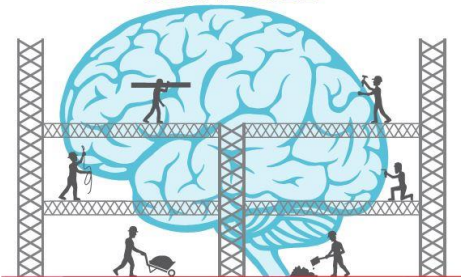




*"Saving Lives in Tennessee"*

# ACEs, Suicide Risk, and Resiliency

**BUILDING STRONG BRAINS**  
TENNESSEE



**Mary Anne Christian, Ed.S.**  
South Central Regional Director  
Tennessee Suicide Prevention Network



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# Expectations



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- Suicide Data & Risk Factors
- Adverse Childhood Experiences
  - ACEs & Suicide Risk
- Protective Factors & Resilience



# Facts About Suicide



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- **47,646** people died by suicide in 2021 in the United States.
- **1,219** reported suicide deaths in TN in 2021.
- In 2021, there were an estimated **1,191,000** suicide attempts nationwide.







# Facts About Suicide



*"Saving Lives in Tennessee"*

- Suicide was the 11<sup>th</sup> leading cause of death for all age groups in the US (2021).
- Suicide was the 2nd leading cause of death in the US of ages 10-34.
- On average, there are **132** suicides per day - someone dies by suicide approximately every **10.9** minutes.
- Cost of suicide in US yearly = \$69 billion medical and lost wages



# What is a Risk Factor?

- History of depression and other mental illnesses
- Hopelessness
- Substance abuse
- Certain health conditions
- Previous suicide attempt
- Violence victimization and perpetration
- Genetic and biological determinants
- High conflict or violent relationships
- Sense of isolation and lack of social support
- Family/loved one's history of suicide
- Financial and work stress
- Inadequate community connectedness
- Barriers to health care
- Availability of lethal means
- Unsafe media portrayals of suicide
- Stigma associated with help seeking and mental illness

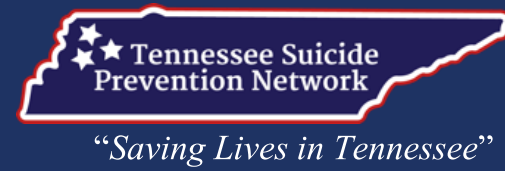
**Reduce risk factors and you  
reduce risk.**







# Some Communities at Higher Risk



- Veterans & Active Military
- LGBTQ+
- Farmers
- First responders
- Suicide loss survivors
- History of mental illness and/or addiction
- Construction workers
- Middle aged men
- Youth involved in the child welfare and/or juvenile justice system
- Domestic violence survivors
- Black youth
- Doctors and nurses



# Risk Factors



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## Adverse Childhood Experiences (ACEs)

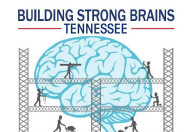


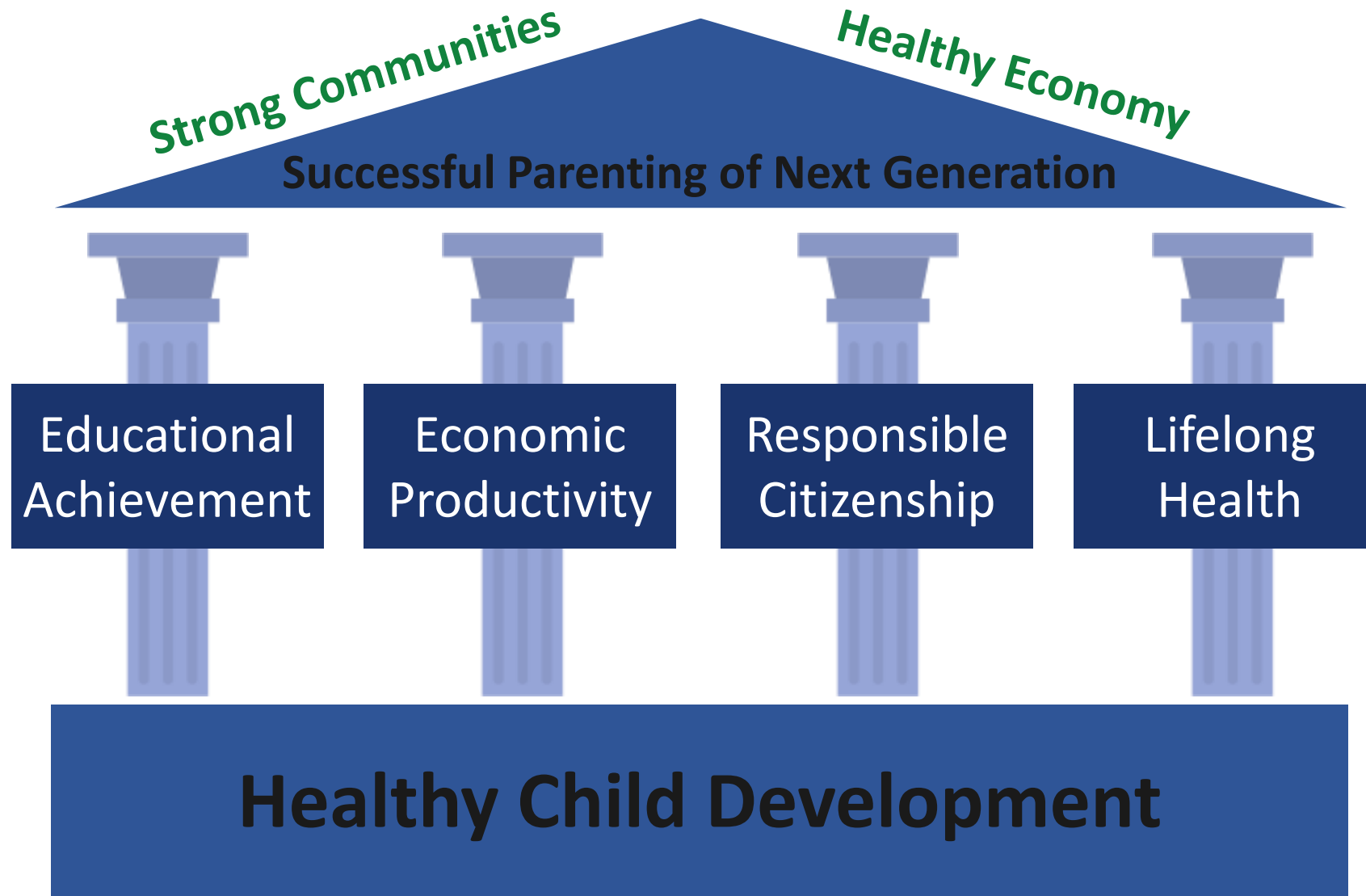
# Building Strong Brains Tennessee

## Mission

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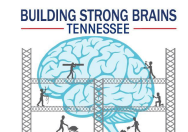
We work to change the culture of Tennessee so that the state's overarching philosophy, policies, programs and practices for children, youth and young adults utilize the latest brain science to prevent and mitigate the impact of adverse childhood experiences.





# 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.



Three Core Concepts in Early Development

# 1 Experiences Build Brain Architecture

NATIONAL SCIENTIFIC COUNCIL ON THE DEVELOPING CHILD

Center on the Developing Child  HARVARD UNIVERSITY

# 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.



# Brain Architecture

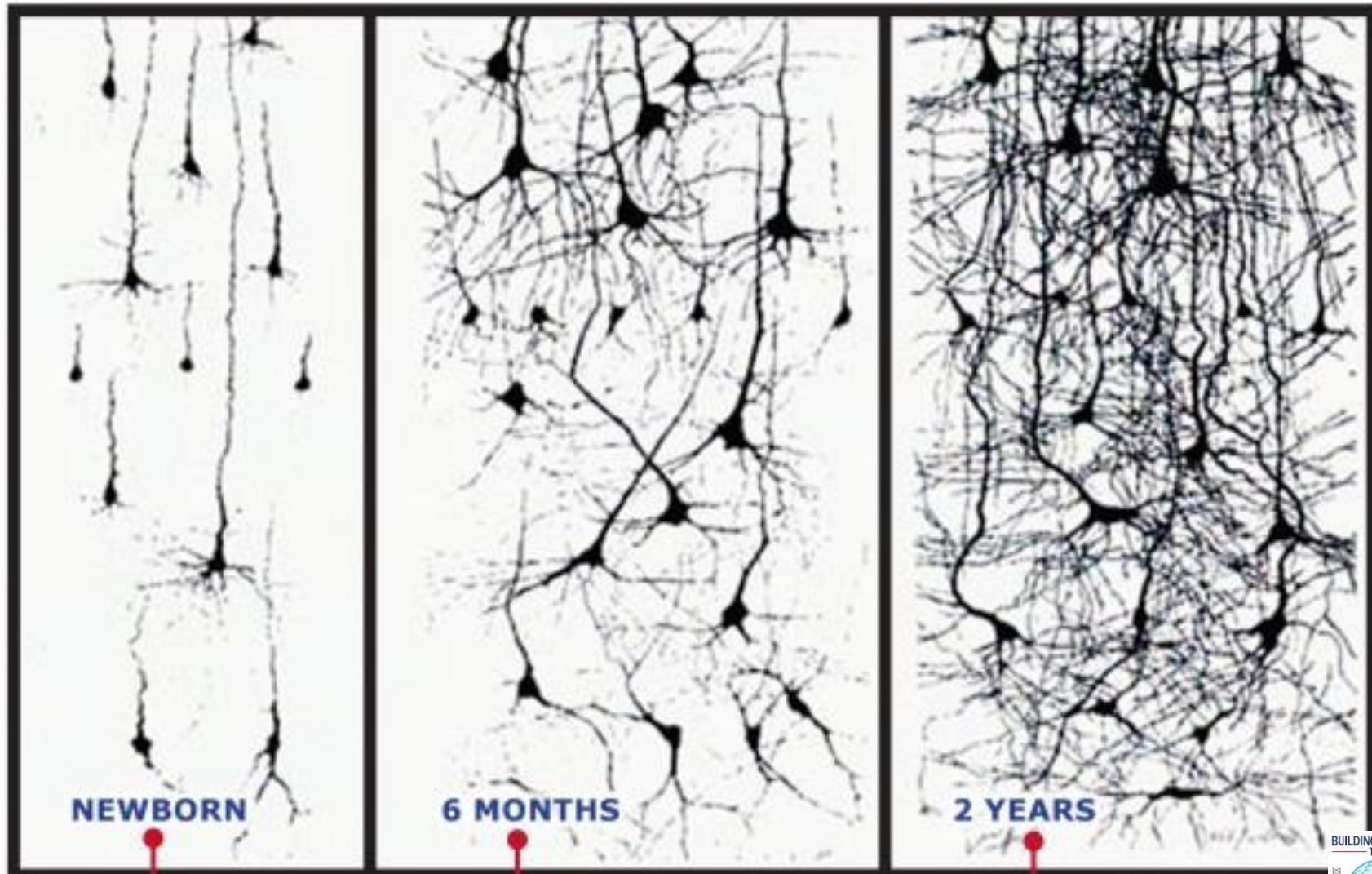


The early years of life matter because early experiences affect the architecture of the maturing brain. As it emerges, the quality of that architecture establishes either a sturdy or a fragile foundation for all of the development and behavior that follows. Getting things right the first time is easier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



Three Core Concepts in Early Development

# 2 Serve & Return Interaction Shapes Brain Circuitry

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Center on the Developing Child  HARVARD UNIVERSITY



## 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.



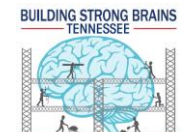
# Adolescent Brain Development: A Period of Vulnerabilities and Opportunities



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.



