

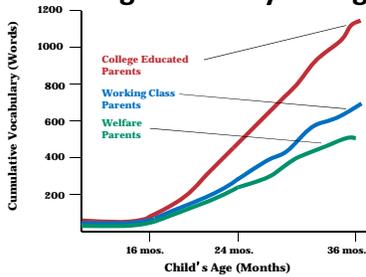
How Toxic stress and Adverse
Childhood Experiences Impact Early
Infant and Toddler Development

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●“We are
hardwired for
relationship.”

<http://www.readynation.org/>

Barriers to Educational Achievement Emerge at a Very Young Age



Data Source: Hart & Risley (1995)

Graph Courtesy: Center on the Developing Child at Harvard University

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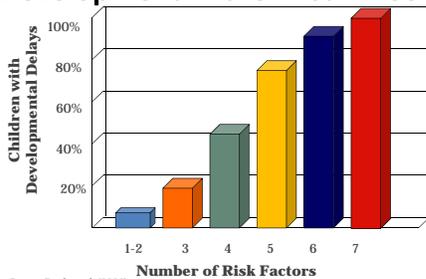
Relationships Buffer Toxic Stress

- Learning how to cope with moderate, short-lived stress can build a healthy stress response system.
- Toxic stress—when the body's stress response system is activated excessively and for a long time—can damage the brain's architecture.
- Without caring adults to buffer toxic stress can have long-term consequences for learning, behavior, and both physical and mental health.



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Significant Adversity Impairs Development in the First Three Years



Data Source: Barth, et al. (2008)

Graph Courtesy: Center on the Developing Child at Harvard University

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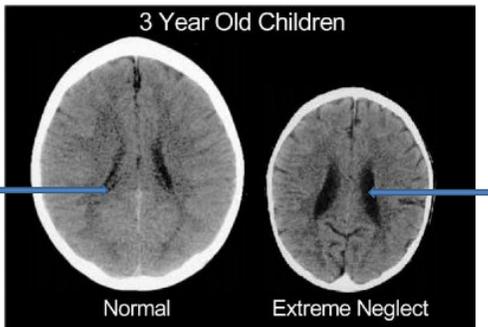
Abnormal Brain Development due to Child abuse and Neglect

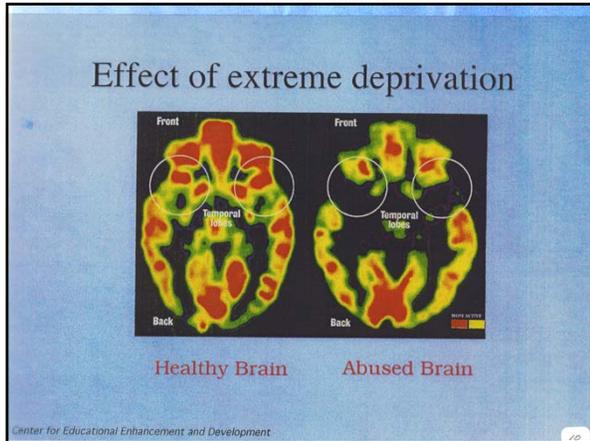
- Abnormal Cortical Development
- Diminished Corpus callosum size
- Diminished left-hemisphere development
- Diminished left hippocampal volume and development
- Decrease right-left cortical integration
- Increase EEG abnormalities

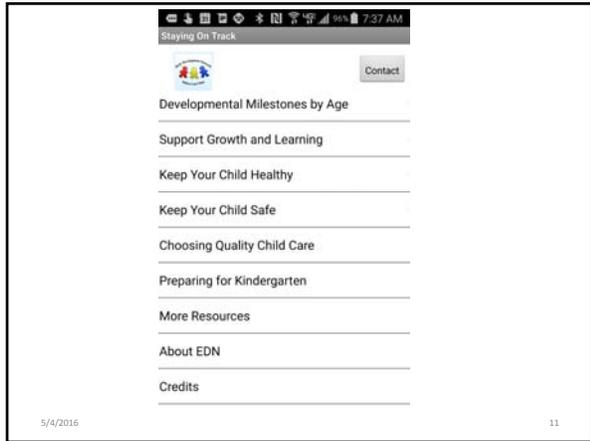
Neuro-imaging evidence

- “These images illustrate the negative impact on the developing brain.
- The CT scan on the left is from a healthy three year old with an average head size (50th percentile).
- The image on the right is from a three year old child following severe sensory deprivation neglect since birth.
- The brain is significantly smaller than average and has abnormal development of cortical, limbic, and midbrain structures.”

