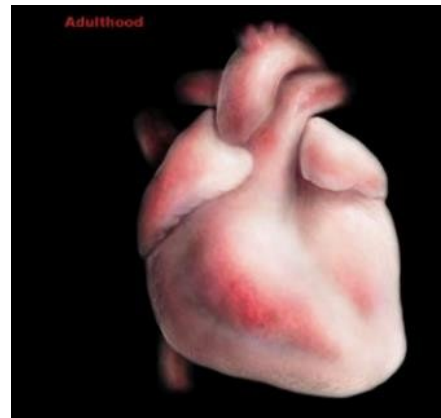
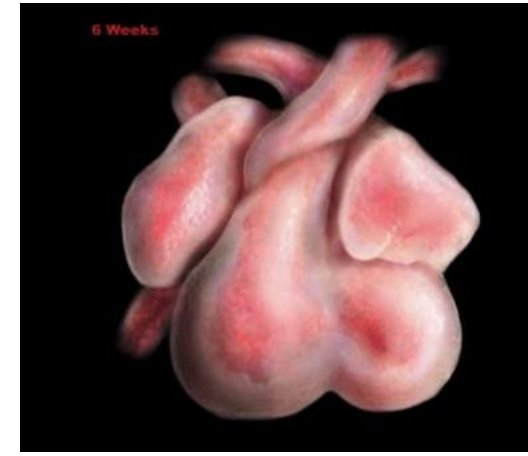
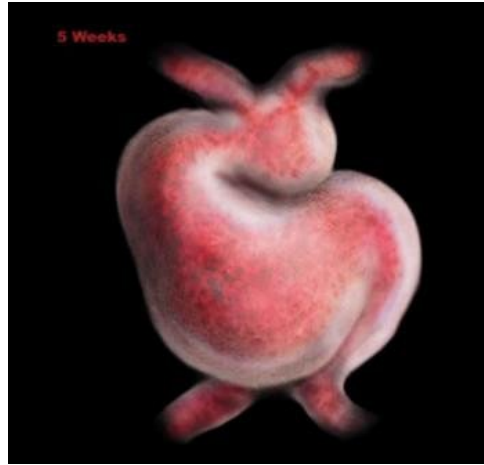
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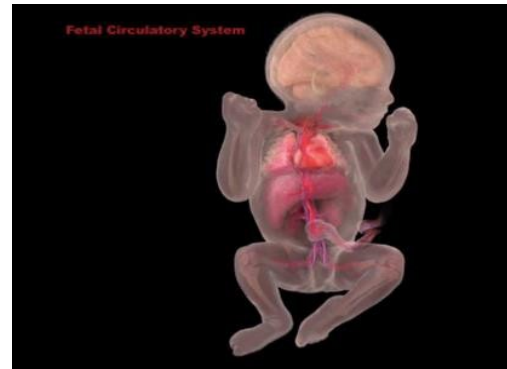
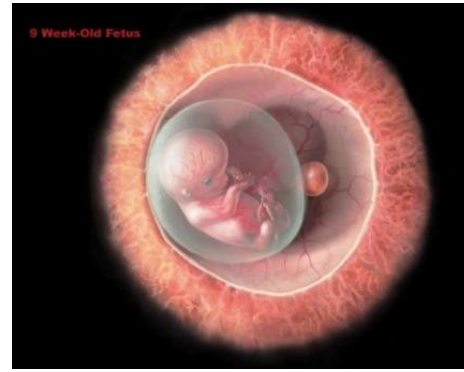
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Heart development

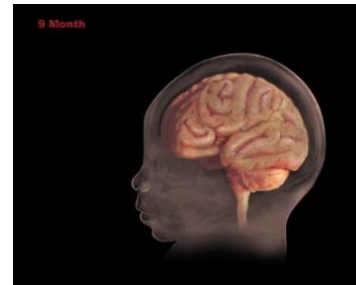
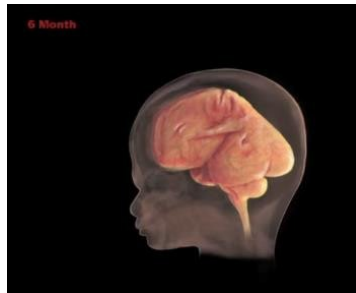
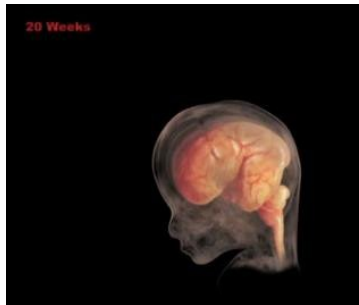
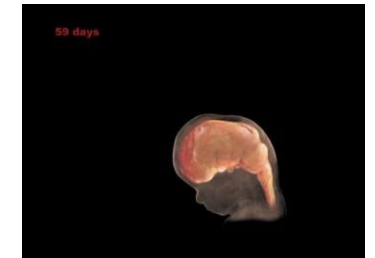
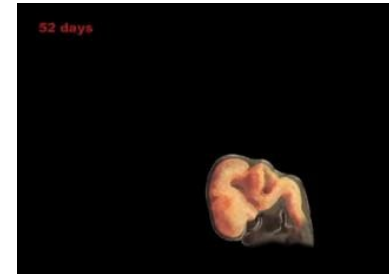
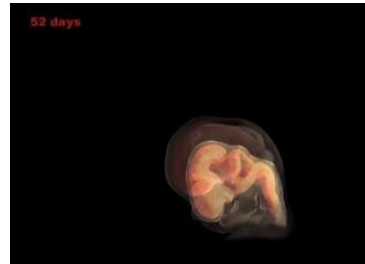


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Vascular development



Brain development



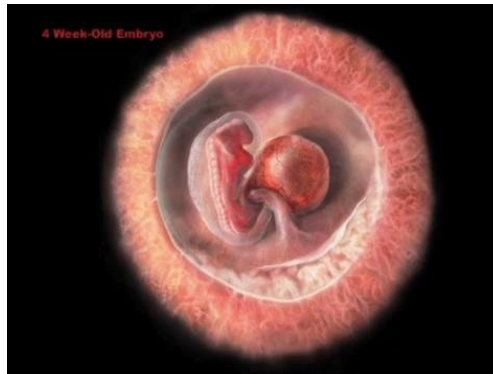
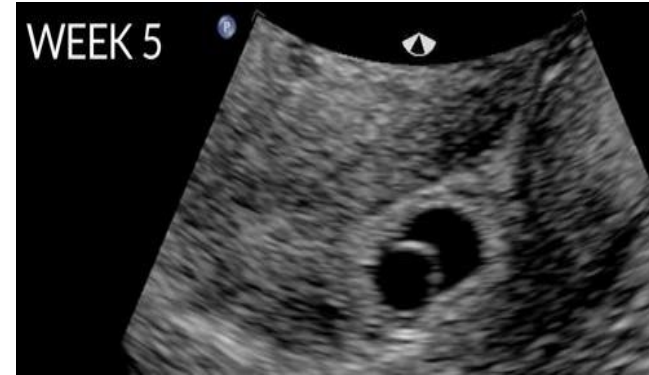
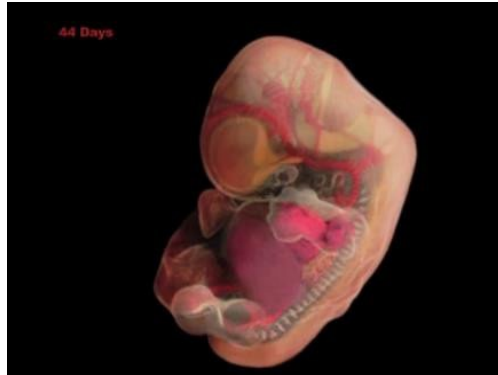
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Functional Development of the Fetus

