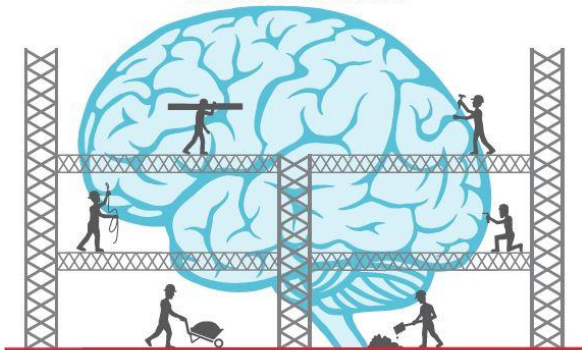


The Role of Life Experiences in Shaping Brain Development

BUILDING STRONG BRAINS
TENNESSEE

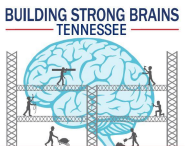


Jill Murphy
Prevention Consultant
University of Tennessee SWORPS

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.



Strong Communities

Healthy Economy

Successful Parenting of Next Generation

Educational
Achievement

Economic
Productivity

Responsible
Citizenship

Lifelong
Health

Healthy Child Development



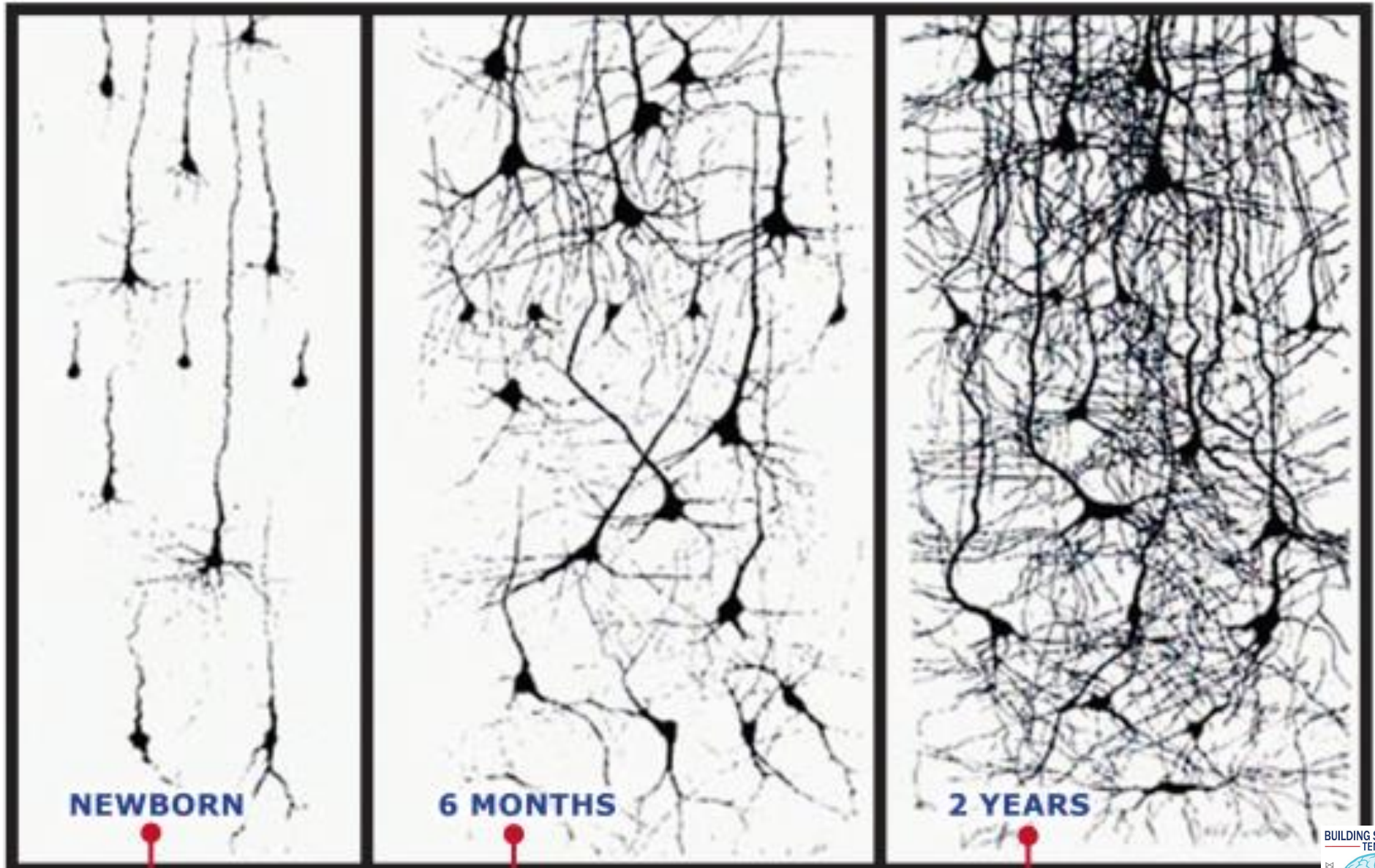
Brain Architecture Building Strong Foundations

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.