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

## 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

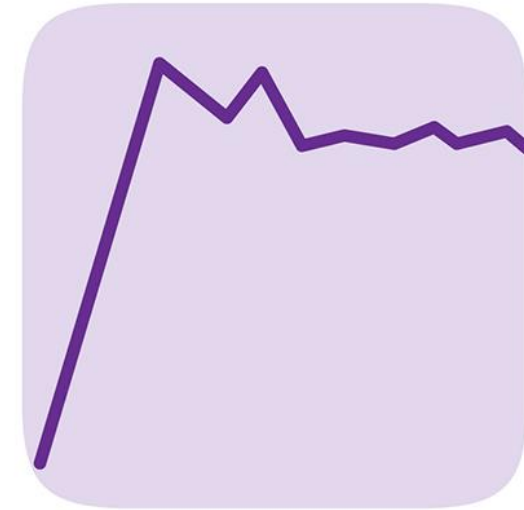


Response to a more severe stressor, limited in duration

### EXAMPLES

*loss of a loved one,  
a broken bone*

## TOXIC

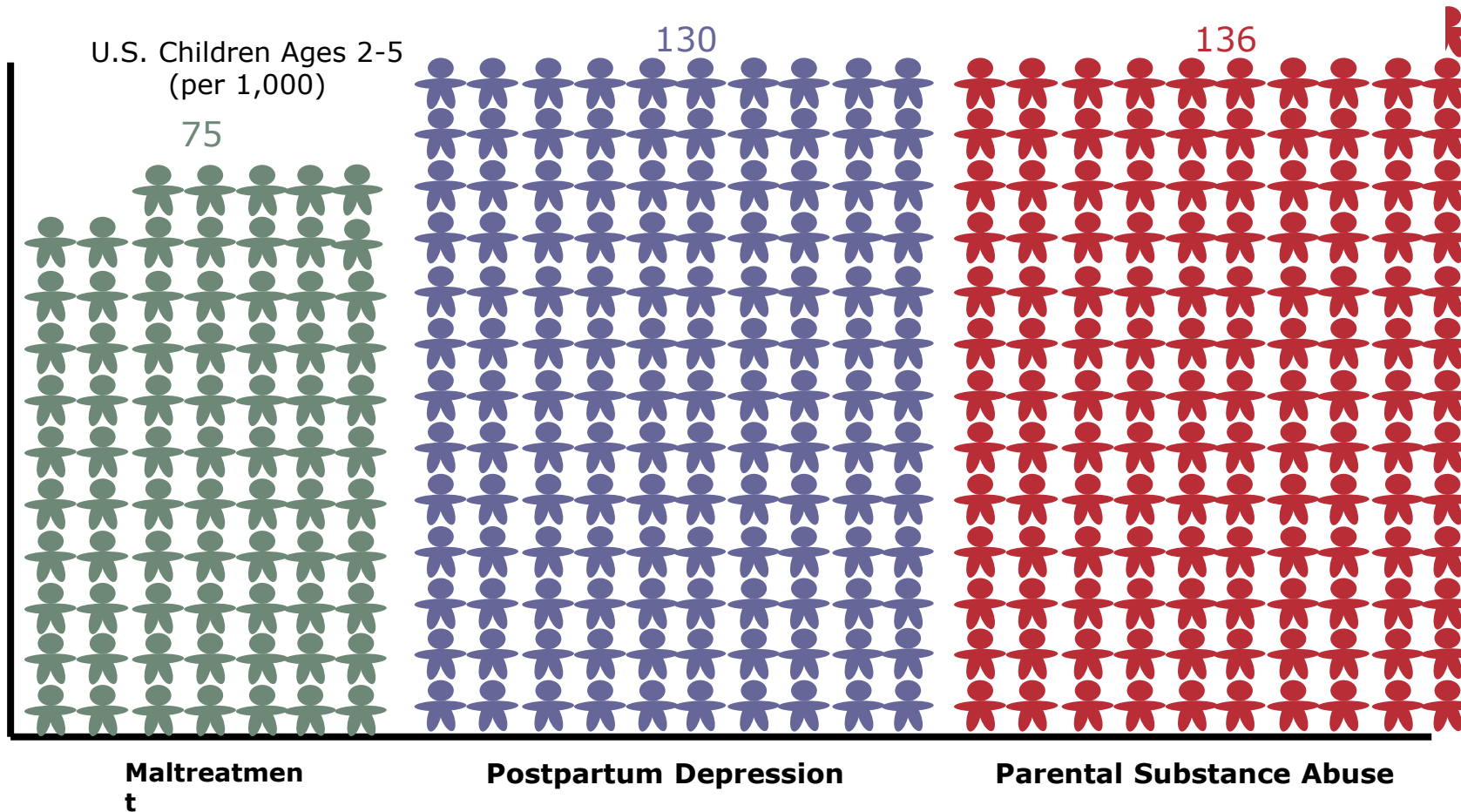


Experiencing strong, frequent, and/or prolonged adversity

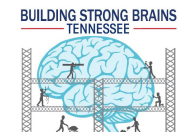
### EXAMPLES

*physical or emotional abuse,  
exposure to violence*

# Common Sources of Toxic Stress



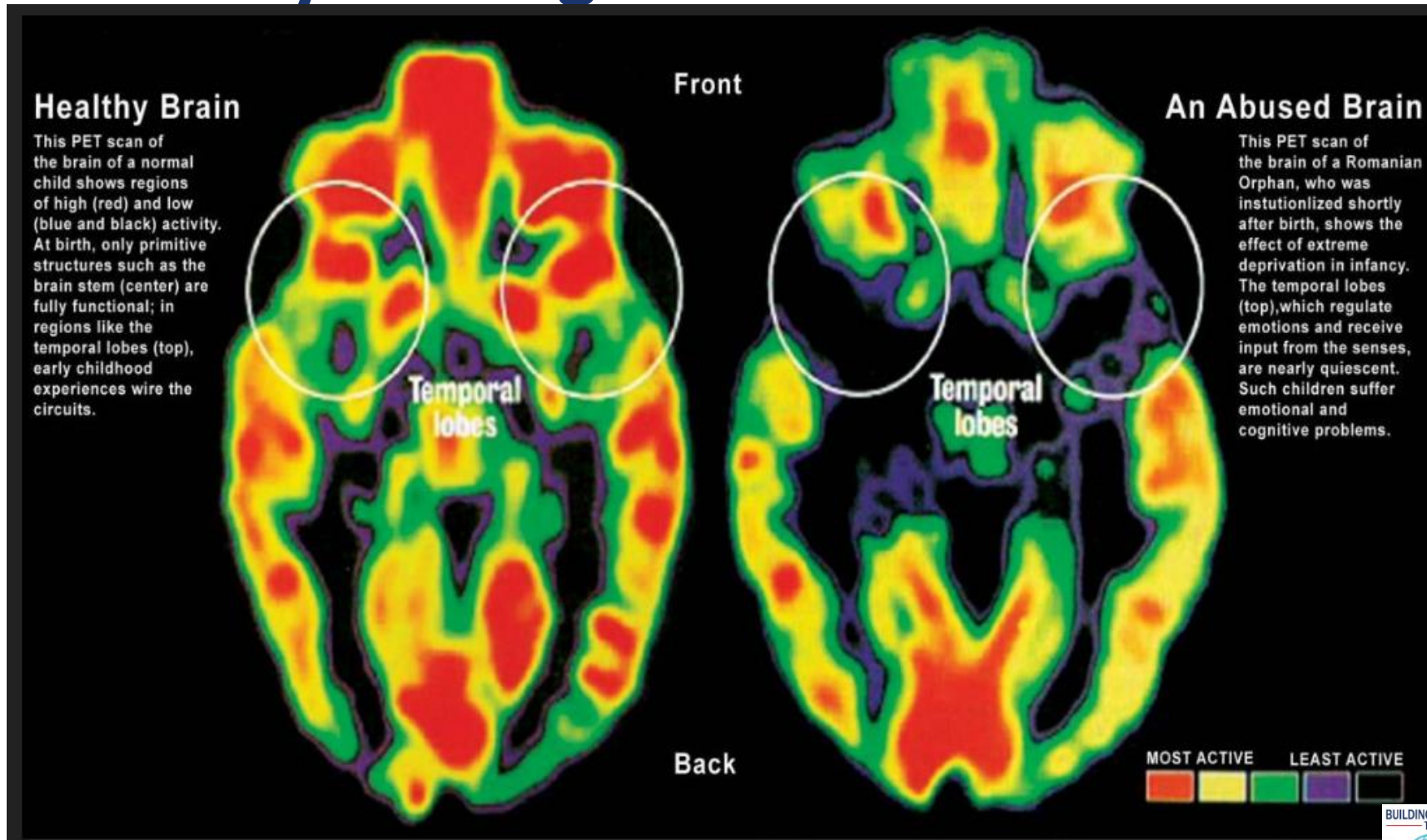
Source: Center on the Developing Child at Harvard University, 2007





