

ACEs and PACEs: Adverse and Protective Childhood Experiences

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CENTER FOR INTEGRATIVE RESEARCH
ON CHILDHOOD ADVERSITY



The speaker has no disclosures to report

Learning objectives

- Be able to identify multiple effects of adverse childhood experiences on health and developmental outcomes
- Become familiar with evidence-based strategies to reduce the effects of ACEs in children and adults
- Recognize the risks of ACEs to children during the COVID-19 pandemic

Adverse Childhood Experiences (ACEs)

Abuse/Neglect

- Verbal abuse
- Physical abuse
- Sexual abuse
- Physical neglect
- Emotional neglect



Household dysfunction

- Domestic violence
- Substance abuse
- Parents separated/divorced
- Incarceration
- Mentally Illness



ACEs study

- 9,508 Kaiser-Permanente adults surveyed following annual exam
- 10 categories of childhood exposure
 - Abuse: psychological, physical, sexual
 - Dysfunction: substance abuse, mental illness, domestic violence, criminality
- 10 health risk factors
 - Smoking, obesity, inactivity, depressed mood, suicide attempts, alcoholism, drug abuse, parental drug abuse, >50 sexual partners, history of STDs.
- Disease conditions:
 - Ischemic heart disease, cancer, stroke, COPD, diabetes, hepatitis, skeletal fractures, general health rating

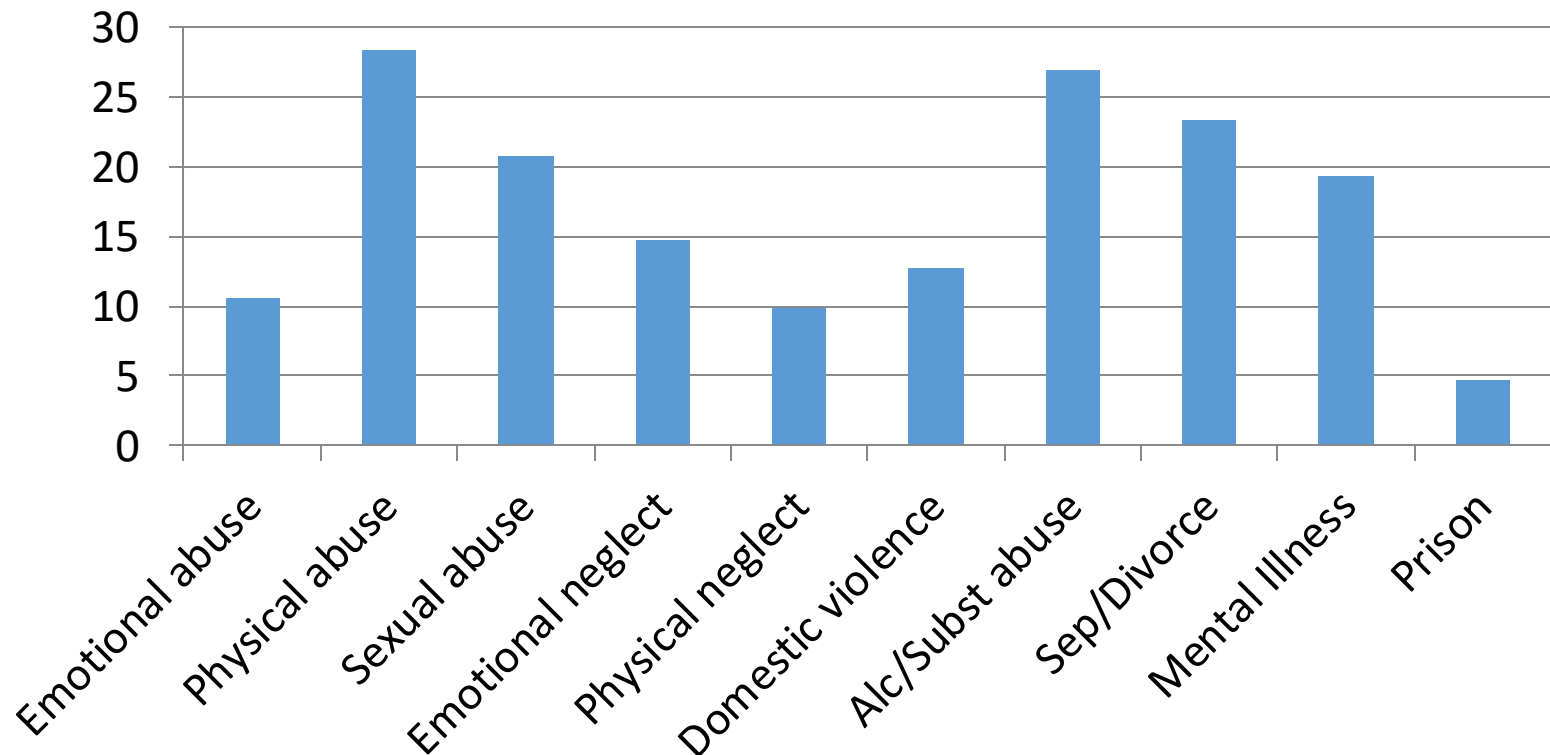
ACEs influence adult behavior & health

- Childhood stressors increased risk of poor health directly and indirectly
- Strong dose-response relationship between number of childhood stressors and
 - All 10 **health-harming behaviors** studied (smoking, obesity, alcohol/drug abuse)
 - All **health outcomes** studied
 - Heart disease
 - Cancer
 - COPD
 - Hepatitis
 - Fractures
 - Poor self-rated health
 - Mental health

Felitti V, Anda R et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. Am J Prev Med 1998;14:245-258.

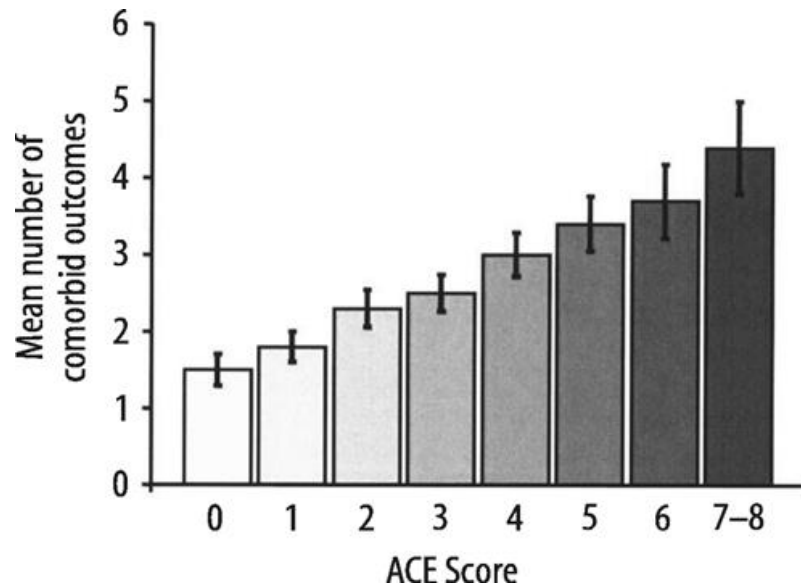
ACEs are prevalent

Kaiser Permanente sample (%)



