# TOXIC STRESS:

## UNDERSTANDING ITS IMPACTS ON RELATIONSHIPS, THE BRAIN AND SCHOOL PERFORMANCE

Monica Coverson, LMSW, LSSW, Keith Ekhator, LSSW, & Maribeth Gambill, LCSW, LSSW
Metro Nashville Public Schools, Nashville, TN

# What's In It For Me (WIFM)?

- Introduction and Rationale
  - What does trauma have to do with school?
  - Adverse Childhood Experiences (ACE) Study
- The Problem
  - What constitutes trauma and toxic stress?
  - Prevalence
- How Trauma Changes the Brain
- The Solution
  - Trauma Sensitive Schools
    - Applying a  trauma informed approach

# Trauma: What's under the surface in a school building?

# INTRODUCTION AND RATIONALE

# Why is this an Educational Problem?

- ACEs are prevalent
- An educational problem, not just a mental health problem
  - Individual interventions are important, but not enough
- Student responses to ACEs and toxic stress can have a profound impact on school success
  - Self regulation, academic performance, behavior, emotions, and relationships
- Schools are often the first line of defense for buffering the impacts of ACEs and promote resilience
  - Safe, stable, nurturing relationships in the environment where kids spend most of their time

# Adverse Childhood Experiences…A Great Equalizer

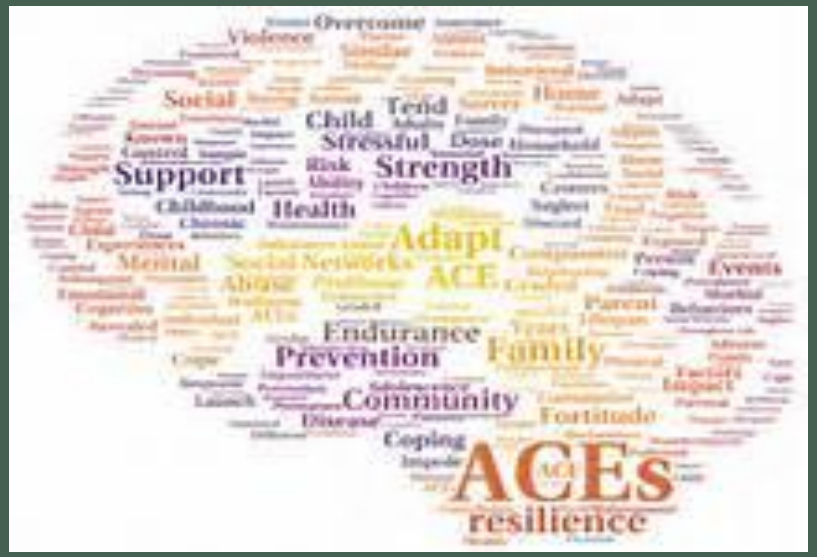
- Students with ACEs are present in every school, regardless of demographics or socio economic status
- Trauma/Toxic Stress can negatively impact:
  - Brain architecture
  - Gene expression
  - Physical and mental health
  - Learning and behavior
- Teachers and schools are often the first line of healing
  - The most saturated source
  - 1 caring adult makes a big difference

# So what's the big deal about Childhood Trauma and Toxic Stress?

- The single and most profound health crisis in our country
- Excessive stress disrupts the architecture of the developing brain
- Effects are complex and profoundly different in children due to the not yet developed brain
- Kids are unable to compartmentalize stress
- School are often the FIRST line of defense.
- Educators can perpetuate a child's Adverse Childhood Experiences

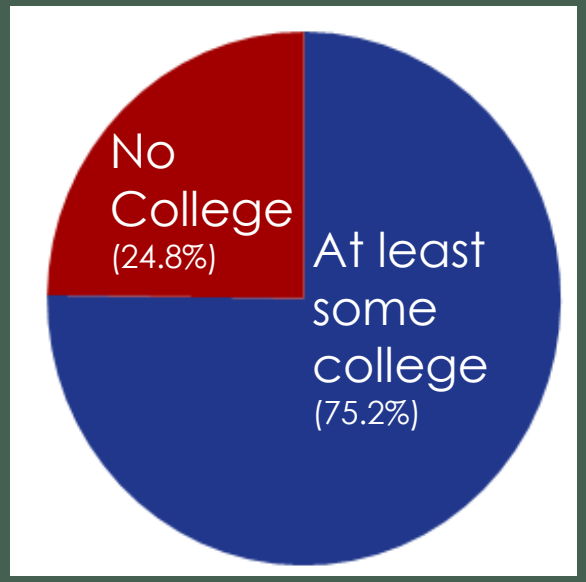
(American Academy of Pediatrics; Felitti, Anda, Nordenberg, Williamson, Spitz, Edwards, et al., 1998; van der Kolk, 2015)

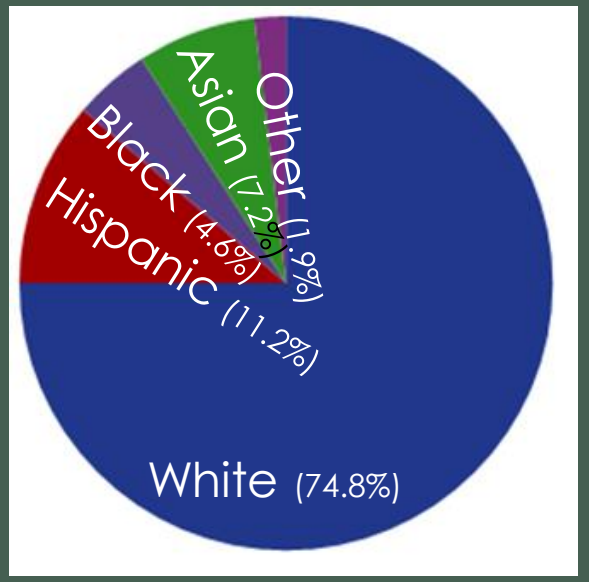
# ADVERSE CHILDHOOD EXPERINCES STUDY ACE

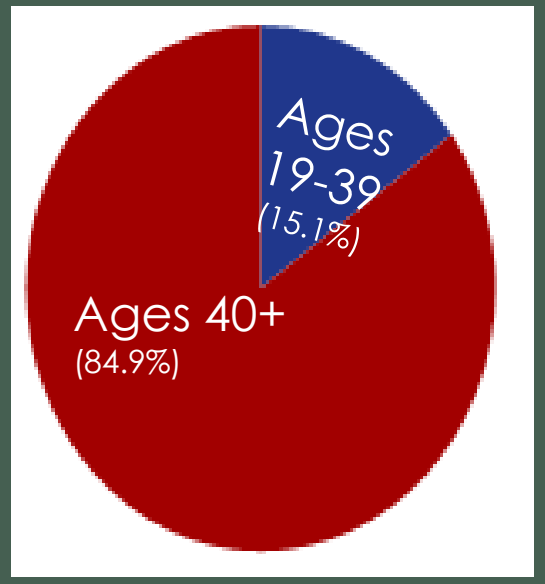


# ACE Study Demographics

Participants were mostly white, middle-aged, college educated, and insured. They didn't face many of life's challenges such as poverty or racism.