# Experience Alters Brain Development

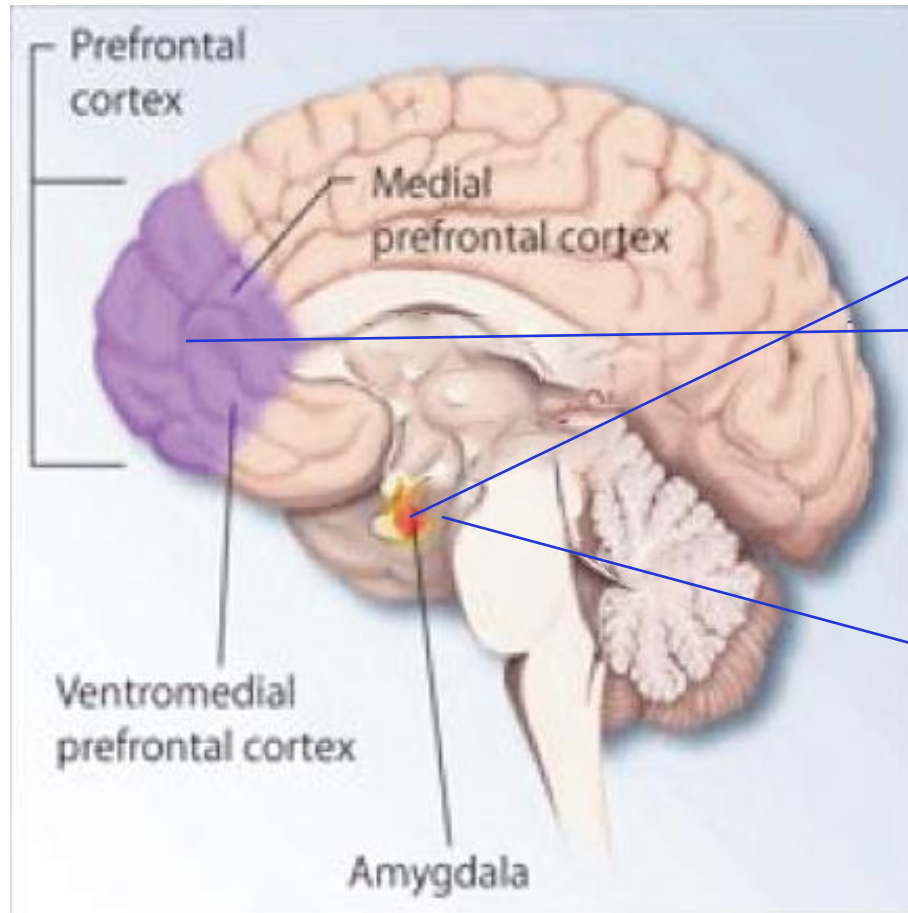
## Healthy vs. Neglected Brain



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



# Toxic Stress Alters Brain Development



## **Amygdala:**

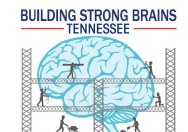
Activates the stress response.  
Toxic Stress: Enlargement

## **Prefrontal Cortex:**

Usually a check to the amygdala.  
Toxic Stress: Loss of neurons, less able to function.

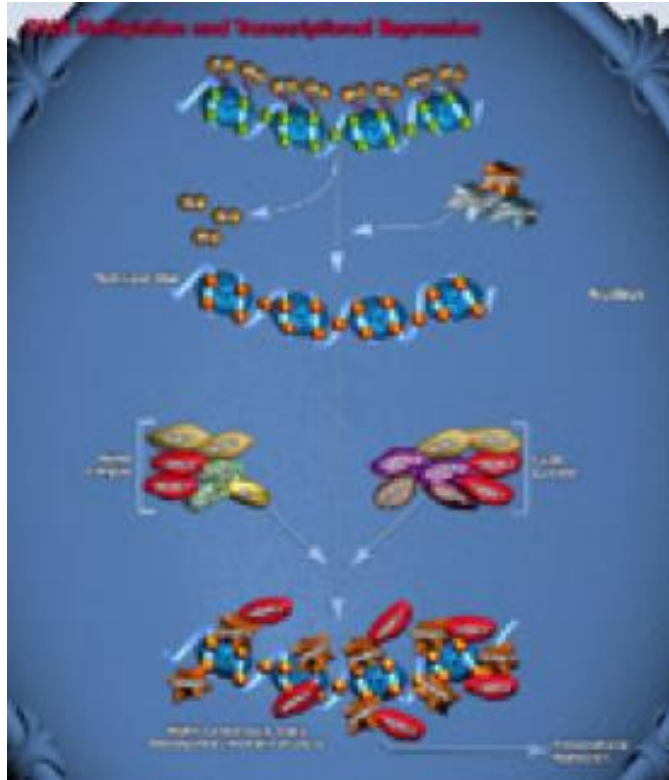
## **Hippocampus:**

Major role in memory and mood.  
Toxic Stress: Impairment in understanding and emotion.



# Toxic Stress Changes Gene Expression

## *Epigenetics*



Intergenerational  
Transmission of Stress  
Response in Male Mice

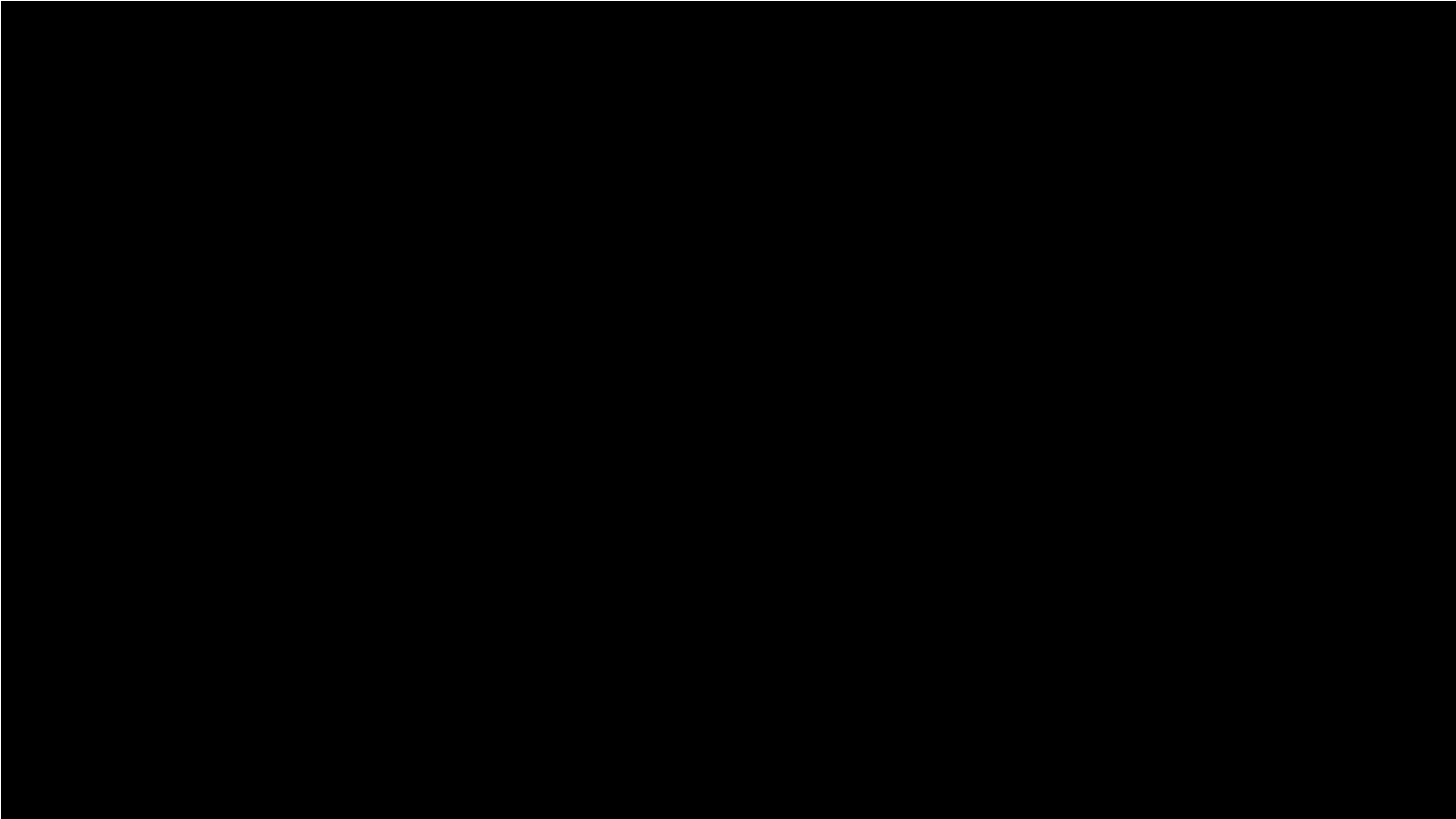


# An “Air Traffic Control System” in the Brain

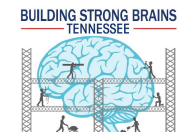


- Executive functioning is a group of skills that help us to focus on multiple streams of information at the same time, set goals and make plans, make decisions in light of available information, revise plans and resist hasty actions.
- Executive functioning is a key biological foundation of school readiness,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



