

Building Capacity for Working with Young Children and Trauma

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Definitions of Trauma/Loss History

National Child Traumatic Stress Network, 2013

- **Neglect:** Physical, Medical, Educational
- Emotional Abuse
- Sexual Abuse or Assault/Rape
- Domestic Violence Exposure
- Physical Abuse or Assault
- Extreme Personal/Interpersonal Violence
- Traumatic Grief/Separation

- Systems-Inducted Trauma
- War/Terrorism/Political Violence
- School Violence Exposure
- Community Violence Exposure
- Serious Accident/Illness/Medical Procedure
- Forced Displacement
- Natural/Manmade Disasters

What Do All Forms of Trauma have in Common?

The Body Keeps the Score

van der Kolk, 1994

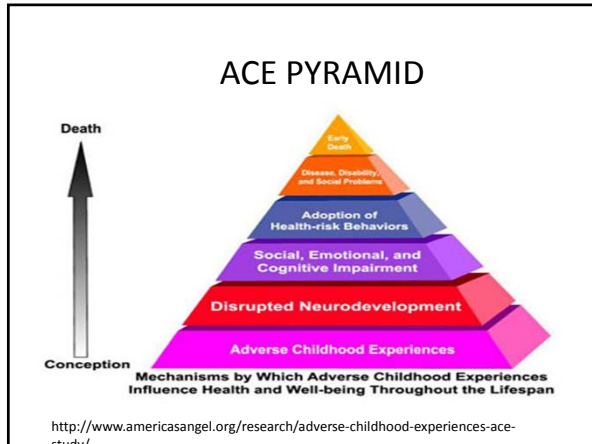
- The detection of safety or danger triggers neurobiologically determined prosocial or defensive behaviors. Even though we may not be aware of danger on a cognitive level, on a neurophysiological level, our body has already started a sequence of neural processes that would facilitate adaptive defense behaviors such as fight, flight or freeze.

• Stephen W. Porges, PhD. The Polyvagal Theory

Adverse Childhood Events

ACE study: (Anda & Felitti, 1998)

- Demonstrated a link between adverse childhood experiences and lifelong health and quality of life
 - 6 or more ACEs = 20 years less in life expectancy
- Looked at: childhood abuse, neglect, and household challenges



ACE Impact

- How common are ACEs?
 - 3% of adults have 1 ACE
 - 4 or more indicates high risk

How does a child make it through this?

- ❖ By building resilience
- ❖ Working with the family system
- ❖ Working with multiple caregivers and providers, all of whom are “going to bat” for the child
- ❖ Stability, routines, predictable occupations
- ❖ Helping the brain build a new roadmap

(Van der Kolk, 2014; Koomar, 2009; Perry, 2006)

MATERNAL DRUG USE AND INFANT DEVELOPMENT

Major Influences Impacting Child Development

- Quality of prenatal environment
- Child's constitutional makeup
- Parenting
- Social factors

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PRENATAL DEVELOPMENT

Maternal Stress


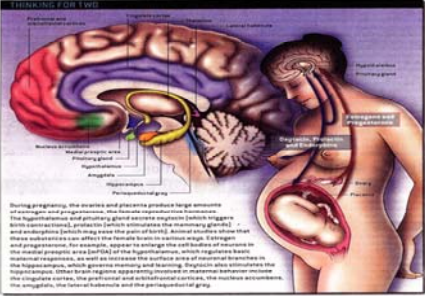


Photo: Marilyn Nell

- Includes physiological stress response
- When stress levels are too high for too long or too frequent, risk increases for:
 - Premature birth, low birth weight, and miscarriage
 - Smaller infant head size, mental and motor delays, and greater irritability