64% of respondents had at least one ACE

ACEs have a dose-response effect on health



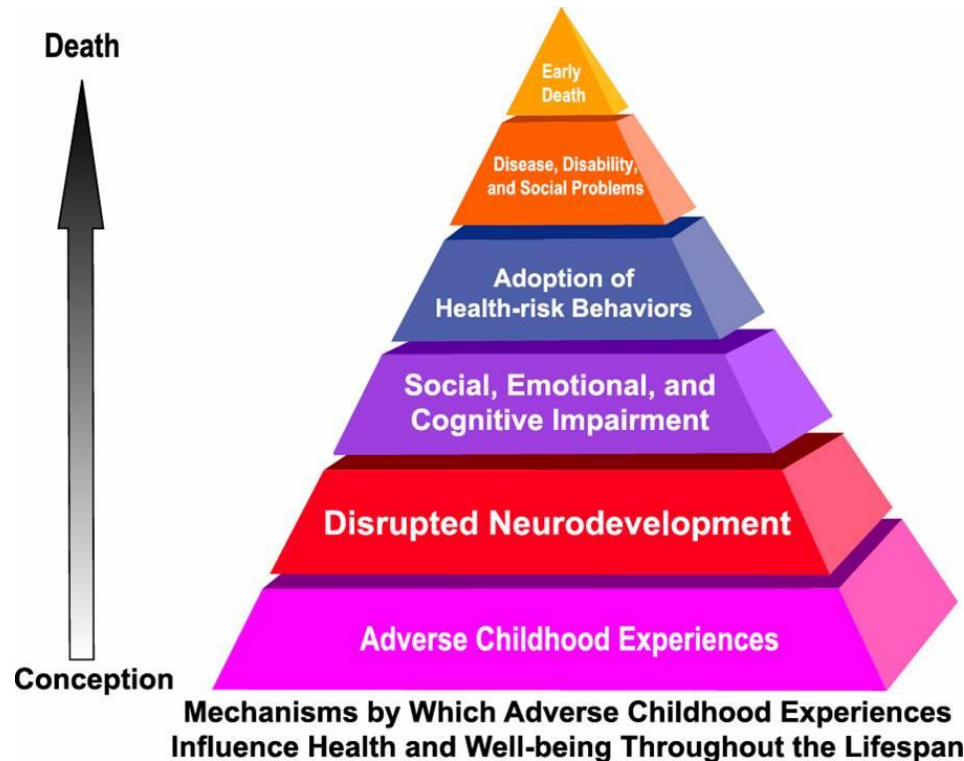
The mean number of comorbid outcomes in the study sample was 2.1 (range: 0–14); means are adjusted for age, sex, race, and educational attainment. The trend in the means is significant ($P < 0.0001$); vertical error bars represent 95% confidence intervals

Example: Mental health
Having ≥ 4 ACEs increases risk of

- panic reactions - 250%
- depressed affect - 360%
- anxiety - 240%
- hallucinations - 270%

Dose effect significant – risk increases with each ACE

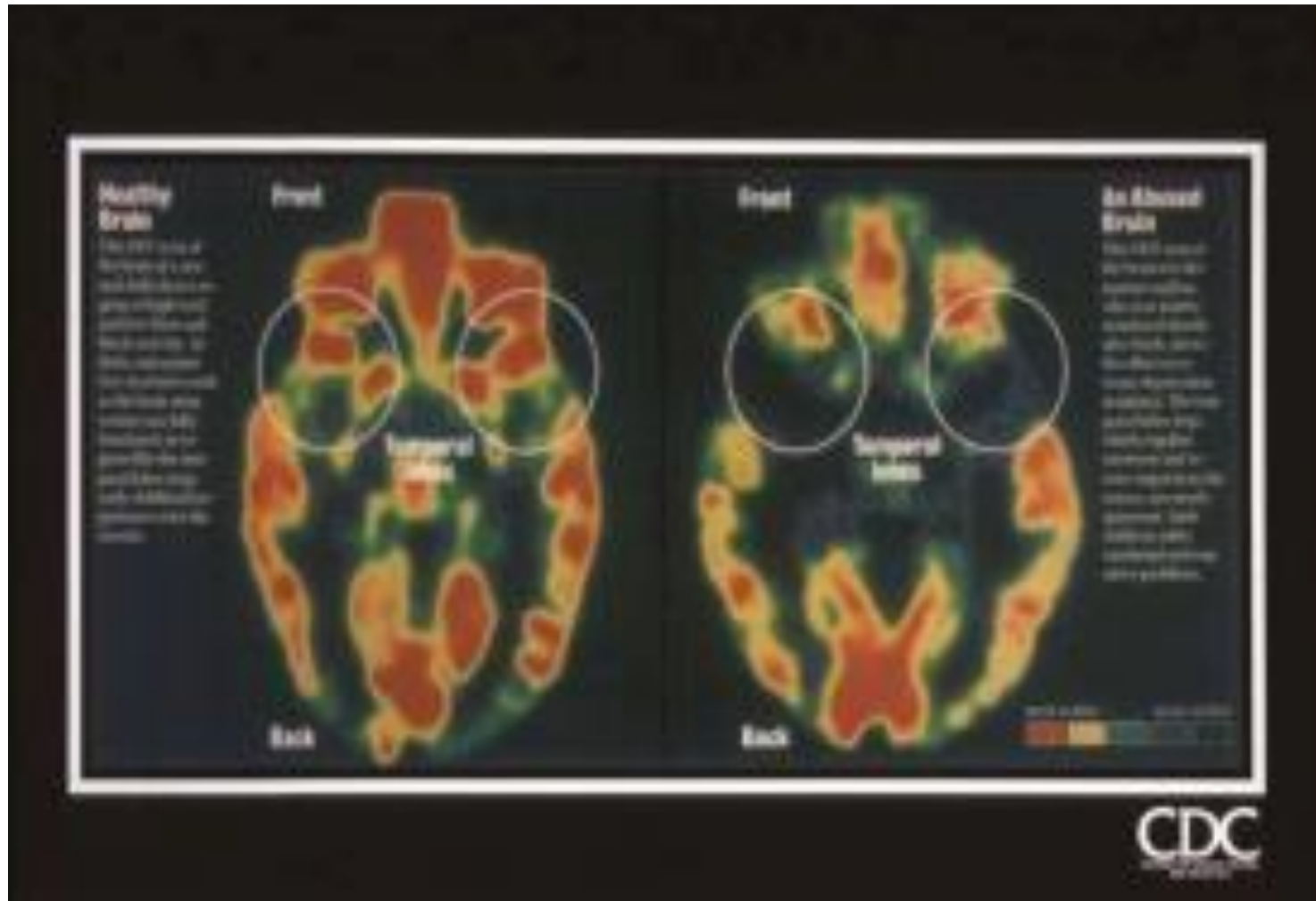
How and why do ACEs have so enduring and powerful effects?