Seed Size



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1 million cells per second

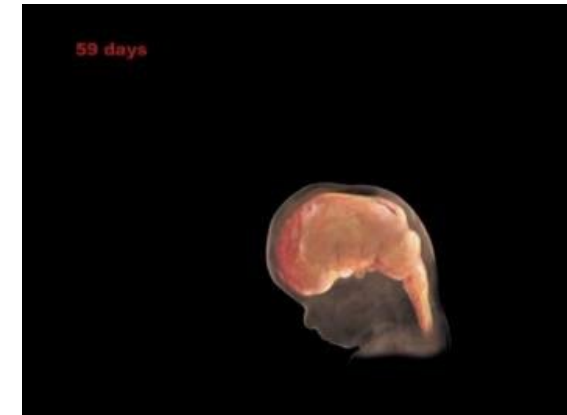
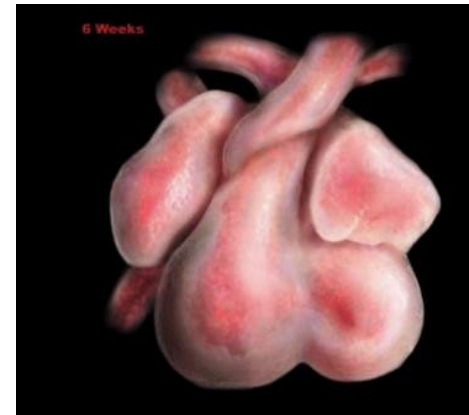


The heart beats



The brain grows
with 100,000 cells per minute

Berry Size

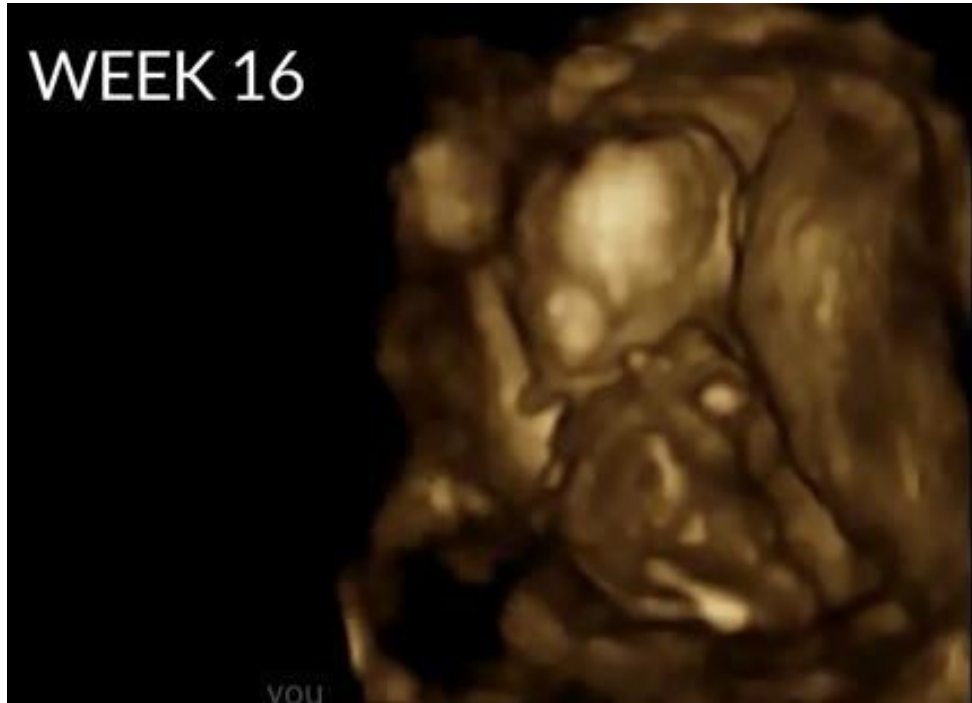


Lemon Size



- Reaction to stimuli:
 - Smell
 - Hearing
 - Hand / finger movements
 - Smile
 - Thumb-sucking

Large Tomato Size



- The head is equal to the body
- Kicks
- Swallows
- Urinates
- Tastes

Quince Size



- Hears Better
- Teeth appear
- Hair
- Nails
- Brows
- Eyelashes
- Rotates
- Kicks
- Learns the action-reaction relationship



Cauliflower Size



- Cerebral cortex splits into 2 hemispheres
- Eyes open
- Responds to light
- Simple facial expressions (smile?)



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Pineapple Size



- Regular sleep /wake intervals
- Response to mom's voice
- Response to external noises
- Movement
- 90% chance of survival in the event of pre-term birth



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Melon Size



- Behaviour of newborn
- Nervous system ready
- Breathing exercise (amniotic fluid)
- Sleeps a lot
- Changes position
- Flexible bones
- Immature immune system



- Kicks and moves
- Stronger immune system
- Reacts to sensory stimuli



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The prenatal period is extremely important for the child's future



Events such as:

- Genetic mutations
- Chromosomal abnormalities
- Toxic – teratogenic agents
- Difficulties in pregnancy
- Stress

