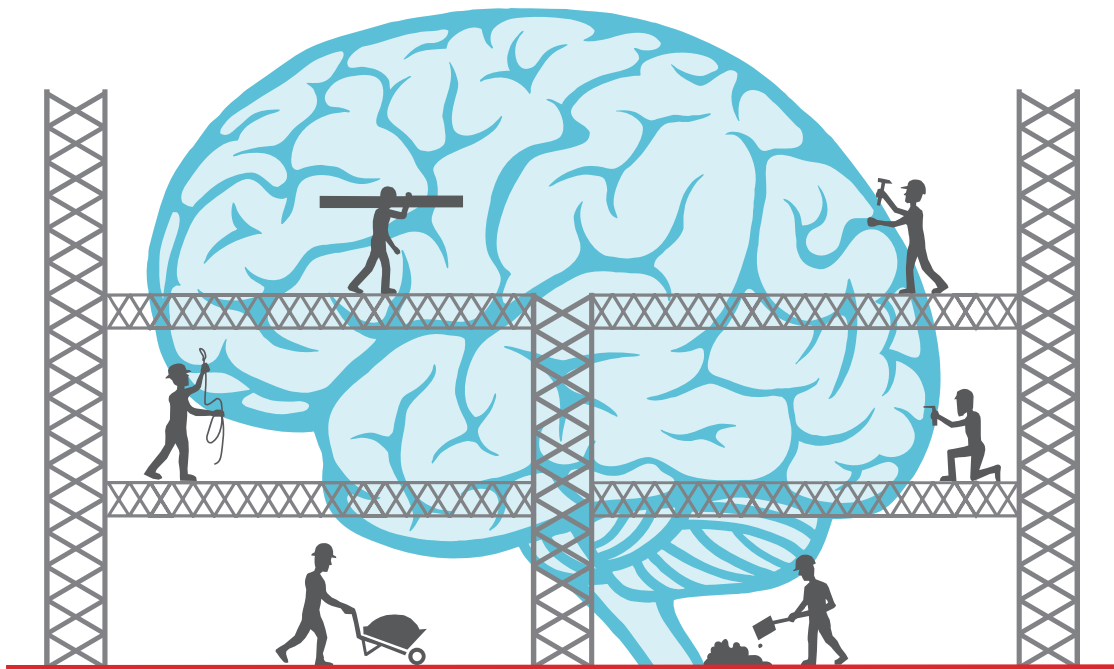
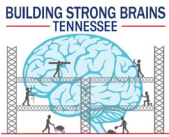


Participant Guide

BUILDING STRONG BRAINS TENNESSEE





The Role of Life Experiences in Shaping Brain Development



**BUILDING STRONG BRAINS
TENNESSEE**

Name
Title
Organization





1

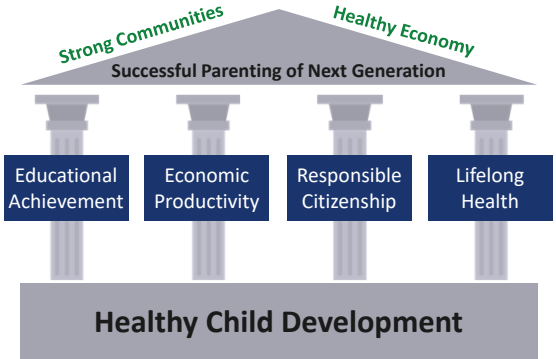
Building Strong Brains Tennessee

Mission


We work to change the culture of Tennessee so that the state's overarching philosophy, policies, programs and practices for children, youth and young adults utilize the latest brain science to prevent and mitigate the impact of adverse childhood experiences.



