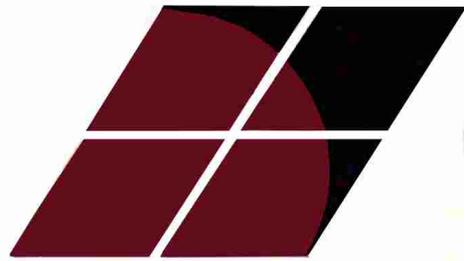


The Amazing First Three Years of Life



CIAR

The Canadian Institute for Advanced Research

NIFTelij

The logo features the text 'NIFTelij' in a green, rounded font. The letter 'i' is replaced by a purple stylized human figure. A purple line starts under the 'N', curves under the 'T', and then rises to end in a purple circle at the end of the 'j'. The entire logo is centered on a white rectangular background, which is itself centered on a light blue background.

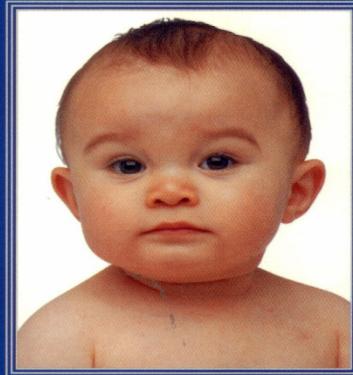
NIFTEY

**NATIONAL INVESTMENT FOR THE
EARLY YEARS**

"[The authors'] descriptions of flirtatious, learning babies will make you laugh, but the seriousness of their project, and its implications, are breathtaking." —*Seattle Times*

THE SCIENTIST IN THE CRIB

WHAT EARLY LEARNING
TELLS US ABOUT
THE MIND



Alison Gopnik, Ph.D.
Andrew N. Meltzoff, Ph.D.
Patricia K. Kuhl, Ph.D.

The Amazing First Three Years of Life

- What people “know” about children
- What children can show us if we watch
- New knowledge about brain development
- Why the early years matter
- Children finding faith