80% of developmental disorders

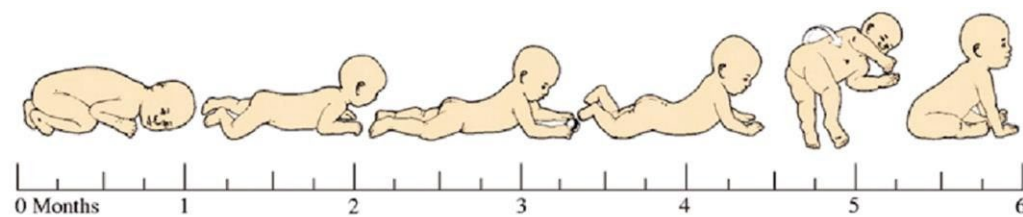


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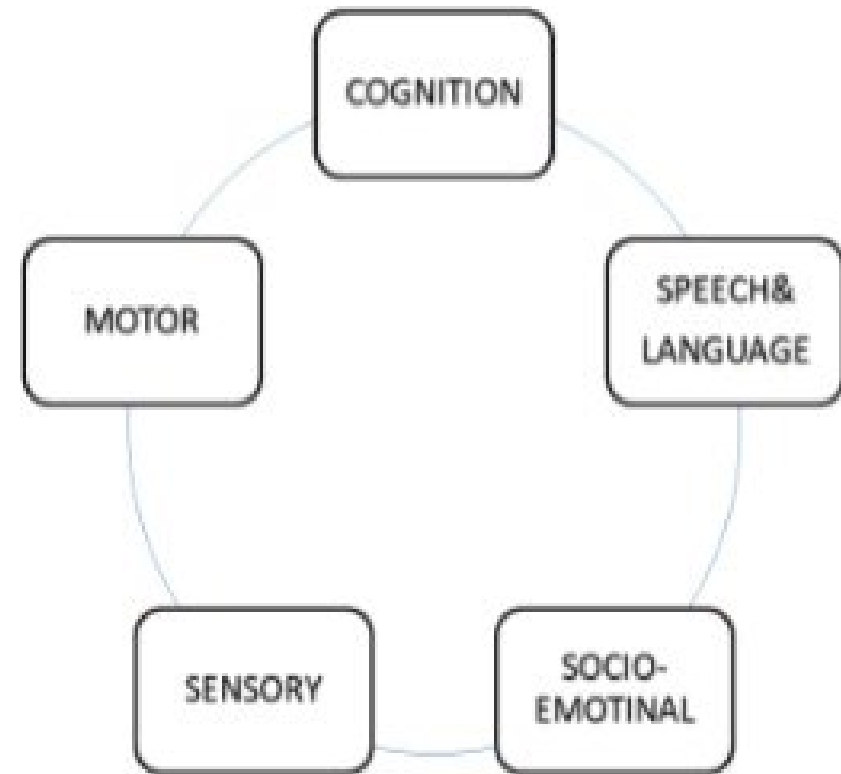
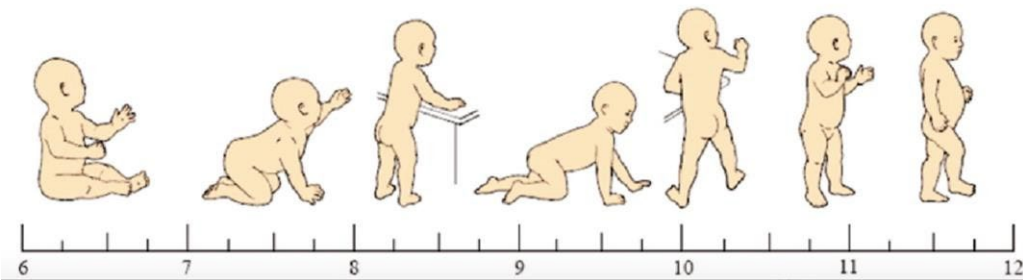
Life after Birth



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Chronologic progression of gross motor development



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1 month



2-3 months



4-6 months



7-9 months



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10-12 months



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18 months



24 months



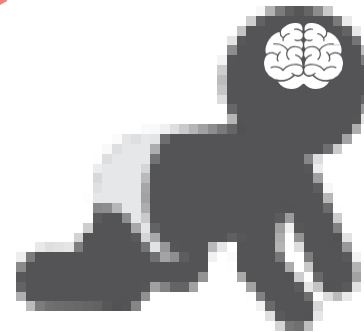
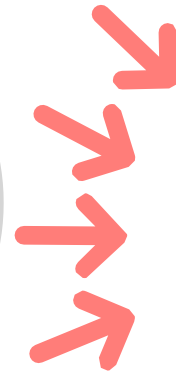
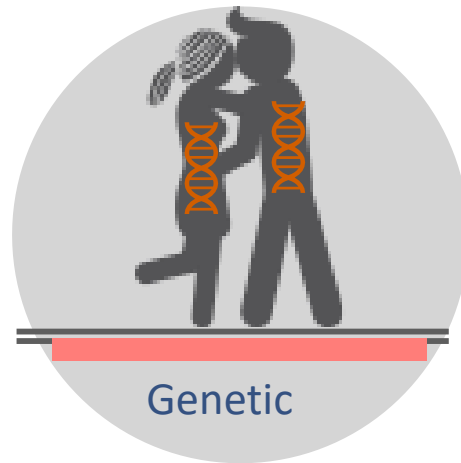
3 years



The development of the child is the result of neural function

“Nature”

Intrinsic factors



“Upbringing”

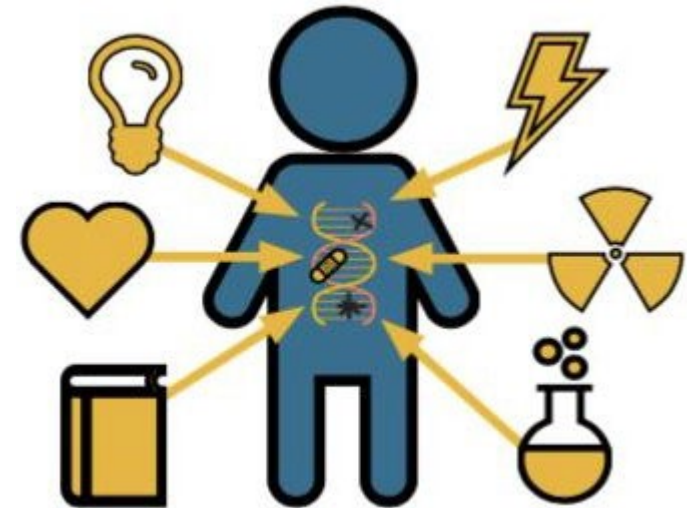
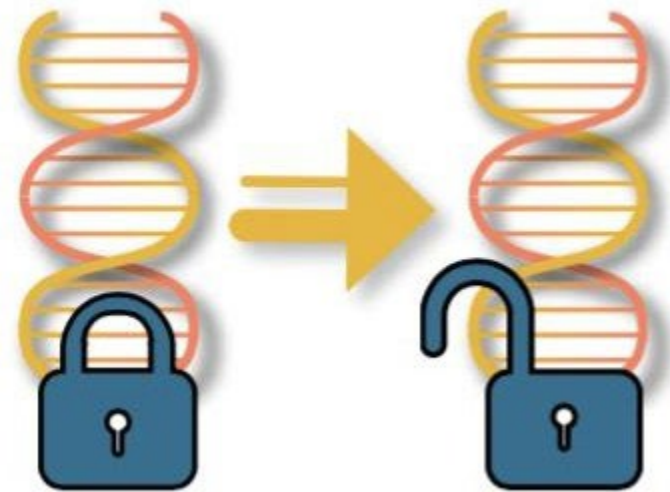
External factors



