EARLY CHILDHOOD DEVELOPMENT & THE PEDIATRICIAN ROLE

Prof Joseph Haddad
Neonatology
Saint George University Hospital
University of Balamand
Beirut Lebanon
ACTIVE INTERACTION

- HEALTH
- ENVIRONMENT
- NEUROBEHAVIOR
ROLE OF ENVIRONMENT

Disparities in Early Vocabulary Growth

SES = Socio-Economic Status

Cumulative Vocabulary

ROLE OF ENVIRONMENT

Abnormal Stress Hormone Levels in Young Children

Brain activity of a normal 5-year-old child (left) and a 5-year-old institutionalized Romanian orphan who was neglected in infancy (right).
WHERE THE PEDIATRICIAN STANDS TO IMPROVE OUTCOME OF CHILDREN?
ACTIVE INTERACTION

HEALTH

ENVIRONMENT

NEURO BEHAVIOR
ACT EARLY FOR A BETTER CHILDHOOD DEVELOPMENT

www.ipa-world.org
CNS PLASTICITY AND BETTER DEVELOPMENT AND BETTER SOCIAL INSERTION
IS THE BRAIN READY EARLY TO INTERACT? THE CNS PLASTICITY!

Birth to 2 Years--Synapses

Birth

2 years
Major Areas of the Brain

- Frontal Lobe: Self-regulation, problem solving, goal setting, social cognition
- Occipital Lobe: Vision and perception
- Parietal Lobe: Sensory motor perception, spatial abilities
- Temporal Lobe: Hearing, language, memory, social-emotional function
Cortical thickness development from birth to 54 mos
Myelinization

DTI Fiber Orientations

Fractional Anisotropy

1 week  3 months  1 year  2 years  10 years
NECESSITY TO ACT EARLY
THE CNS PLASTICITY

Human Brain Development
Synapse Formation Dependent on Early Experiences

- Sensory Pathways (Vision, Hearing)
- Language
- Higher Cognitive Function

Conception, Birth, Months, Years

Age

IS THE BRAIN READY EARLY TO INTERACT—THE CNS PLASTICITY!
Effects of Early Interventions in Preterm Infants

At 2 weeks’ corrected age: more advanced white matter development
Differences in brain activity (colored areas) between a typical child reader and a child with reading difficulties.
Differences in brain activity in the same child before and after specialized reading instruction
Early left periventricular brain lesions induce right hemispheric organization of speech
Visual recovery after perinatal stroke evidenced by functional and diffusion MRI: case report
Effects of Mothers’ Speech on Infant Vocabulary

Level of Mothers’ Speech to Their Infants
- △ High
- ■ Medium
- □ Low

Vocabulary Size (Words) vs. Age (Months)
PEDiatrician and GROWTH

METABOLIC SYNDROM /BEHAVIOR PROBLEM
EARLY DETECTION OF ABNORMAL DEVELOPMENT
FAVOR INTERACTION WITH PARENTS AND ENVIRONMENT
PEDRIATRICIAN AND NUTRITION

BENEFIT ON IQ
Figure 1: Framework for actions to achieve optimum fetal and child nutrition and development
PEDiatrician and immunization
from conception to adulthood

Benefit on morbidity
NECESSITY TO ACT EARLY

Home Visit Outcomes
Average effects of paraprofessional and nurse home visits on child development outcomes at ages 2 and 4

Program Effect Sizes

Paraprofessional  Nurse

NECESSITY TO ACT EARLY

Cost/Benefit for
Two Early Childhood Programs
(Dollars returned for each dollar invested)

Lifetime effects: The High/Scope Perry Preschool study through age 40. (Monographs of the
Intervention. National Institute for Early Childhood Education Research, New Brunswick, NJ. Also
available at www.nieer.org.
Nurturing Relationships

- Healthy brain development requires consistent and nurturing relationships.

- They shape self awareness, social competence, conscience, emotional growth, and other accomplishments.

- They buffer against future behavior problems.
HOLISTIC APPROACH

Health and Development Across the Lifespan
ACT EARLY FOR A BETTER CHILDHOOD DEVELOPMENT

EDUCATION

HEALTH & PREVENTION

PARENTS

RIGHTS

www.ipa-world.org