

## The Amazing Brain: Early Childhood

Linda Chamberlain PhD MPH

# 100 BILLION

Waiting to Connect...

### Optimal Brain Development: The Right Experience at the Right Time

Synapses = wiring of brain

at birth	50 trillion
at 1 year	1000 trillion
at age 20	500 trillion

Stars and the Bubble Nebula, Brian Lula

### Key Concepts

1. Sequential development
2. Use-dependent organization
3. Neural plasticity

### Sequential Development

Abstract Thought  
Problem solving  
Affiliation  
Attachment  
Sexual Behavior  
Emotional Reactivity  
Motor Regulation  
Sleep  
Digestion  
Blood Pressure  
Heart Rate  
Respiration  
Body Temperature



Peter Camburn

6000 WORDS AT AGE 6

30,000 WORDS AT AGE 30

10,000 WORDS AT AGE 80

### WORD POWER

## Use Dependent Organization: Vision

- Connections accelerating at 2 - 4 months
- peaking at 8 months
- infant cataract removal to prevent blindness

Center for Educational Enhancement and Development

## Emotional Development Starts Early

- Emotions are set by the limbic system and prefrontal lobes
- Limbic system forms an emotional blueprint for later use
- Both lobes are developed and connected early in life (8-18 months)

Center for Educational Enhancement and Development

## 5 Critical Needs for Emotionally Healthy Children

*How can early trauma affects these needs?*

1. Needs to feel respected
2. Need to feel important
3. Need to feel accepted
4. Need to feel included
5. Need to feel secure

Dr. Gerald Newmark, author of "How to Raise Emotionally Healthy Children"

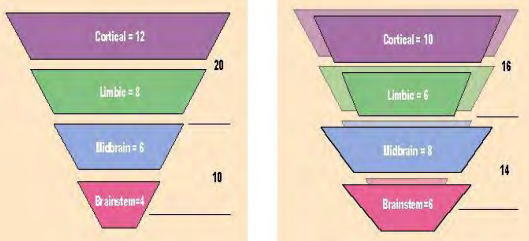
## Childhood Exposure vs. Child Witness

- The children "know"
- **Childhood exposure** means more than "seeing" the violence
  - hear it
  - feel it
  - See the impact of it
  - **LIVE IT AND RELIVE IT**

## Traumatic Brain Development

NORMAL

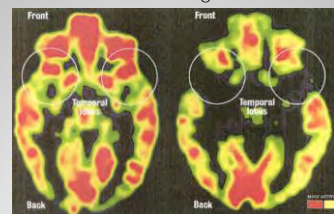
TRAUMA



2:1 ratio Cortical Modulation Ratio ~1:1 ratio

## Early Trauma Affects Brain Development

- Organizational changes
- Brain chemistry imbalances
- Structural changes



Healthy Child

Severe Emotional Neglect

## What Does This Mean in Terms of Behavior?

- More impulsive, reactive brain
  - **"Always on the ready"** (hypervigilance)
- Persistent physiological hyperarousal & hyperactivity
- Less able to get to the **"thinking/rationale"** brain under stress
- Empathy/compassion must be learned

## Implications for Learning

- Spend more time in the lower level brain & focus more on non-verbal vs. verbal cues
- Must do verbal learning when calm
- Learning needs to be more experience-based

## TRAUMA INTERFERES WITH LEARNING

- IQ and reading ability (Delaney-Black et al, 2003)
- Lower grade point average (Hurt et al, 2001)
  - **↑** Days absent from school (Hurt et al, 2001)
  - Decreased rates of high school graduation (Grogger, 1997)
  - Significant deficits in attention, abstract reasoning, long term memory for verbal information, and decreased reading ability (Beers & Debellis, 2002)

## What We Can Do

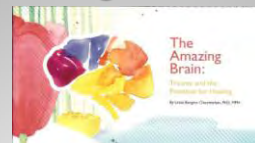
- **Developmentally appropriate** experiences to heal the brain
- **Babies learn best through social interactions**
  - Increase child-adult time
  - Reduce exposure to media violence and **"media parenting"**
- **Active, experiential learning, enrichment programs**

Magic Trees of the Mind™  
by Dr. Marian Diamond

## DVD AND DISCUSSION

- 15 minute DVD plus stories for discussion on exposure to violence & the developing brain
- For service providers & parents
- English and Spanish

## The Amazing Brain Series

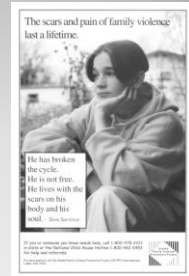


- Resource for home visitors and clients
- 5<sup>th</sup> grade reading level
  - Six key factors about trauma and brain development

## Six Basic Facts about Trauma and Brain Development

1. Trauma such as exposure to violence can affect how the brain organizes and develops
2. Trauma interferes with learning
3. Children can experience posttraumatic stress disorder (PTSD) and PTSD affects brain development
4. Trauma leads to other health problems
5. You can make a difference
6. It is never too late to change our brains!

## The Impact of Violence on Children's Physical, Mental, and Behavioral Health



## Factors Influencing a Child's Response to Violence

- Child's age
- Child's gender
- Relationship to victim and perpetrator
- Frequency
- Severity
- Proximity

## Preschool Children

- Extreme separation anxiety
- Intractable tantrums
- Night terrors
- Developmental regression
- Withdraw from everyday activities and people
- Cruelty to animals

JAMA, August 2000; Boston Medical Center, 2000; NCFV, 1999

## Elementary School Age Children

- Bed wetting
- Chronic digestive problems
- Chronic headaches
- Asthma
- Allergies
- Speech disorders
- Increased aggressive behaviors, bullying
- Difficulty concentrating

## Domestic Violence Makes Kids Feel...

- Guilty
- Shame ⇨ isolation
- Parentification
- Helpless
- Ambivalent
- **"I Do and I Don't"**

BOTTLED UP SECRETS COME OUT AS BEHAVIORS

**By Age 12, children exposed to violence are two times more likely to be diagnosed:**

- Attachment disorder
- Depression
- Anxiety disorder
- Oppositional defiant disorder

≈ PTSD ≈

**Working With Children Exposed to Violence**



1. Healing begins with relationships
  2. Help children to know what to expect
  3. Give children different ways to tell their story
  4. Educate victimized parent and perpetrator about the impact of domestic violence on children
  5. Children need to learn about healthy relationships and alternatives to violence
- EARLY