NEURODEVELOPMENT

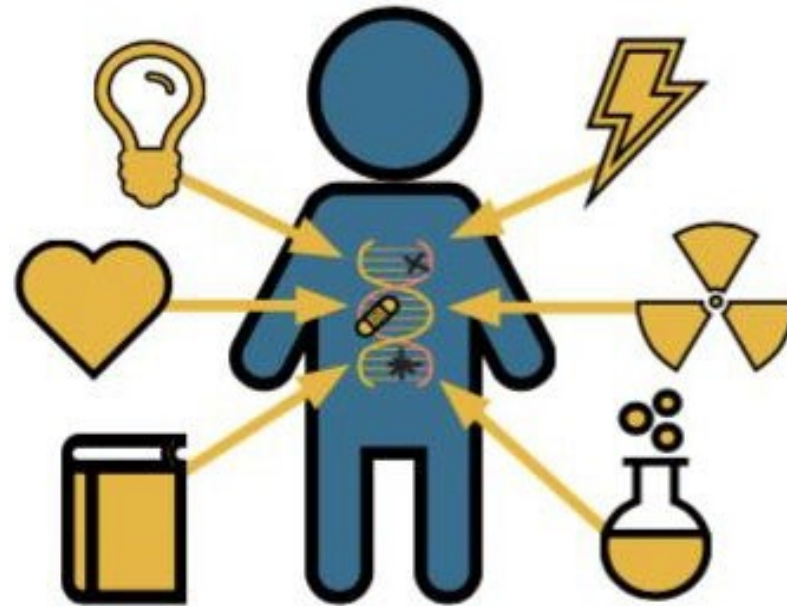
Epigenetics

Children's experiences actually influence gene expression



So what should we remember about children's development?

Development is a highly interactive and sensitive process that is not exclusively determined by genes.



The architecture of the brain for the most part is formed in the period from conception to the first three years after birth.



Even infants and young children are affected when there are chronic stress conditions in the environment where they grow up.

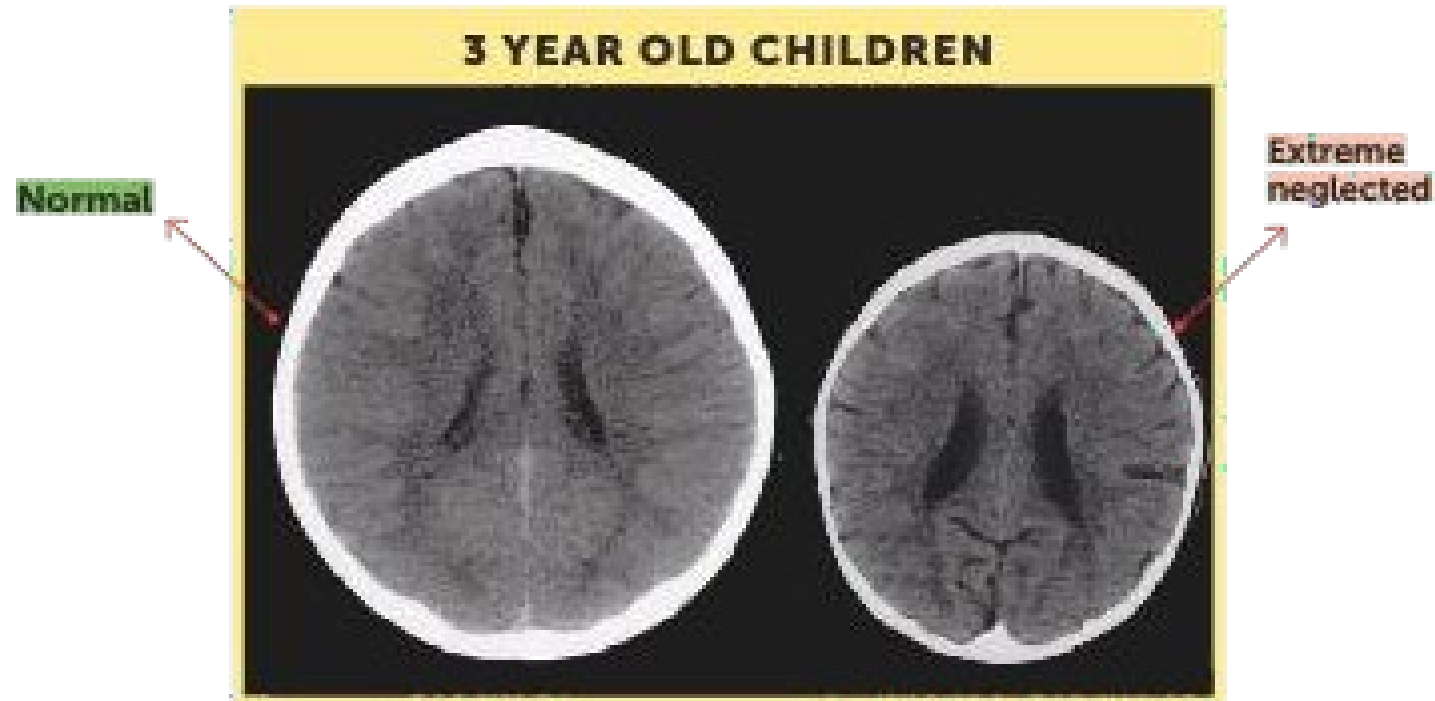


The close relationship with the parents is extremely important, even before childbirth.



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Severe neglect of a baby / child is as great a threat to health and development as physical abuse.



Who are the children in need of early developmental therapeutic intervention?