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During pregnancy, the ovaries and placenta produce large amounts of estrogen and progesterone, the female reproductive hormones. The hypothalamus and pituitary gland secrete oxytocin (which triggers birth contractions), prolactin (which stimulates the mammary glands), and androgens (which may cause the penis to form). A recent study shows that these substances can affect the brain's ability to regulate, organize, and program the brain. Studies to date show the cell bodies of neurons in the medial preoptic area (MPA) of the hypothalamus, which regulates basic reproductive responses, do not yet develop the surface web of neuronal branches in the hippocampus, which governs memory and learning. Research also indicates the hippocampus, which regulates basic reproductive responses, does not yet develop the surface web of neuronal branches in the cerebral cortex, the postnatal and adult brain's cortex, the nucleus accumbens, the amygdala, the basal ganglia, and the parietal lobe of the brain.

BUILDING THE BRAIN

Stages of Brain Development

- Neural Tube Formation
- Cell Proliferation
- Cell Migration
- Cell Differentiation
- Cell Connections

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BUILDING THE BRAIN

Cell Connections

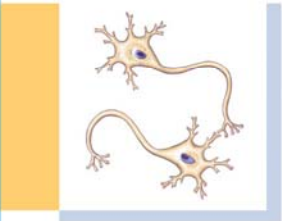



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BUILDING THE BRAIN

Myelination

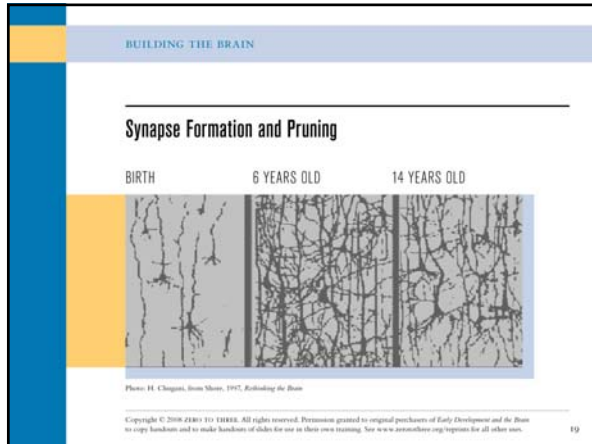


- Electrical messages travel faster and more efficiently

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Poverty

- Researchers at UC Berkeley reported findings that normal 9 - 10 year-olds differing only in socioeconomic status, with no prenatal exposure to drugs or alcohol, had detectable differences in the response of their frontal cortex compared to children from high socioeconomic levels. Children from lower socioeconomic levels show brain physiology patterns similar to someone who actually has damage in the frontal lobe as an adult.


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Poverty in Nebraska

- 2014 Kids Count Report in Nebraska - nearly 41% of Nebraska children are growing up in low-income families. A disproportionate number of these children are minorities.
 - 10.7 percent of Caucasian children 17 & younger live in poverty;
 - 44.9 percent for African American children;
 - 42.2 percent for Native Americans;
 - 31.9 percent for Hispanic children.
- The vast majority have parents working 2 or more jobs and earning less than they need to survive.
- Overall, 8% of Nebraskans work multiple jobs, the fifth-highest rate in the nation.

PRENATAL DEVELOPMENT

Sleep/Wake States



- State organization emerges at 24 weeks with separation of quiet and active states
- Most of the time, fetus is in active sleep
- Later in pregnancy, quiet sleep increases and a quiet alert state emerges (Hofer, 1981)

Image: Tatars, 2012
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Sleep is the Primary Activity of the Developing Brain

J. Mindell

- By age 2 the average child has spent about 9,500 hours (13 months) sleeping, in contrast to 8,000 hours for all waking activities combined.
- Between ages 2 & 5 children spend equal amounts of time awake and asleep.
- Throughout childhood and adolescence sleep continues to account for about 40% of a child's average day.

Circadian rhythms shift developmentally


(D. Beebe, 2011)

- In teenagers, research has shown that melatonin levels in the blood naturally rise later at night than in most children and adults. Since teens may have difficulty going to bed early to get enough sleep, it can help to keep the lights dim at night as bedtime approaches. It can also help to get into bright light as soon as possible in the morning.