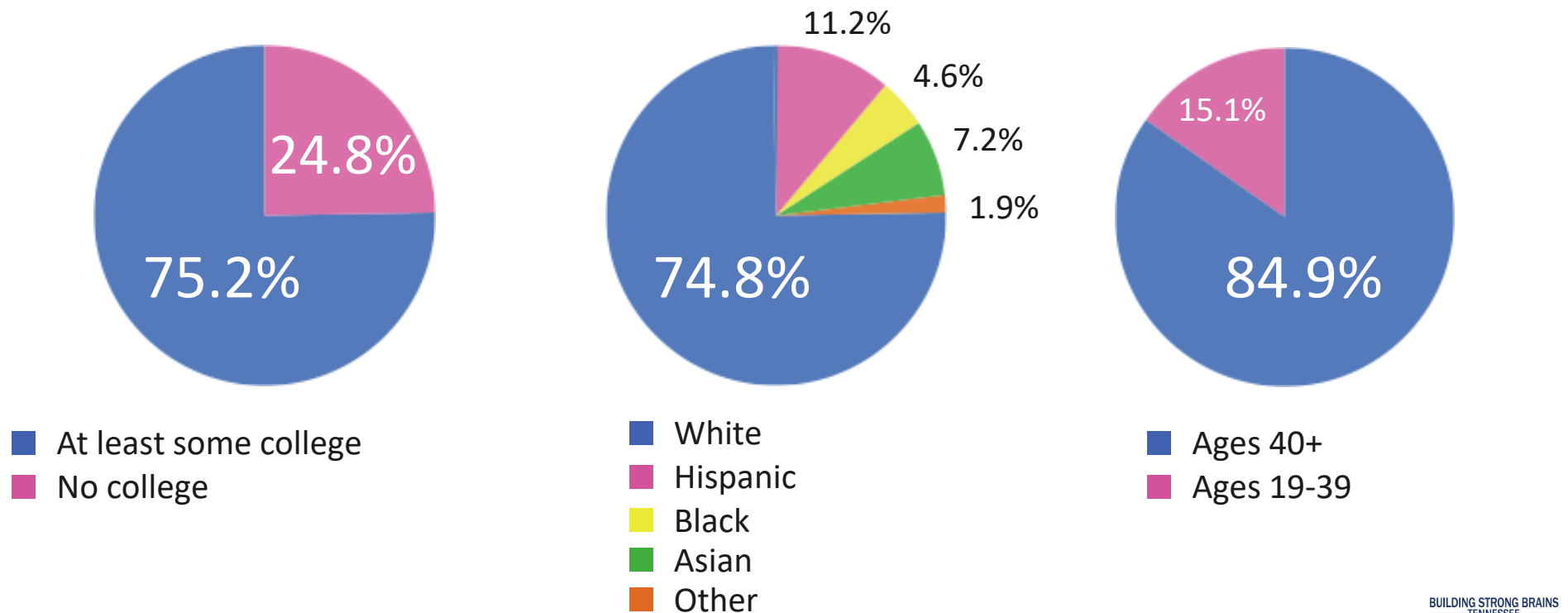
<https://www.youtube.com/watch?v=LmVWOe1ky8s>



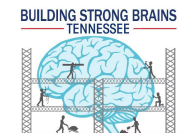


# ACE Study Demographics

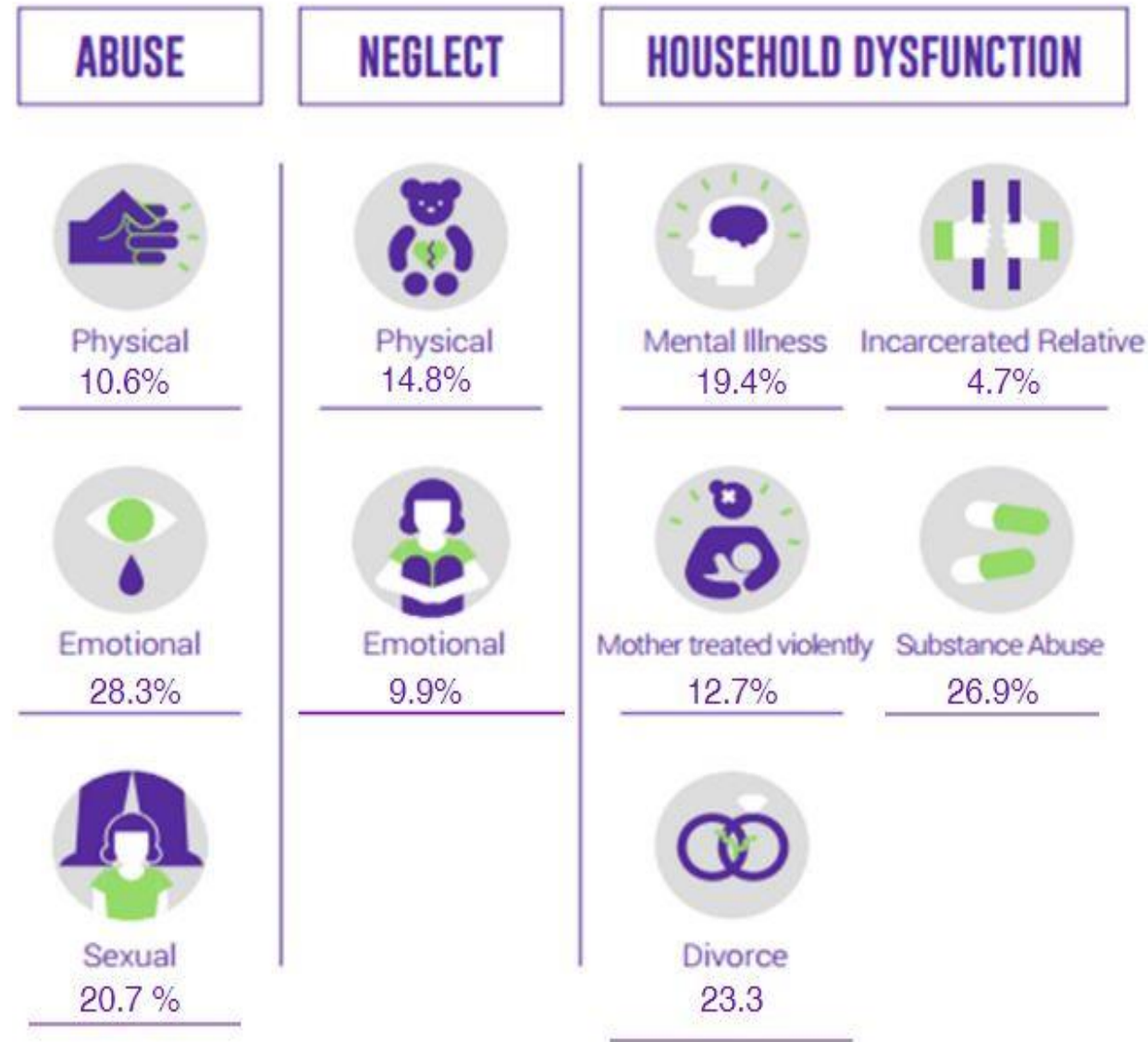
Participants were mostly white, middle-aged, college educated and insured. They didn't face many of life's challenges such as poverty or racism.



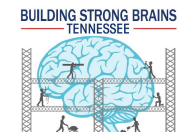
Source: Centers for Disease Control and Prevention, 2016