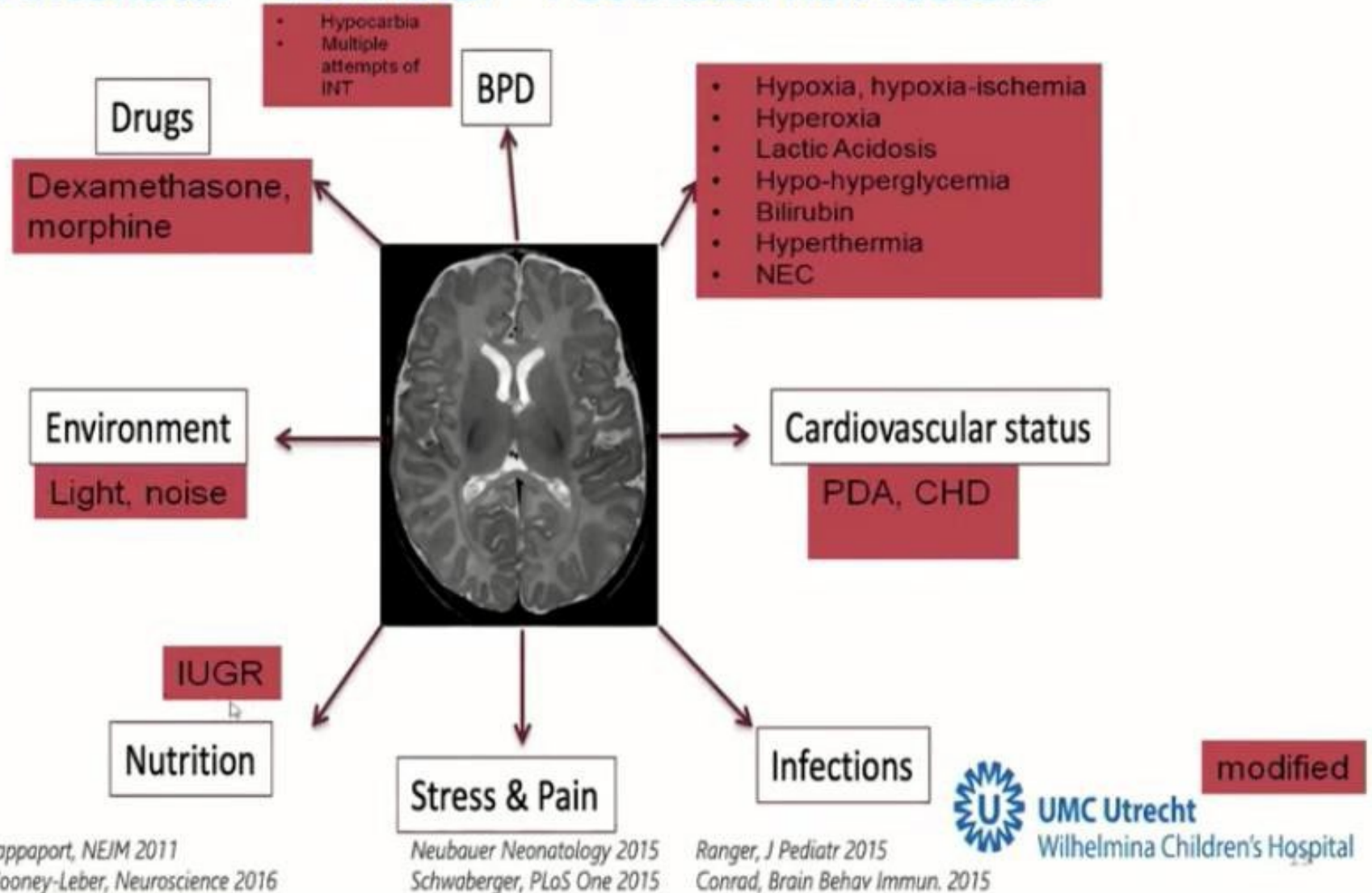
Developmental disorders



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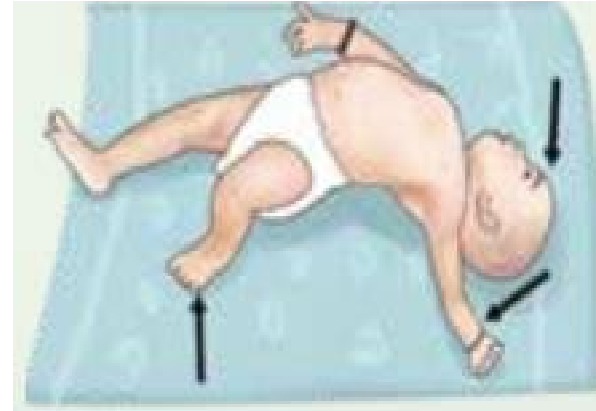
Disorder	Severe impact	Mild impact
Mental	<ul style="list-style-type: none"> • Intellectual disability 	<ul style="list-style-type: none"> • Borderline cognition • Slow learning
Motor	<ul style="list-style-type: none"> • Cerebral damage 	<ul style="list-style-type: none"> • Mild hypotonia • Ataxia • Mild neurological signs
Verbal	<ul style="list-style-type: none"> • Aphasia • Autistic spectrum 	<ul style="list-style-type: none"> • Developmental verbal disorders
Sensory / Perceptual	<ul style="list-style-type: none"> • Dyslexia • Deafness • Blindness 	<ul style="list-style-type: none"> • Learning difficulties • Hearing loss • Low vision
Electrical	<ul style="list-style-type: none"> • Epilepsy 	<ul style="list-style-type: none"> • EEG abnormalities without convulsions
Morphological	<ul style="list-style-type: none"> • Malformations • Chromosomal disorders • Genetic syndrome 	<ul style="list-style-type: none"> • Dysmorphic features • Microcephaly

Antenatal - Perinatal - Postnatal risk factors



2-3 months

Red flags



- The child does not pay attention to your face, the child does not smile at the sound of the carer's voice
- The child cannot support its own head
- The child has strabismus, eye goes outwards

4-6 months

Red flags



- The child cannot support its own head or torso
- The child has no interest in playing with toys and games (especially new toys)
- The child does not interact with their carer, shows no affection for the person that cares for them
- The child does not push down with their legs when feet are placed on a hard surface

7-9 months

Red flags



- The child kinetically, perceptually and communicatively does not progress
- The child does not reach to grab things
- The child does not sit without help
- The child does not respond to their own name

10-12 months

Red flags



- The child does not crawl, does not reach out to parents
- The child cannot sit by itself

18 months

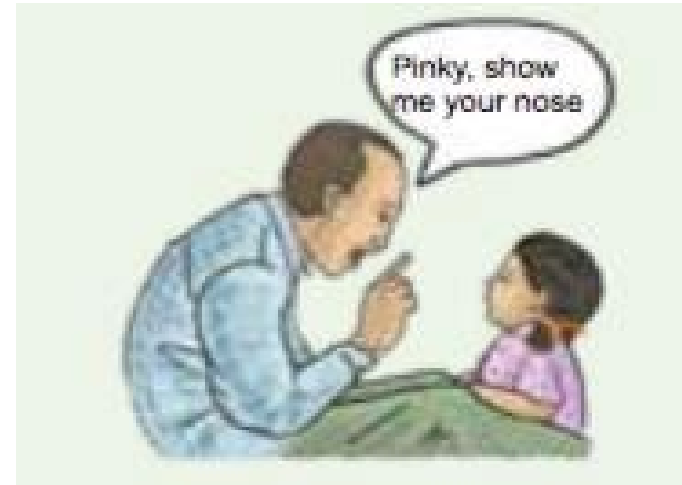
Red flags



- The child cannot walk
- The child doesn't point to show things
- As the child continues to grow, there is a greater divergence from typical development