More Than **ONE MILLION** New Neural Connections Per Second



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



Serve & Return Relationships Support Skill Learning



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.



Toxic Stress Disrupts Brain Development

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.

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



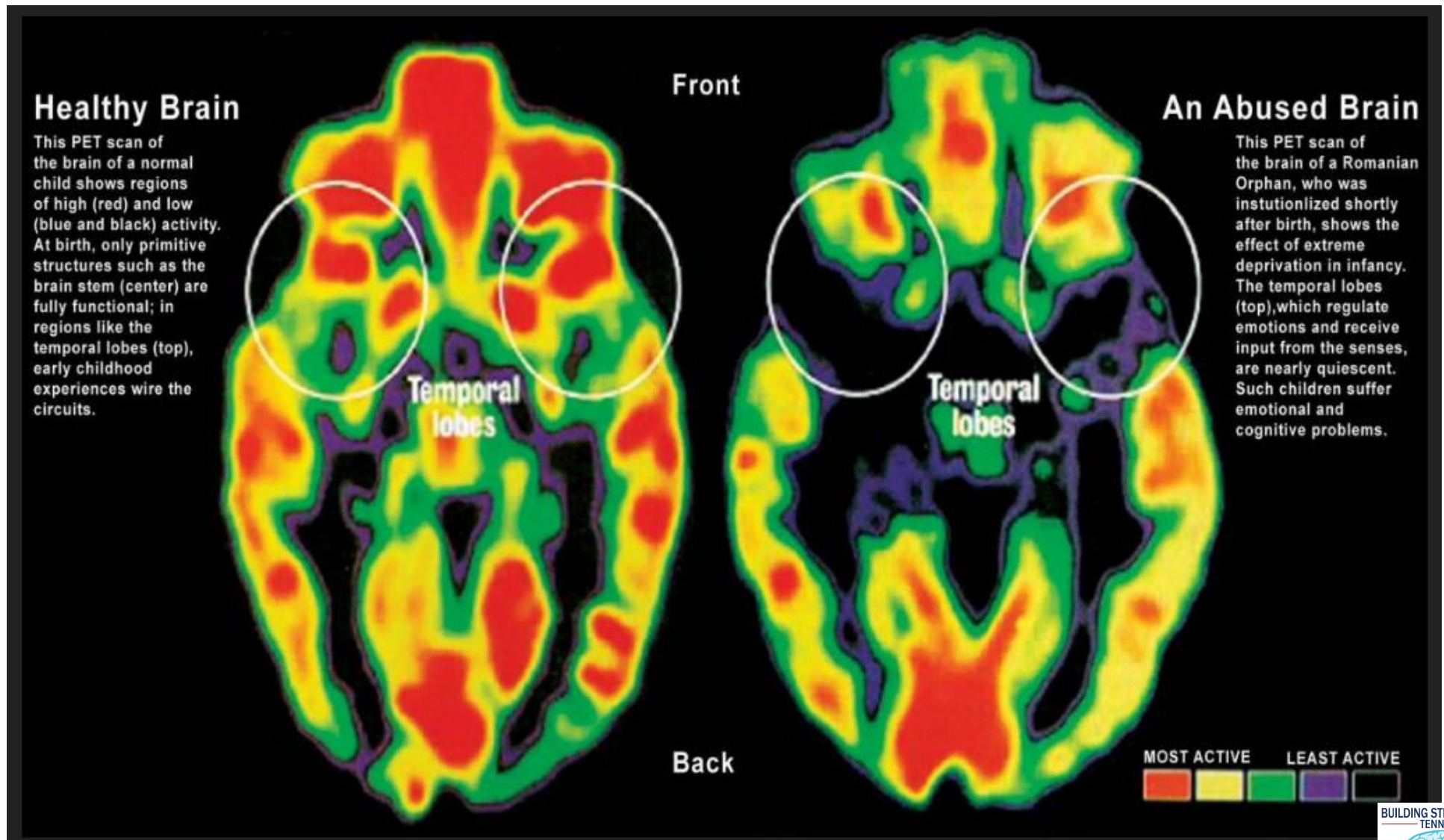
Experiencing strong, frequent, and/or prolonged adversity