From studies by Bruce D. Perry , MD PhD at the ChildTrauma Academy www.childtrauma.org







What is Trauma?

- An exceptional experience in which powerful and dangerous stimuli overwhelm the capacity to regulate emotions.
- Definition (NASMHPD, 2006)
 - The experience of violence and victimization including sexual abuse, physical abuse, severe neglect, loss, domestic violence and/or the witnessing of violence, terrorism or disasters
- DSM IV-TR (APA, 2000)
 - Person's response involves intense fear, horror and helplessness
 - Extreme stress that overwhelms the person's capacity to cope

Prevalence of Trauma Mental Health Population – United States

These are the children's parents.

- 90% of public mental health clients in have been exposed to trauma
– (Mueser et al., 2004, Mueser et al., 1998)
- 51-98% of public mental health clients in have been exposed to trauma
– (Goodman et al., 1997, Mueser et al., 1998)
- Most have multiple experiences of trauma
– (Mueser et al., 2004, Mueser et al., 1998)
- 97% of homeless women with SMI have experienced severe physical & sexual abuse – 87% experience this abuse both in childhood and adulthood
– (Goodman et al., 1997)

Adverse Childhood Experiences

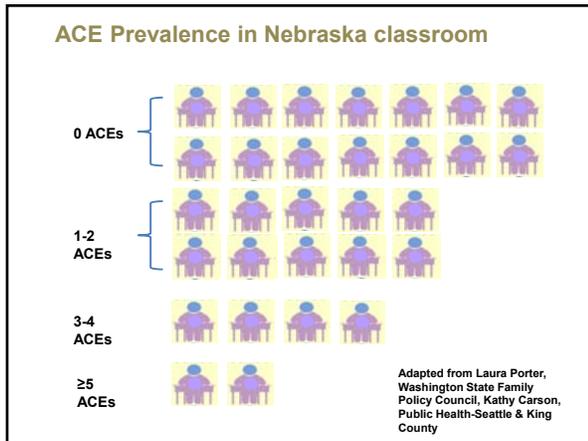
- Recurrent and severe physical abuse
- Recurrent and severe emotional abuse
- Sexual abuse
- Growing up in household with: ACE Checklist Handout.
 - Alcohol or drug user
 - Member being imprisoned
 - Mentally ill, chronically depressed, or institutionalized member
 - Mother being treated violently
 - Both biological parents absent
 - Emotional or physical abuse
 - (Felitti et al, 1998)

study by Kaiser Permanente and the Centers for Disease Control and Prevention (initial phase 1995 to 1997)

- 17,337 adult health maintenance organization (HMO) members responded to a questionnaire about adverse childhood experiences
 - 11% reported emotional abused as a child,
 - 30.1% reported physical abuse, and
 - 19.9% sexual abuse.
 - 23.5% reported being exposed to family alcohol abuse,
 - 18.8% were exposed to mental illness,
 - 12.5% witnessed their mothers being battered, and
 - 4.9% reported family drug abuse.
- The ACE study showed that adverse childhood experiences are vastly more common than recognized or acknowledged and that they have a powerful relationship to adult health a half-century later.
- www.acestudy.org

Demographic Categories	Percent (N = 17,337)
Gender	
Female	54%
Male	46%
Race	
White	74.8%
Hispanic/Latino	11.2%
Asian/Pacific Islander	7.2%
African-American	4.6%
Other	1.9%
Age (years)	
19-29	5.3%
30-39	9.8%
40-49	18.6%
50-59	19.9%
60 and over	46.4%
Education	
Not High School Graduate	7.2%
High School Graduate	17.6%
Some College	35.9%
College Graduate or Higher	39.3%

→ Born in 1935 or before



- ### Nebraska ACEs Prevalence
- **ACEs common among Nebraskans**
 - 53% of Nebraskans with at least 1 reported ACE
 - **Prevalence of individual ACEs 6.2–25.8%**
 - 6.2% for household incarceration to 25.8% for verbal abuse

What does the prevalence data tell us?