Original model – ACEs pyramid

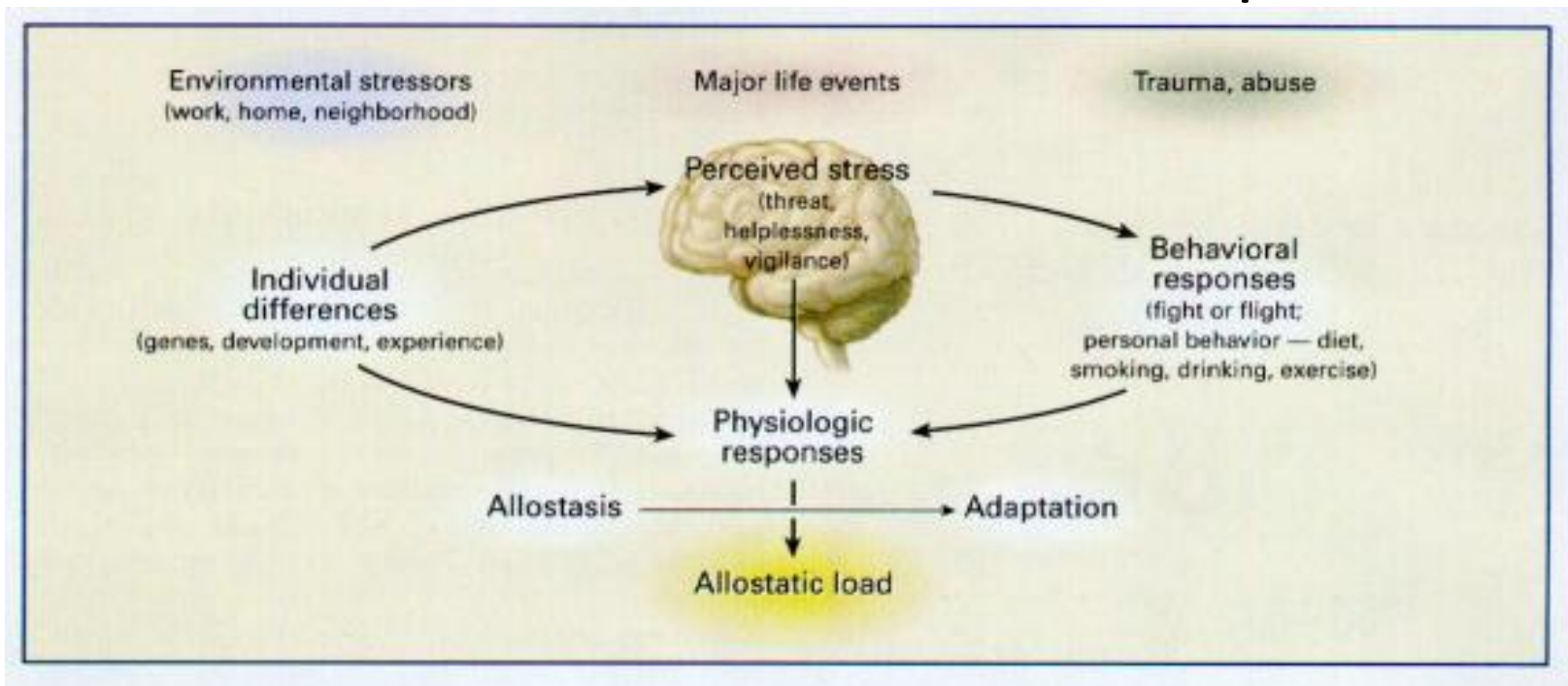
- ACEs disrupt brain development
- Cause developmental impairments
- Risky health habits result
- Disease/disability
- Premature mortality (20 years)

ACEs alter brain development



ACEs alter the architecture of the developing brain, leading to a cascade of events: diminished cognitive, social and emotional abilities

Allostatic Load – Stress Response

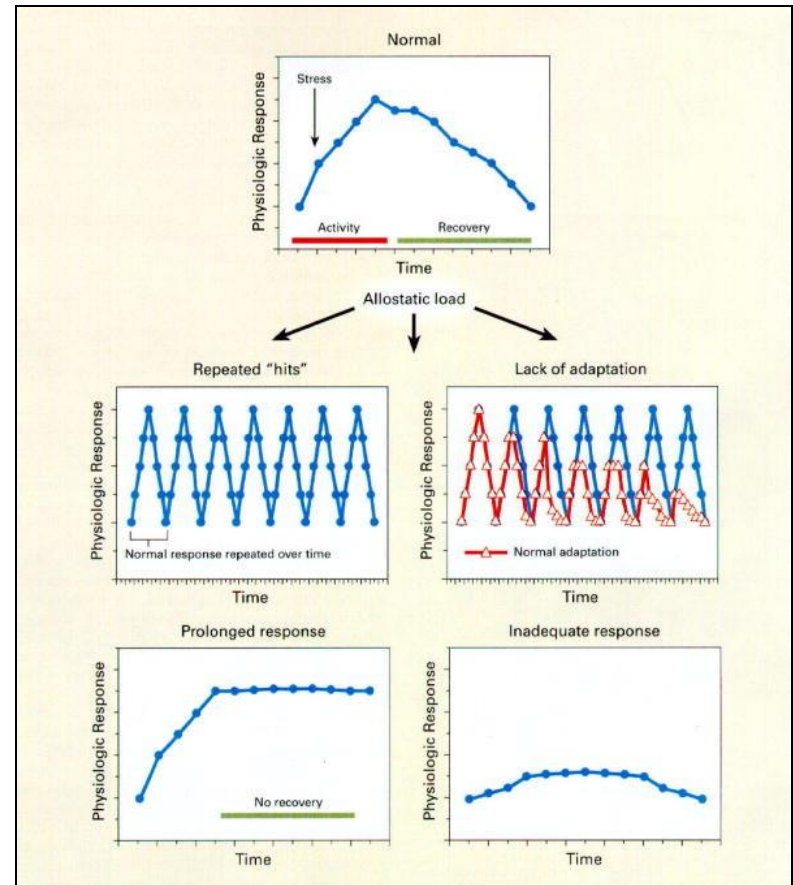


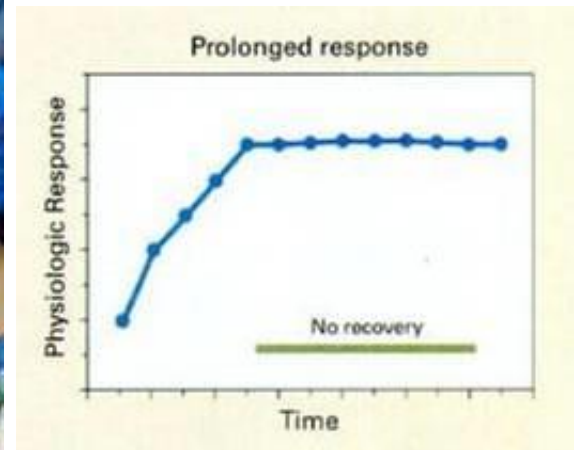
The perception of stress is influenced by one's experiences, genetics, and behavior. When the brain perceives an experience as stressful, physiologic and behavioral responses are initiated, leading to allostasis and adaptation. Over time, allostatic load can accumulate, and the overexposure to mediators of neural, endocrine, and immune stress can have adverse effects on various organ systems, leading to disease.