EXAMPLES

*physical or emotional abuse,
exposure to violence*

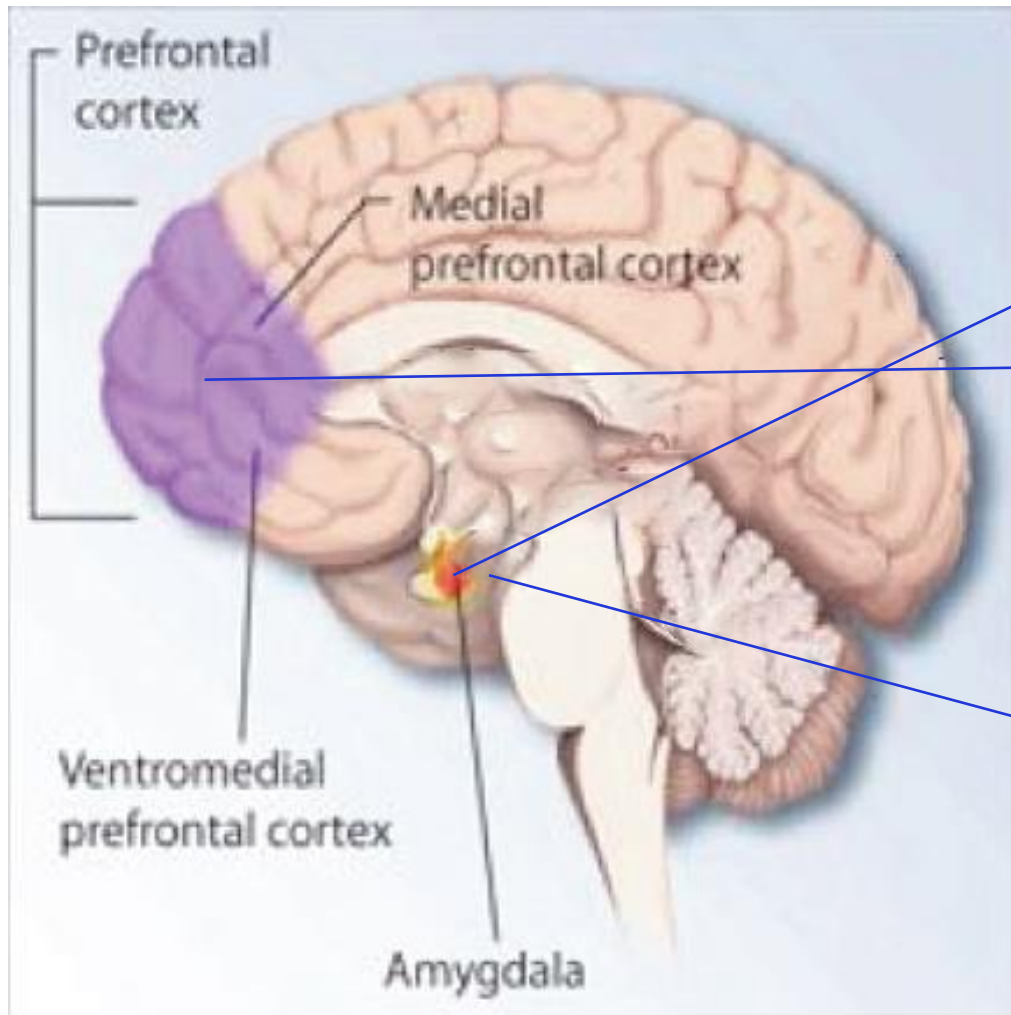
Experience Alters Brain Development

Healthy vs. Neglected Brain



Sources: Felitti, 2011; Nelson et al., 2007

Toxic Stress Alters Brain Development



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.

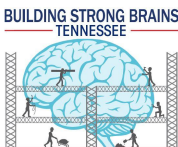
An “Air Traffic Control System” in the Brain



- 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.