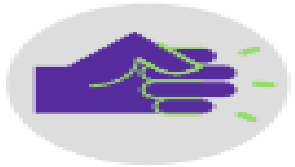



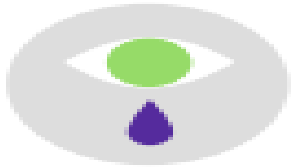

Source: Centers for Disease Control and Prevention. Available at: http://www.cdc.gov/ace/about.htm

# Adverse Childhood Experiences

## ABUSE



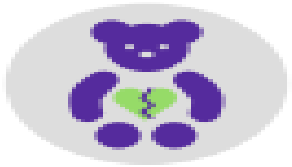
Physical



Emotional

Sexual

## NEGLECT

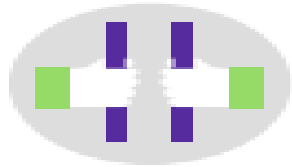


Physical

Emotional

## HOUSEHOLD DYSFUNCTION

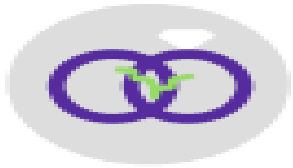
Mental Illness



Incarcerated Relative

Mother treated violently

Substance Abuse

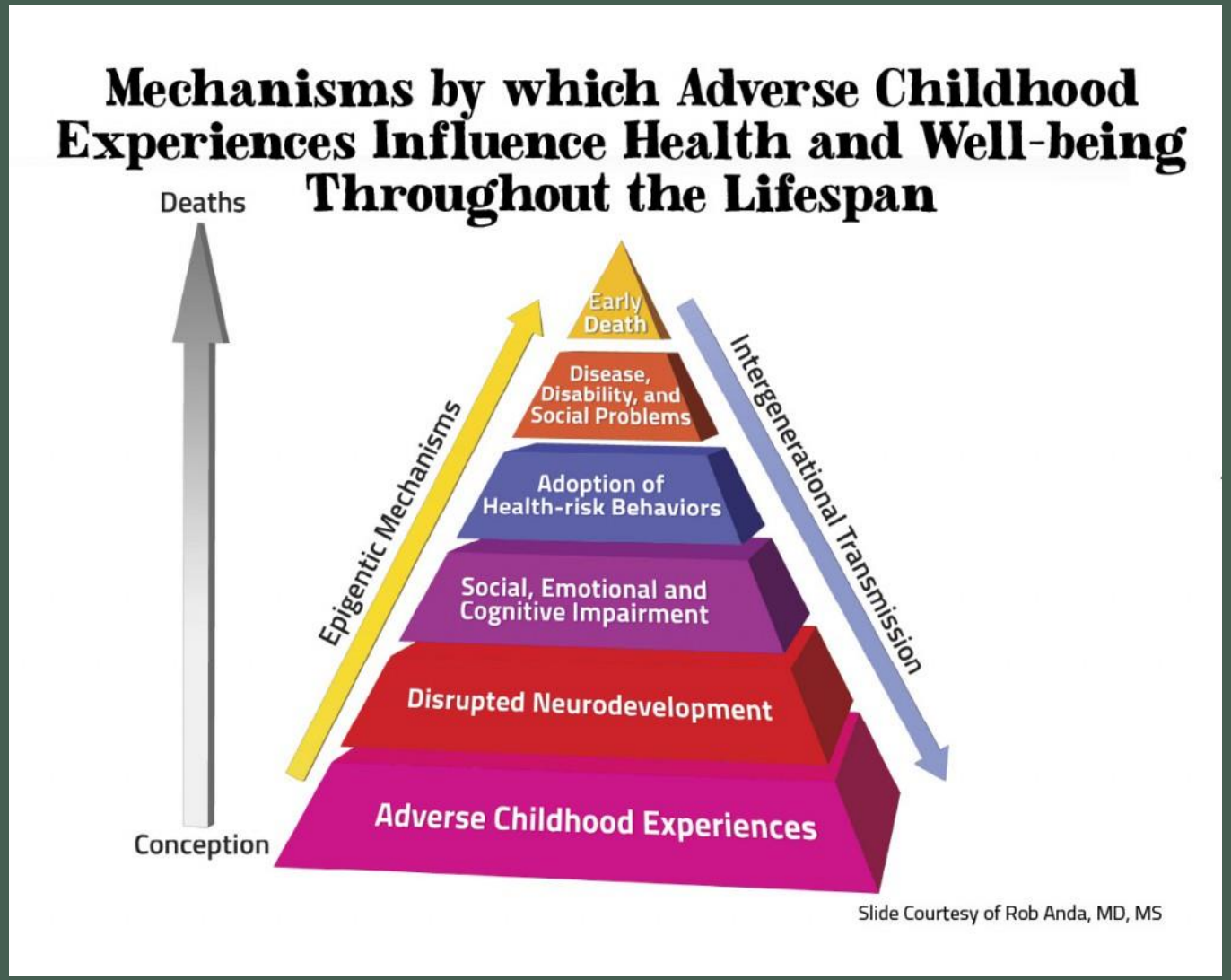


Divorce

# ACE Study Findings

| Health-Risk Behaviors | Disease and Injury | Mental health and Well-being | Job Problems |
|---|---|---|---|
| • Sexual Promiscuity<br>• Sexual perpetration<br>• Alcohol abuse<br>• Illicit/injected drug use<br>• Smoking<br>• Physical Inactivity | • STD's, including HIV<br>• Gynecological problems<br>• Heart Disease<br>• Diabetes<br>• Stroke<br>• Cancer<br>• Suicide<br>• Obesity and overweight | • Depression, PTSD<br>• Aggression<br>• Anxiety<br>• Somatic complaints<br>• Attempted suicide<br>• Social ostracism<br>• Academic achievement<br>• Re-victimization<br>• Unwanted pregnancy | • Absenteeism/lost time from work<br>• Impaired productivity |