McEwen, B. *New England Journal of Medicine*. 338(3):171-179, 1998.



ACEs alter stress response





Allostatic load: Wear and tear from chronic stress

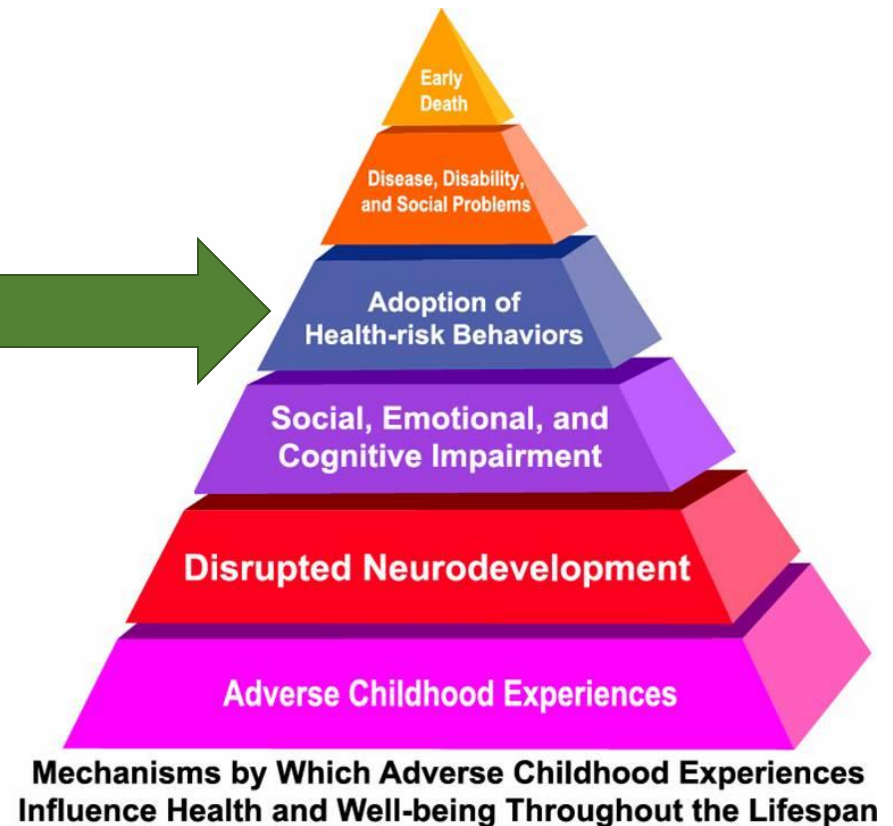
Health-Risk Behaviors as Coping Behaviors

- Impairments in healthy, normal stress response (blunted, chronically elevated)
- Poor problem-solving skills
- Short-term solution (alcohol, drugs, bingeing other risk-taking) becomes a long-term problem (addiction, impaired functioning)

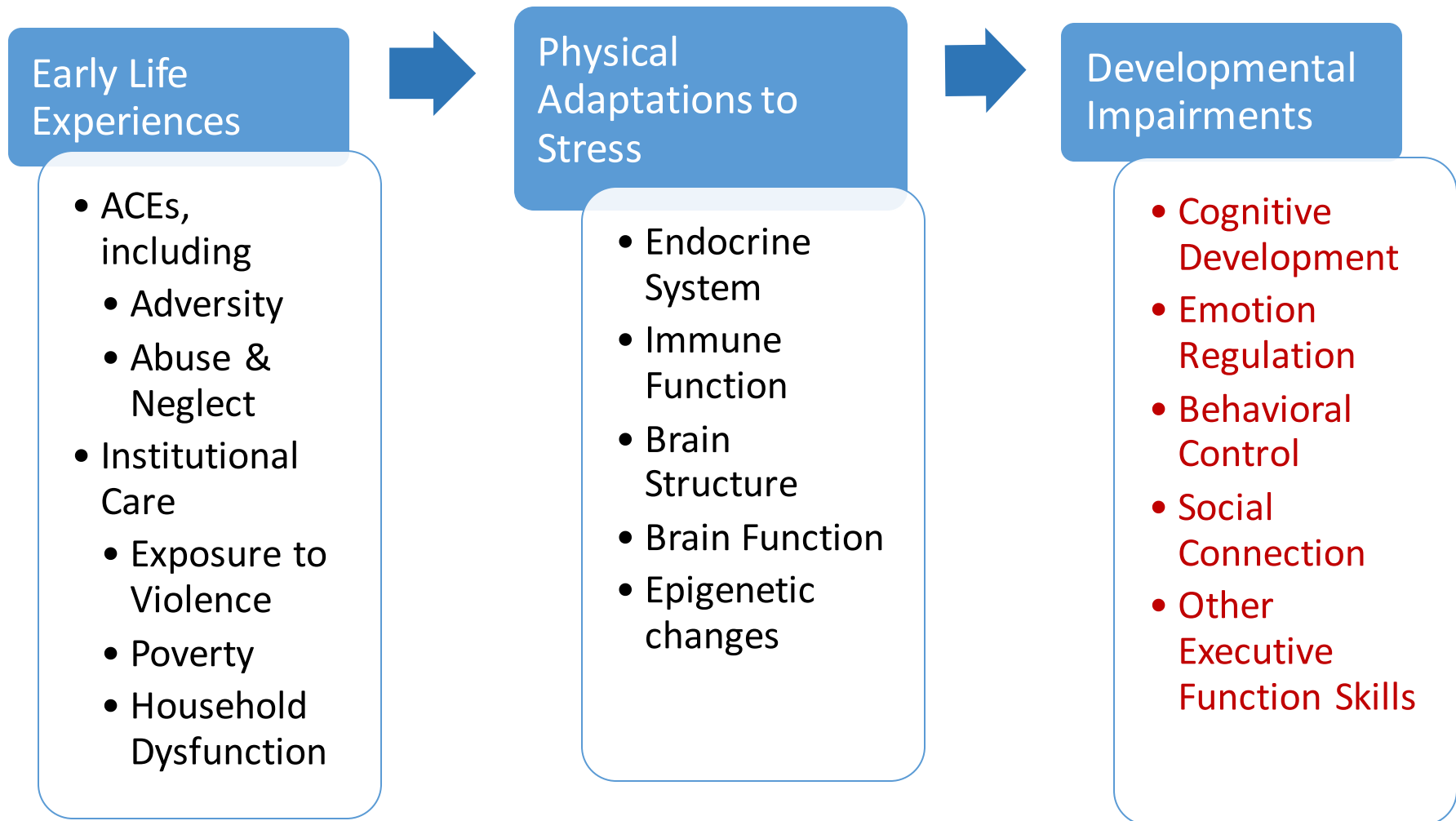


“What we thought was the problem, she considered her solution to the problem.”