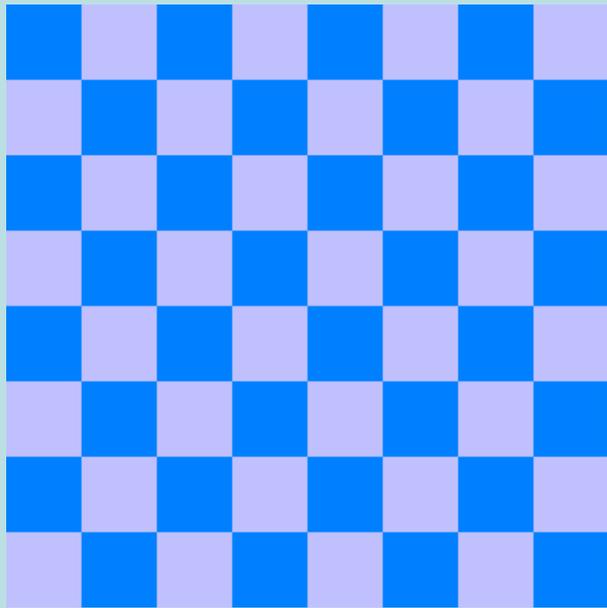
Beliefs about infants' knowledge

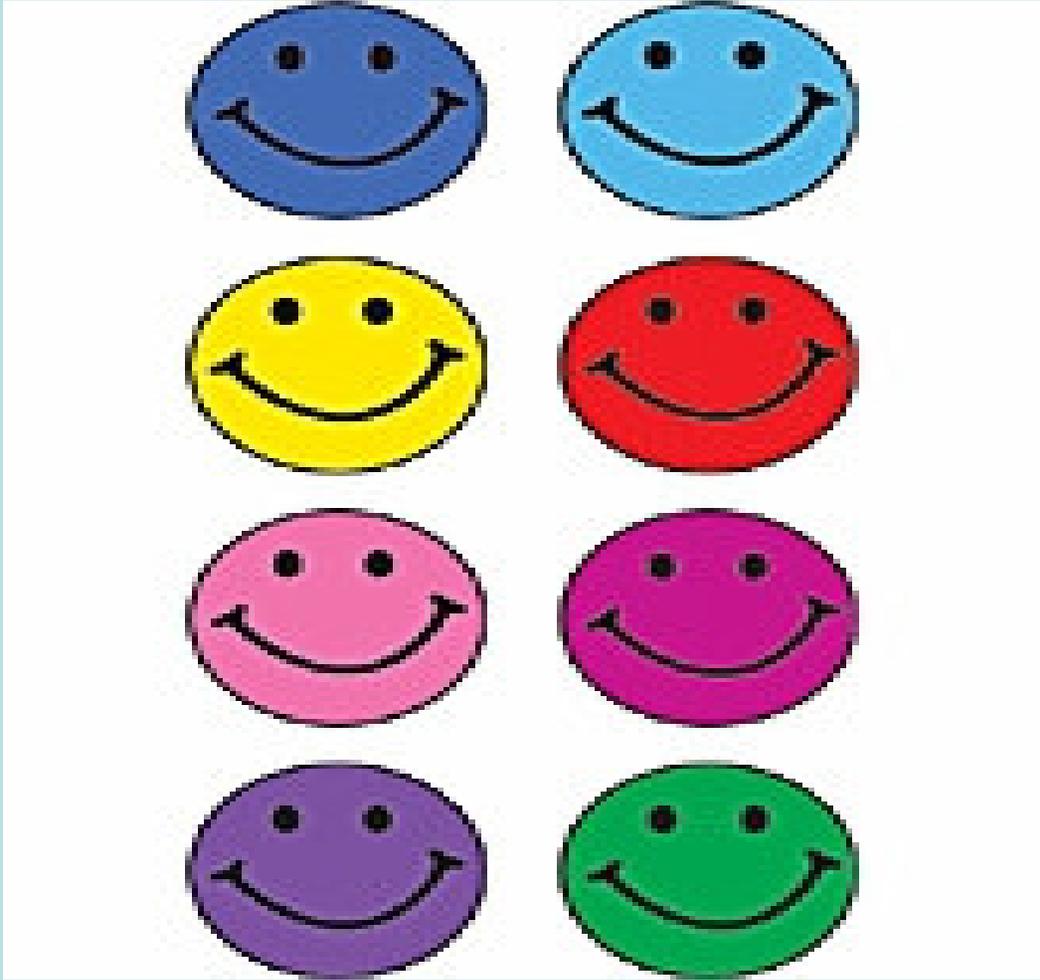
- Children defined by what they didn't know and couldn't do
- Romantic view: Children's knowledge uncorrupted, like poetry rather than science
- Piaget: Babies think, search for knowledge and learn
- Vygotsky: Children use their parents as a tool to solve problems

Beliefs about infants' knowledge

- Freud: relied on inferences from neurotic adults
- Skinner: relied on the behaviour of slightly less neurotic laboratory rats

Both ignored Bertrand Russell's advice to
Aristotle







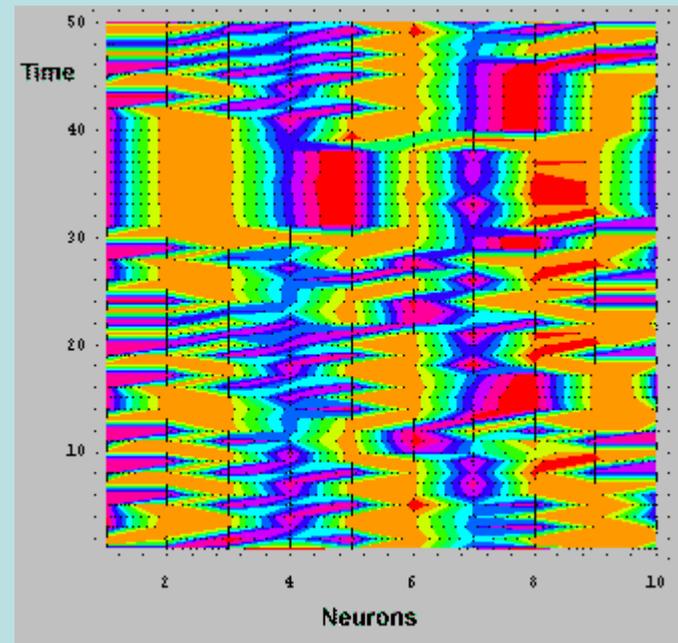
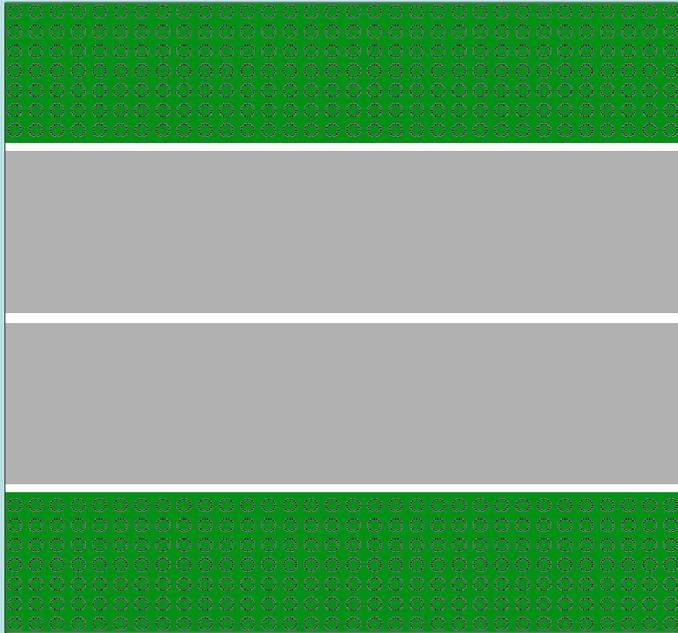