**ACE Score = Risk**




Relationship between ACEs and rates of disease & disability

# PATHWAY LINKING ACES TO SCHOOL PROBLEMS AND POOR WELL-BEING INTO ADULTHOOD

ACES

↓

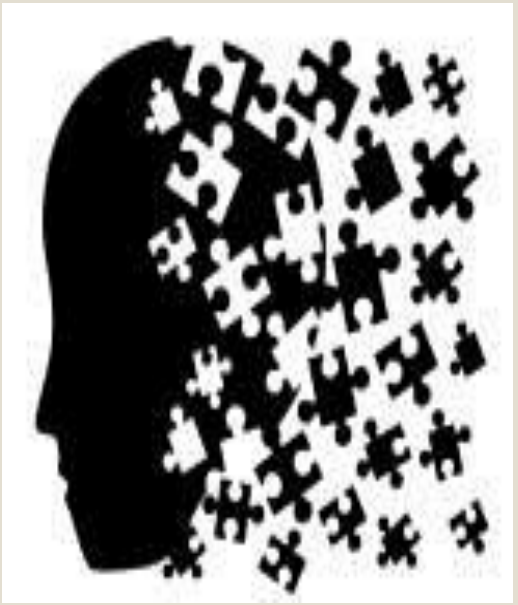
Academic and behavior problems in early school years

↓

Achievement gaps in later schooling

↓

Health and quality of life disparities in adulthood



# Students with ACEs in the classroom: Impaired Academic Performance

- Difficulties with:
  - Learning and retrieving new verbal information
  - Language and communication skills
  - Memory
  - Problem solving and analysis
  - Organizing narrative material
  - Cause and effect relationships
  - Taking another's perspective
  - Attentiveness to classroom tasks
  - Regulating emotions
  - Executive functions
  - Engaging in the curriculum

(Helping Traumatized Children Learn, 2005)

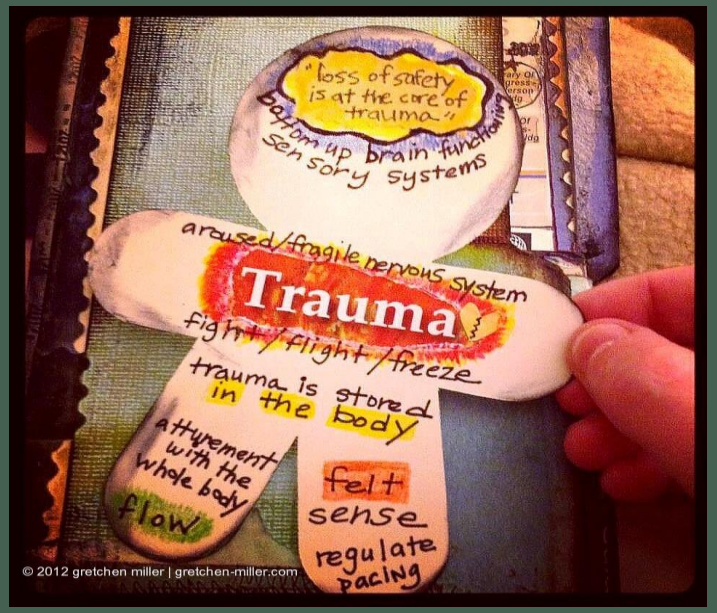
# Students with ACEs in the classroom: Behavior and Relationships

- **Behavior**
  - Reactivity and impulsivity
  - Aggression
  - Noncompliance and defiance
  - Withdrawal
  - Perfectionism
  - Over compliance
  - Symptoms that look like mental illness (ADHD, ODD, Conduct D/O, anxiety, depression
- **Relationships**
  - School staff/authority figures
  - peers

# THE INVISIBLE EPIDEMIC: CHILDHOOD TRAUMA AND TOXIC STRESS

# What is Trauma?

***Trauma (Noun)***
an emotional wound or shock that causes substantial, sometimes lasting damage to psychological development





- More emotion than the brain can deal with
- Exposure to extreme stress
- Not an event itself, but rather a **response** to one or more overwhelmingly stressful events where one's ability to cope is dramatically undermined
- A natural biological response to unnatural events

Trauma is the experience, rather than the exposure.

# What We Know About Childhood Trauma

- Traumatized kids often do not act in ways that make sense to adults
  - ✓Counter-intuitive symptoms
- Trauma is difficult to diagnose
  - ✓Diagnosis is less important then the presenting symptoms and the solution are what matters
- You may not know the diagnosis or the whole story
  - ✓Always assume there is a good reason for the behavior

# Situations that can be traumatic

- Physical or sexual abuse
- Abandonment
- Neglect
- Death or loss of a loved one
- Witnessing domestic violence
- Automobile accident or other serious accidents
- Bullying
- Community Violence (shootings, stabbings, robbery, fighting at home, neighborhood or school)
- Natural disasters
- Acts or threats of terrorism (viewed in person or on television)
- Residing in a chronically chaotic environment in which housing and financial resources are not readily available

Trauma is the emotional, psychological, and physiological residue left over from heightened levels of *TOXIC STRESS* that accompanies experiences of danger, violence, significant loss, and life-threatening events.

# TOXIC STRESS

# Three Levels of Stress
# Positive, Tolerable, **TOXIC**!!!!

## Positive Stress


Short, stressful events like meeting new people or starting the first day of school are healthy for brain development. They prepare the brain and body for stressful situations later in life.

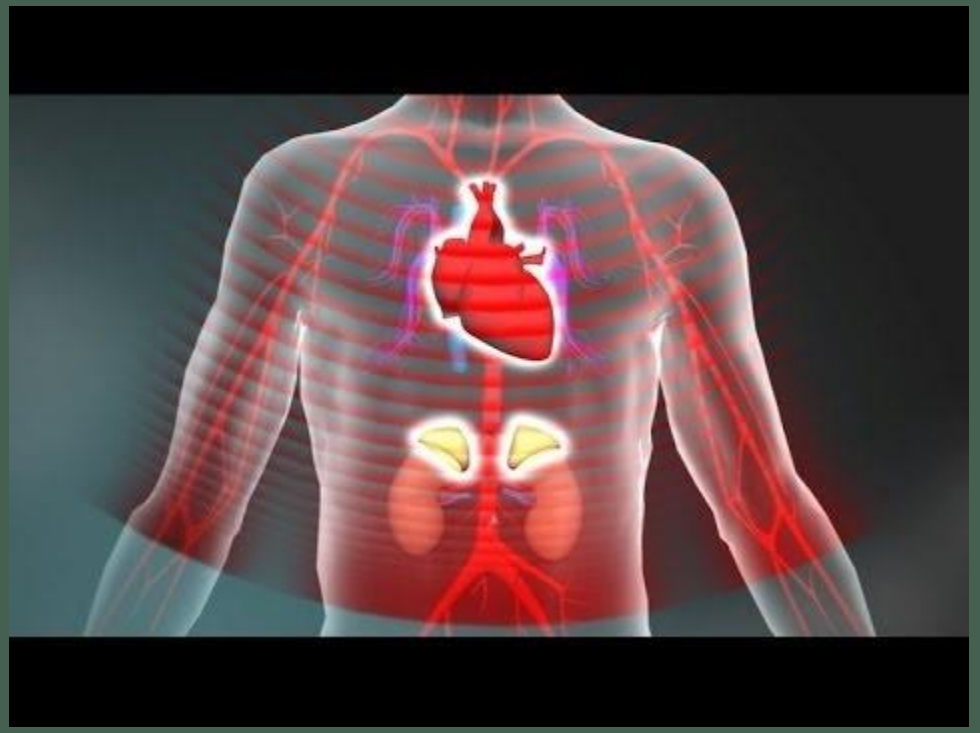
## Tolerable Stress


Tragic, unavoidable events like a natural disaster or losing a loved one aren't good for us. But if supportive caregivers are around to buffer the stress response, these events won't do lasting damage to the brain and body.