- Growing body of research on the relationship between victimization and later offending
- Many people with trauma histories have overlapping problems with mental health, addictions, physical health, and are victims or perpetrators of crime
- **Victims of trauma are found across all systems of care**
 - (Hodas, 2004; Cusack et al, Muesar et al, 1998, Lipschitz et al, 1999; NASMHPD, 1998).

How are Children Traumatized?

- Exposure to community violence in their neighborhoods and homes.
- Exposure and witnessing domestic violence.
- Exposure to or hearing about unusual traumatic events such as accidents, terrorist attacks, wars, natural disasters (hurricanes, tornados, fires).
- Exposure to media.
- Abuse: emotional, physical, sexual.
- Medical Trauma

Neurobiological Impacts of Trauma

- Abuse and neglect have **profound** effects on brain development. The longer the abuse or neglect, the more likely it is that permanent brain damage will occur.
- Not only are people with developmental disabilities more likely to be exposed to trauma, but exposure to trauma makes developmental delays more likely.
- Severe neglect can result in reduced brain size, decreased density of neurons, and smaller head circumference (Perry, 2001)

Impacts of Trauma on Learning

- Persistent fear states in children can interfere with their ability to learn from educational, social, and emotional experiences
- Exposure to trauma can affect their perception of time, cognitive style, affective tone, problem-solving skills, and ability to respond to and understand rules, regulations, and laws
– (Perry, 2001)

Social & Emotional Effects of Trauma

- Early childhood trauma has been associated with reduced size of the parts of the brain responsible memory, attention, perceptual awareness, thinking, language, and consciousness.
- These changes may affect IQ and the ability to regulate emotions, and the child may become more fearful and may not feel as safe or as protected.
– (Natl. Child Traumatic Stress Network)

Social & Emotional Effects of Trauma

- Interactions with parents, caregivers, and other adults are important in a child's life, but new evidence shows that these relationships actually shape brain circuits and lay the foundation for later developmental outcomes, from academic performance to mental health and interpersonal skills.
– (Center of the Developing Child: Harvard University)

Social & Emotional Effects of Trauma

- The early experience of trauma (particularly trauma that involves interpersonal violence) adversely affects attachment and the subsequent formation and maintenance of relationships
- Because of brain changes discussed earlier, over time trauma survivors may develop persistent fear responses and become overly sensitive to contextual cues that threats are present
- This tendency to be constantly “on alert” for threats may lead to nearly “automatic” responding to stimuli resembling aspects of the trauma as the individual seeks to protect himself or herself

Serve and Return Interactions (stress/bad type)

- If the responses are unreliable, inappropriate, or simply absent, the developing architecture of the brain may be disrupted, and later learning, behavior, and health may be impaired.
- A breakdown in these reciprocal interactions between adult caregivers and young children can be the result of a multitude of predisposing factors including significant stresses associated with high levels:
 - of economic hardship,
 - social isolation, and/or

Serve and Return Interactions

- chronic disease, as well as a wide range of adult mental health impairments,
 - including depression, anxiety, post-traumatic stress disorder, serious personality disorders, or substance abuse involving alcohol or illicit drugs.
 - Caregivers who are at highest risk for providing inadequate care often experience several of these problems simultaneously.
 - Neglectful acts or patterns occur in every culture, at all income levels, and within all racial, ethnic, and religious groups.

• www.developingchild.harvard.edu The Science of Neglect: The Persistent Absence of Responsive Care Disrupts the Developing Brain: Working paper 12.

Maternal Depression: Consequences for Children

- Children of depressed mothers have higher rates of depression, attention deficits, behavior problems, separation anxiety, and conduct disorder compared to control samples
- Findings are consistent across different types of raters (parent report, child and teacher reports)
- Also poorer social skills and peer relations
- Insecure attachments

Dr. Deborah Perry
Georgetown University Child Development Center

Parental Substance Abuse

- A significant barrier if untreated
- Often resistance
- But contact with their children often provides motivation for sobriety.