24 months

Red flags



- The child cannot follow simple instructions
- The child cannot copy actions or words
- The child does not walk steadily

3 years

Red flags

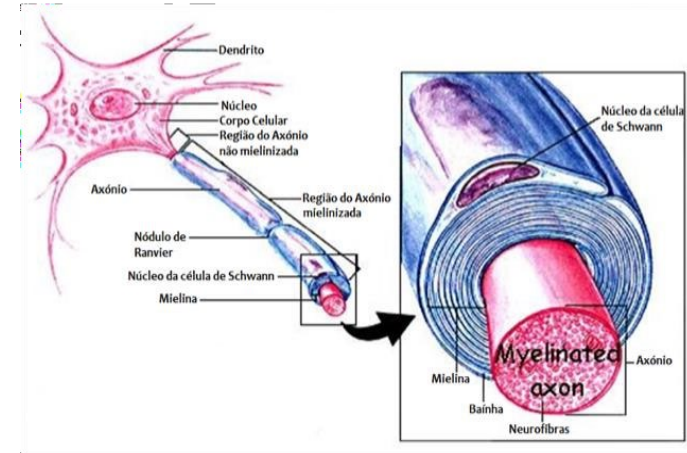
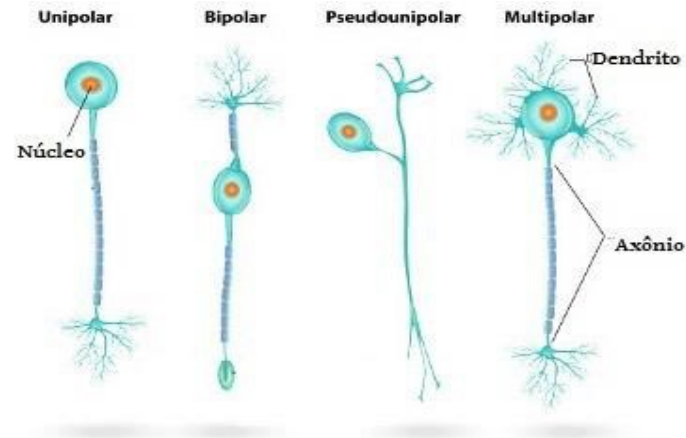
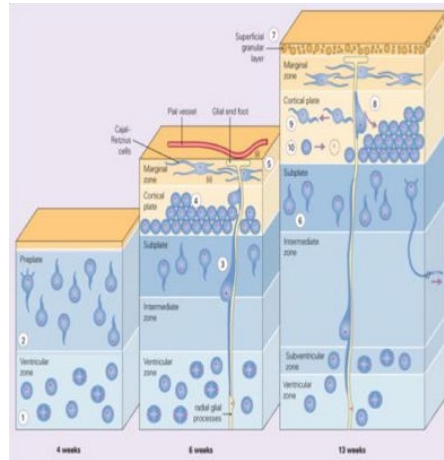
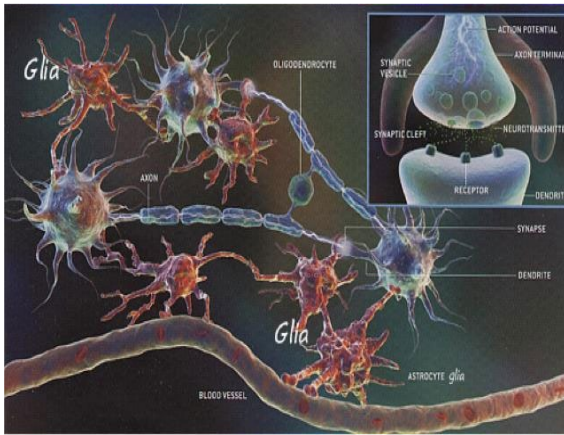


- The child falls down a lot or has trouble with stairs
- The child does not want to play with other children
- The child cannot work simple toys
- The child cannot answer simple questions

Why early developmental intervention?



Brain development



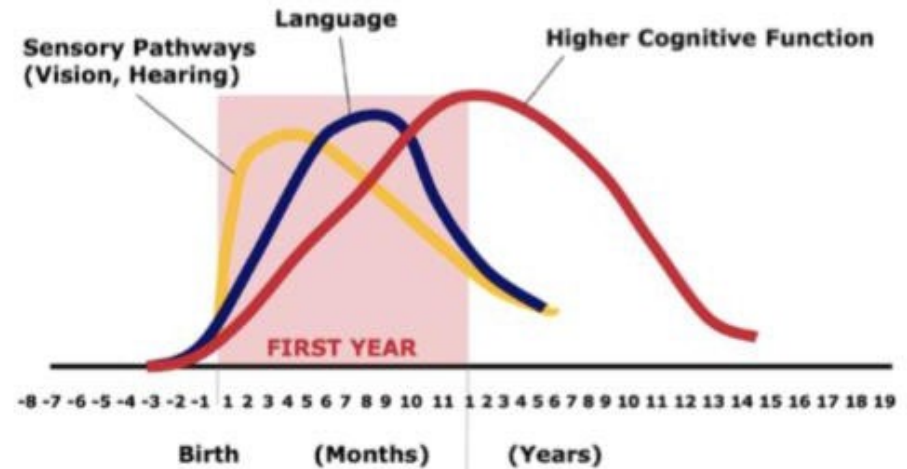
Then pruning, so that the brain circuits become more efficient

Each brain function has its own critical development time.



Source: Nelson, C. (2000). Source: Center on the Developing Child at Harvard University. Core concepts in the science of early childhood development. <http://developingchild.harvard.edu>. Reproduced with permission of the author.