2



Healthy Child Development



3

Four Core Concepts of Development

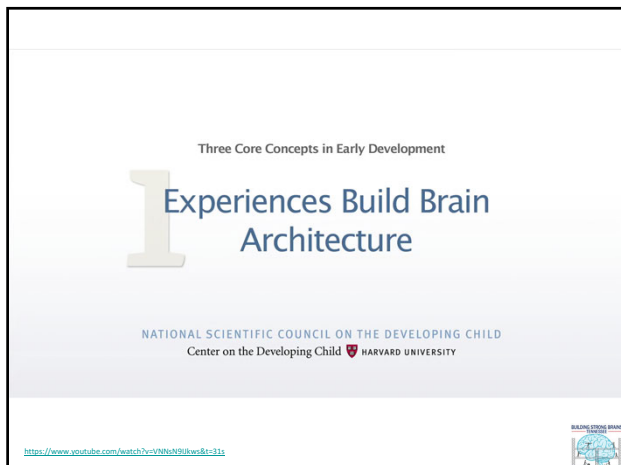
- 1 **Brain Architecture** is established early in life and supports lifelong learning, behavior and health.
- 2 Stable, caring relationships and “**Serve and Return**” interactions shape brain architecture.
- 3 **Toxic Stress** in the early years of life can derail healthy development.
- 4 **Resilience** can be built through “Serve and Return” relationships, improving self-regulation skills and executive function. Though there are sensitive periods of brain development in early childhood and adolescence, resilience can be strengthened at any age.



4

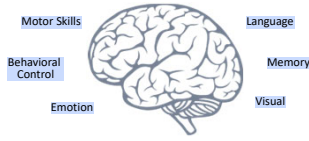


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Brain Architecture Supports Lifelong Learning, Behavior and Health



- Brains are built over time, starting in the earliest years of life. Simple skills come first; more complex skills build on top of them.
- Cognitive, emotional and social capabilities are inextricably intertwined throughout the life course.
- A strong foundation in the early years improves the odds for positive outcomes and a weak foundation increases the odds of later difficulties.



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Brain Architecture

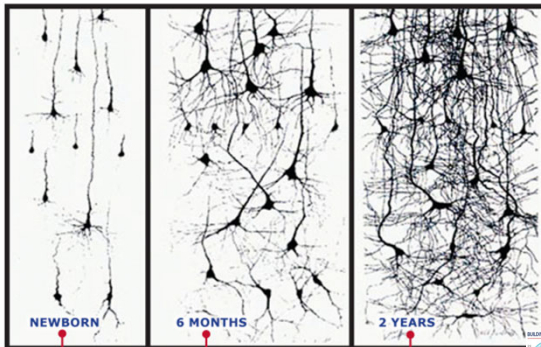


The early years of life matter because early experiences affect the architecture of the maturing brain. As it emerges, the quality of that architecture establishes either a sturdy or a fragile foundation for all of the development and behavior that follows. Getting things right the first time is easier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



8

More Than ONE MILLION New Neural Connections Per Second



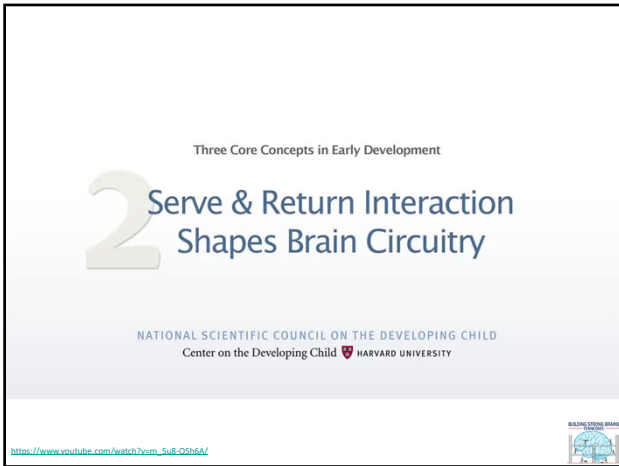
Source: Center on the Developing Child at Harvard University, 2009




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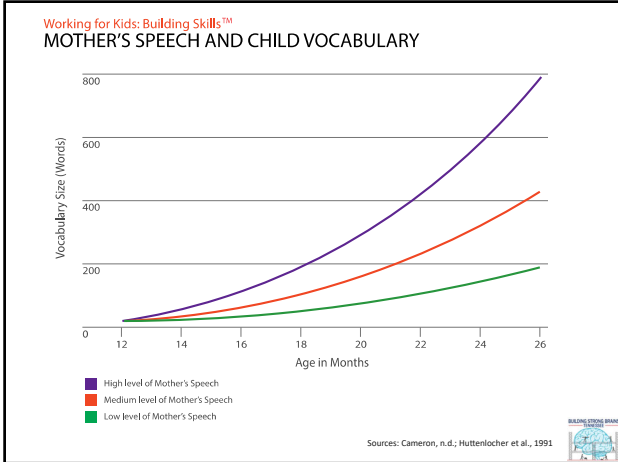
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Serve & Return Interactions Build Brains and Skills

- Young children naturally seek 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.
- Quality relationships continue to be vital in adolescence in order to reinforce brain architecture and build resilience.