PRENATAL DEVELOPMENT

Behavioral Organization

- Amount and pattern of fetal activity are related to amount of infant crying and patterns of infant behavior (DiPietro et al., 1996; DiPietro, Bornstein, et al., 2002; St. James-Roberts & Menon-Johansson, 1999).




Photos: Lenatt Nilsson/Albert Bonaventura Fasting, Polymorph Eben

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SENSORY PROCESSING

Sensory Processing Problems




- Impair children's ability to learn and to form relationships with others
- Everyday activities are challenging or stressful
- May lead to delays in fine and gross motor skills, language, balance, and visual-spatial skills

Photo: Jeffrey Parke

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SENSORY PROCESSING

Our Seven Senses



- Vision
- Hearing
- Smell
- Taste
- Touch

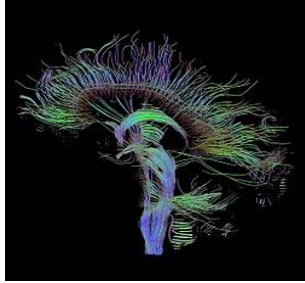
Two lesser-known senses:

- Vestibular sense
- Proprioception

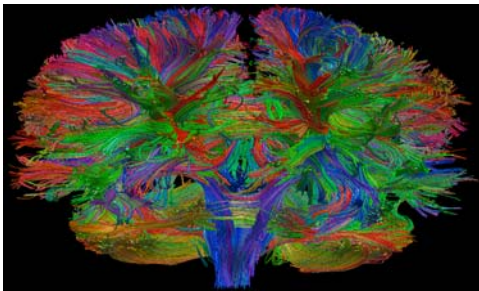
Photo: Cattie Nopstad

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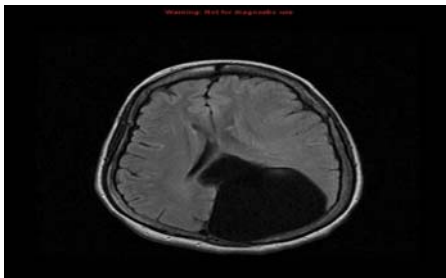
White Matter Diffusion Tensor MRI



Diffusion MRI




Structural Abnormality





BRAIN BASICS

Cortex Association Areas: "Executive Functions"



- Direct attention, plan, initiate, sequence, reason, control behavior, make decisions, and use good judgment
- Last area of the brain to develop





Photo: University of Illinois Extension, Illustration: Kristin Wisnack

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NEUROBEHAVIORAL OBSERVATION

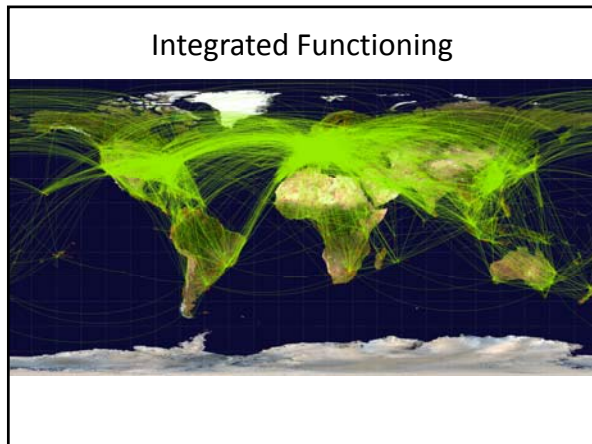
Self-Regulation



Self-regulation is the ability to manage physiology, arousal, emotion, attention, and behavior appropriately for a task or situation

Photo: Rebecca Klein

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Delayed Effects in Children

- Immature brain has less potential compensate.
- Full effects only evident many years later, when brain maturation stages do not unfold normally.