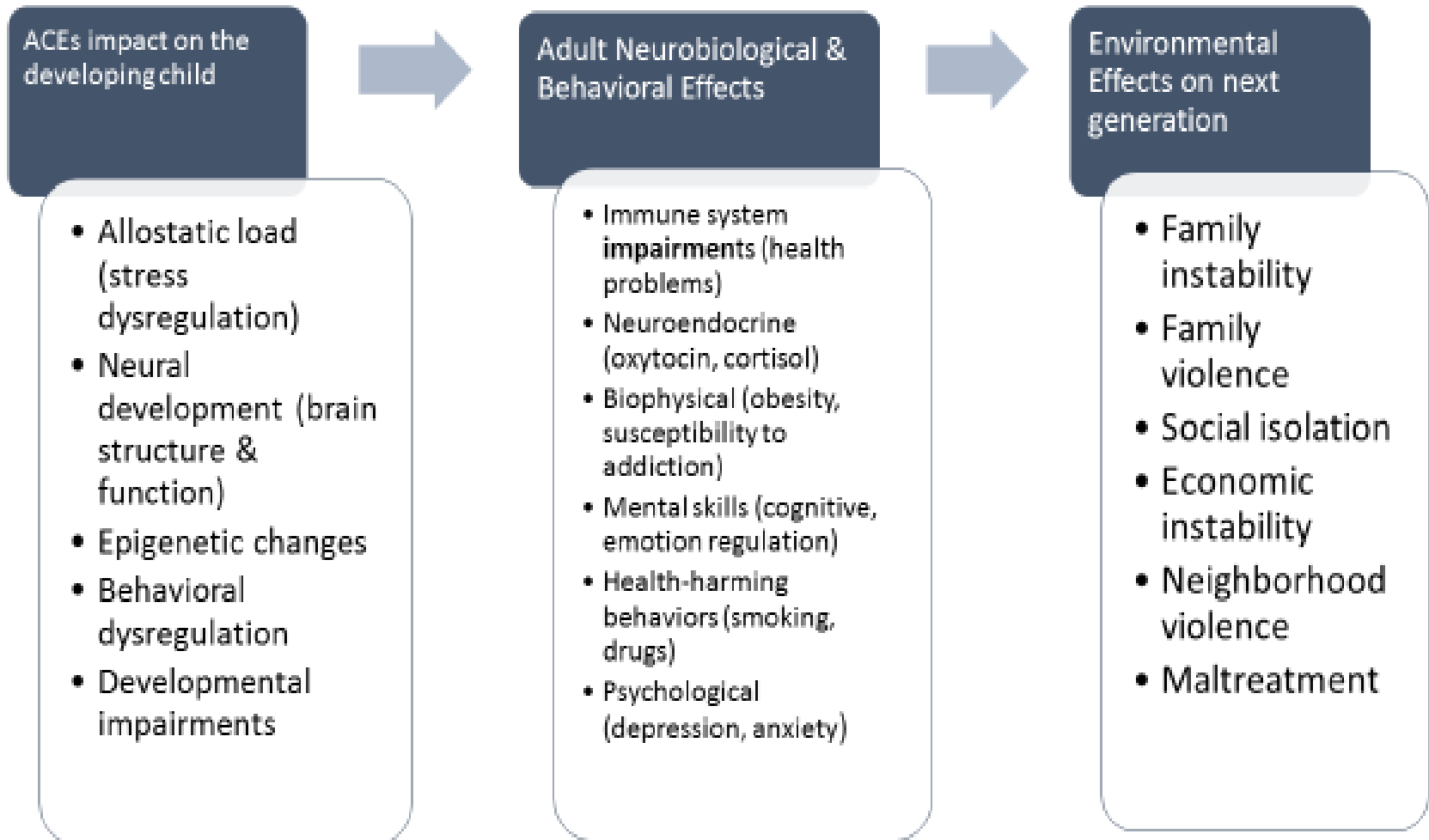
Dr. Vincent Felitti



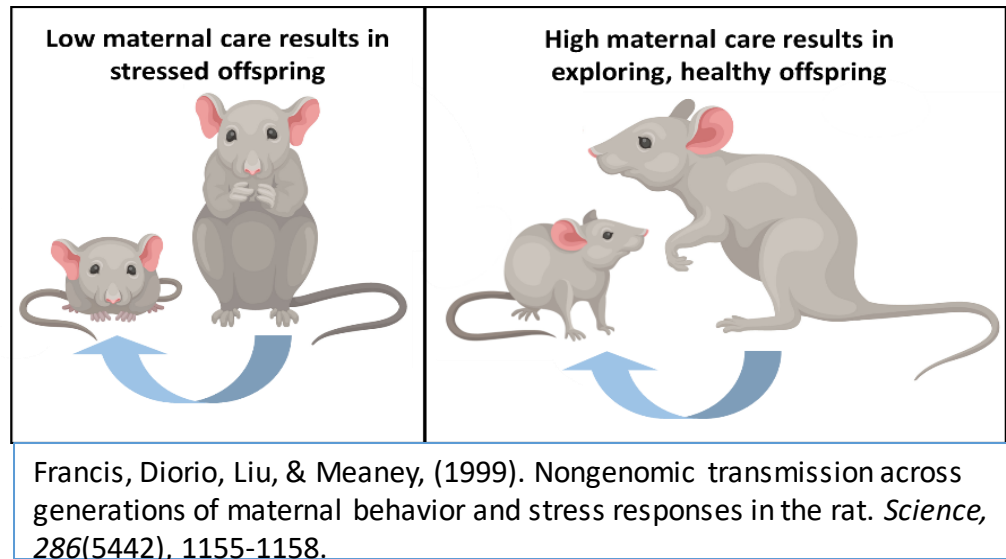
ACEs impair normal development



Intergenerational Transmission of Adversity



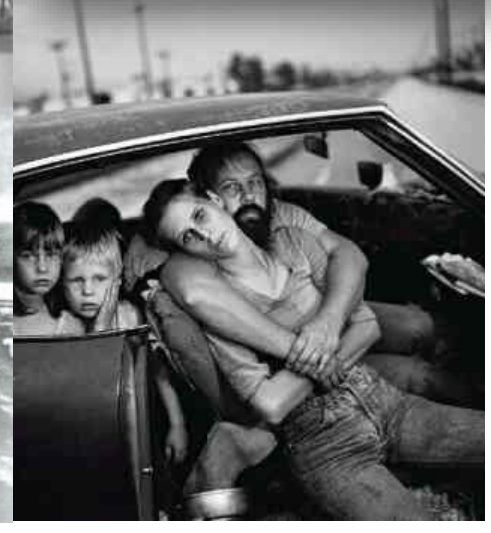
Epigenetic transmission of trauma and stress