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Adolescent Brain Development: A Period of Vulnerabilities and Opportunities

The brain starts to undergo a **“remodeling”** project in adolescence, making it an opportune time to build resilience.

- **Air Traffic Control:** Before and during puberty, a second period of rapid neural growth occurs in the prefrontal cortex.
- **“Use it or lose it”:** The adolescent brain strengthens the neural connections that are used most often and prunes away those that aren't used as frequently.
- **Integration:** The *corpus callosum*, which relays information between different parts of the brain, also undergoes waves of growth during adolescence, improving self-regulation.

Sources: Siegel, 2015; Spinks, n.d.

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Toxic Stress Disrupts Brain Development


15

Three Core Concepts in Early Development

3 Toxic Stress Derails Healthy Development

NATIONAL SCIENTIFIC COUNCIL ON THE DEVELOPING CHILD
Center on the Developing Child HARVARD UNIVERSITY

<https://www.youtube.com/watch?v=VfKcO2Hlw/>



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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.



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Body's Response to Different Types of Stress


POSITIVE



A normal and essential part of healthy development

EXAMPLES
getting a vaccine,
first day of school


TOLERABLE



Response to a more severe stressor, limited in duration


EXAMPLES
loss of a loved one,
a broken bone

TOXIC



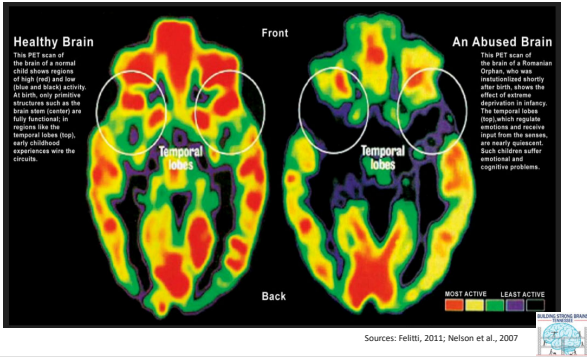
Experiencing strong, frequent, and/or prolonged adversity

EXAMPLES
physical or emotional abuse,
exposure to violence



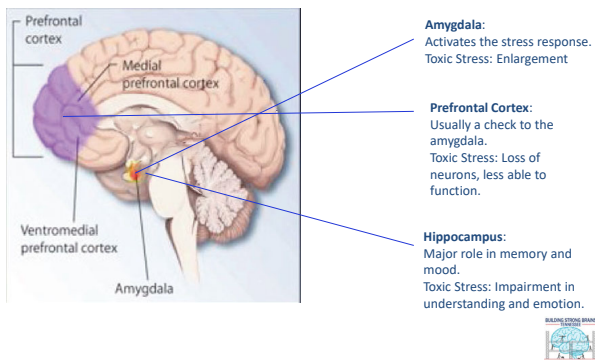
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Experience Alters Brain Development Healthy vs. Neglected Brain



19

Toxic Stress Alters Brain Development



20


Toxic Stress Changes Gene Expression *Epigenetics*




21

MM3

An "Air Traffic Control System" in the Brain




- Executive functioning is a 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.
- Executive functioning is a key biological foundation of school readiness, as well as outcomes in health and employability.
- Although there are sensitive periods of development, executive functioning can be built along any point in the lifespan.




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How Brains are Built




https://www.youtube.com/watch?v=tFE6_aa_cs



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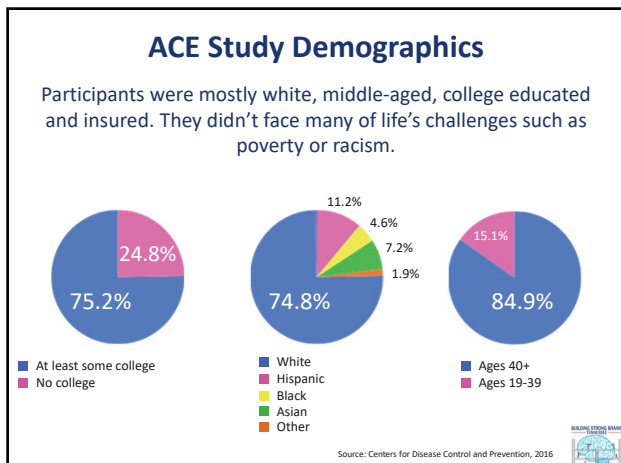
Adverse Childhood Experiences