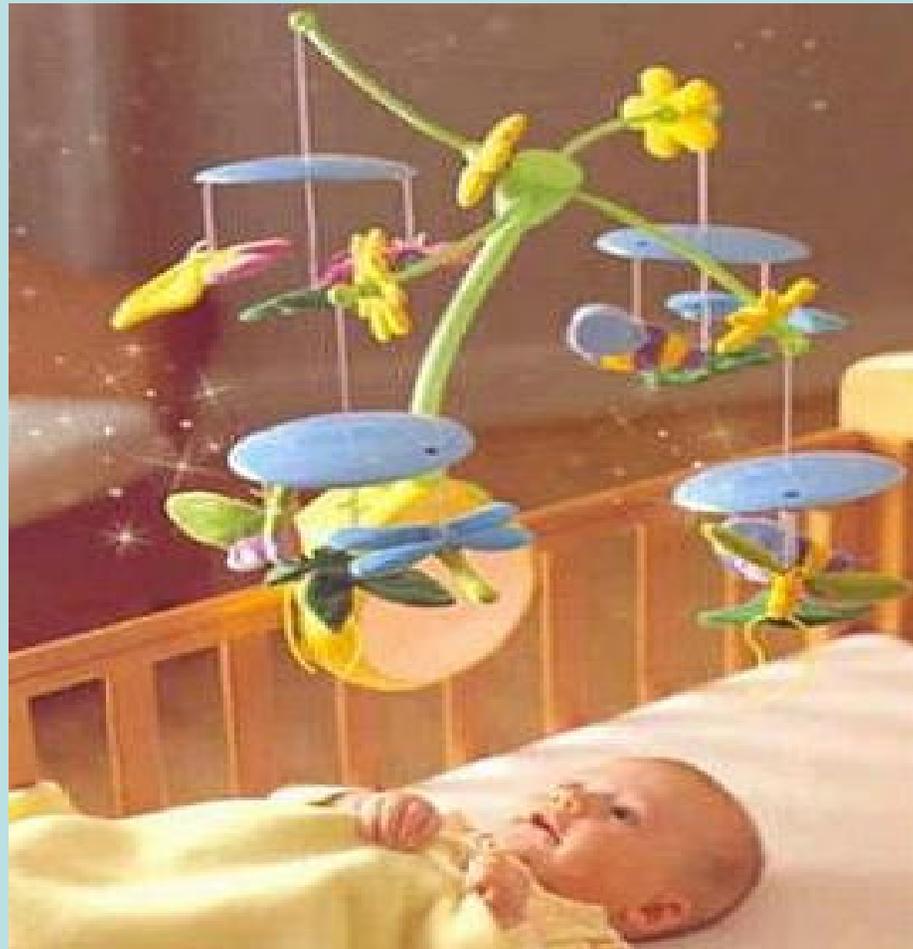


How infants

- See
- Compute
- Reason
- Speak







Language

R & L

English = Fried rice

Japanese = Flies lice

Before 7 months Japanese and English speaking infants discriminate R and L equally – not by 12 months