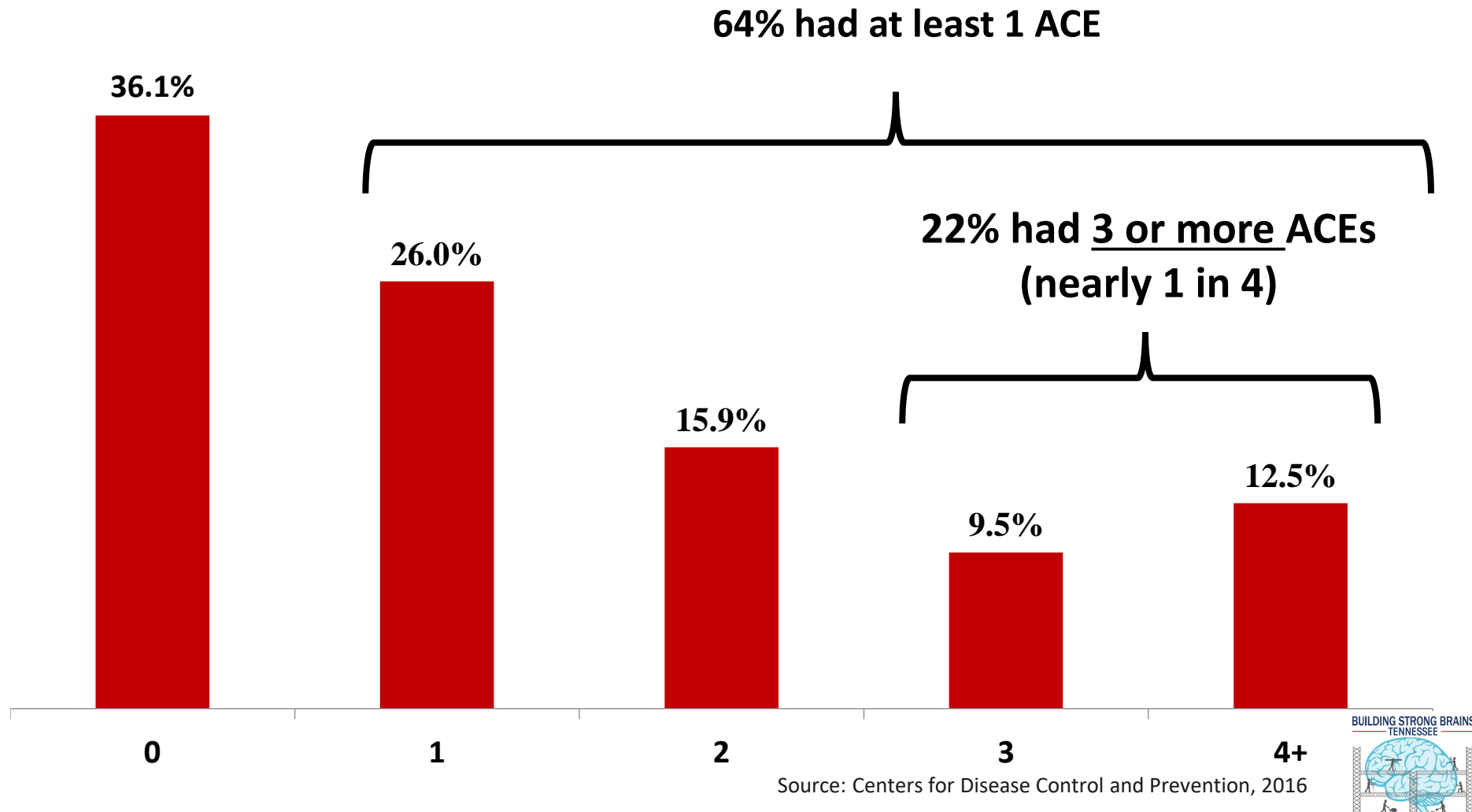
# Adverse Childhood Experiences



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



# Number of ACEs Experienced Before Age 18 by Adults in CDC-Kaiser ACE Study 1997



# ACEs Can Have Lasting Effects On...



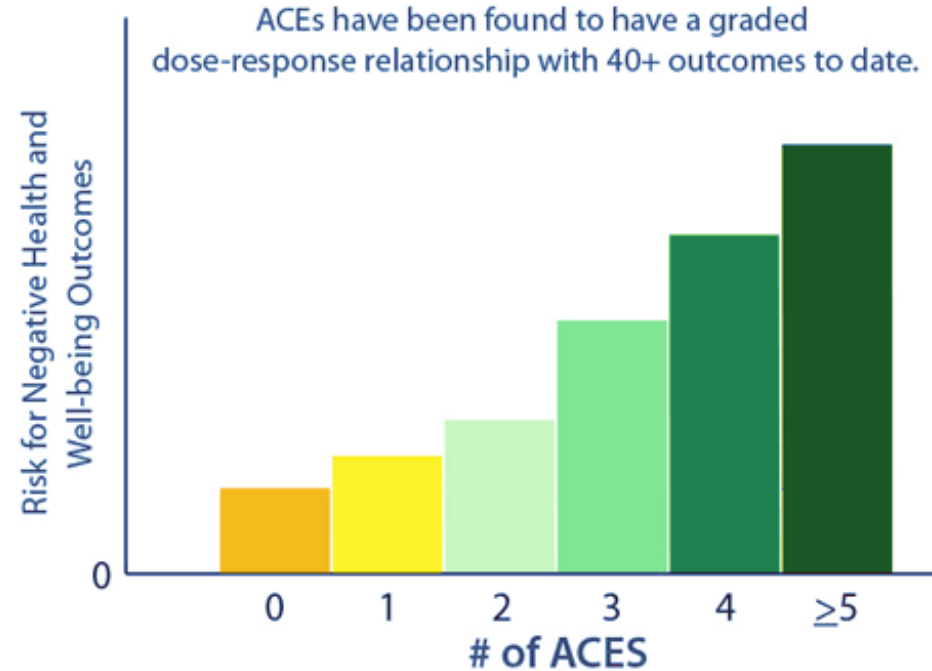
Health (obesity, diabetes, depression, suicide attempts, STDs, heart disease, cancer, stroke, COPD, broken bones)



Behaviors (smoking, alcoholism, drug use)



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

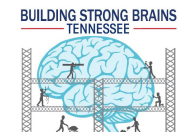


\*This pattern holds for the 40+ outcomes, but the exact risk values vary depending on the outcome.

# Adverse Childhood Experiences



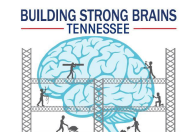
<https://www.youtube.com/watch?v=ccKFkcfXx-c>



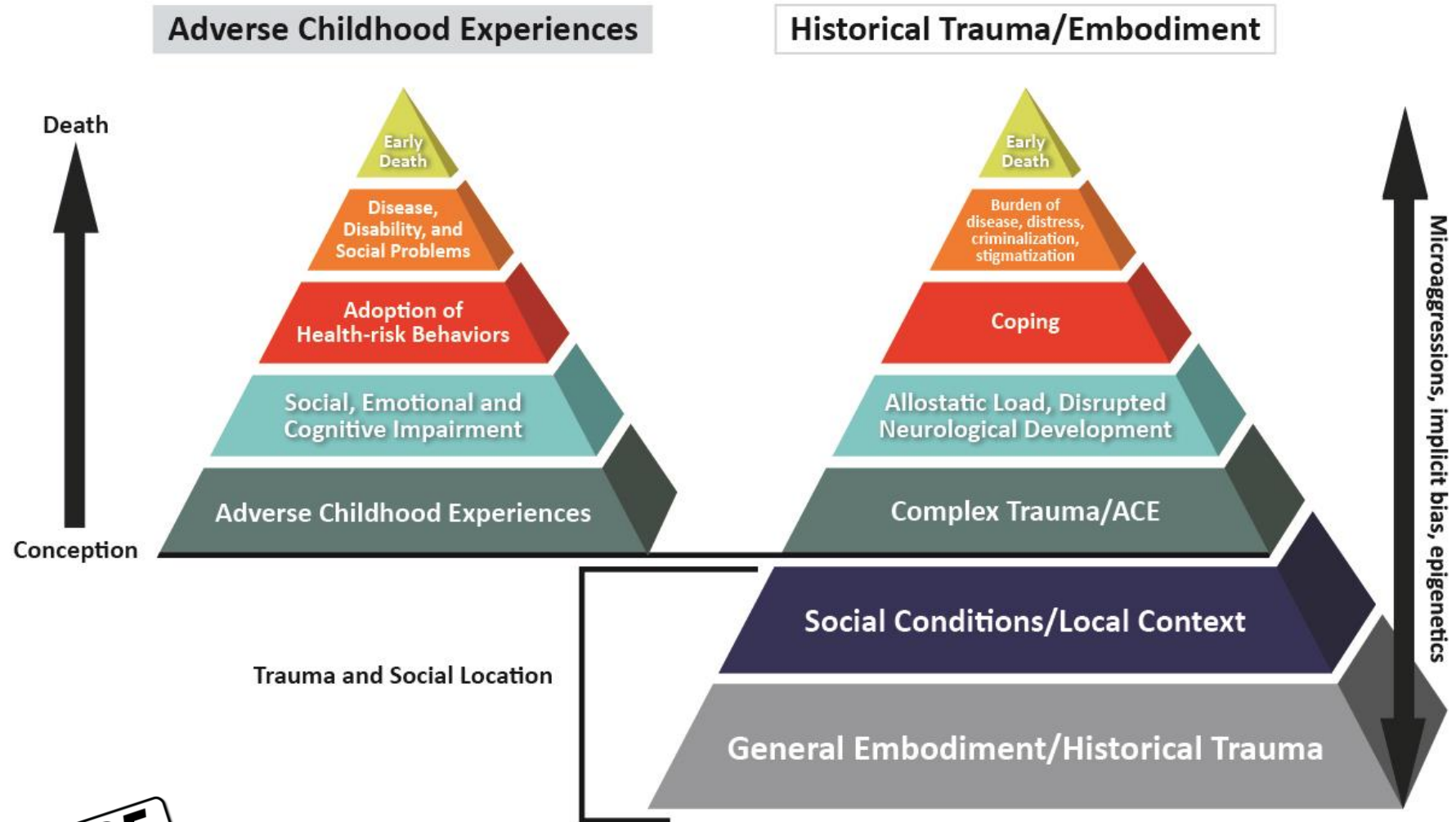
# New Additions to the ACEs Questionnaire