ABUSE		NEGLECT		HOUSEHOLD DYSFUNCTION	
Physical 10.6%	Emotional 28.3%	Physical 14.8%	Emotional 9.9%	Mental Illness 18.4%	Incarcerated Relative 4.7%
Sexual 20.7%				Mother treated violently 12.7%	Substance Abuse 26.9%
				Divorce 23.3%	

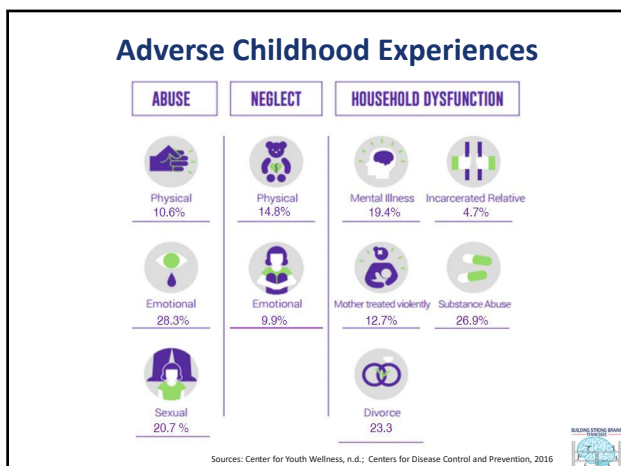


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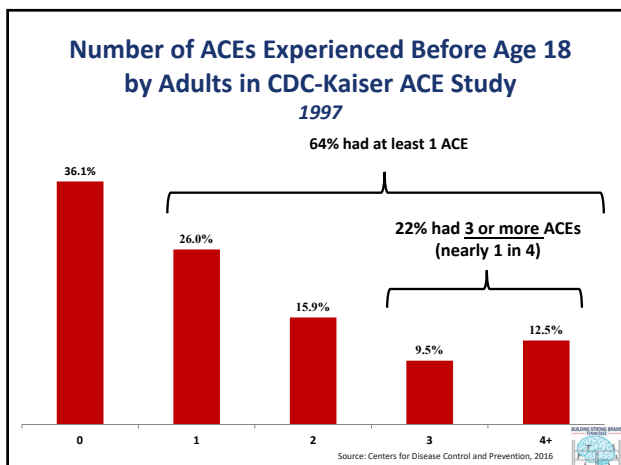
MM3 New language
Melissa McGee, 1/22/2021



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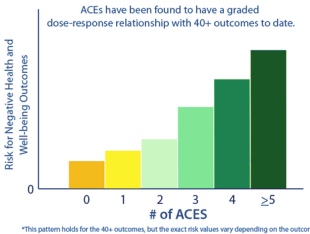
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ACEs Can Have Lasting Effects On...

-  Health (obesity, diabetes, depression, suicide attempts, STDs, heart disease, cancer, stroke, COPD, broken bones)
-  Behaviors (smoking, alcoholism, drug use)
-  Life Potential (graduation rates, academic achievement, lost time from work)



ACEs have been found to have a graded dose-response relationship with 40+ outcomes to date.

*This pattern holds for the 40+ outcomes, but the exact risk values vary depending on the outcome.

Source: Centers for Disease Control and Prevention, 2016

28

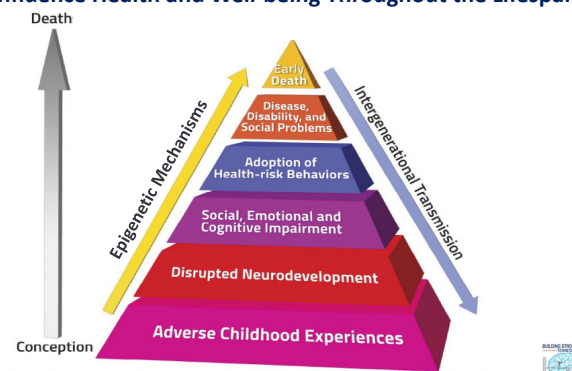
Adverse Childhood Experiences



<https://www.youtube.com/watch?v=cc0KfKfXc-c>

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Mechanisms by Which Adverse Childhood Experiences Influence Health and Well-being Throughout the Lifespan