Nature Vs Nurture

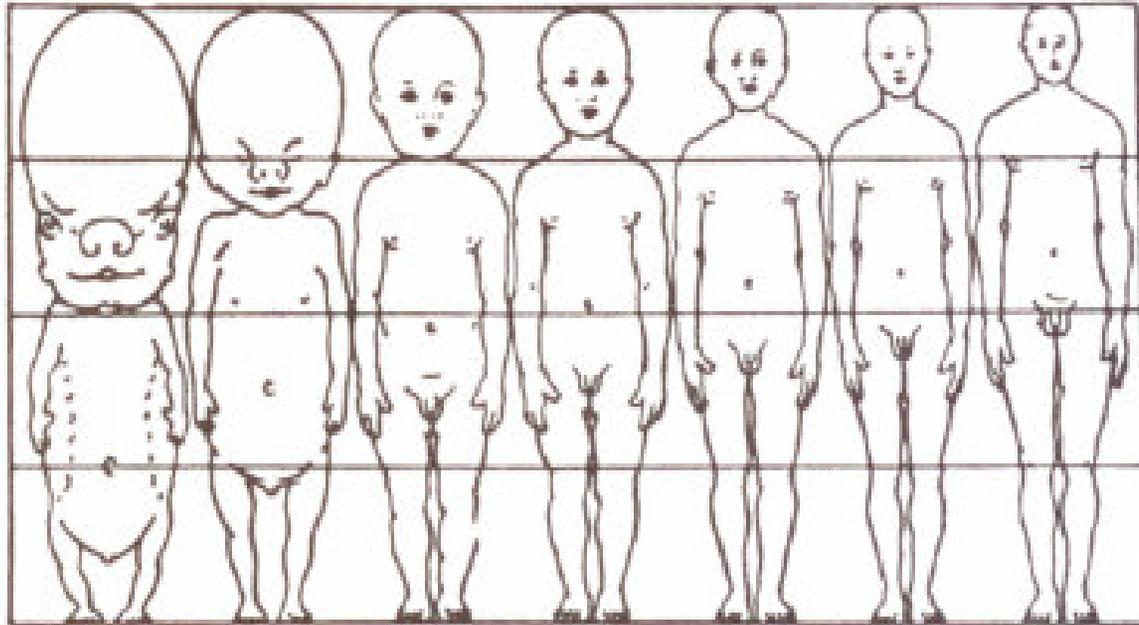
~~Nature Vs Nurture~~

Too simple

Scientifically obsolete

Nature **AND** Nurture

Child development is not a matter of nature Vs nurture, it is the **interplay** of nature and nurture together



2 mo. (fetal)

5 mo.

Newborn

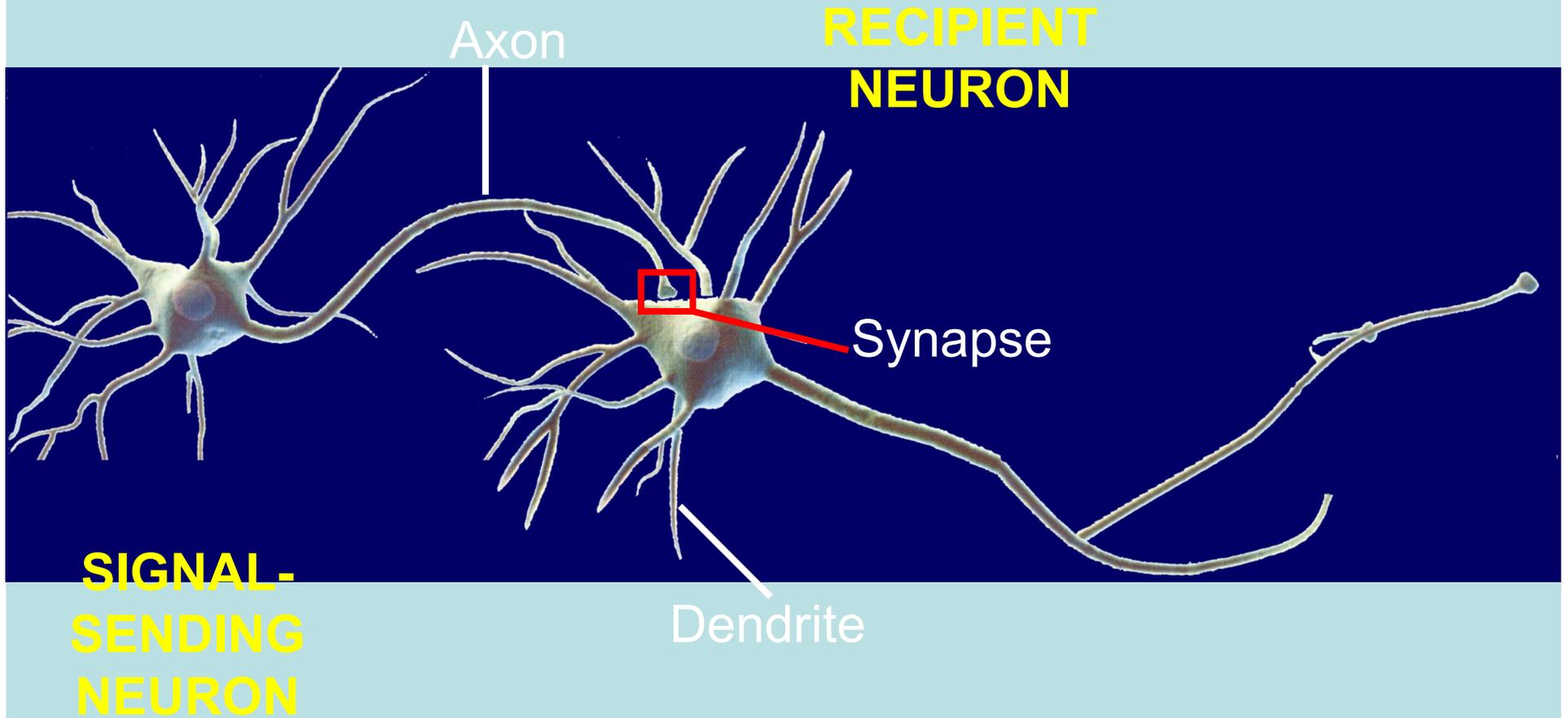
2 yr.