## *The Philadelphia ACE Study Questions*

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

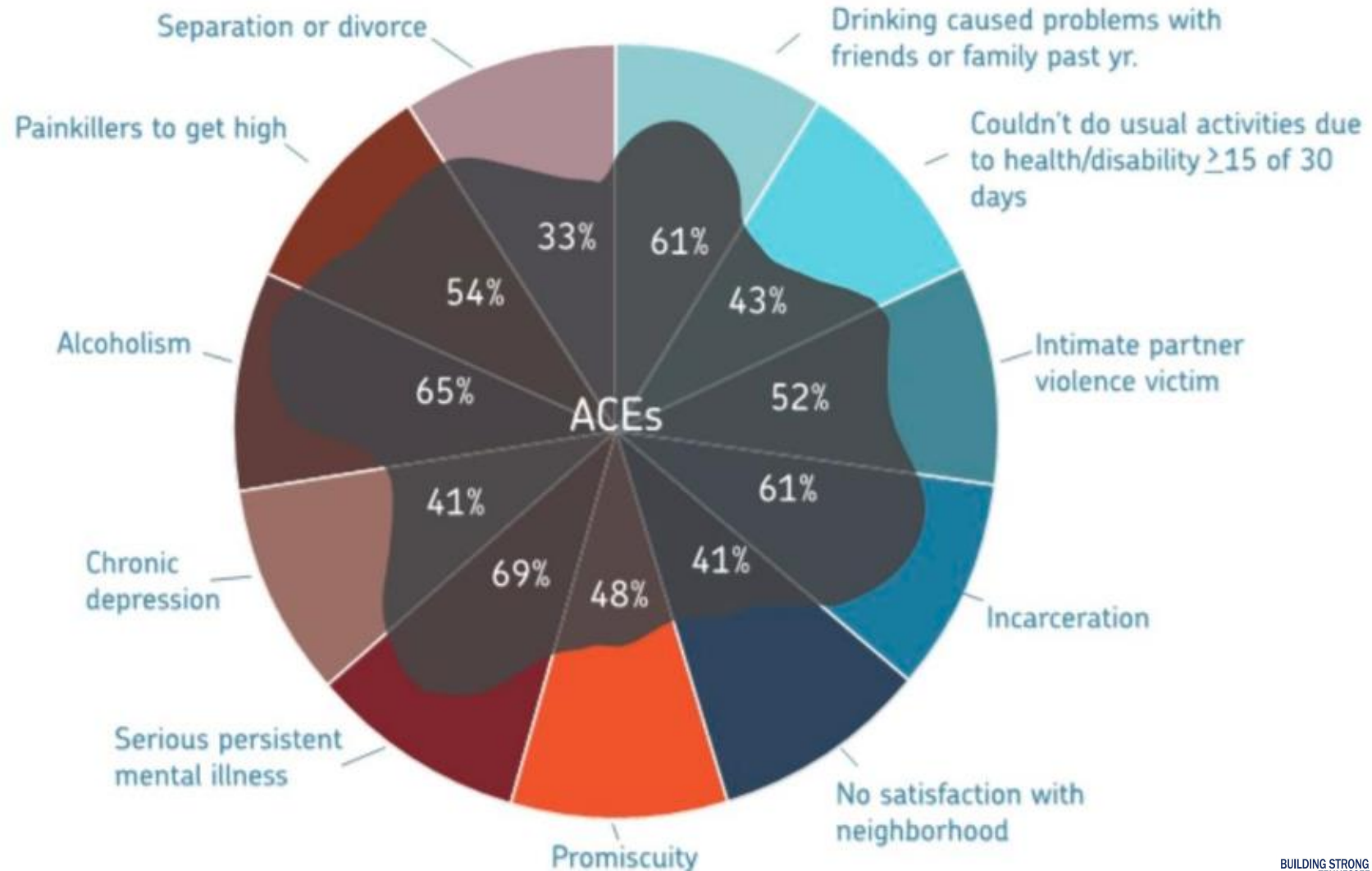


# Trauma and Social Location



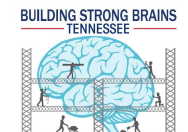


# ACEs Compromise Community Prosperity



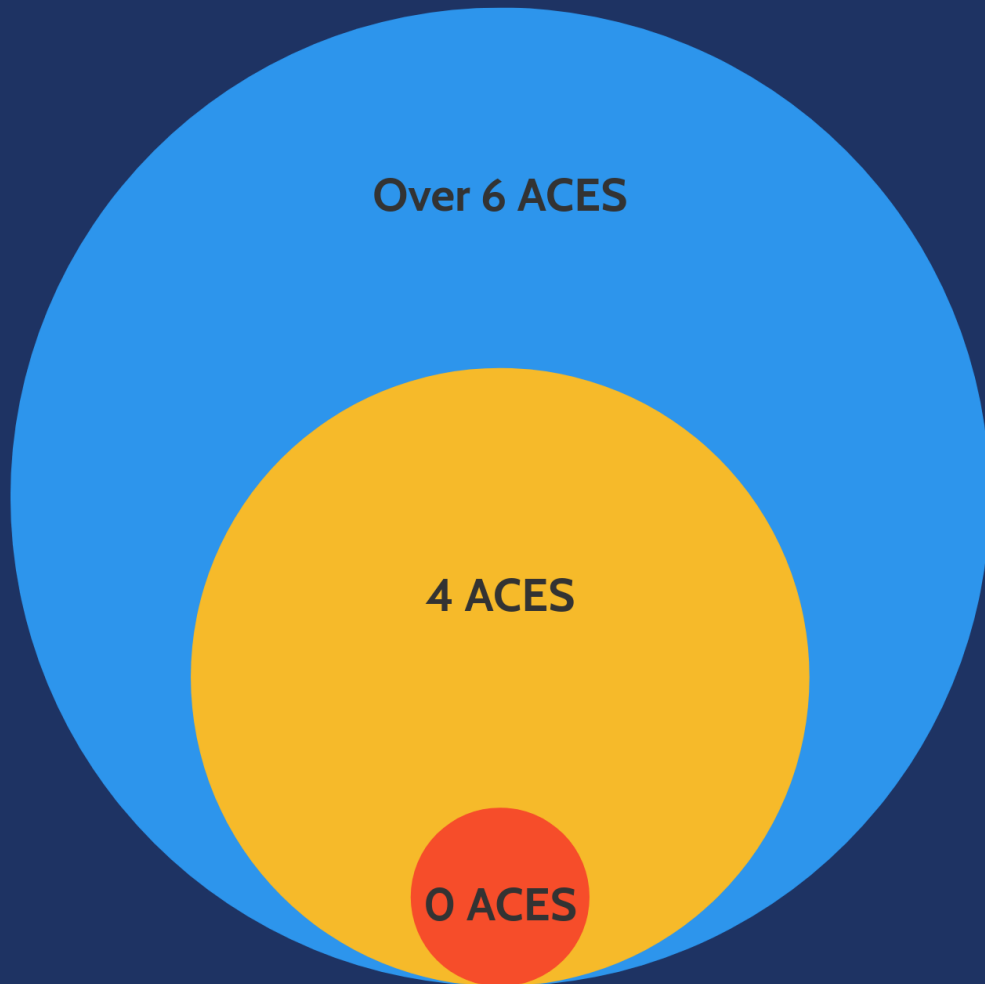
\*based on an ACE score of 4+

Source: Perkins, 2016





# Suicide and the KP Study



- An ACE score of 4 was associated with a 1,200% increase in attempted suicide.
- An ACE score above 6 was associated with a 3,000 percent increase in attempted suicide.



# Suicide and ACEs

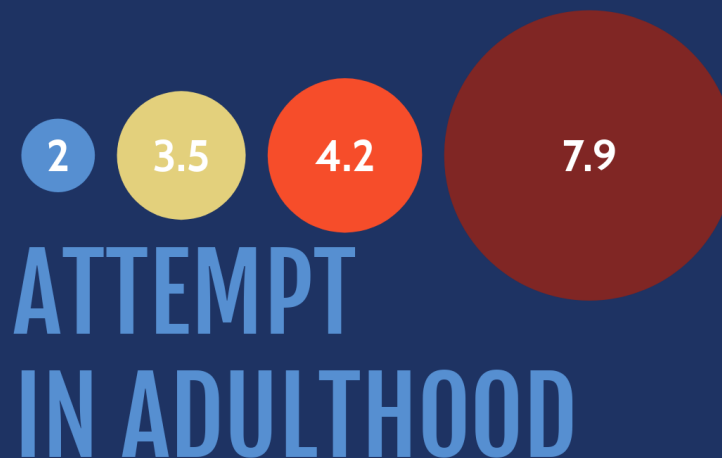


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Information from  
a few studies  
about suicide and  
ACEs



0 ACES - 2%  
1 ACE - 3.5%  
2 ACEs - 4.2%  
3+ ACEs - 7.9%



1. Sexual abuse
2. Emotional abuse
3. Physical abuse
4. Parental incarceration
5. Family history of suicide

## IDEATION

- 
1. Sexual abuse
  2. Emotional abuse
  3. Family history of suicide
  4. Physical abuse
  5. Parental incarceration

## ATTEMPT

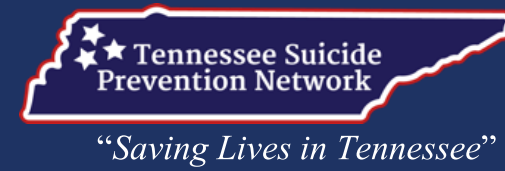


The odds of making a suicide attempt in adulthood increased 2-3x among those who had experienced sexual, physical, or emotional abuse

## ABUSE



Choi, N. G., Dinitto, D. M., Marti, C. N., & Segal, S. P. (2017)



- Men who had experienced four or more ACEs and women who had experienced two or more ACEs had significantly increased risk of attempting suicide at least once, compared to members of each sex with no ACEs.
- Men and women who reported having a parent or relative with mental illness were more likely to have attempted suicide than those who did not.
- Men who had experienced childhood emotional neglect were more likely to have attempted suicide than those who had not.
- Men and women who had experienced childhood sexual abuse were more likely to have attempted suicide multiple times compared to those who had not.



# Suicide and ACEs



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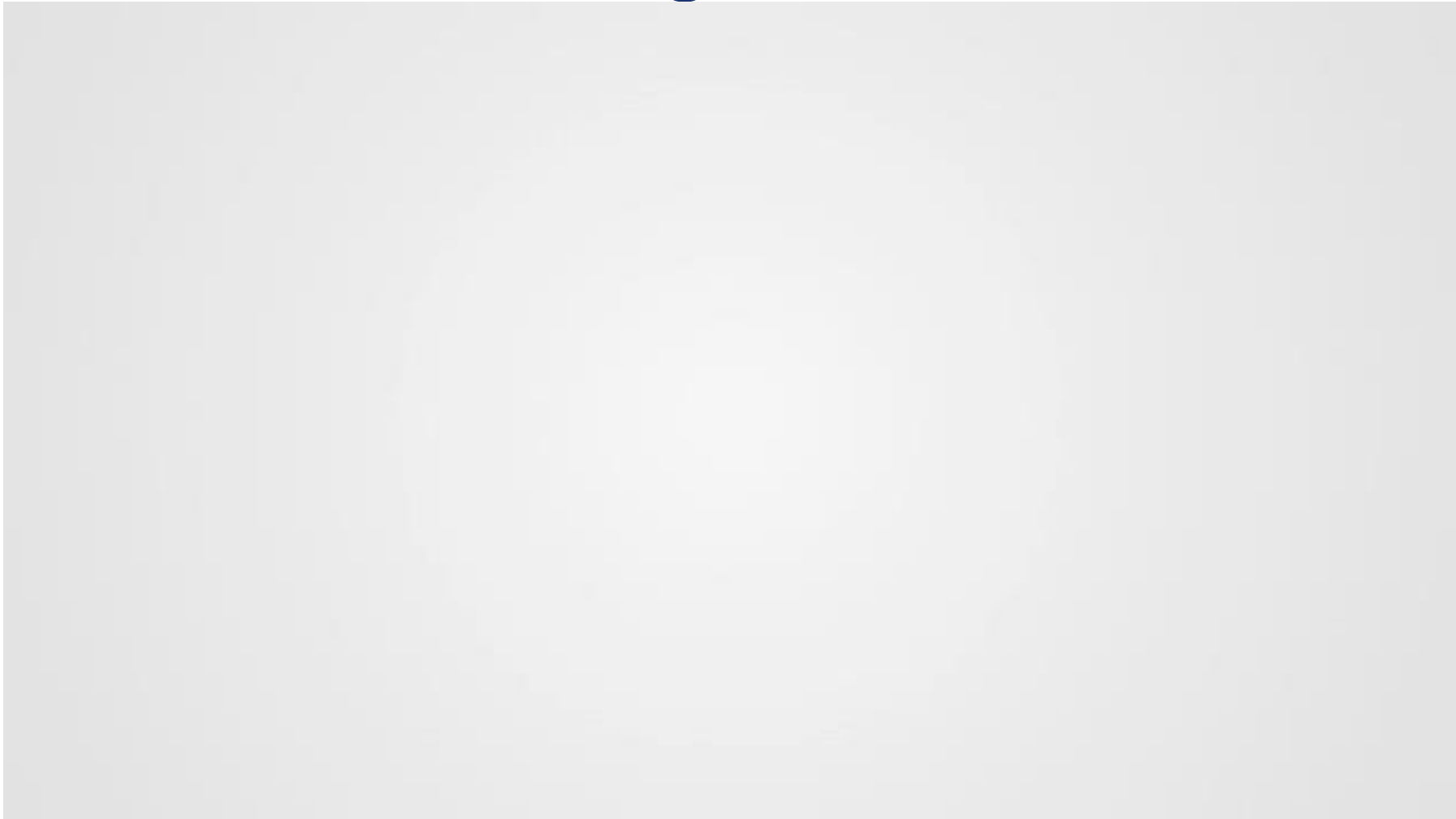
- Although this research shows there is a correlation between experiencing ACEs and suicide attempt, that this is not saying that ACEs are the direct cause of suicide
- Suicide is a complex issue
- This highlights the importance of working to reduce ACEs in hopes of reducing many issues later in life, including the risk of suicidal thoughts and behaviors