Conception → Death

Mechanisms: Epigenetic Mechanisms, Intergenerational Transmission

Stages: Adverse Childhood Experiences, Disrupted Neurodevelopment, Social, Emotional and Cognitive Impairment, Adoption of Health-risk Behaviors, Disease, Disability, and Social Problems, Early Death

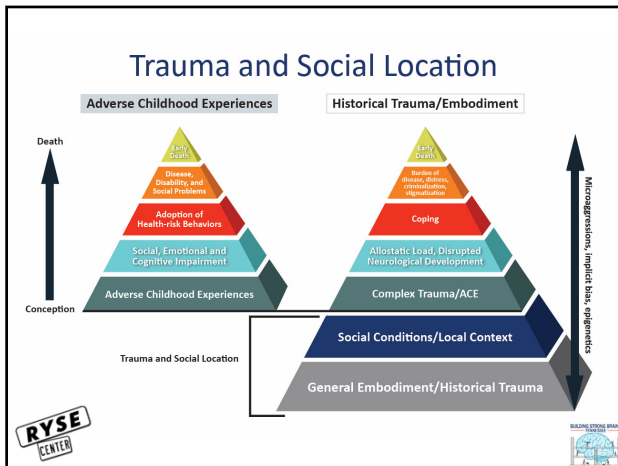
Source: Anda, n.d.

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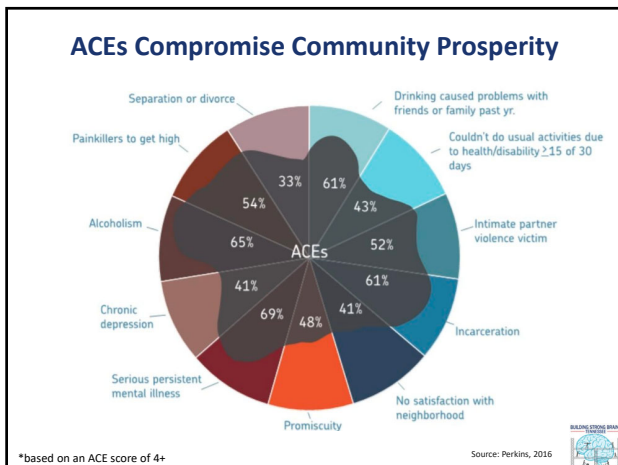
New Additions to the ACEs Questionnaire *The Philadelphia ACE Study Questions*

Conventional ACEs	Expanded ACEs
Physical Abuse	Witnessing Violence
Emotional Abuse	Living in Unsafe Neighborhoods
Sexual Abuse	Experiencing Racism
Emotional Neglect	Living in Foster Care
Physical Neglect	Experiencing Bullying
Domestic Violence	
Household Substance Abuse	
Incarcerated Care Provider	
Mental Illness in the Home	

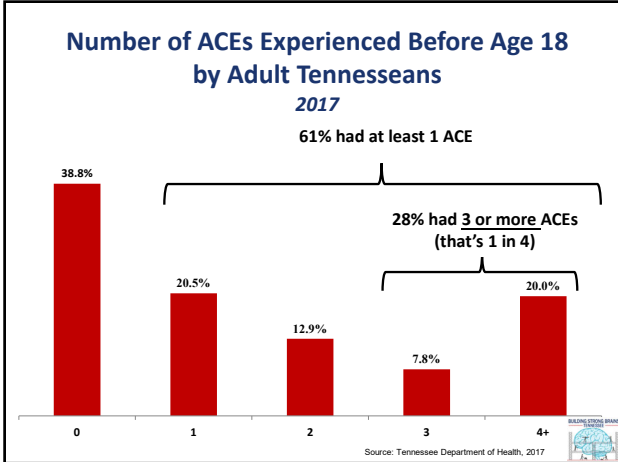
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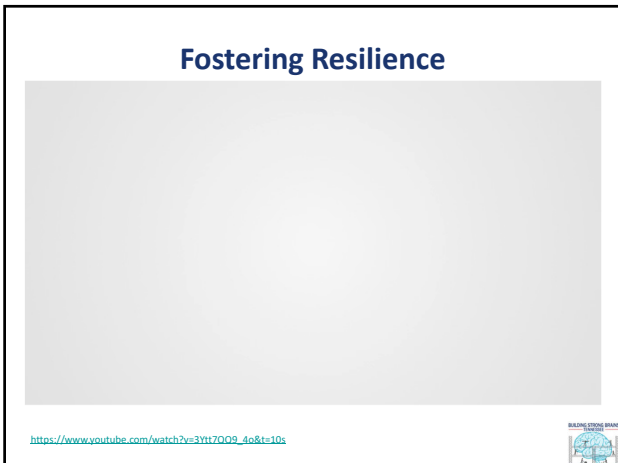
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Fostering Resilience

Overtime, the cumulative impact of positive life experiences and coping skills can shift the fulcrum's position, making it easier to achieve positive outcomes.