6 yr.

12 yr.

25 yr.

Two Neurons



Synaptic Density

At Birth

6 Years Old

14 Years Old



Early brain development

- 100 billion nerve cells at birth – most of these are unconnected
 - each neuron may eventually connect to as many as 15,000 other neurones
 - by the age of three, a child's brain has 1.000 trillion connections
 - by late adolescence one-third of these synapses have been discarded
- Forming and reinforcing these connections are the key tasks of early brain development

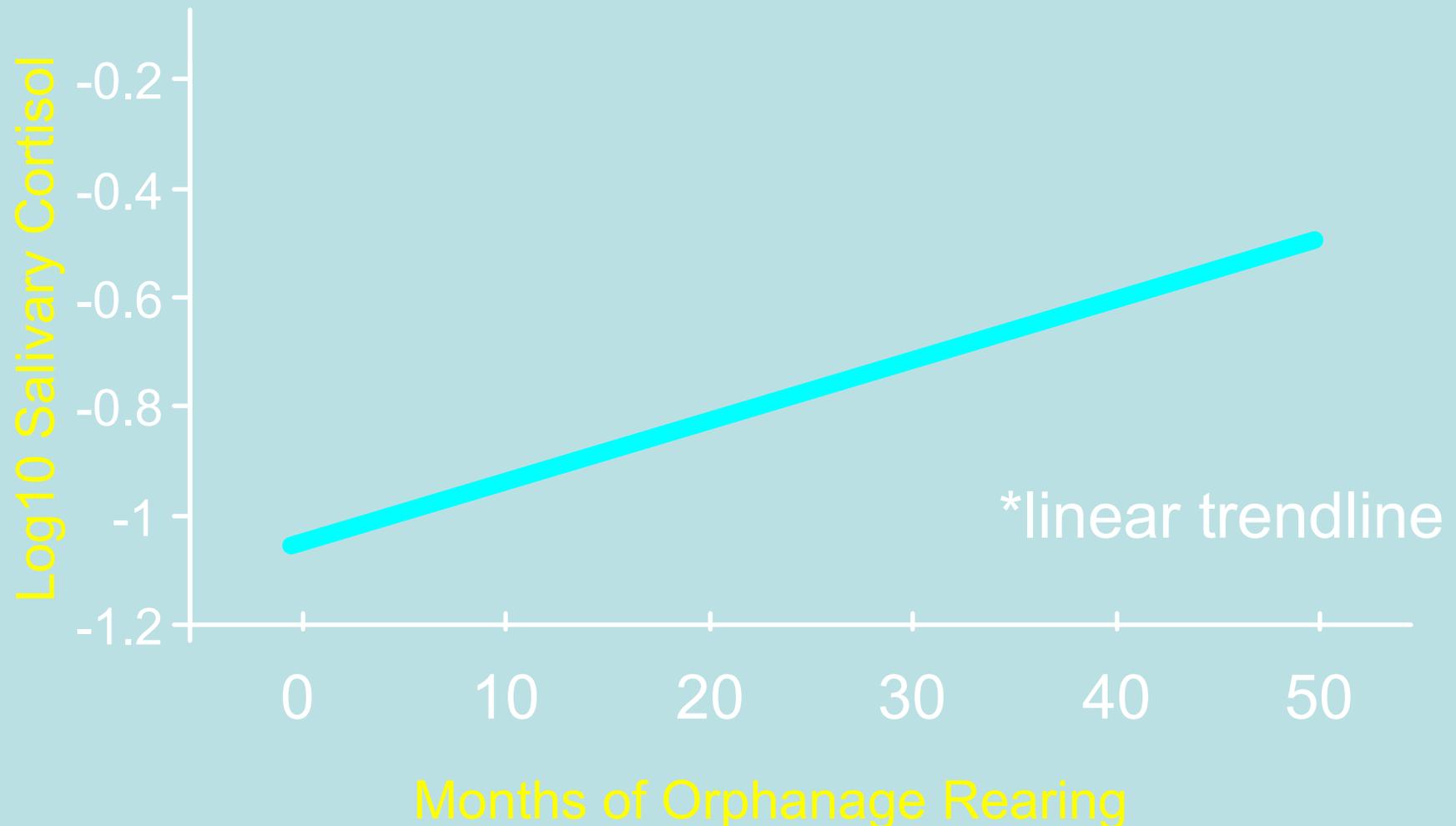
Critical Periods