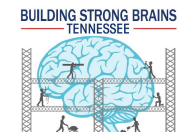


# Resilience

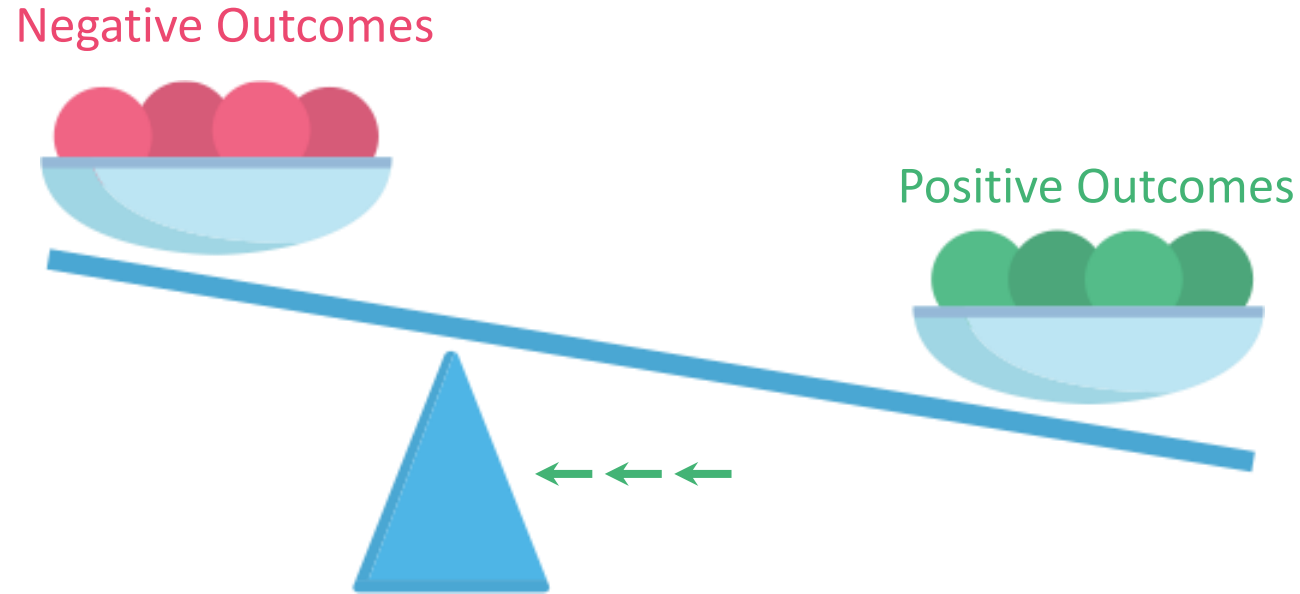
# Fostering Resilience



<https://vimeo.com/106322359>



# 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.

# Why is Individual Resilience so Important?

- ▶ Because it is rare for individuals never to be confronted with adversity or challenging circumstances during the course of their lifetime.
- ▶ People who are resilient tend to be able to harness their inner strengths and resources to rebound quickly and more fully from setbacks

# How Can We Develop Individual Resilience?

- It's possible that some people may be more biologically predisposed toward being resilient; but psychological and environmental factors can contribute to its development.
- Although resilience shouldn't be looked at as a "pull yourself up by your bootstraps" thing, there *are things* we can do on an individual level to help foster resilience within us- to help us "bounce forward"



# Improving Air Traffic Control Helps with Stress Management Across the Lifespan

Focusing Attention

Problem Solving

Planning Ahead

Behavior Regulation

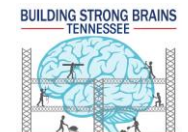
Controlling Impulses

Adjusting to New Circumstances



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

Source: Cameron, n.d.



# 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

# Symptom Reduction and Adaptation Strategies

53

- good nutrition
- regular exercise
- enough sleep
- relaxation and imaging skills
- positive affirmation
- self-help groups
- therapy
- deep breathing
- meditation/yoga/prayer
- change/ vacation
- mindfulness
- time management
- goal setting
- social support network, inter-dependence
- assertiveness skills
- negotiation skills
- Problem-solving directly rather than avoidance

# Symptom Reduction and Adaptation Strategies, cont'd

- Reframe the problem - turn what we face into challenge or opportunity.
- Try to see another perspective
- Accept and adjust to the things that you cannot change, e.g. growing older, loss of physical health, loss of a relationship, a death in the family. Lack of acceptance of things that cannot be changed creates great distress, continued anxiety and inhibits resilience

# Symptom Reduction and Adaptation Strategies, cont'd

- GRATITUDE
- Journaling
- Connect

“Life doesn’t get easier or more forgiving, we get stronger and more resilient.”

— **Steve Maraboli, Life, the Truth, and Being Free**

“You may have to fight a battle more than once to win it.”

— **Margaret Thatcher**

“It’s your reaction to adversity, not adversity itself that determines how your life’s story will develop.”

— **Dieter F. Uchtdorf**

“Do not judge me by my success, judge me by how many times I fell down and got back up again.”

— **Nelson Mandela**

“I can be changed by what happens to me. But I refuse to be reduced by it.”

— **Maya Angelou**

“Rock bottom became the solid foundation in which I rebuilt my life.”

— **J.K. Rowling**



"Courage doesn't always roar. Sometimes courage is the quiet voice at the end of the day saying 'I will try again tomorrow'."

— **Mary Anne Radmacher**

"Resilience is knowing that you are the only one that has the power and the responsibility to pick yourself up."

— **Mary Holloway**

"She stood in the storm and when the wind did not blow her way, she adjusted her sails."

— **Elizabeth Edwards**

"Our greatest glory is not in never falling, but in rising every time we fall."

— **Confucius**

"A smooth sea never made a skilled sailor."

— **Franklin D. Roosevelt**

"Note to self: every time you were convinced you couldn't go on, you did."

— **Unknown**



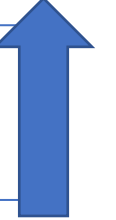
- Resilience needs to be looked at not just from an individual standpoint, but also looking at our systems – families, communities, etc.



# What are protective factors?

- Cultural, religious beliefs, or personal beliefs that discourage suicide
- Support through ongoing health and mental health care relationships
- **Coping/problem solving skills**
- Resiliency, self esteem, direction, mission, determination, perseverance, optimism, empathy
- Reasons for living
- Sense of social support
- **Connectedness** to family, pets, community, individuals, and social institutions
- **Access to effective mental health care** and support for help seeking
- Skills to recognize and respond to signs of risk

**Increase protective factors  
and you reduce risk.**

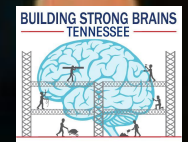




*"Saving Lives in Tennessee"*

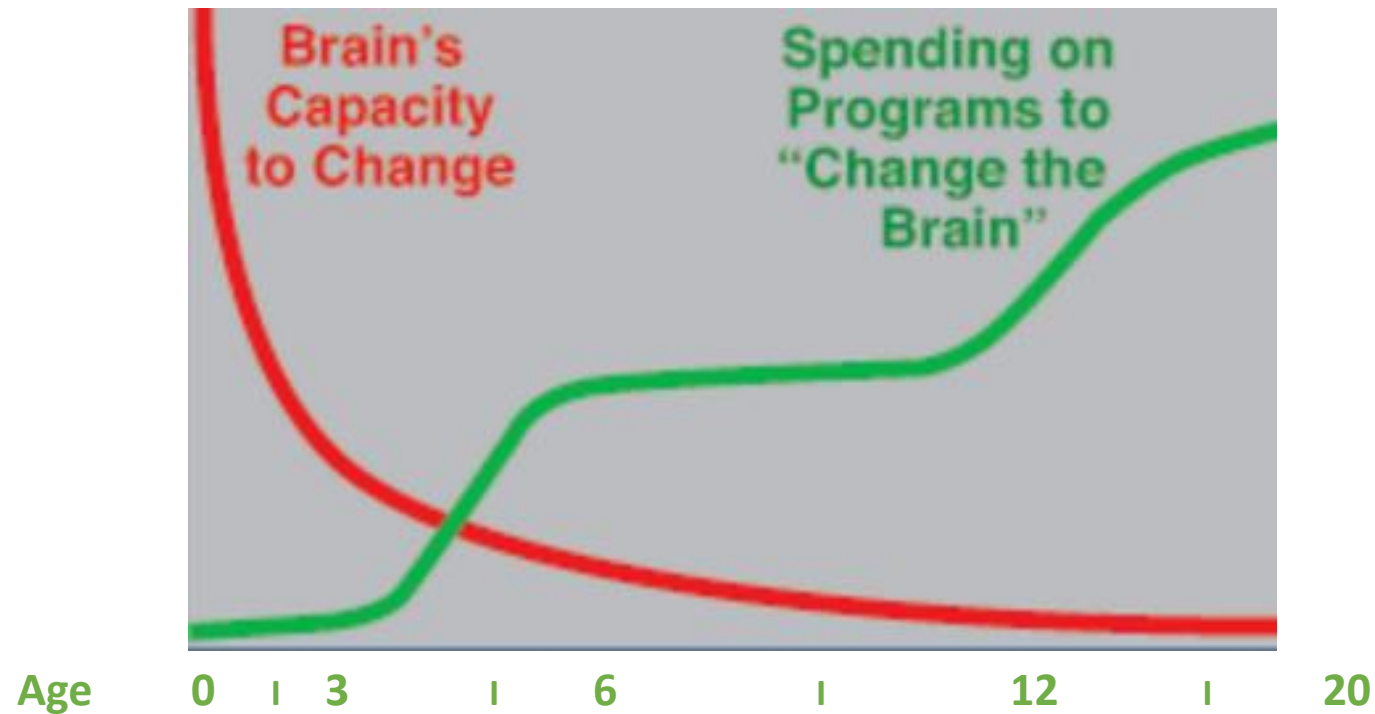
# Resiliency on Systemic Level

# Collective Ingenuity



# Move the Needle by Investing Early

Focus has to shift from remediation to prevention and not just “prevention,” but **primary prevention**