How Brains are Built

https://www.youtube.com/watch?v=ttFE6_aa_os



ABUSE



Physical
10.6%

NEGLECT



Physical
14.8%

HOUSEHOLD DYSFUNCTION



Mental Illness
19.4%



Incarcerated Relative
4.7%



Emotional
28.3%



Emotional
9.9%



Mother treated violently
12.7%



Substance Abuse
26.9%



Sexual
20.7 %

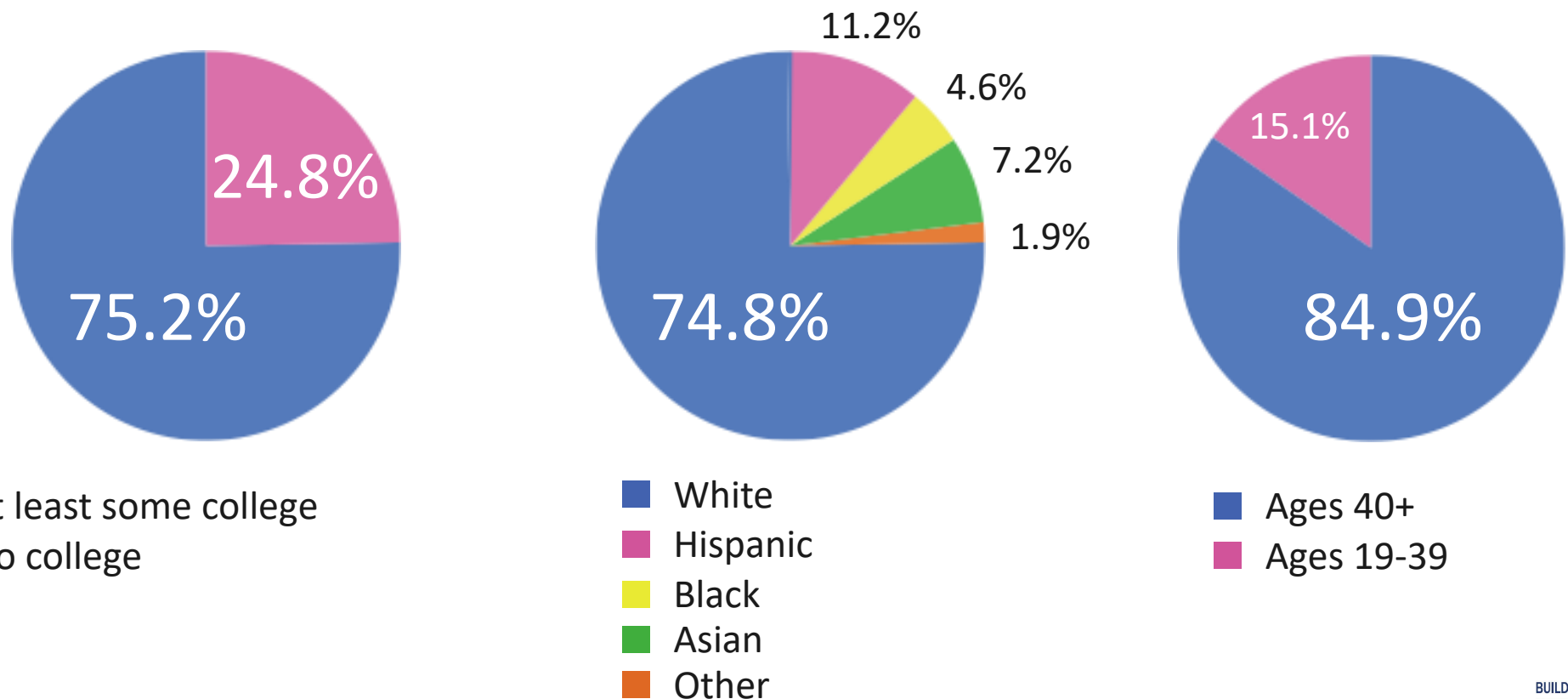


Divorce
23.3

Adverse Childhood Experiences

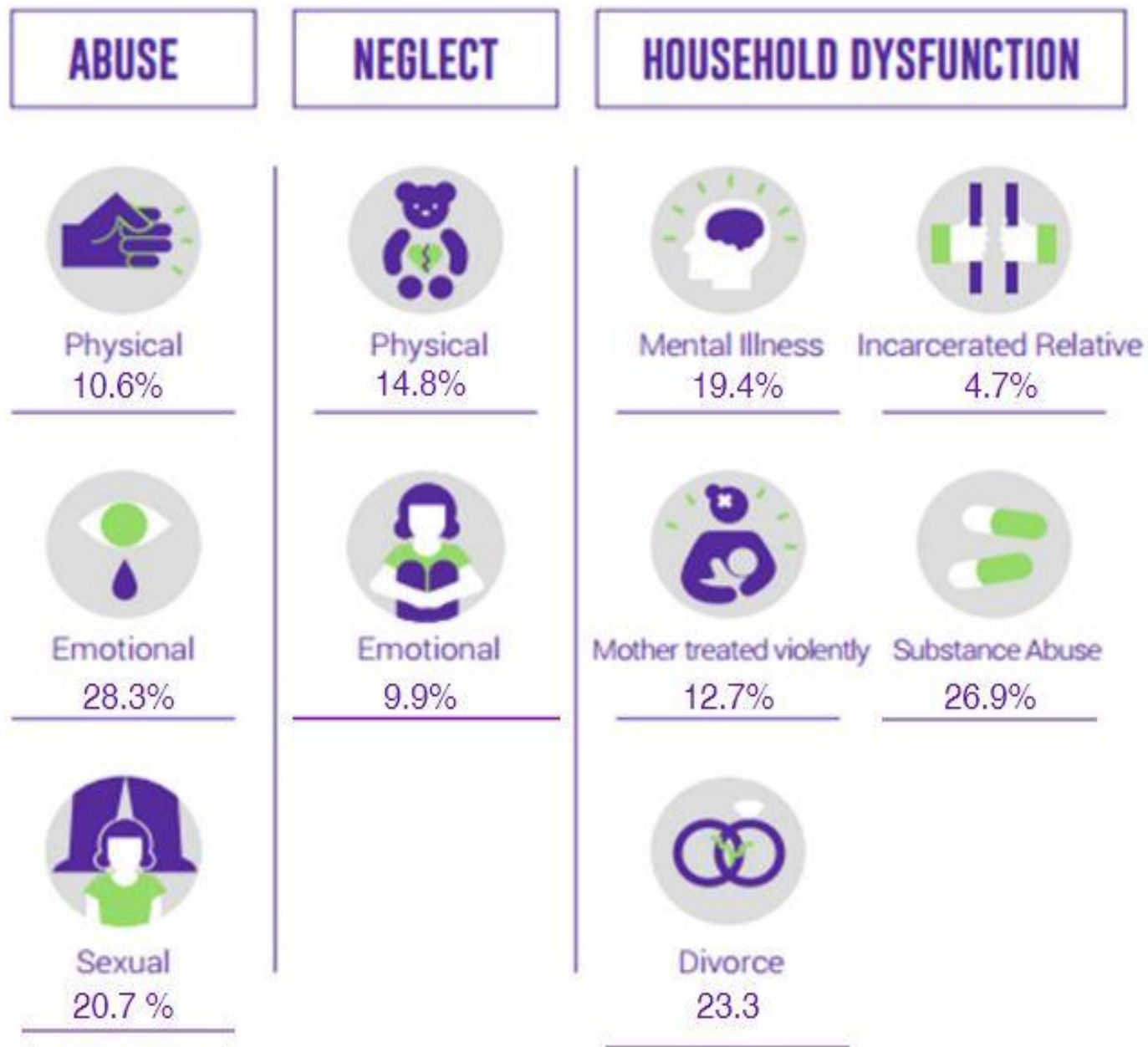