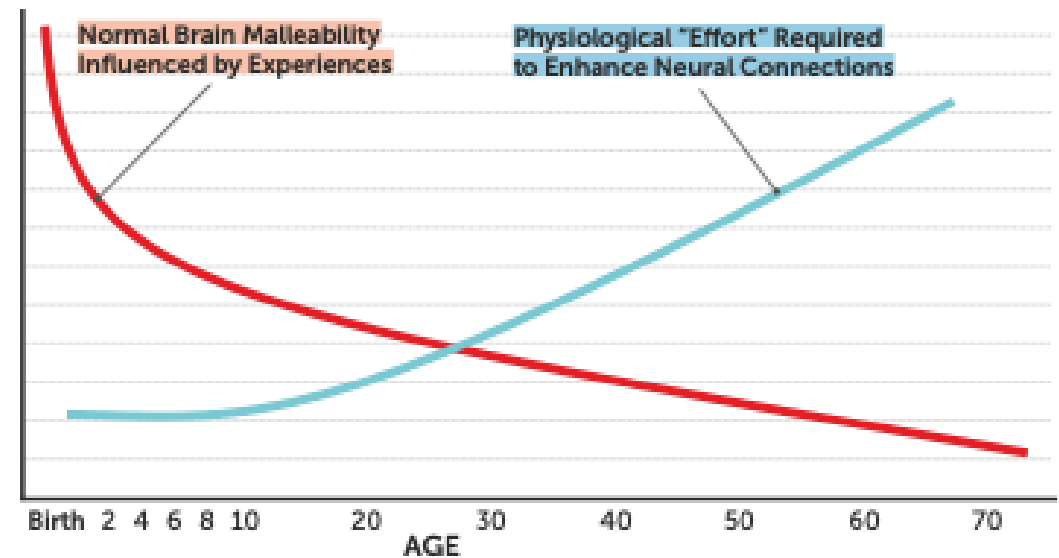
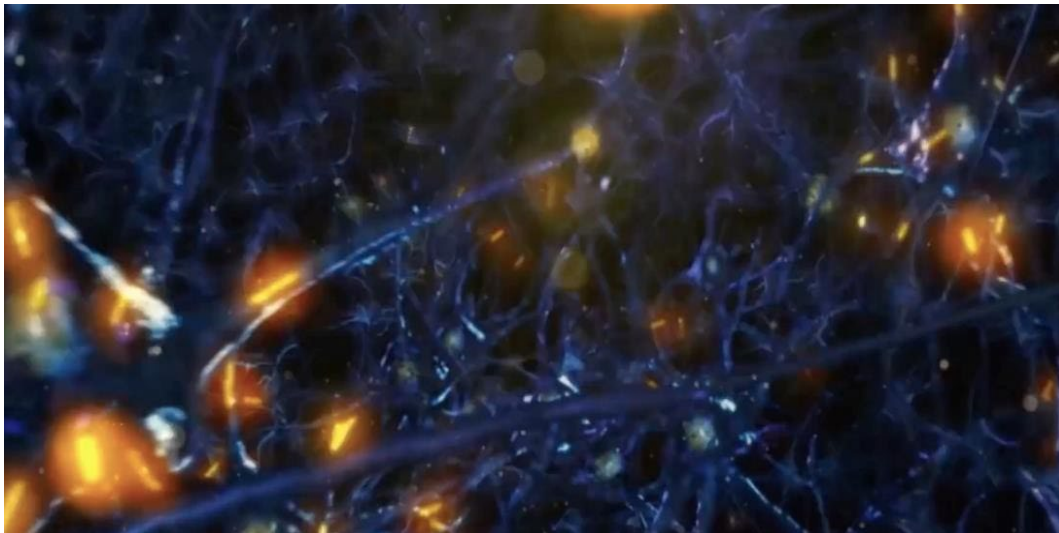
Human Brain Development
Neural Connections for Different Functions Develop Sequentially



Source: C.A. Nelson (2000)

Source: Levitt, P. (2009). Source: Center on the Developing Child at Harvard University. Core concepts in the science of early childhood development. <http://www.developingchild.harvard.edu>. Reproduced with permission of the author.

Neuroplasticity



In the first years of life, more than 1 million new neural connections are formed every second

“Práticas Recomendadas em Intervenção Precoce na Infância: Um Guia para Profissionais”, 2015

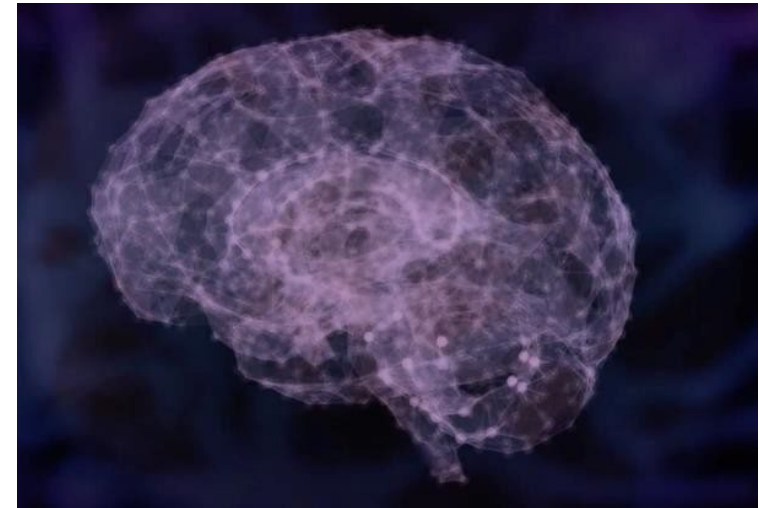
What we should remember about the value of early development intervention?

The early provision of appropriate therapeutic approaches yields very good results



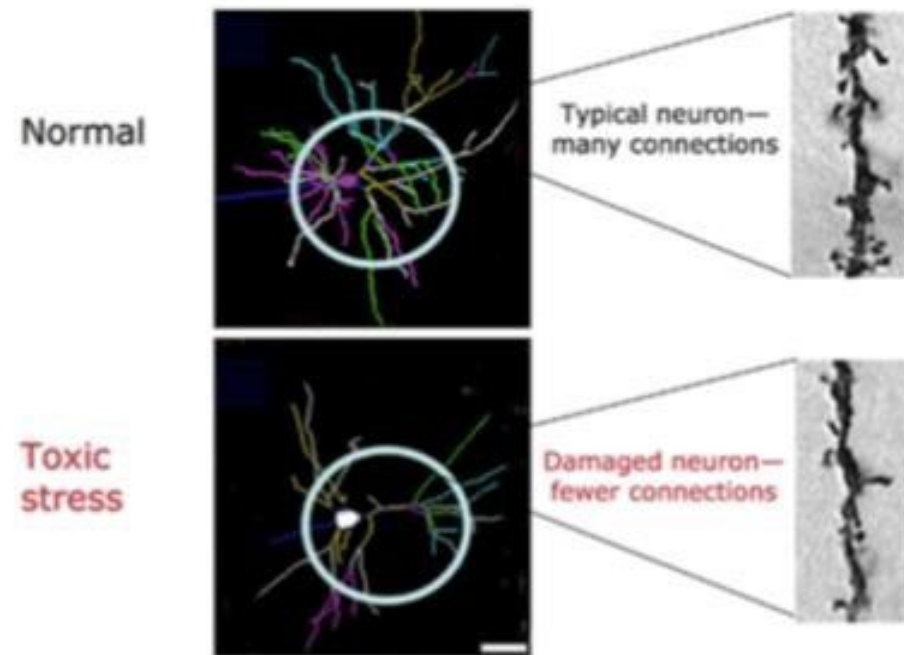
Neuroplasticity of the developing brain in the early years of life is characterized mainly by:

1. Easy synapse formation
2. Easy change of existing synapses
3. Non-consolidation of neural circuits



Late intervention to build new skills requires more effort.