MATERNAL DRUG USE AND INFANT DEVELOPMENT

Common Substances

- Cigarettes
- Alcohol
- Marijuana
- Cocaine
- Heroin

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MATERNAL DRUG USE AND INFANT DEVELOPMENT

Smoking Cigarettes During Pregnancy

Effects on fetal and child health and development

- Results in:
 - Decreased oxygen and nutrition to the fetus
 - Nicotine affecting fetal brain development
- Increased risk for:
 - Preterm delivery
 - Lower average birth weight
 - Sudden infant death syndrome (SIDS)

(Slotkin, 1992; U.S. Department of Health and Human Services, 2002)

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MATERNAL DRUG USE AND INFANT DEVELOPMENT

Smoking Cigarettes During Pregnancy

Effects on fetal and child health and development

- Associated with:
 - Poorer cognitive performance
 - Deficits in auditory responsiveness
 - Deficits in speech and language
 - Increased impulsive responses
 - Increased activity levels

(Fried, 1992)

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MATERNAL DRUG USE AND INFANT DEVELOPMENT

Alcohol Use During Pregnancy

Effects on fetal and child health and development

- Not a linear model predicted by dosage or timing alone
- Effects range from subtle changes in IQ to profound mental retardation
- Increased risk for:
 - Fetal growth retardation
 - Birth defects of major organ systems
 - Abnormal brain growth, structure, and functioning

(CDC, 2003; Clarren et al., 1978; Coles et al., 1991)

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MATERNAL DRUG USE AND INFANT DEVELOPMENT

Marijuana Use During Pregnancy

Effects on fetal and child health and development

- Results in:
 - Decreased oxygen to the fetus
 - THC potentially affecting fetal brain development
 - Increased risk of premature birth and low birth weight
 - Differences in newborn sleep and cries
 - Deficits in executive functioning (attention, impulsivity and self-control, and problem solving)

(Fried & Smith, 2001; Lester & Dreher, 1989; Scher et al., 1988)

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MATERNAL DRUG USE AND INFANT DEVELOPMENT

Cocaine Use During Pregnancy

Effects on fetal and child health and development

- Associated with:
 - “Stress behaviors” in infants (restlessness, irritability, high muscle tone, tremors, and abnormal reflexes)
 - Impairment in neonatal habituation, attentional and arousal regulation, reactivity to novelty, and recognition memory
 - Different brain activity patterns in area of the brain involved in controlling impulses and attention

(Dixon et al., 1990; Mayes & Bornstein, 1995; Smith et al., 2001)

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MATERNAL DRUG USE AND INFANT DEVELOPMENT

Cocaine Use During Pregnancy

Effects on fetal and child health and development

- Increased risk of:
 - Placental abruption
 - Spontaneous abortion or miscarriage
 - Prematurity
 - Low birth weight
 - Shorter length
 - Smaller head circumference

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MATERNAL DRUG USE AND INFANT DEVELOPMENT

Opiate Use During Pregnancy

Effects on fetal and child health and development

- Withdrawal symptoms, such as irritability, high-pitched cry, tremors, hyperactivity, seizures, vomiting and diarrhea, and joint stiffness.
- Risk of SIDS (8 times higher than the norm)
- Poor motor coordination
- High activity levels
- Poor attention
- Behavior and conduct problems

(Hans & Marcus, 1983; Hans et al., 1984; Zagon & McLaughlin, 1992)

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MATERNAL DRUG USE AND INFANT DEVELOPMENT

Opiate Use During Pregnancy

Effects on fetal and child health and development

- Premature birth
- Low birth weight
- Reduced head circumference
- Congenital malformations
- Complications of prematurity
- Bleeding within the head (intracranial hemorrhage)
- Low blood sugar (hypoglycemia)

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MATERNAL DRUG USE AND INFANT DEVELOPMENT

Risk and Protective Factors

- Protective factors can help reduce the impact of prenatal exposure
- An accumulation of other risk factors can exacerbate the influence of prenatal exposure

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