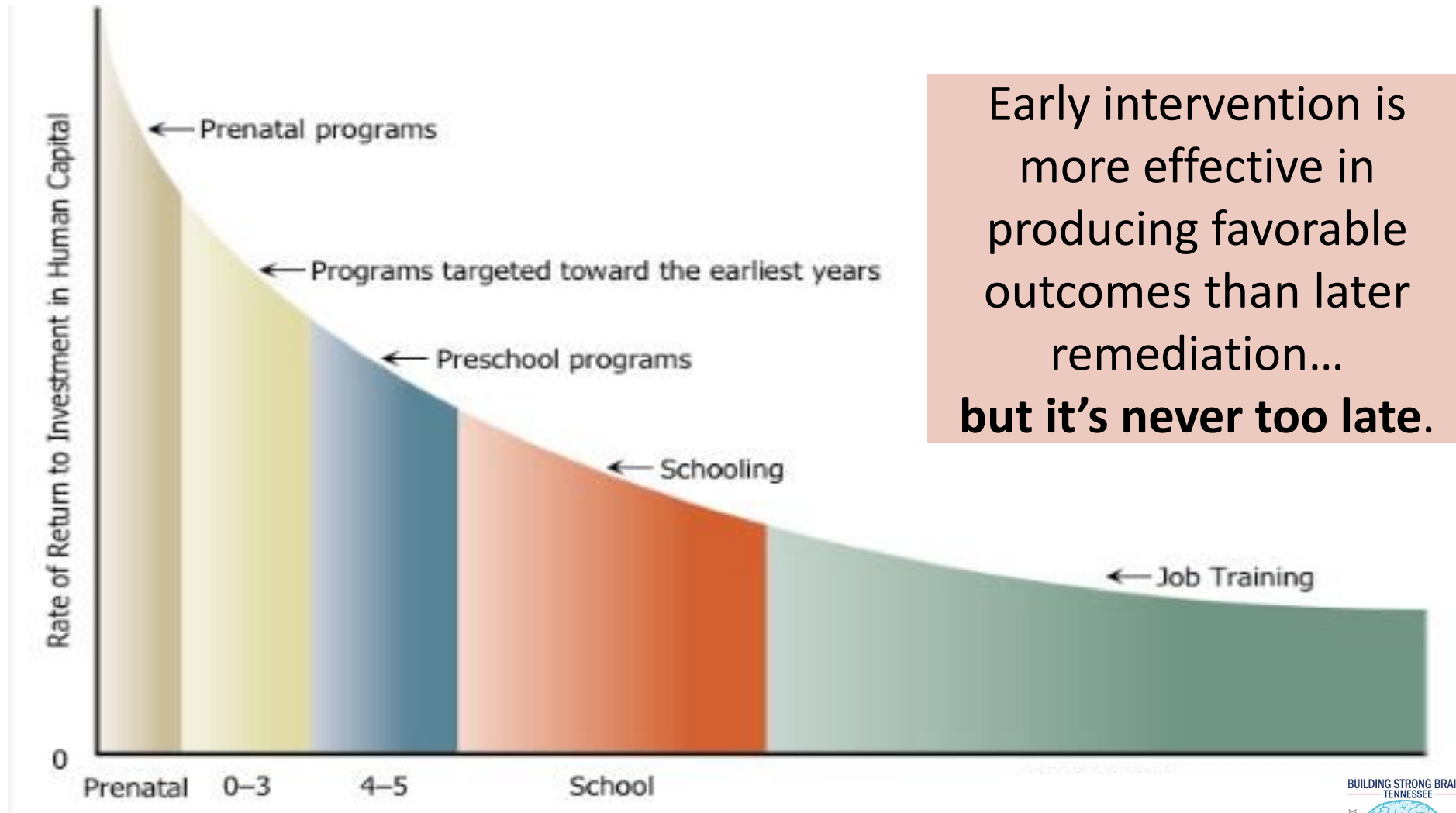


Source: Perry, 2004

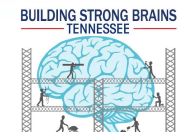




# The Biggest Returns Come From Early Investments

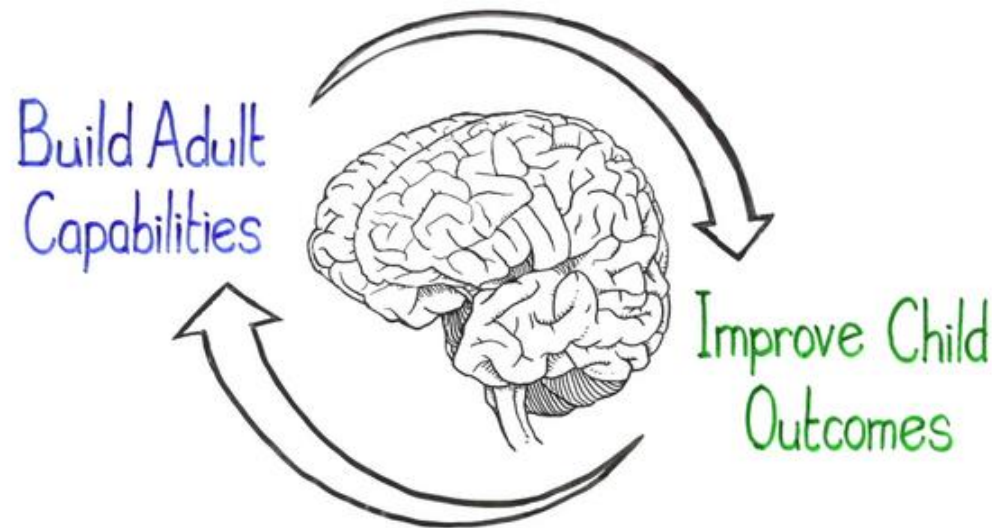


Source: Heckman, 2018



# 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)



# What CAN Be Done About ACEs Across the Lifespan?



**Adopt Trauma-Informed School  
Policies and Practices**



**Access to High-Quality,  
Affordable Childcare and Pre-K**



**Home Visiting to Pregnant  
Women and Families with  
Newborns**



**Business and Organization  
Policies that support working  
parents**



**Access to Integrated Healthcare**



**Parent Support Programs for  
Teens and Teen Pregnancy  
Prevention Programs**



**Infant and Early Childhood  
Mental Health Services and  
Supports**

# 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*

# The New Norm: Shifting the Conversation...

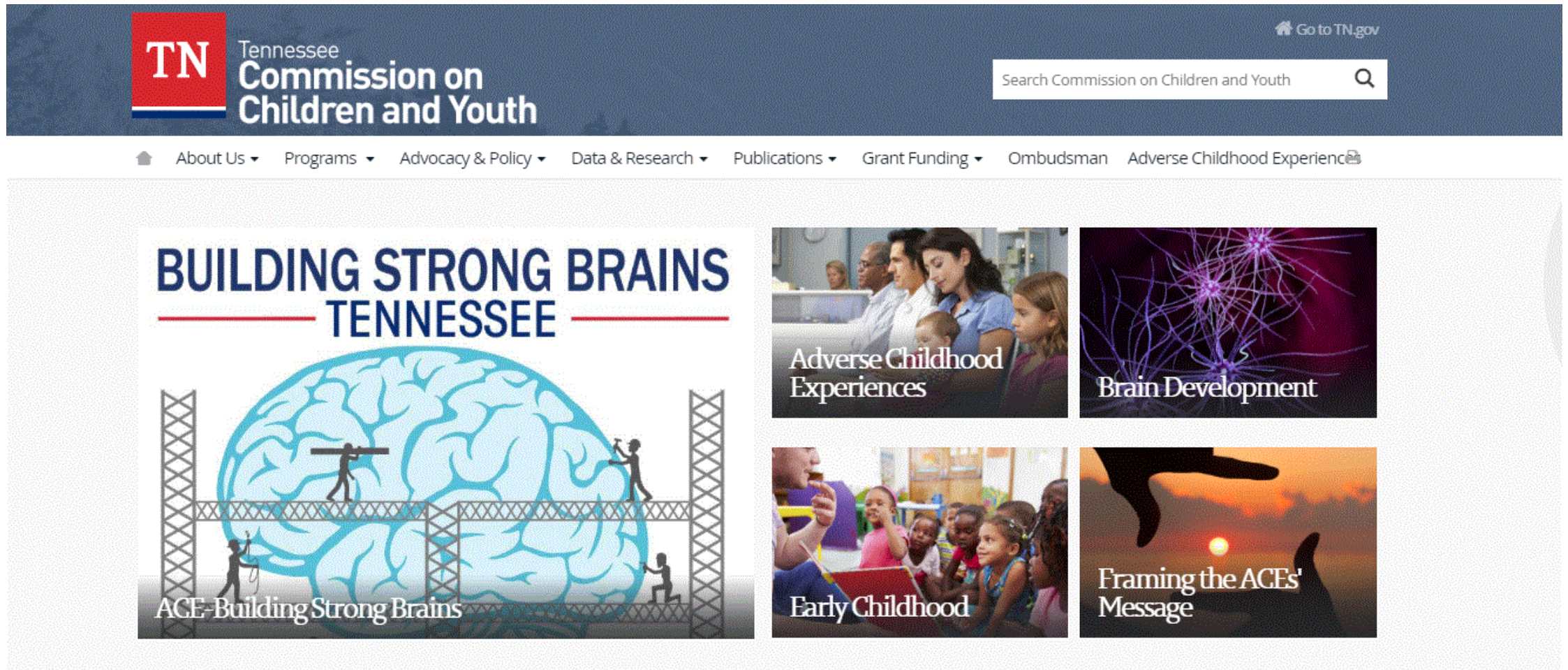
*What is wrong with you?*

**TO**

*What has happened to you?*

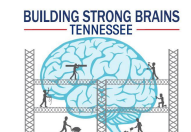


# Further Information



Tennessee Commission on Children and Youth Website

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







# Disclaimer



*"Saving Lives in Tennessee"*

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**CRISIS TEXT LINE |**

Text **TN** to 741741.

**STATEWIDE**

**CRISIS LINE**

HELP IN A MENTAL HEALTH CRISIS

**855-CRISIS-1** [TN.gov/CrisisLine](https://www.tn.gov/CrisisLine)

**855-274-7471**  Department of  
Mental Health &  
Substance Abuse Services



Institute on Aging 24-hour Toll-Free Friendship Line

800.971.0016

**988**

**SUICIDE  
& CRISIS  
LIFELINE**

THE **TREVOR** PROJECT  
**LGBTQ CRISIS HOTLINE**  
**CALL 1-866-488-7386**

If it is an emergency,  
call 9-1-1

# Contact Information

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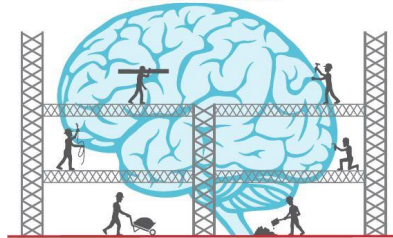
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**BUILDING STRONG BRAINS  
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