Critical Periods

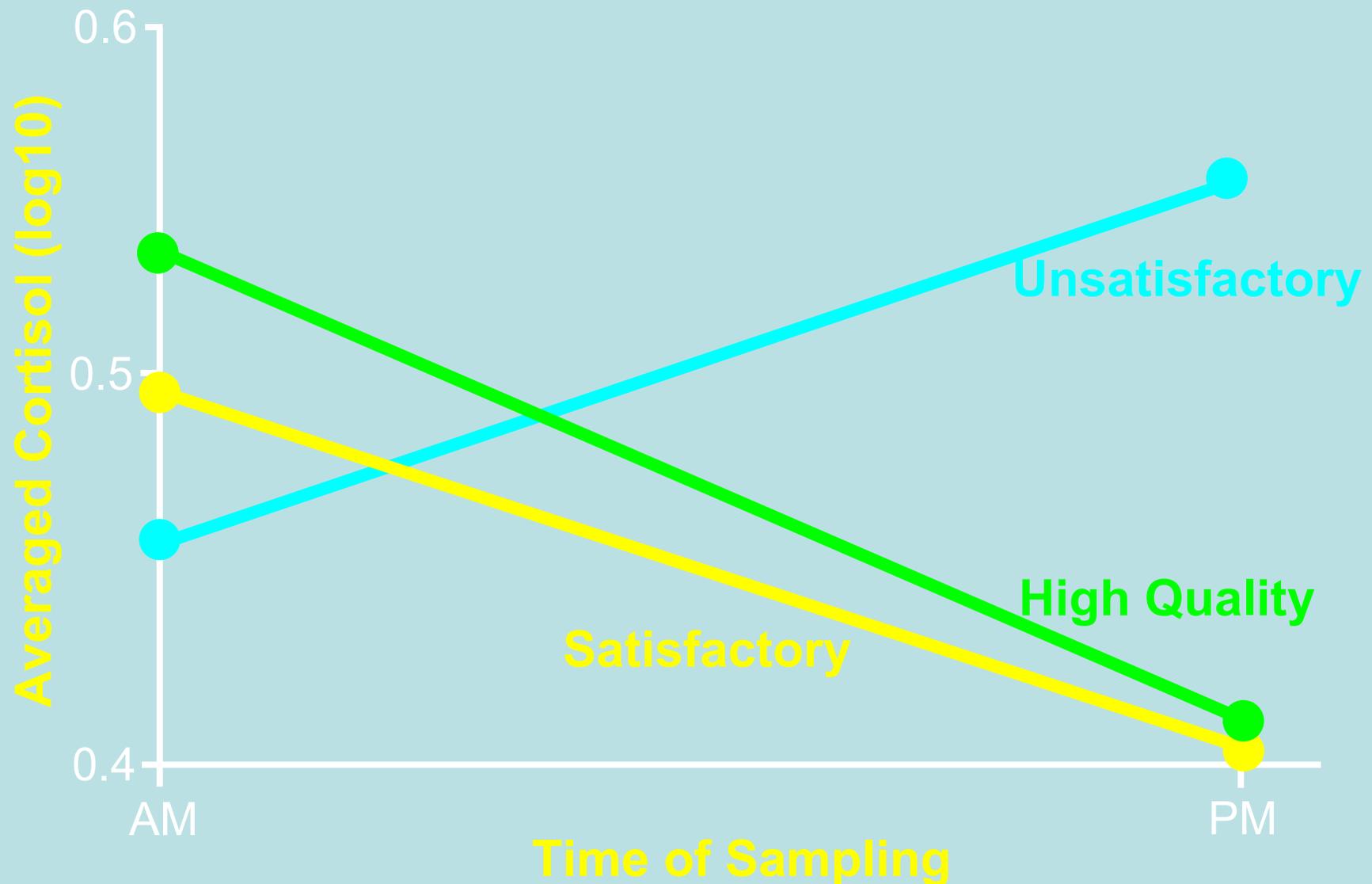
Windows of opportunity in early life when a child's brain is exquisitely primed to receive sensory input and develop more advanced neurological systems

Early Years Report 2003
Canadian Government

Evening Cortisol Levels Increase with Months of Orphanage Rearing *



Cortisol Sampling – Quality Day Care



Health problems related to early life and brain development

- Coronary heart disease
- Non-insulin dependant diabetes
- Obesity
- High blood pressure
- Memory loss
- Depression