ACE Study Demographics

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, 2016

Adverse Childhood Experiences



Sources: Center for Youth Wellness, n.d.; Centers for Disease Control and Prevention, 2016

ACEs Can Have Lasting Effects On...



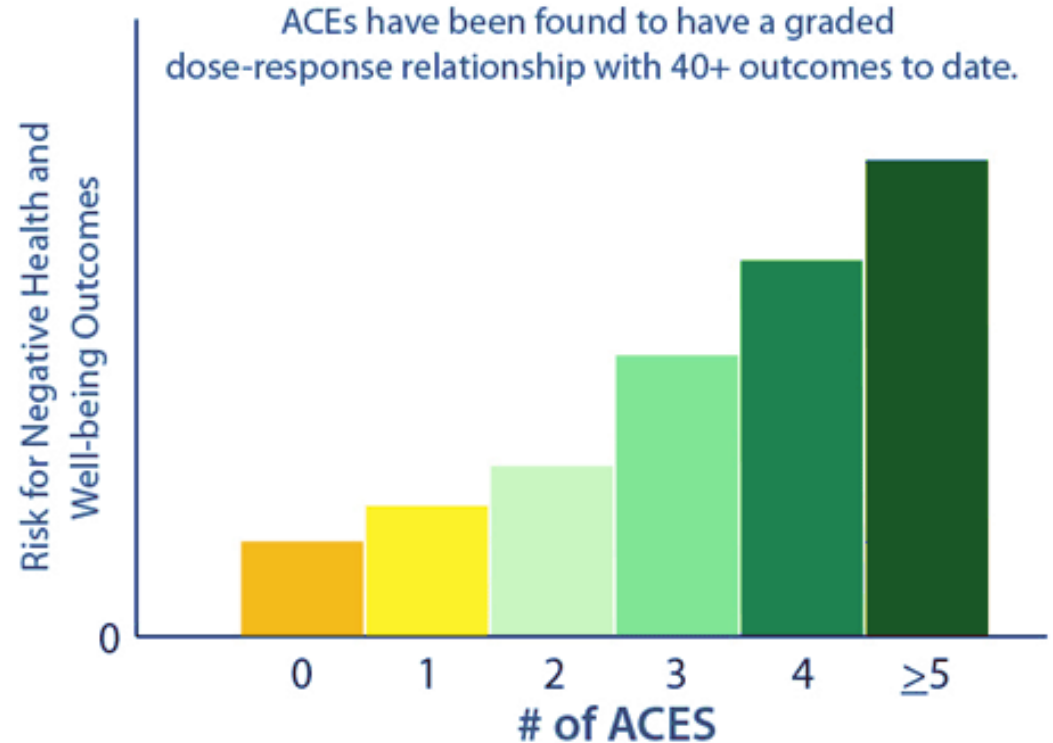
Health (obesity, diabetes, depression, suicide attempts, STDs, heart disease, cancer, stroke, COPD, broken bones)