## Toxic Stress


Ongoing, repeated exposure to abuse or neglect is bad for brain development. If no supportive adults are present to help buffer the stress response, stress hormones will damage developing structures in the child's brain. The result is an increased vulnerability to lifelong physical and mental health problems, including addiction.

# Toxic Stress derails healthy development

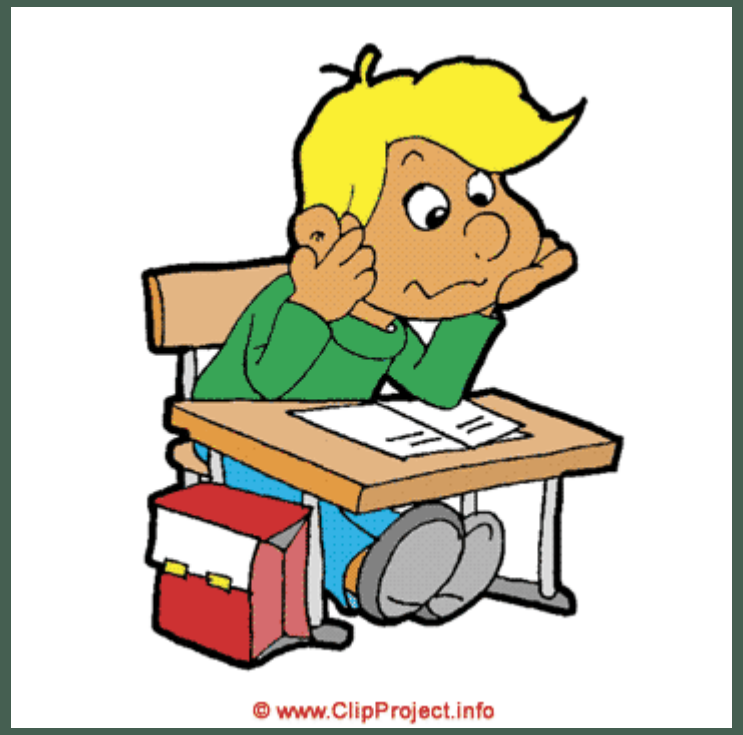


# The Impact of Toxic Stress

This derailment "can result increases vulnerability to:

- Detect and respond to emotionally stressful stimuli such as distress cues of others
- Internalizing disorders (anxiety and depressive disorders)
- Externalizing disorders (early onset aggression, oppositional defiant or conduct disorder, disruptive behavior disorder, antisocial behavior
- Chronic pain syndromes
- Immune-related disorders
- Cognitive deficits
- Disorganized attachment

# What does Toxic Stressed look like in the classroom?



# Developmental Trauma and Toxic Stress Negatively Impacts Functionality

- Hallmark symptoms of Trauma: Hyperarousal, re-experiencing and avoidance
- Physical
  - Neurobiological
  - Inflammation
- Cognitive
  - Learning Attention
  - Memory & Recall
  - Mental Flexibility

- Emotional
  - Emotional regulation
  - Symptoms that look like mental illness
- Behavioral
  - Internalizing
  - Externalizing

# Krystal's Story

**1996**

Krystal's mother uses alcohol and drugs during pregnancy

**2003**

Krystal is often neglected, unsupervised and endured psychological abuse

**1998**

Krystal's mother continues to use alcohol and drugs

**2010**

Krystal witnesses violence towards her mother


- What ACE's did Krystal experience?
- What evidence of trauma might educators and social workers observe in the school setting?
- What might be some of the potential long term risk factors for Krystal as she transitions into her teenage years? Into adulthood?

# HOW TRAUMA CHANGES THE BRAIN

# Activity

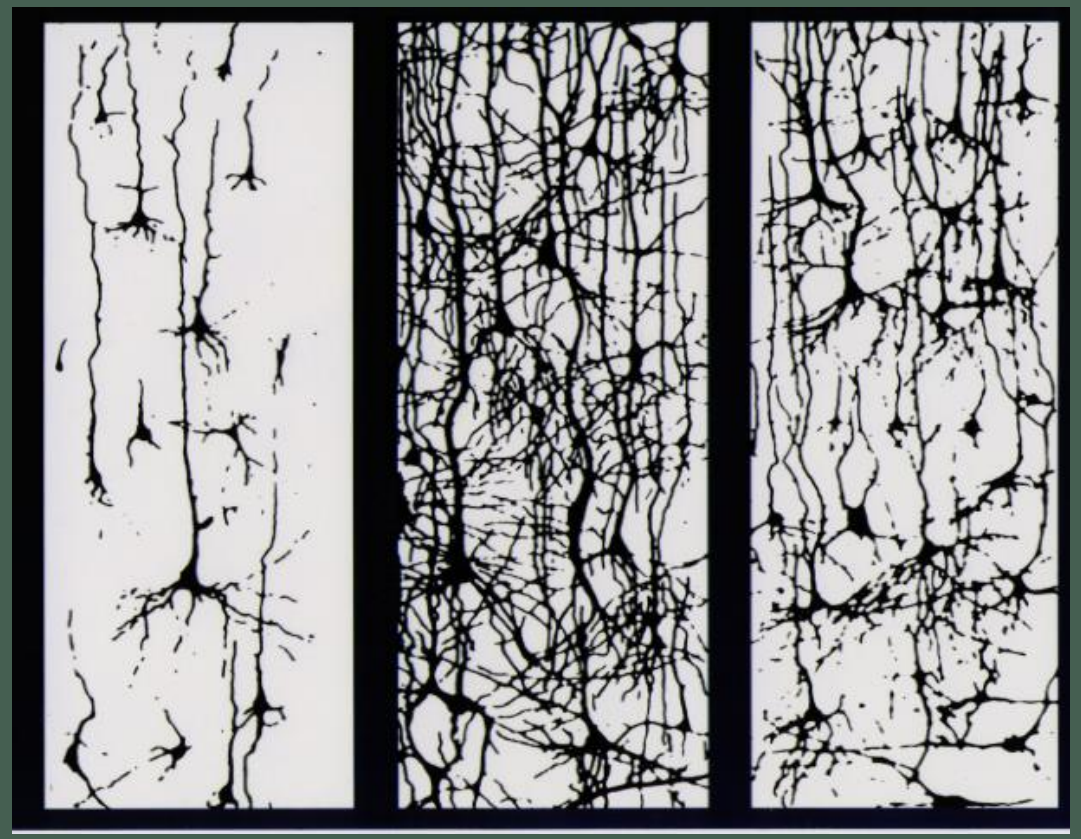
- Your group has 5 minutes using the pipe cleaners and straws tape to create the tallest stand alone tower you can.