- **FACT:** Traumatized children may experience physical and emotional distress.
 - Physical symptoms like headaches and stomachaches
 - Poor control of emotions
 - Inconsistent academic performance
 - Unpredictable and/or impulsive behavior
 - Over or under-reacting to bells, physical contact, doors slamming, sirens, lighting, sudden movements
 - Intense reactions to reminders of their traumatic event:
 - Thinking others are violating their personal space, i.e., “What are you looking at?”
 - Blowing up when being corrected or told what to do by an authority figure
 - Fighting when criticized or teased by others
 - Resisting transition and/or change

Effects of Exposure to Violence depends on:

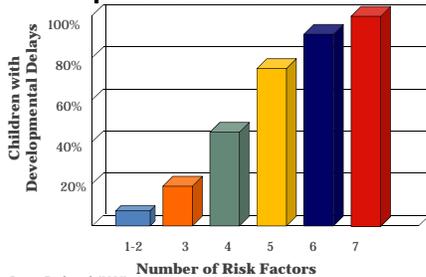
- Characteristics of the violence – one time or chronic (duration)
- Developmental phase of the child
- Proximity to the traumatic event
- Familiarity with victim and/or perpetrator
- Family and community support
- Response to violence exposure by family, school, community institutions.

Relationships Buffer Toxic Stress

- Learning how to cope with moderate, short-lived stress can build a healthy stress response system.
- Toxic stress—when the body's stress response system is activated excessively—can weaken brain architecture.
- Without caring adults to buffer children, toxic stress can have long-term consequences for learning, behavior, and both physical and mental health.
- Hardwired for relationships.

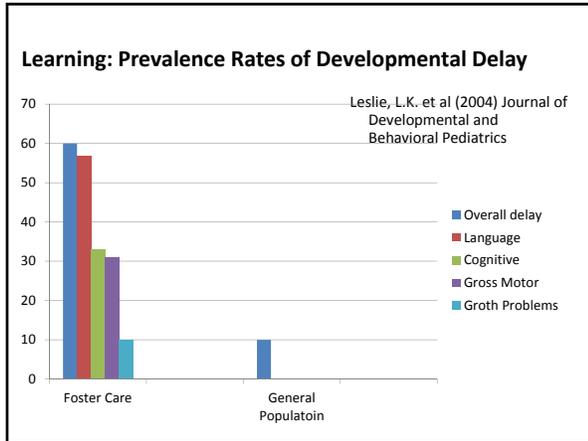


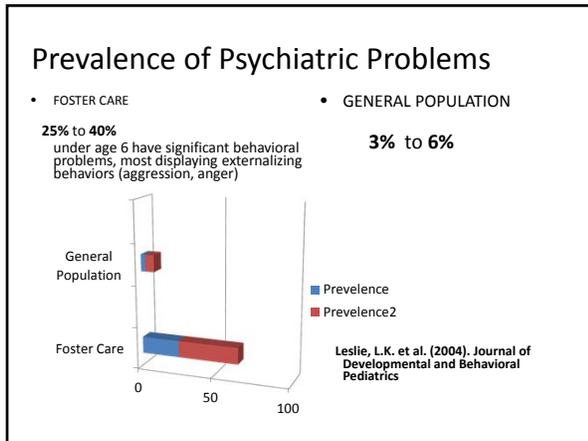
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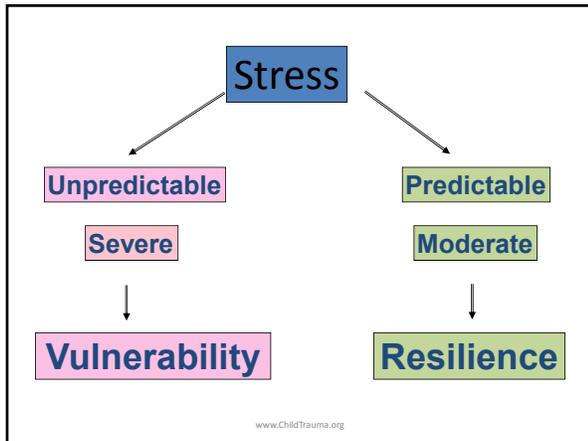


Child Abuse Prevention and Treatment Act

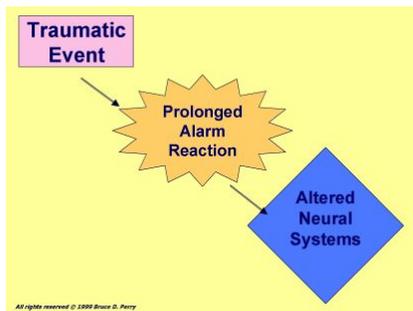
- Prevalence of disabilities in children who have been removed from their homes and or and suffer from the cumulative affective of developmental trauma was the foundation for the need to have children receive developmental screening, evaluations, and interventions.