Behaviors (smoking, alcoholism, drug use)



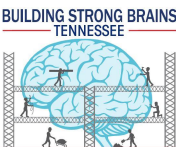
Life Potential (graduation rates, academic achievement, lost time from work)



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

Adverse Childhood Experiences

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



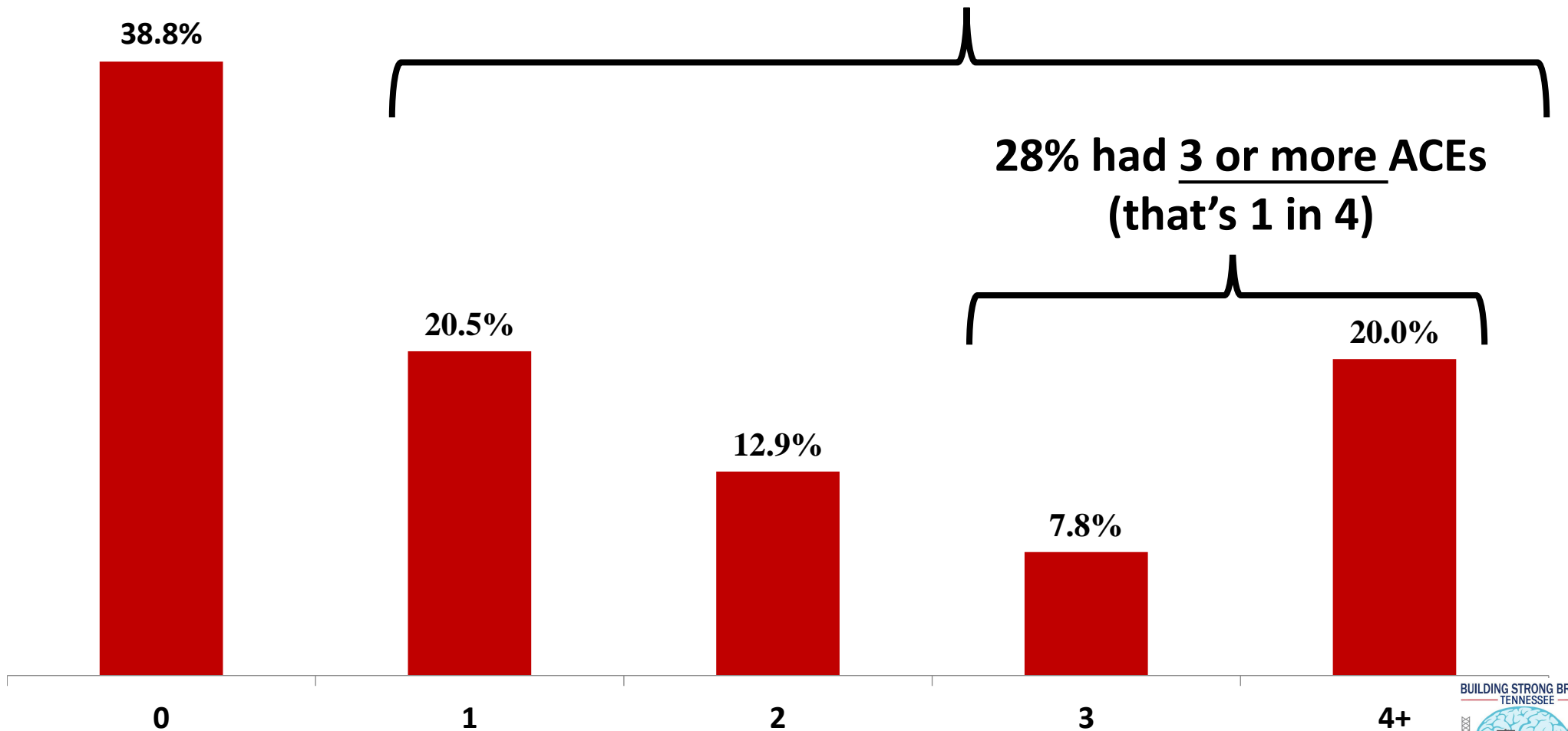
New Additions to the ACEs Questionnaire

The Philadelphia ACE Study Questions

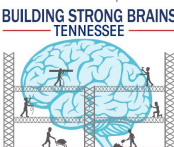
Conventional ACEs	Expanded ACEs
Physical Abuse	Witnessing Violence
Emotional Abuse	Living in Unsafe Neighborhoods
Sexual Abuse	Experiencing Racism
Emotional Neglect	Living in Foster Care
Physical Neglect	Experiencing Bullying
Domestic Violence	
Household Substance Abuse	
Incarcerated Care Provider	
Mental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