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Ensure Every Child's Relationships and Environments Are:

- Safe**—Free from physical & emotional harm.
- Stable**—Familiar routines, people, & places.
- Nurturing**—Sensitively care & encourage development

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Positive Childhood Experiences (PCEs) Buffer ACEs and Promote Adult Health

6-7 vs. 0-2 PCEs: Adults reporting 6-7 PCEs have **72% lower odds** of having depression or poor mental health compared to those reporting 0-2 PCEs.

48% v. 12.6%, OR 0.28; 95% CI 0.21-0.39. 3.8x higher rate for 0-2 vs. 6-7 PCEs.

Source: Bethell et. al., 2019

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Improving Air Traffic Control Helps with Stress Management Across the Lifespan

- Focusing Attention
- Problem Solving
- Planning Ahead
- Behavior Regulation
- Controlling Impulses
- Adjusting to New Circumstances

Executive Function and Self Regulation Skills can be built at any point across the lifespan.

Source: Cameron, n.d.

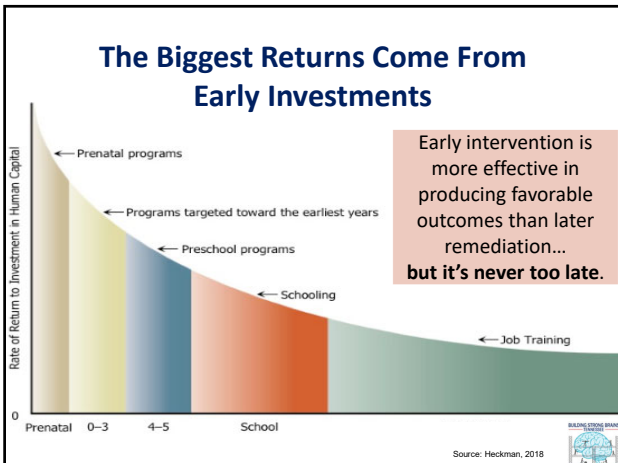


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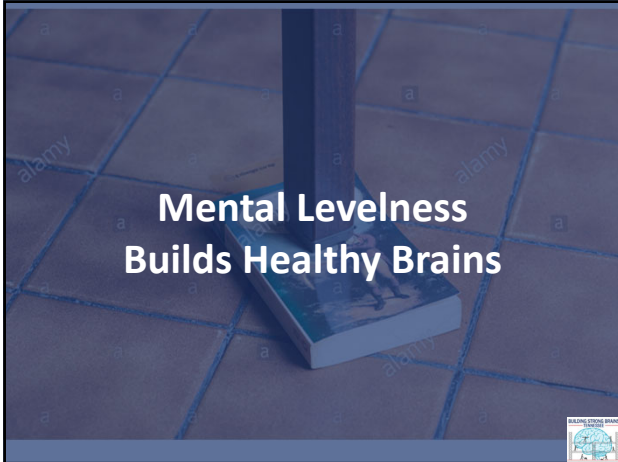
Collective Ingenuity



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Build Executive Functioning in Childhood and Adolescence

- Sports and Physical Activity
- Goal Setting, Planning and Monitoring
- Yoga, Meditation and Mindfulness Activities
- Journaling and Self-Talk
- Logic Puzzles and Computer Games
- Theater, Music and Dance

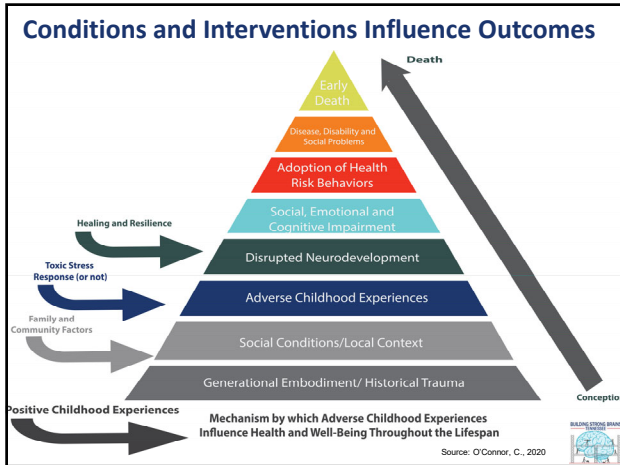
Source: Center on the Developing Child at Harvard University, 2014