# Experiences alter Brain Development

# Brain Architecture

- The early years of life matter because early experiences affect the architecture of the maturing brain. As it emerges, the quality of that architecture establishes either a sturdy or a fragile foundation for all of the development and behavior that follows --- and getting things right the first time is easier than trying to fix them later.

# Experiences Shape Brain Architecture by Over-Production Followed by Pruning (**(700 synapses formed per second in the early years)**



**birth** **6 years** **14 years**

# Serve and Return

Young children naturally reach out for interaction through  babbling, facial expressions, and gestures, and adults respond in kind.

These “serve and return" interactions are essential for the development of healthy brain circuits.

Therefore, systems that support the quality of relationships in early care settings, communities, and homes also support the development of sturdy brain architecture.

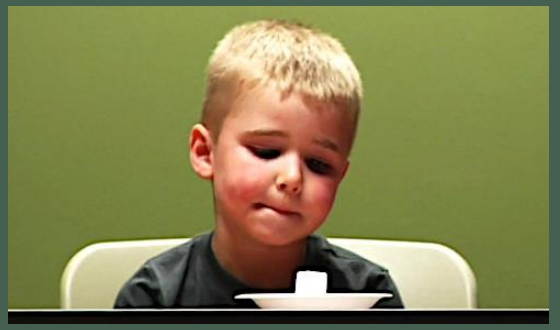
# Air Traffic Control

Executive functioning is group of skills that help us to focus on multiple streams of information at the same time, set goals and make plans, make decisions in light of available information, revise plans, and resist hasty actions.

A key biological foundation of school readiness as well as outcomes in health and employability

# Executive Functioning

**Inhibitory Control —** filter thoughts and impulses to resist temptations and distractions



**Working Memory —** hold and manipulate information in our heads over short periods of time

**Cognitive flexibility —** adjust to changed demands, priorities, or perspectives

# How Brains are Built

# Neuroplasticity

- The brain changes in a variety of ways as a result of our experiences, for the better or worse.

- The brain is flexible or "plastic"
  - Most flexible early in life
- The brain learns through experience and repetition
  - Interactions of genes and environment
- The brain's capacity for change decreases with age
  - You can teach an old dog new tricks, but it's harder than teaching a young dog
- Stress derails healthy brain development and damages the brain

(Center on the Developing Child at Harvard University)

# Brains are built over time, from the bottom up

- More primitive areas of the brain develop first
  - Brain Stem
    - Controls awake/alert states, Stress Responses: Fight, Flight, Freeze
  - Midbrain/Limbic System
    - Ex; Hypothalamus, Hippocampus, Amygdala
  - Prefrontal Cortex
    - Executive Functioning, Self regulation, successful school and life outcomes

# Dr. Dan Siegel; Hand Model of the Brain

# Trauma & Toxic Stress on the Developing Brain

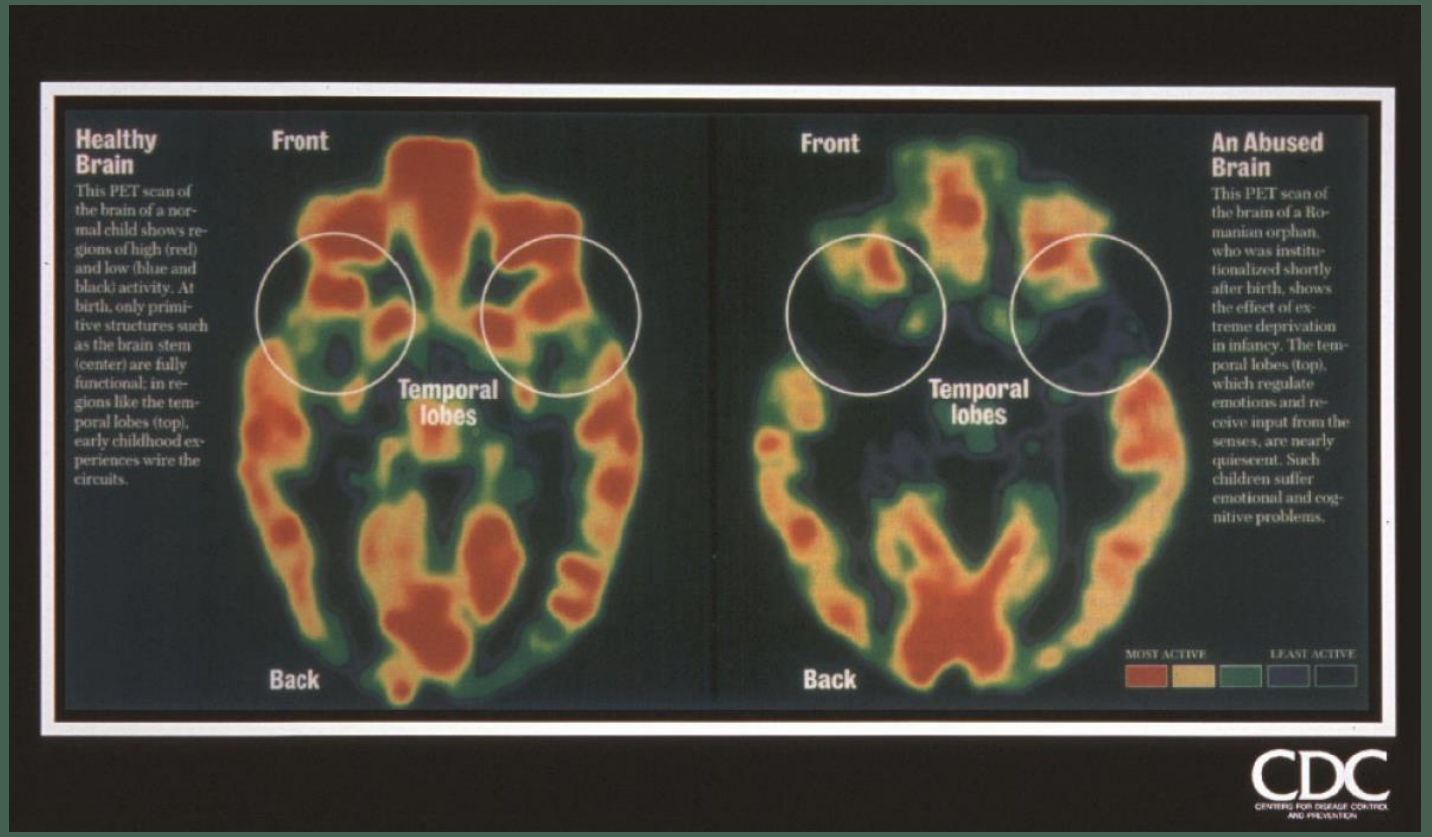
- A hostile takeover of the conscious mind by powerful negative emotions