CAPTA (not random/based on the Science)

- *The Child Abuse Prevention and Treatment Act requires a referral of a child under the age of 3 who is involved in a substantiated case of abuse or neglect to Early Intervention Services.*



The Psychology and Physiology of Trauma



Maltreated children develop as if the entire world is chaotic, unpredictable, violent, frightening and devoid of nurturing.

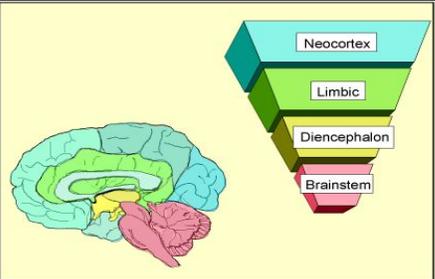
Unfortunately, the systems designed to help these children continue to expose these children to neglect, unpredictability, fear, chaos and, all too often, more violence.

www.ChildTrauma.org

Trauma and Altered Neurodevelopment

Altered cardiovascular regulation
Behavioral impulsivity
Increased anxiety
Increased startle response
Sleep abnormalities

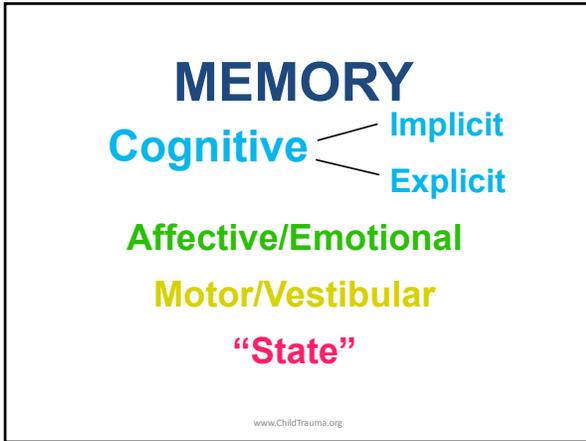
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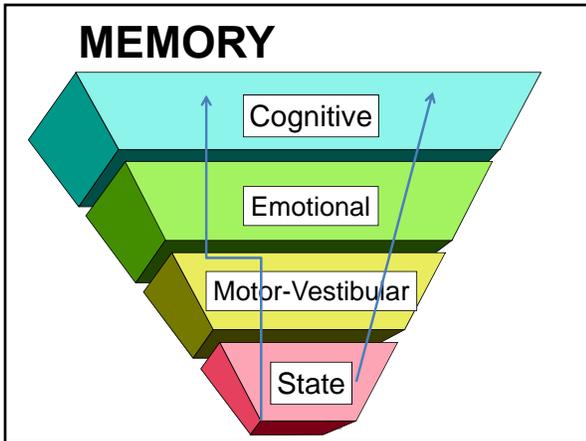


The Human Brain: The brain can be divided into four interconnected areas: brainstem, diencephalons, limbic and neocortex. The complexity of structure, cellular organization and function increases from the lower, most simple area, the brainstem to the most complex, the neocortex.

Shifting Developmental Activity across Brain Regions (Perry)

Brain Region	Age of greatest developmental activity	Age of functional maturity	Key functions
Neocortex	Childhood	Adult	Reasoning, problems solving, abstraction, secondary sensory integration
Limbic	Early Childhood	Puberty	Memory, emotional regulation, attachment, affect regulation, primary sensory integration
Diencephalon	Infancy	Childhood	Motor Control, secondary sensory processing
Brainstem	In utero	Infancy	Core physiological state regulation, primary sensory processing.





•Children who have been traumatized have emotional and state memories indelibly burned into their brainstem and midbrain!