Persistent Stress Changes Brain Architecture



Prefrontal Cortex and Hippocampus

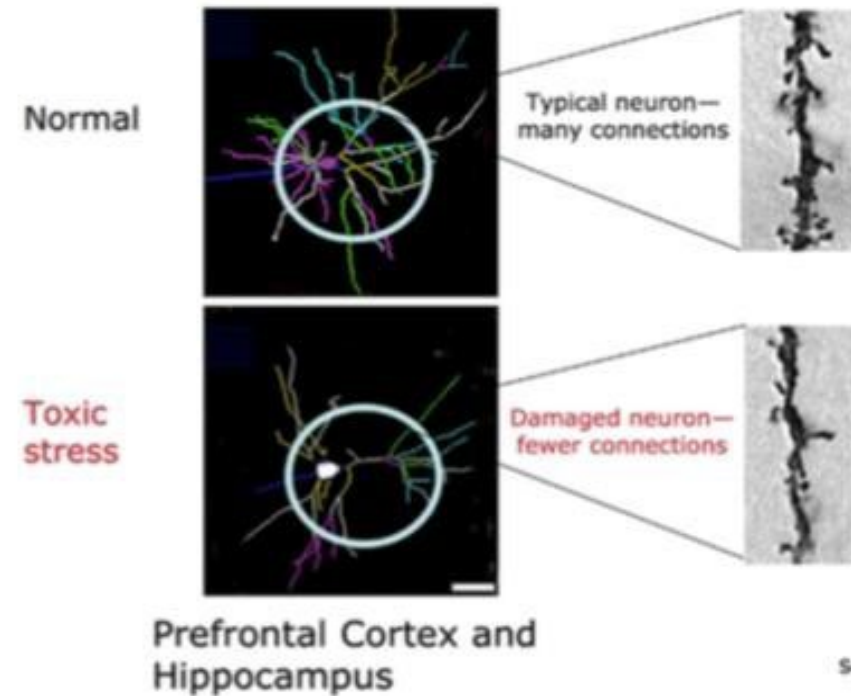
Sources: Radley et al. (2004)
Bock et al. (2005)

Early experiences
affect the
developing brain
as early as in the
prenatal period

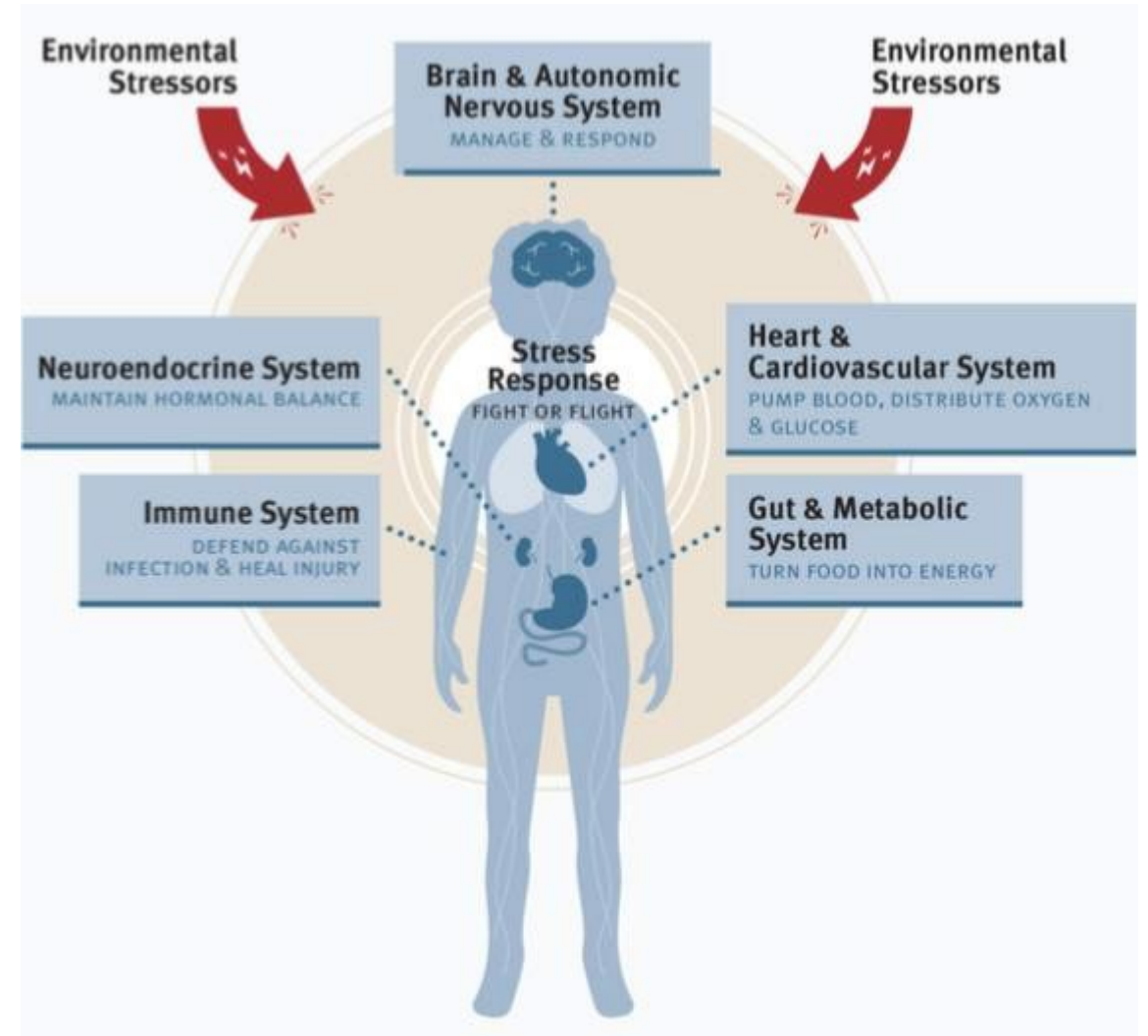


Chronic stress can be toxic to the developing brain

Persistent Stress Changes Brain Architecture



Early brain damage can lead to lifelong problems



Early developmental
therapeutic intervention
further prevents
adverse effects



Stable care relationships
with parents and
caregivers are essential
for healthy
development



Children need opportunities, motivation, play and simple everyday routines to learn.



Rethinking Early Childhood Intervention Services: Implications for policy and practice,
Tim Moore, 2012



American Academy of Pediatrics, 2013



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The action has received funding from the European Union via the Technical Support Instrument and is implemented by EASPD, in cooperation with the European Commission's Directorate-General for Structural Reform Support

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