- Constantly in a state of hyperarousal at baseline, when typical brains are calm
  - Relies on basic automatic survival responses (fight, flight, freeze)
  - The primitive brain hijacks and overpowers the cortex and executive functioning
  - Traumatized brains cannot reliable access and use the thinking brain to make good decisions

# Dr. Nadine Burke Harris

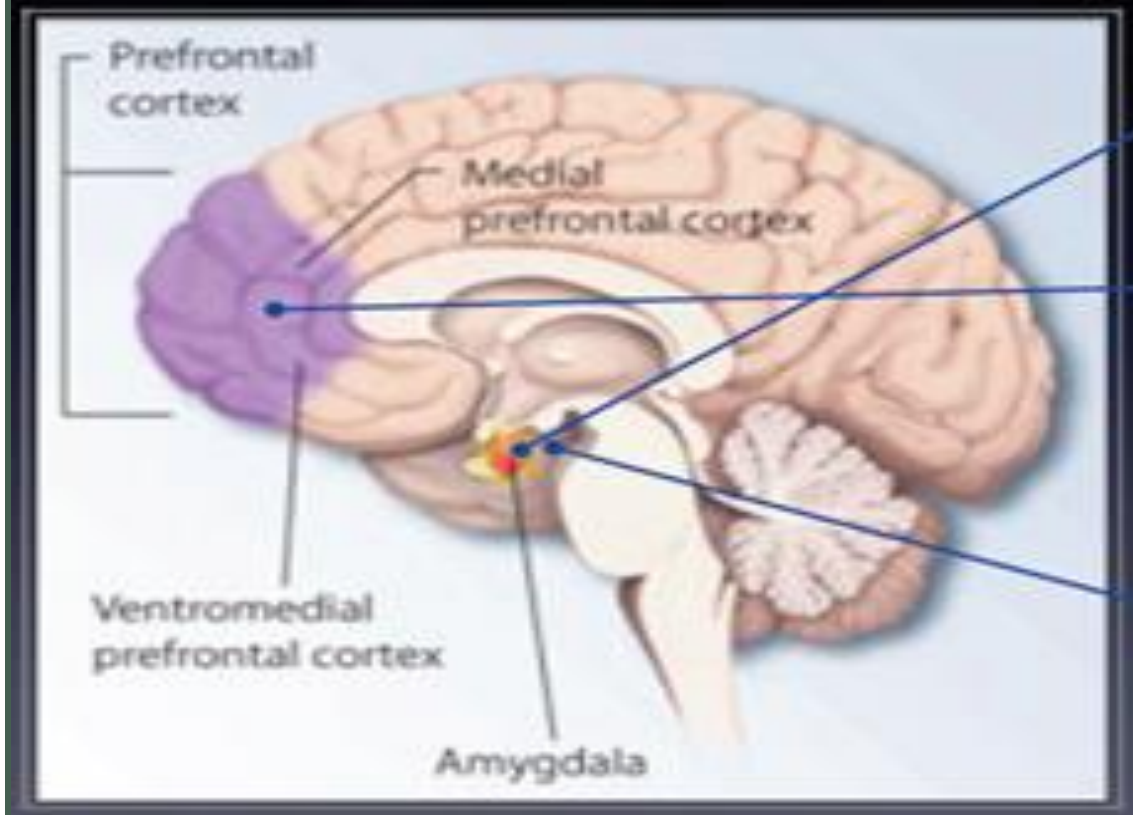
# Experiences alter brain development

Healthy Brain




Neglected Brain

# What happens?




**Amygdala:**
activates the stress response
*Toxic stress:* enlargement

**Prefrontal cortex:**
usually a check to the amygdala
*Toxic stress:* loss of neurons, less able to function

**Hippocampus:**
major role in memory and mood
*Toxic stress:* impairment in understanding and emotion

# Trauma & Toxic Stress on the Developing Brain


- The brain is like Velcro for the bad, Teflon for the good.

- Negative experiences "stick" more than positive ones.
- The traumatized brain is even more sensitized to negative experiences
  - Ability to accurately appraise the present and learn from experience is impaired
- Damages brain architecture
  - Functionality disrupted more than structure
- Can cause life long problems in learning, behavior, and physical and mental health
- Toxic stress derails healthy development

# Epigenetics

- The study of changes in organisms caused by modifications of gene expression rather than alteration of the genetic code itself

- Our gene expression is not fixed
  - Experiences determine whether genes are "read" and activated, or "turned off" and not activated

Intergenerational transmission of stress and trauma

# Implications for Educators

- The 3 R's are NOT enough!

- We know about trauma and toxic stress
- The science behind trauma is readily available (ex, neuroscience/neuroplasticity, epigenetics, ACEs Study)
- We know about the life stressors faced by many of our students and the behavior challenges they exhibit at school.

- What do we do? Business as usual? We can do better!

# THE SOLUTION

# Executive Functioning & Self Regulation skill building

Classroom strategies that reduce stress:

- Mindfulness
- Foster social connection
- Stable & supportive relationships
- Incorporate open ended creative play
- Incorporate vigorous physical exercise
- Increase complexity of skills step by step
- Repeated practice over time
- Space for creativity and exploration

# Positive Social Interactions

- We are social creatures with a social brain
- We live in a relationship impoverished world (e.g., social media; cell phones)
- To build cognitive skills we must support the social emotional brain
- The emotional state of a student controls:
  - Learning
  - Motivation
  - Engagement
  - Memory

# Positive Social Interactions

- The primary motivator of whether kids in poverty will learn is whether they like the teacher. It's the relationship that is the key. (Payne, 2003)
- Kids don't learn from people they don't like. (Rita Pierson, 2013)
- Greet every student by name when they walk in your door.
- Say things like "I'm so glad you're here today" or "I know we're going to have a great day today!"
- Maintain your students' dignity at all times

# Negative Social Interactions

Feel-Good Hormones
Serotonin
Dopamine
Oxytocin


Stress Hormones
Cortisol
Adrenaline
Norepinephrine

Learning
Memory

Motivation
Self Regulation

# Positive Social Interactions

<u>Feel Good Hormones</u>
Serotonin
Dopamine
Oxytocin

<u>Stress Hormones</u>
Cortisol
Adrenaline
Norepinephrine

Learning
Motivation

Memory
Self Regulation

# Family Engagement

Foster awareness and understanding

- Parents may have their own ACEs score or negative school experiences
- psychoeducation