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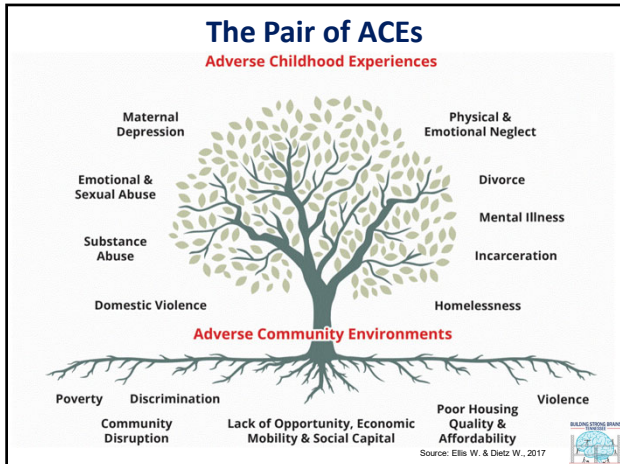
Use a Two- and Three-Generation Approach

- Early Childhood intervention also promotes healthy parenting by those children as adults
- Early “Child” Intervention needs to include focus on adult development as caregivers and on those skills inherent to caring for others
- Ensuring healthier, more mindful, socially connected caregivers positively impacts child health (and also the next generation)

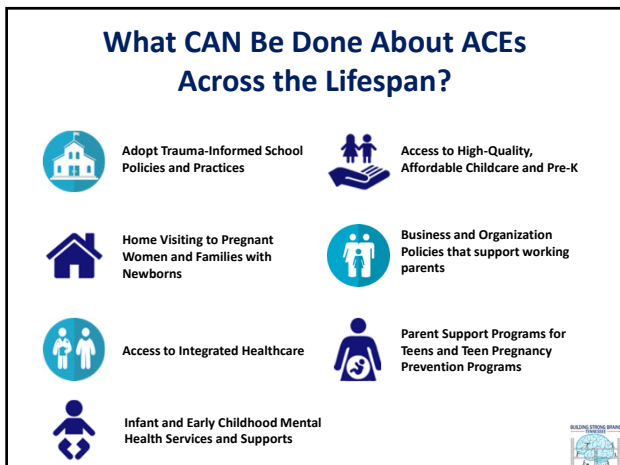
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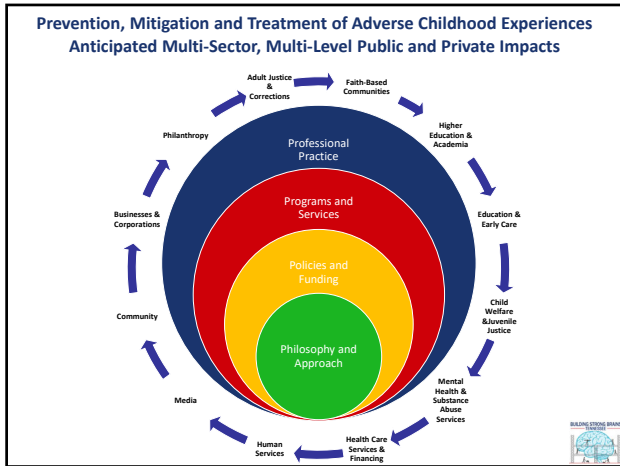
What CAN Be Done About ACEs Across the Lifespan?

- Access to Mental Health and Substance Abuse Treatment
- Sufficient Income Support for Low-Income Families
- Intimate Partner Violence Prevention
- Bringing Community Development and Childhood Development together
- Health System Investment in Communities
- Social Supports for Parents

...and so much more



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50

The New Norm: Shifting the Conversation...

What is wrong with you?

TO

What has happened to you?



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Further Information

Tennessee Commission on Children and Youth Website
<https://www.tn.gov/tccy/topic/tccy-aces>

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**Adverse Childhood Experiences
Community Survey**

<http://bit.ly/2dZOeWg>

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