•Once you know how to ride a bicycle...
•can you unlearn it?

www.ChildTrauma.org

Consequences of Maltreatment aka, ACEs

- Increases in violent behavior
- increases in neuropsychiatric disorders
- Increased risk of substance abuse
- Increased risk for teenage pregnancy
- Increased risk for anti-social/criminal actions
- Increased risk of becoming perpetrators of abuse
- Increased risk of becoming victims of other abuse

www.ChildTrauma.org

A Public Health Crisis

•If anxiety, impulsivity, aggression, sleep problems, depression, vulnerability to substance abuse, antisocial and criminal behavior, retardation, school failure, respiratory and heart problems in 8 million people every year were caused by a virus, we would consider it a national public health crisis.

•Yet over 8 million maltreated children each year are vulnerable to these problems. Our society has yet to recognize this epidemic, let alone develop an 'immunization' strategy.

B.D. Perry

www.ChildTrauma.org

Trauma: fight flight freeze

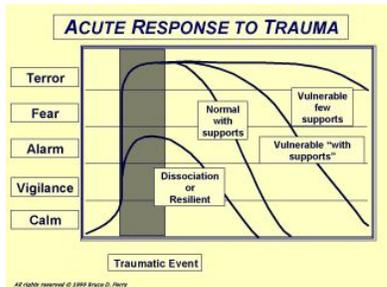
- There is no time to think when facing threat
- Our primary responses are instinctual
- The brains main function is survival
- Trauma reactions are rooted in the oldest and deepest structures of the brain
- Area called the Reptilian brain.
- Activation of the fear response: fight or flight
 - Freeze

Arousal continuum, Bruce Perry, MD PhD, 2006

Sense of Time	Extended Future	Days Hours	Hours Minutes	Minutes Seconds	Loss of Sense of Time
Hperarousal Continuum	Rest Male child	Vigilance	Resistance Crying	Defiance Tantrums	Aggression
Dissociative Continuum	Rest Female child	Avoidance	Compliance Robotic	Dissociation Fetal rocking	Fainting
Primary Secondary Brain Areas	Neocortex Subcortex	Subcortex Limbic	Limbic Midbrain	Midbrain Brainstem	Brainstem Autonomic
Cognition	Abstract	Concrete	Emotional	Reactive	Reflexive
Mental Status	Calm	Arousal	Alarm	Fear	Terror

Bruce Perry, ChildTraumaAcademy.org

The Alarm Phase

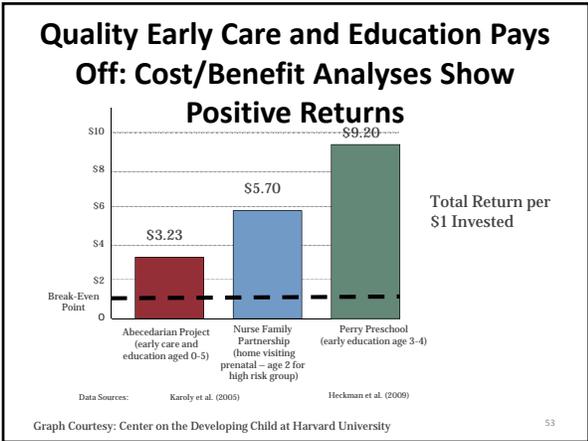


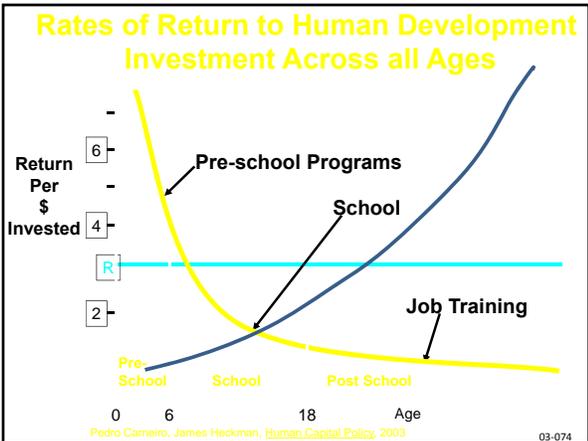
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Brains develop and organize
in the context of relationships.



Positively and Negatively





Keys to Healthy Development



A balanced approach to emotional, social, cognitive, and language development, starting in the earliest years of life.

Supportive relationships and positive learning experiences that begin with parents but are strengthened by others outside the home.



Highly specialized interventions as early as possible for children and families experiencing significant adversity.

For more on the science:
www.developingchild.harvard.edu

For more on business champions:
www.ReadyNation.org

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