Build relationships with families too

Foster Healing at Home

- Addressing the stressors on families


(Neuroscience, Epigenetics, Adverse Childhood Experiences and Resilience Toolkit, 2015)

# The Importance of Trauma Sensitive Schools

- The kids who need our help are often the ones who are most difficult to engage
- "Culture eats strategy for breakfast" (Drucker)
  - Culture allows sound educational strategies to work—or cause them to fail
- Therapy is important but its not the only solution
- Schools are in a unique position to provide the relationships that students need
- A long term commitment for healing is necessary

# Trauma Sensitive Schools

Shared understanding of all school staff:

- School environment promotes a sense of emotional and physical safety & security
- Remember behavior problems are an external manifestation of internal dysregulation
- Student who have experienced trauma need highly regulated adults
- Relationships can be a powerful healing force
- Creating a low stress environment is paramount
- The importance of calming, non-verbal cues
- The importance of examining one's own lens through which we see, respond to, and understanding traumatized children

(Child Trauma Toolkit for Educators, 2008; traumasensitiveschools.org, 2015)

# Shift the focus


**“What’s wrong with you?”**

**To**

**“What has happened to you? How have you managed to do so well in spite of all that has happened?”**

(Child Trauma Toolkit for Educators, 2008; traumasensitiveschools.org, 2015

# Create SSNREs

- Safe, stable and nurturing relationships AND environments (SSNREs) buffer the impact of ACEs and build resiliency
- SSNREs are CDC recommended prevention and mediation for ACEs
- Parents and school communities have enormous potential capacity to provide and model SSNREs for children, youth, parents, and staff

"…in order to develop normally, a child requires progressively more complex joint activity with one or more adults who have an irrational emotional relationship with the child. Somebody's got to be crazy about that kid. That's number one. First, last, and always."

(Bronfenbrenner, National Scientific Council on the Developing Child)

# Promoting Resilience through Relationships

- Resilience
  - The ability of an individual or community to withstand or rebound in the face of adversity
  - A process that can be learned and supported
  - Highly dependent on context
    - Also highly influenced by stress
  - Focused on student strengths

# How Resilience is Built

# The 3 R's of Resilience

**Compassion is a prerequisite for fostering resilience.**

- 3 R's for fostering resilience in the classroom
  - **Relationship**
    - Connection that conveys caring, cooperation, and hope
  - **Respect**
    - Mutual, unconditional respect for each individual and their boundaries and challenges, through appropriate expectations, consequences, activities, and materials
  - **Reasonable**
    - Reasonable expectations and accommodations for student needs given the challenges of most school environments and the realities of ACEs

# Challenge: Fostering Teacher Resilience

- Resilient students need resilient teachers.
- Good content teaching requires modeling of skills, and attitudes.
  - If teachers themselves are barely coping, if teachers cannot bounce back from the challenges they face, how are they to sustain the strength needed to promote resiliency among their students?

(Source: The Heart of Learning and Teaching, 2011; Wolpow and Askov, 2008)

# Positive Social Interactions: Communication

- Body Language
  - Sit on their level
  - Open and affirming body language
  - Neural demeanor (poker face)
- Conversation
  - Model effective communication
  - Name it to tame it
  - Encourage expression of feelings
  - Listen without words
  - Use "I" statements
  - Verbally praise for positive behaviors
    - This will increase self esteem
  - Be supportive

- Avoid
  - Criticism and negative statements (ex., "don't ask that." "don't be nosy.' "you ask too many questions.")
  - Discouragement of talking
  - Gender stereotyping
  - Asking why questions (instead focus on who, what, when, where, how)
  - Telling them what to do or how to feel

# Supportive Classroom Practices

- Low Stress Classrooms
  - Consistency & established routines
  - Safe, predictable relationships and interactions
  - Frequent brain breaks
  - Down time matters
    - Replace bell ringer with five minutes of silent free-choice or mindfulness
  - Movement and physical activity
    - Regulates the hemispheres of the brain
  - Decreased sensory stimulation
    - Soft lighting, calming colors, low stimulation décor, peace/calm spot)

# Other intervention ideas

- PBIS (Positive Behavior Interventions and Support)/RTI2:B
- Restorative Practices

# Responding to Challenging Behaviors

- Clear and fair/reasonable/realistic boundaries
- Time In
- Kids who struggle with dysregulated brains need highly regulated adults
- When a student is "melting down" use empathetic statements
  - "I care how you feel."
  - "I see you are upset. Do you need a break before you start your work."

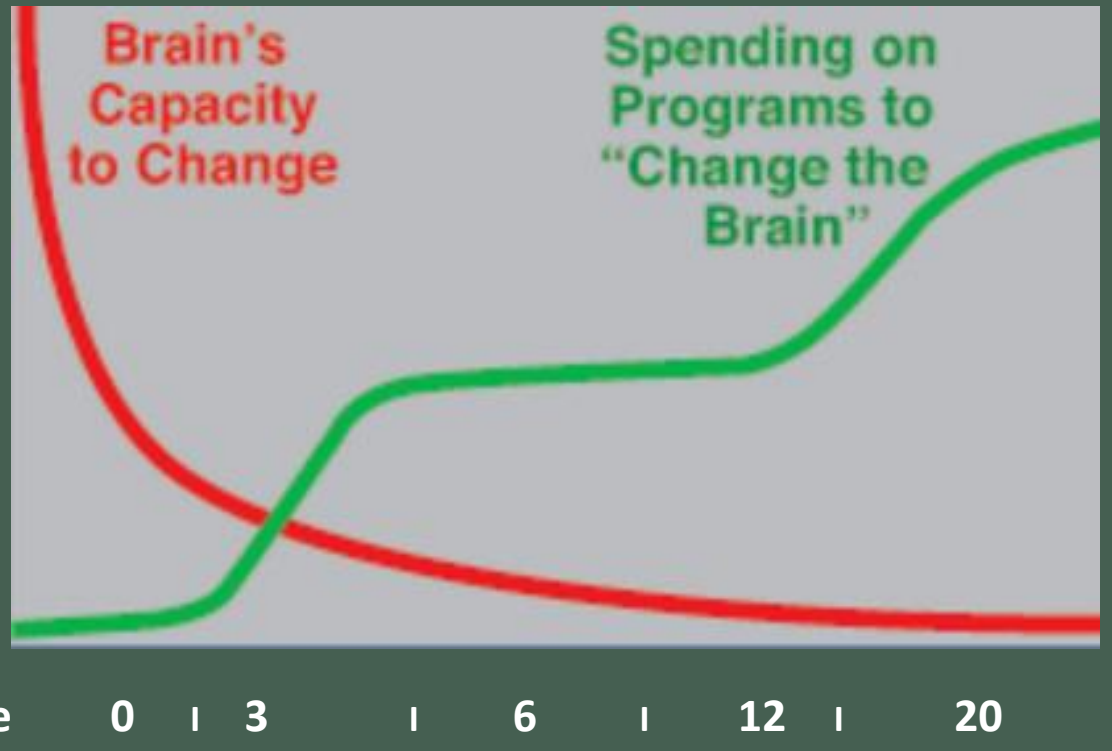
Don't let them pull you into their storm, instead bring them into your calm.