Key facts about brain development

- The brain development that takes place before age one is more rapid and intensive than we previously realized
- Brain development is much more vulnerable to environmental influence than we ever suspected
- The influence of early environment on brain development is long lasting
- The environment affects not only the number of brain cells and number of connections among them, but also the way these connections are “wired”
- We have new scientific evidence for the negative impact of early stress on brain function

Carnegie Corporation of New York (1994)

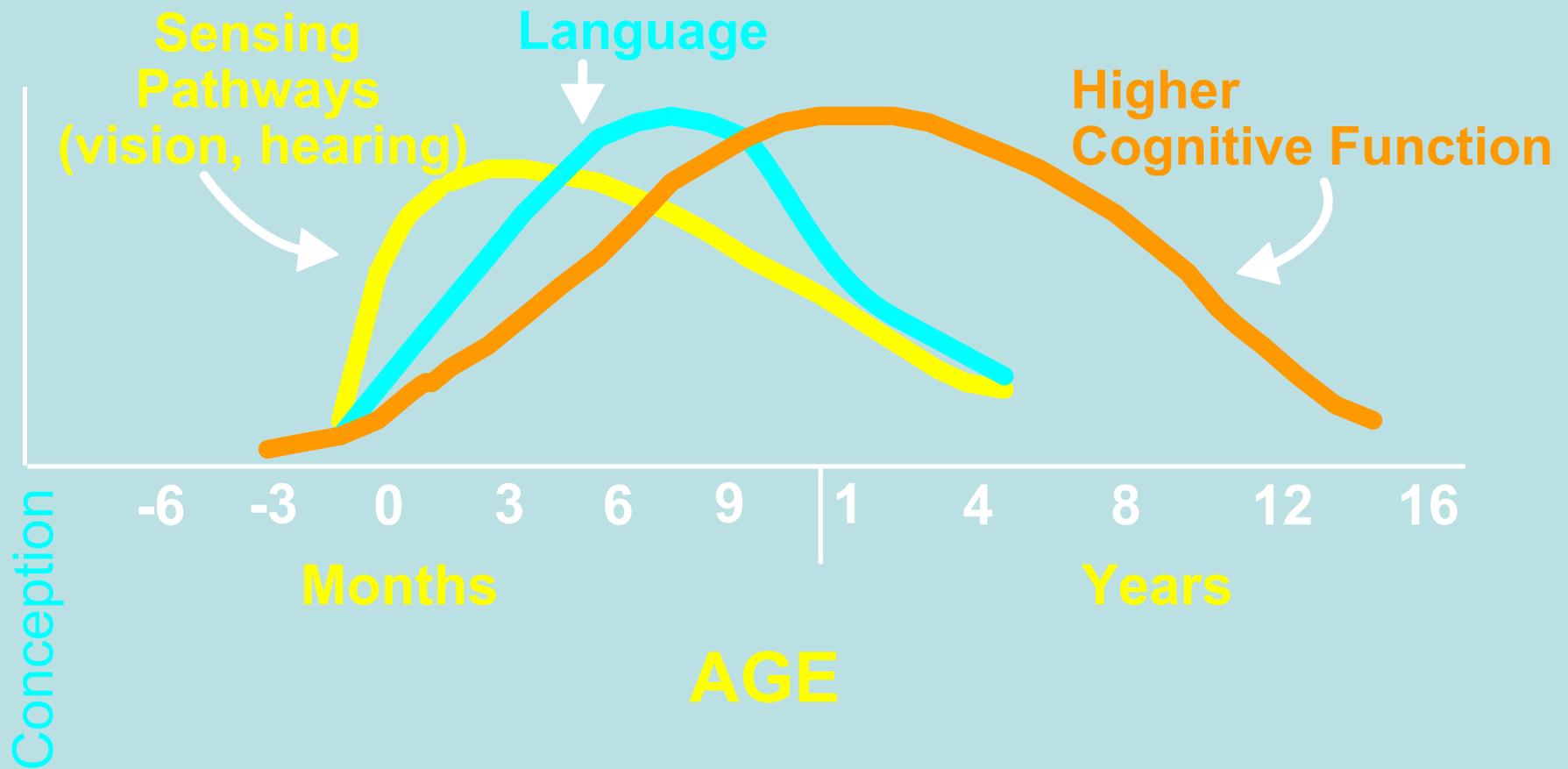
“One cannot emphasize too strongly the importance of those first years for the course that a child will follow throughout his entire life”.