Epigenetic alterations observed following exposure to maternal separation or “abusive” care in

- Glucocorticoid receptor gene promotor in hippocampus (Francis et al 1999)
- BDNF methylated DNA in the prefrontal cortex; in exposed rats and in their offspring (Roth et al 2009; Blaze & Roth, 2013)
- Depressive behavior (Franklin et al 2010) and social anxiety (Franklin et al 2011); in exposed rats and in offspring **to the third generation**

History of adversity in Oklahoma



What do we do to
reduce effects of ACEs?

Promote resilience

Six decades of research on resilience

- **Nurturing Relationships** –unconditional love, other adult mentors, friendships, social groups, volunteer/caring for others
- **Enriched environments** – resources and routines that develop physical skills, talents, knowledge and competencies: school, basic needs, family rules & daily routines, opportunity to develop skills, physical activity

No one is resilient alone

Protective and Compensatory Experiences (PACEs)

(Morris, Hays-Grudo, 2014)

Relationships	Resources
Between birth and 18, did you...	
Have someone who loved you unconditionally (you did not doubt that they cared about you)?	Have an engaging hobby -- an artistic or intellectual pastime either alone or in a group?
Have at least one best friend (someone you could trust, had fun with)?	Were you regularly involved in organized sports groups or other physical activity ?
Do anything regularly to help others or do special projects in the community to help others?	Live in a home that was typically clean AND safe with enough food to eat?
Have an adult (not your parent) you trusted and could count on when you needed help or advice?	Have a school that provided the resources and experiences you needed to learn ?
Were you an active member of at least one social group ?	Were there rules in your home that were clear and fairly administered?

Adult PACEs Plan

PACEs Plan		Month _____
Relationship PACEs		
Love. I know that am love and love someone unconditionally. I do not doubt that I am cared for.		
<i>Current status:</i>	<i>Actions taken:</i>	
<i>Goal:</i>		
Friendship. I have at least one best friend, someone I can count on and have fun with.		
<i>Current status:</i>	<i>Actions taken:</i>	
<i>Goal:</i>		
Volunteer. I do something regularly to benefit others or participate in community helping projects.		
<i>Current status:</i>	<i>Actions taken:</i>	
<i>Goal:</i>		
Mentor. I have someone I can look to for advice, information, or support.		
<i>Current status:</i>	<i>Actions taken:</i>	
<i>Goal:</i>		
Community connection. I am an active member of at least one civic, social, or faith-based group.		
<i>Current status:</i>	<i>Actions taken:</i>	
<i>Goal:</i>		

Notes:

		Month _____
Environment and Resources PACEs		
Home. I live in a home that is clean, uncluttered, safe, with healthy food to eat.		
<i>Current status:</i>	<i>Actions taken:</i>	
<i>Goal:</i>		
Learning. I make opportunities for lifelong learning, and have the resources I need to learn and grow in my work and as a person.		
<i>Current status:</i>	<i>Actions taken:</i>	
<i>Goal:</i>		
Physical activity. I get some type of physical exercise every day, either alone or with others.		
<i>Current status:</i>	<i>Actions taken:</i>	
<i>Goal:</i>		
Hobby. I have a hobby that gives me pleasure and allows me to be creative and productive and feel proud of my accomplishments.		
<i>Current status:</i>	<i>Actions taken:</i>	
<i>Goal:</i>		
Routines and rituals. I make a point to get enough sleep, eat regular meals with family and friends and have other opportunities to spend time with others.		
<i>Current status:</i>	<i>Actions taken:</i>	
<i>Goal:</i>		

Notes:



ACEs & PACEs conversations are therapeutic

- Provides adults with a chance to **see the story of their lives** and create a different path for the future
- **Fosters healing** by moving people from feelings of shame from coping behaviors (addiction, risky behaviors) to understanding and resilience-building strategies
- Create **alternative coping and living strategies** with hope, meaning, and purpose
- Helps us **rewrite our stories**:
 - I'm a survivor – it wasn't my fault
 - I'm not alone
 - I'm good, strong, worthwhile



Trauma-informed practices

1. Realizing the widespread impact of trauma
2. Recognizing how trauma may affect individual clients, staff, or others in the program;
3. Responding by applying knowledge about trauma into practice;
4. Preventing retraumatization

Oklahoma Legislative Task Force on Trauma-Informed Practices

U.S. Substance Abuse and Mental Health Services Administration (SAMHSA), 2014).

What can health care providers do to reduce the effects of ACEs?