# Responding to Challenging Behaviors

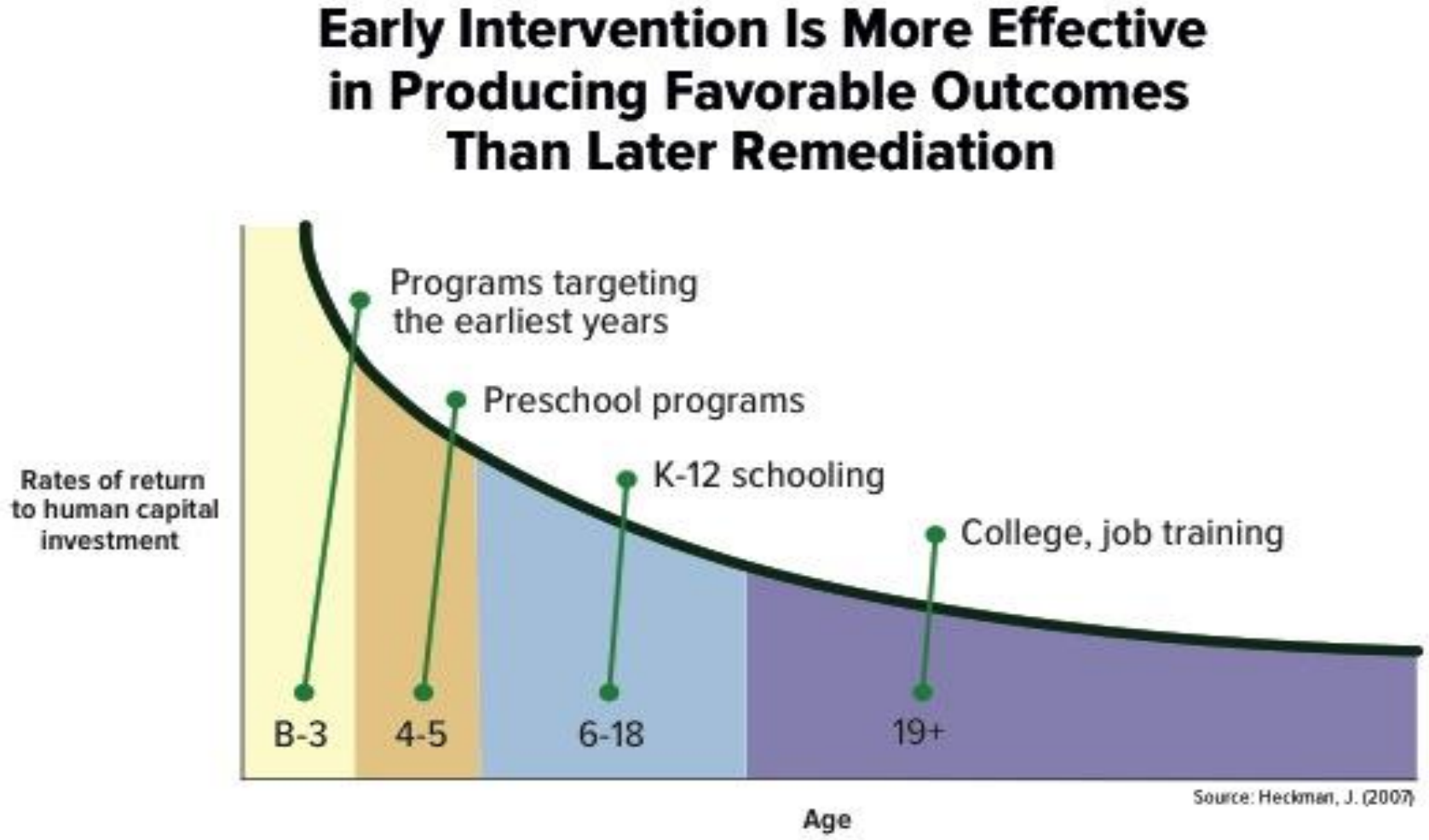
- Attunement: First Connect, then Redirect (Siegel)
  - Connect
    - Name it to tame it
    - Use empathetic statements BEFORE you try to help them fix the problem. Wait until they're calm before moving to solutions.
  - Redirect
    - Choice menu of de-escalation strategies
      - Go to the bathroom to splash water on your face
      - Sit in the beanbag chair
      - Listen to calming music with headphones
      - Run an errand
- Collaborative Problem Solving
  - Restorative Practices: Circles
  - SAMA De-escalation script

# Move the Funding

- Focus has to shift from remediation to prevention and not just "prevention," but primary prevention



# The biggest returns come from early investment



# What can we do?

- Make sure vulnerable children have access to stable, supportive relationships with adults—as early and as consistently as possible.
- Invest in the development and retention of a skilled early childhood workforce and in more early prevention/intervention for children.
- Make sure those caring for children are given the support and services to ensure their own development as parents (and caregivers) – invest in adult transition to parenthood.
- In addition to preventative services for infants and young children, invest in programs that promote adult skill building and bringing communities together

# CONCLUDING THOUGHTS

# Healing can Occur

- Humans have an astounding capacity to use challenging life experiences to create richer and more meaningful ways of living

- Children's Hope Scale (Snyder, 2002)
- Posttraumatic Growth (Tedeschi & Calhoun, 2004)
  - Positive psychological change that occurs as the result of one's struggle with a highly challenging, stressful, and traumatic event

# REMEMBER…

- Supportive relationships buffer the impacts of trauma and toxic stress
- Focus on fixing the broken system & structures, not "fixing" the students
- Don't forget the transformative neurobiological power of relationships
- Show empathy and compassion to your student and each other
- Go back to your school and talk about this
  - Build trauma informed communities with trauma informed conduct

# Resources

- http://traumasensitiveschools.org/
  - Trauma and learning policy initiative, Massachusetts Advocates for Children & Harvard Law School
- Center on the Developing Child at Harvard University
  - http://developingchild.Harvard.edu
- The National Child Traumatic Stress Network
  - www.NCTSN.org
- http://acestoohigh.com/
- http://ACEstudy.org
- http://childtrauma.org