Number of ACEs Experienced Before Age 18 by Adult Tennesseans 2017

61% had at least 1 ACE

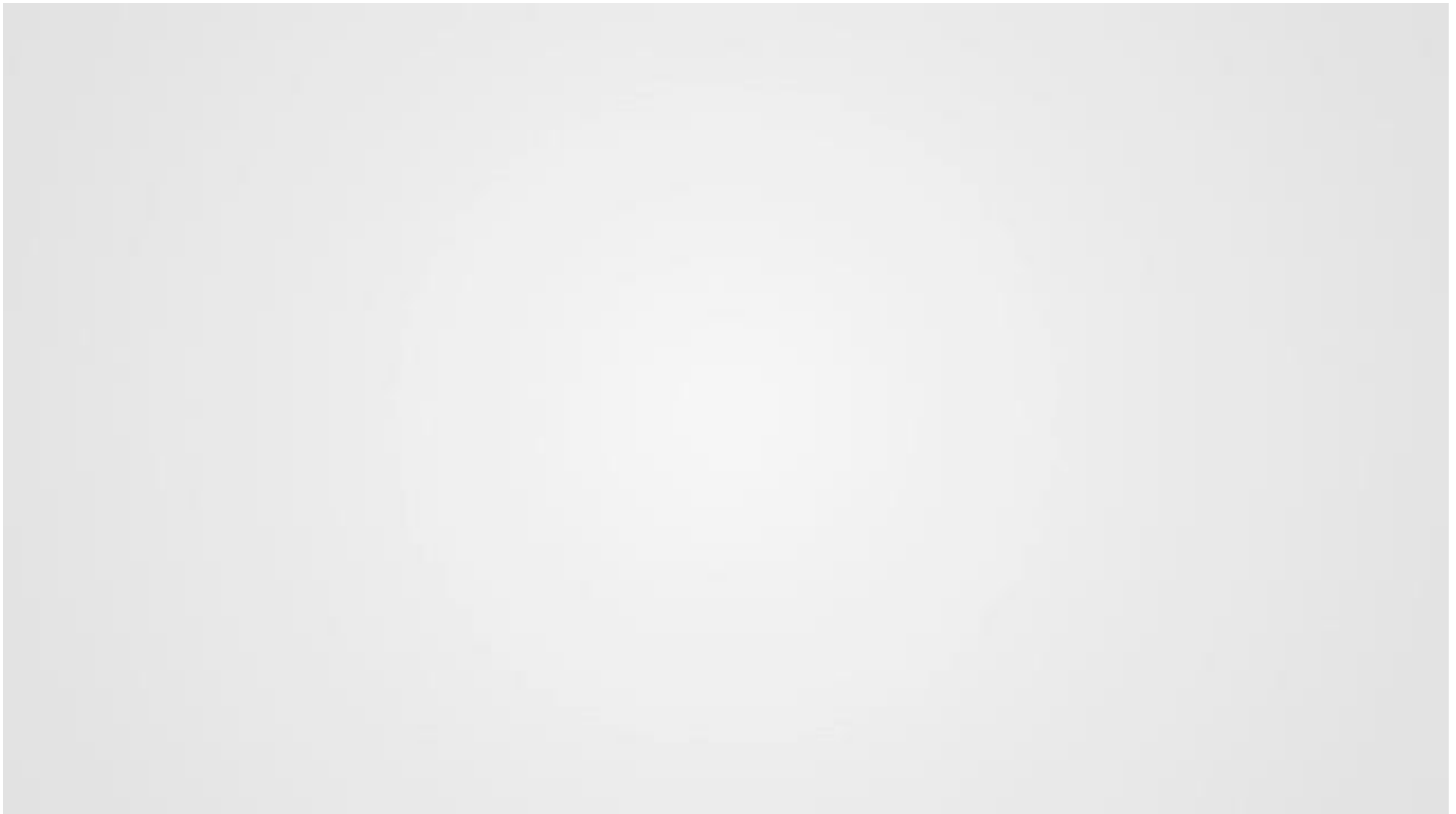


Source: Tennessee Department of Health, 2017



Resilience

Fostering Resilience



https://www.youtube.com/watch?v=3Ytt7QQ9_4o&t=10s

Ensure Every Child's Relationships and Environments Are:

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



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

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

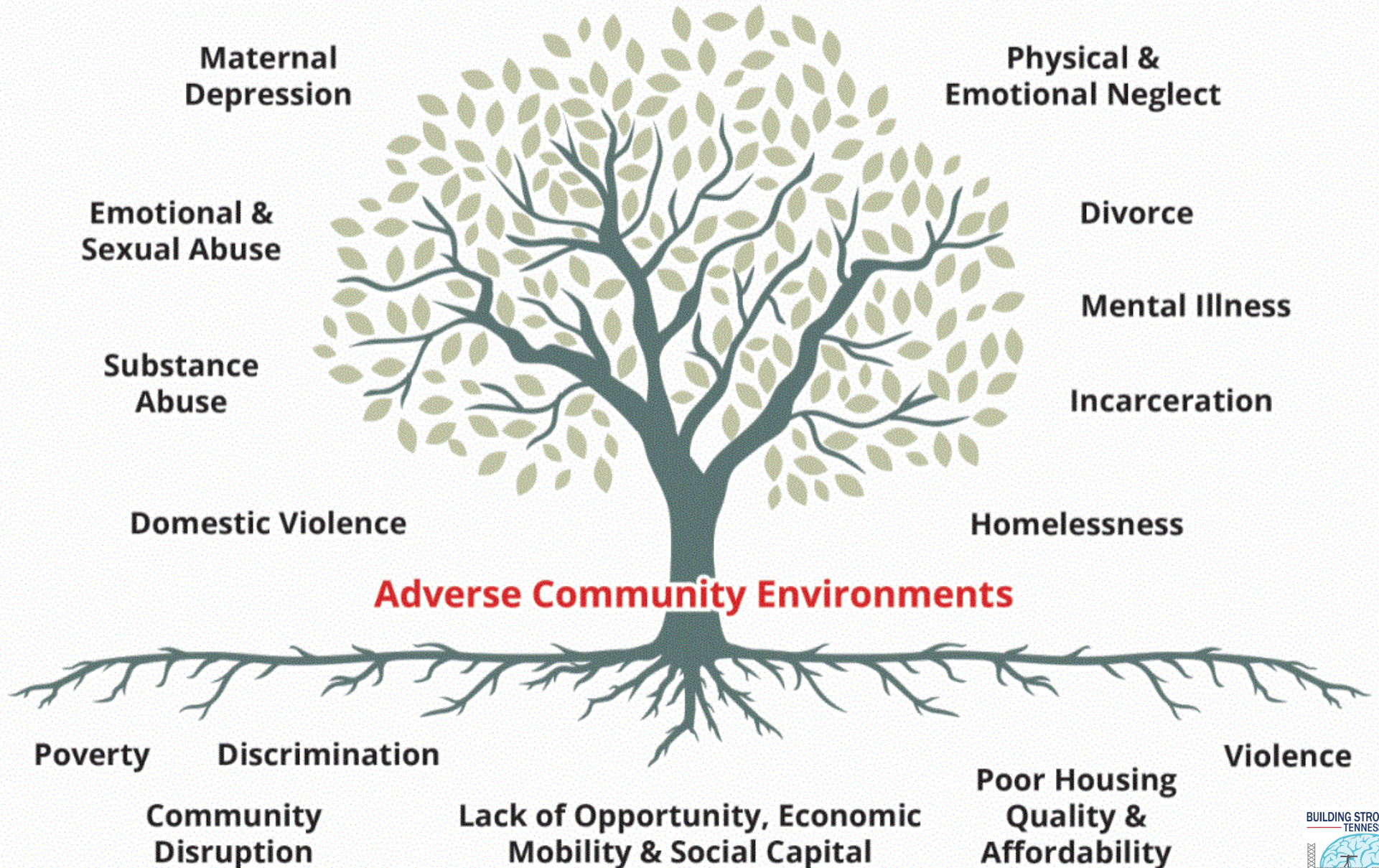


Executive Function and Self Regulation Skills can be built at any point across the lifespan.

Source: Cameron, n.d.

The Pair of ACEs

Adverse Childhood Experiences



Source: Ellis W. & Dietz W., 2017

The New Norm: Shifting the Conversation...

What is wrong with you?

TO

What has happened to you?

Further Information



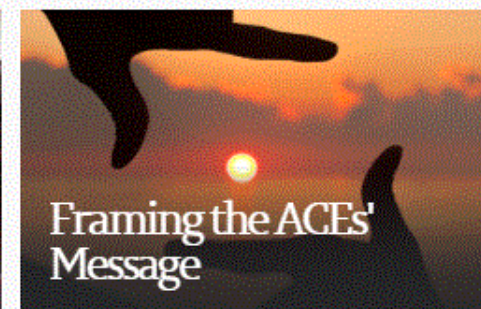
Tennessee
**Commission on
Children and Youth**

Go to TN.gov

Search Commission on Children and Youth



Home About Us Programs Advocacy & Policy Data & Research Publications Grant Funding Ombudsman Adverse Childhood Experiences



Tennessee Commission on Children and Youth Website

<https://www.tn.gov/tccy/topic/tccy-aces>