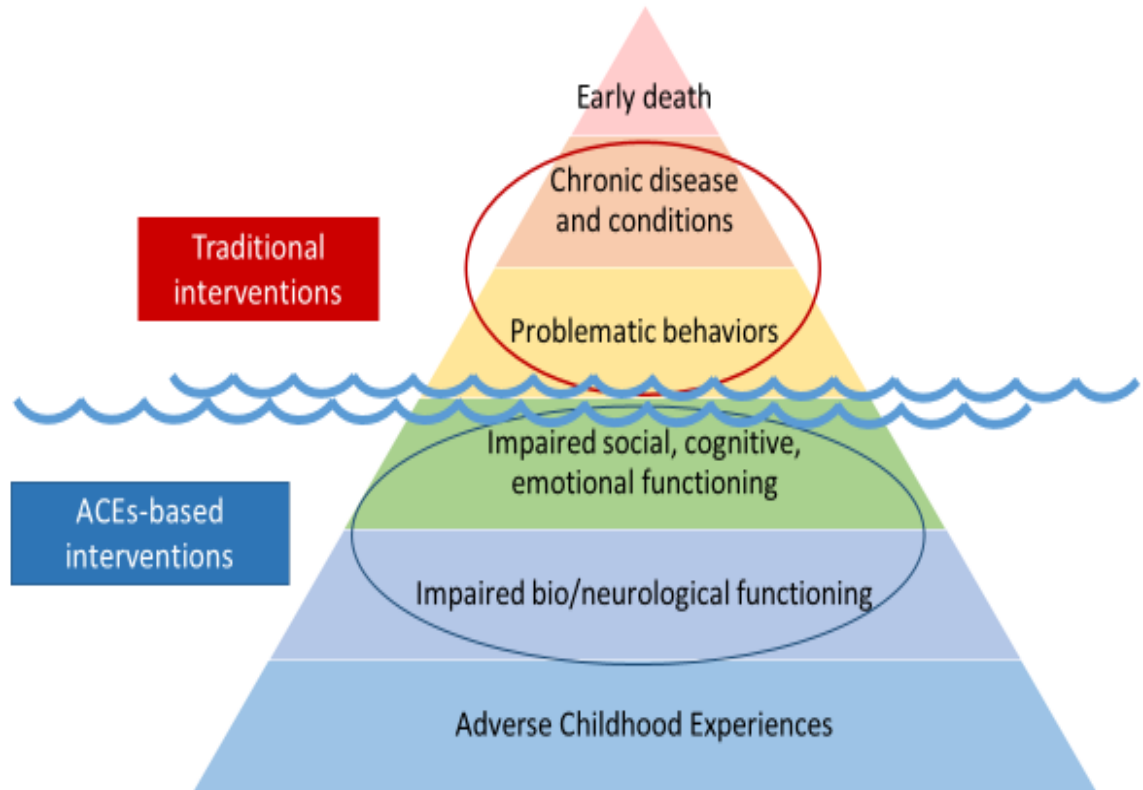
- Screen adult patients
 - Treat ACEs as a risk factor (Felitti)
 - MBSR, other programs to address dysregulated stress response
- Screen parents
 - Identify parents with ACEs (Burke-Harris)
 - Early interventions – pregnancy, parents with infant/toddler programs
- Screen children
 - Challenges - mandatory reporting, referrals
 - American Academy of Pediatrics website:
<https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/resilience/Pages/Clinical-Assessment-Tools.aspx>

Evidence-based approaches

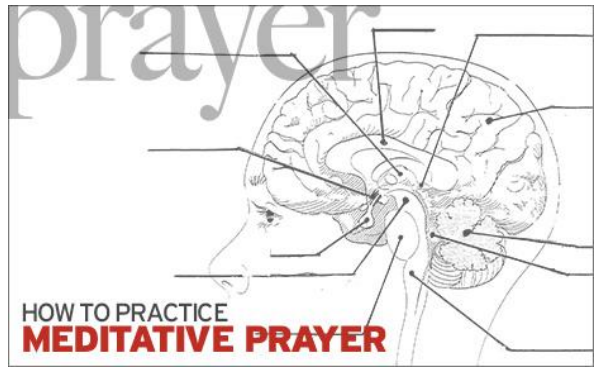
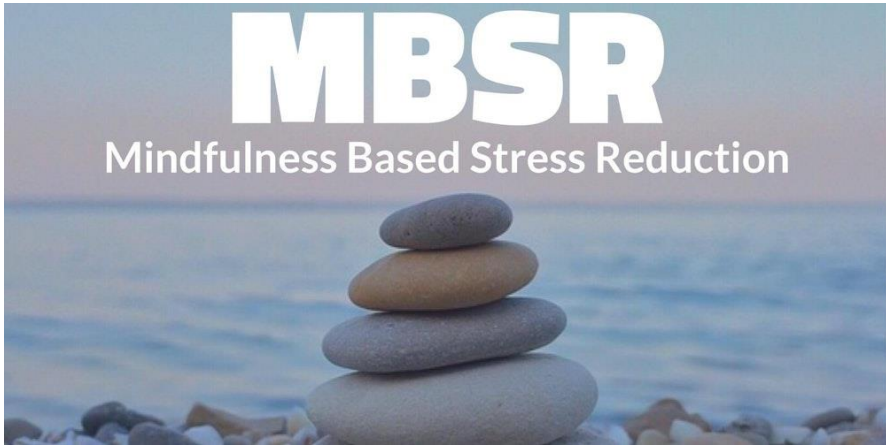
- **Top down** – by talking, (re-connecting with others, allowing past and current experiences to be acknowledged and processed); tf-CBT
- **Medications** that shut down inappropriate alarm reactions, or other technologies that change the way the brain organizes information
- **Bottom up** – by allowing the body to have experiences that viscerally contradict the helplessness, rage, or collapse that result from trauma (fight/flight/freeze).

Two-levels of Intervention: Traditional and ACEs-based

- Treat disease
- Address problematic behaviors,
- Build executive functioning skills
- Address underlying neurobiological effects



Hays-Grudo, J. & Morris, A. (2020). *Adverse and Protective Childhood Experiences: A Developmental Perspective*. Washington, DC: APA Press.



Taking care of ourselves

The expectation that we can be immersed in suffering and loss daily and not be touched by it is as unrealistic as expecting to be able to walk through water without getting wet” Remen (1996)

- **Secondary traumatic stress** - mimics posttraumatic stress disorder (PTSD), develops through the indirect transmission of traumatic material in a clinical encounter
- **Vicarious traumatization** - the transformation of therapists' cognitive schemas related to identity, spirituality, and worldview resulting from chronic exposure to client's trauma stories
- **Compassion fatigue** - a nonclinical term to describe the cost of caring for traumatized populations.

Going beyond self-care

- Compassion fatigue is actually avoidance of empathy and helplessness fatigue
- Clinicians who have concrete skills in maintaining their own emotional regulation during trauma treatment do not experience the same level of depletion as those who lack them.
- Evidence-based trauma treatments aim to desensitize a client to provocative stimuli and to reduce emotional dysregulation. But they **are largely ignored in the treatment or prevention of compassion fatigue in trauma treatment providers** (in favor of an emphasis on self-care after secondary trauma exposure).

Brian Miller & Ginny Sprang, 2016, Components for Enhancing Clinician Engagement and Reducing Trauma: *Traumatology*.

What do we are we doing to
address ACEs at OSU?