Erasmus (1529, p.309)

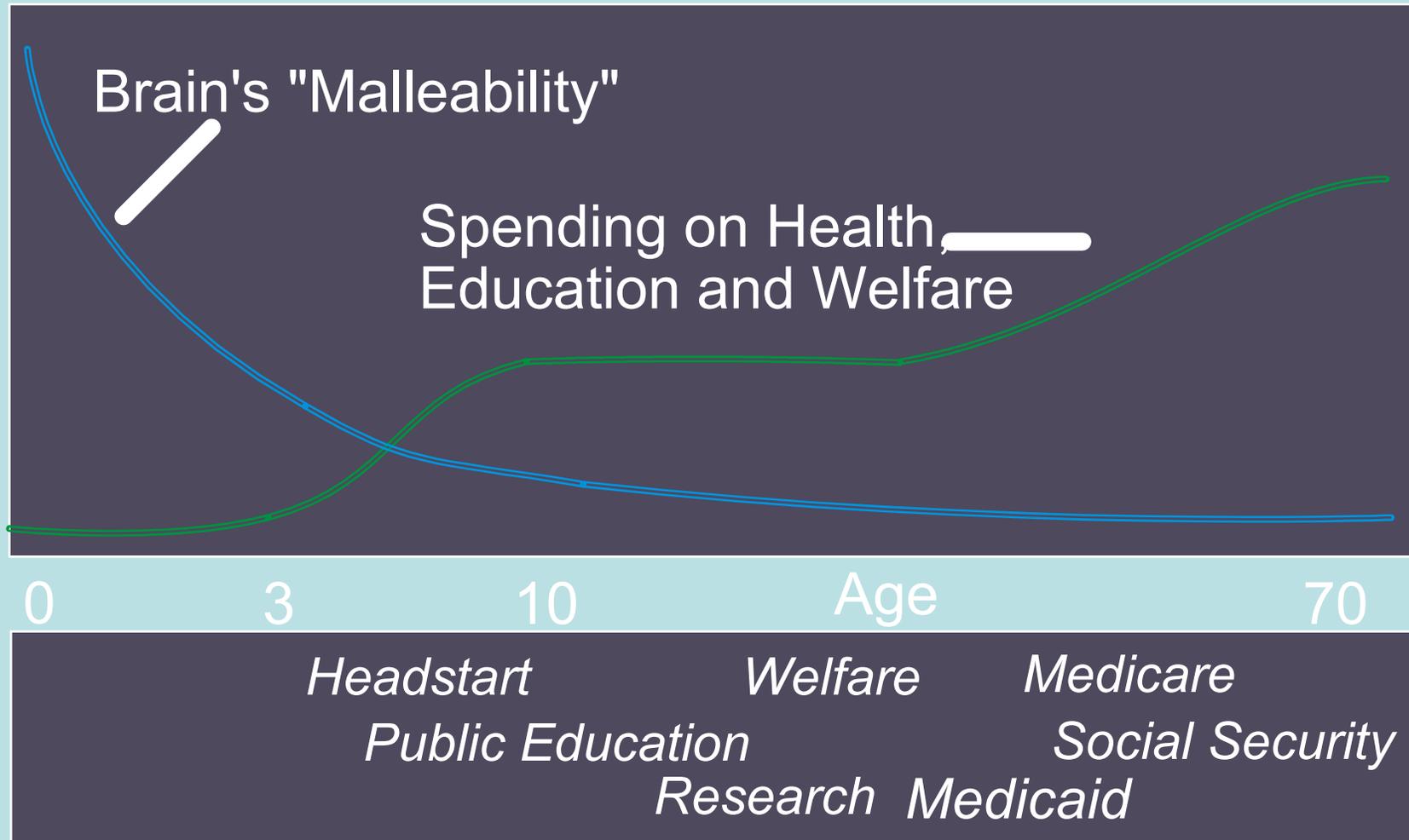
“Early brain development sets a base for learning, behaviour and health throughout life”.

Early Years Report

Human Brain Development – Synapse Formation



The Mismatch Between Opportunity and Investment



“If we have a dollar to invest, where do we place it to get the best return? All the evidence points to early intervention as having the highest success rate and therefore the best return for society”.

“If we have a dollar to invest, where do we place it to get the best return? All the evidence points to early intervention as having the highest success rate and therefore the best return for society”.

James Heckman, 2005
Nobel Prize, Economics



When a child learns security and trust

This paves the way for seeing
God as personal, trustworthy and
dependable

When a child feels valued as a
person

This paves the way for seeing
God's love for individuals

When a child learns about
forgiveness and putting things
right

This paves the way for concepts
of God's fairness, of repentance
and of reconciliation

When a child learns about giving,
sharing and preserving and
enjoying relationships

This paves the way for talking to
and listening for God and for
obedience and service