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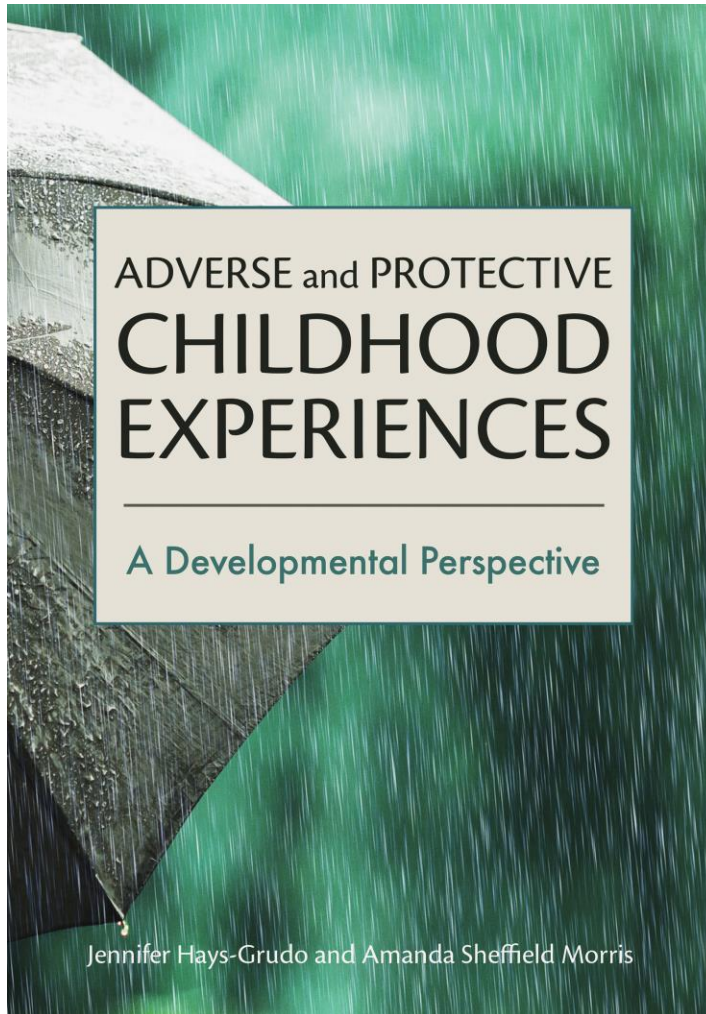
\$11.3M National Institutes of Health

2016-2021, renewable twice

Building research infrastructure and launching new
investigators

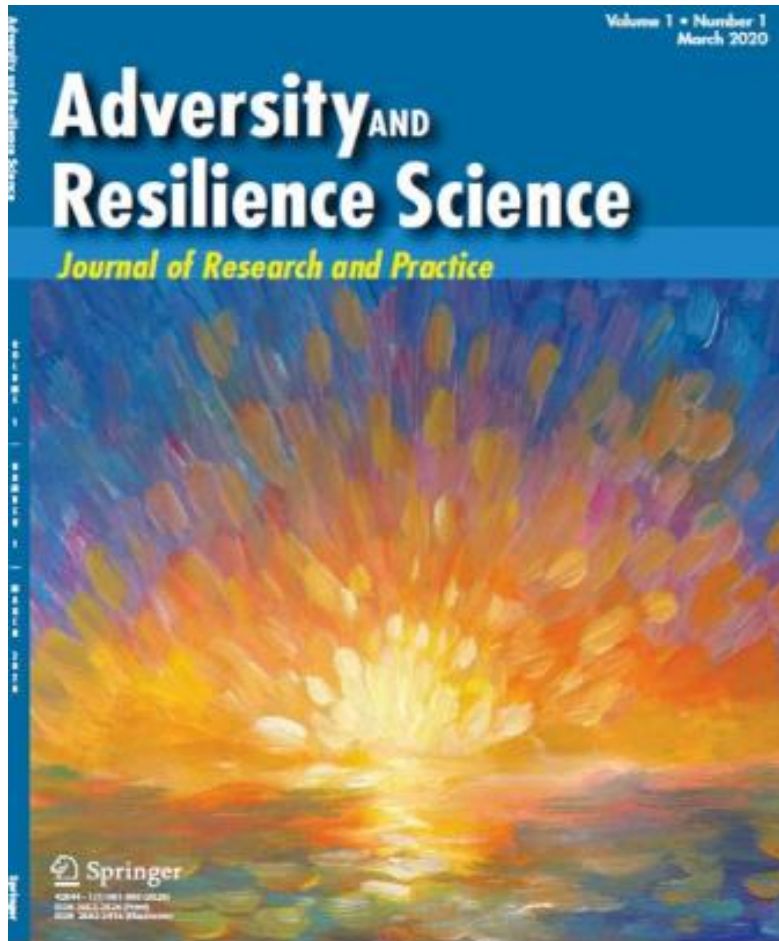
Collaboration with OSU-CHS, OSU-Tulsa, OUHSC-Tulsa

Published first scholarly book on ACEs



- American Psychological Association (APA)
- Textbook and guide for therapists and clinicians
- Second book in 2021 (LifeTools) for parents

Launched scientific journal



- March 2020 first issue
- Springer/Nature
- Jennifer Hays-Grudo, Editor-in-Chief; Amanda Morris and Hiram Fitzgerald, Associate Editors
- Interdisciplinary, international editorial board
 - Psychology, neuroscience, immunology, public health, pediatrics, psychiatry, social work

Collaborating in Policy Work

- Legislature passed and Governor Fallin signed SB 1517 in 2018
 - 3-year Task Force on Trauma-Informed Care
 - Interim Report submitted December 2019
 - Currently identifying best practices for implementation

Interim Report
of the

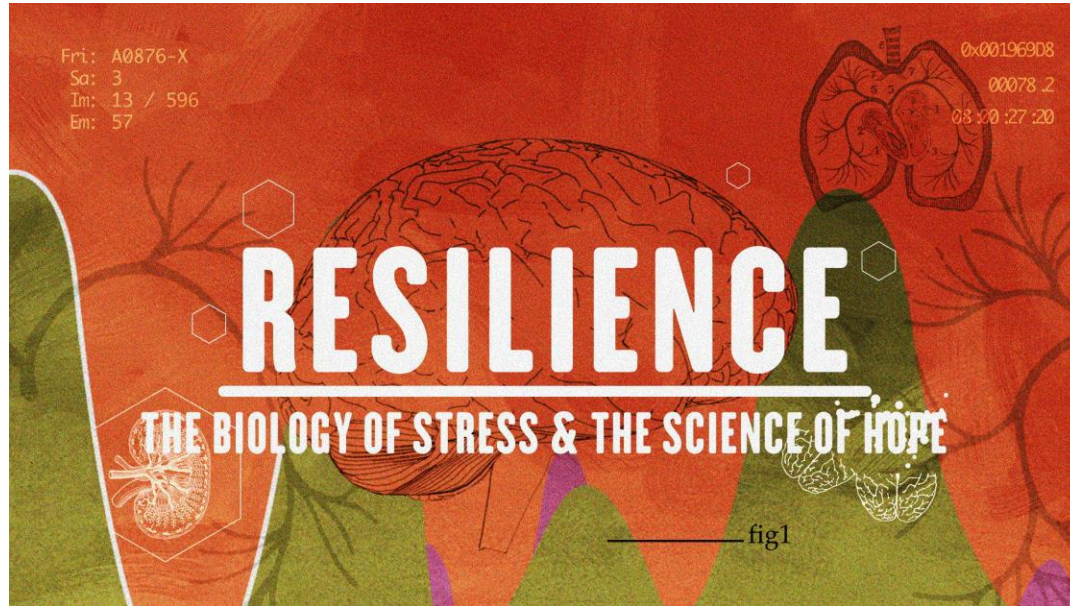
Task Force on Trauma-Informed Care

Pursuant to Senate Bill 1517



December 1, 2019

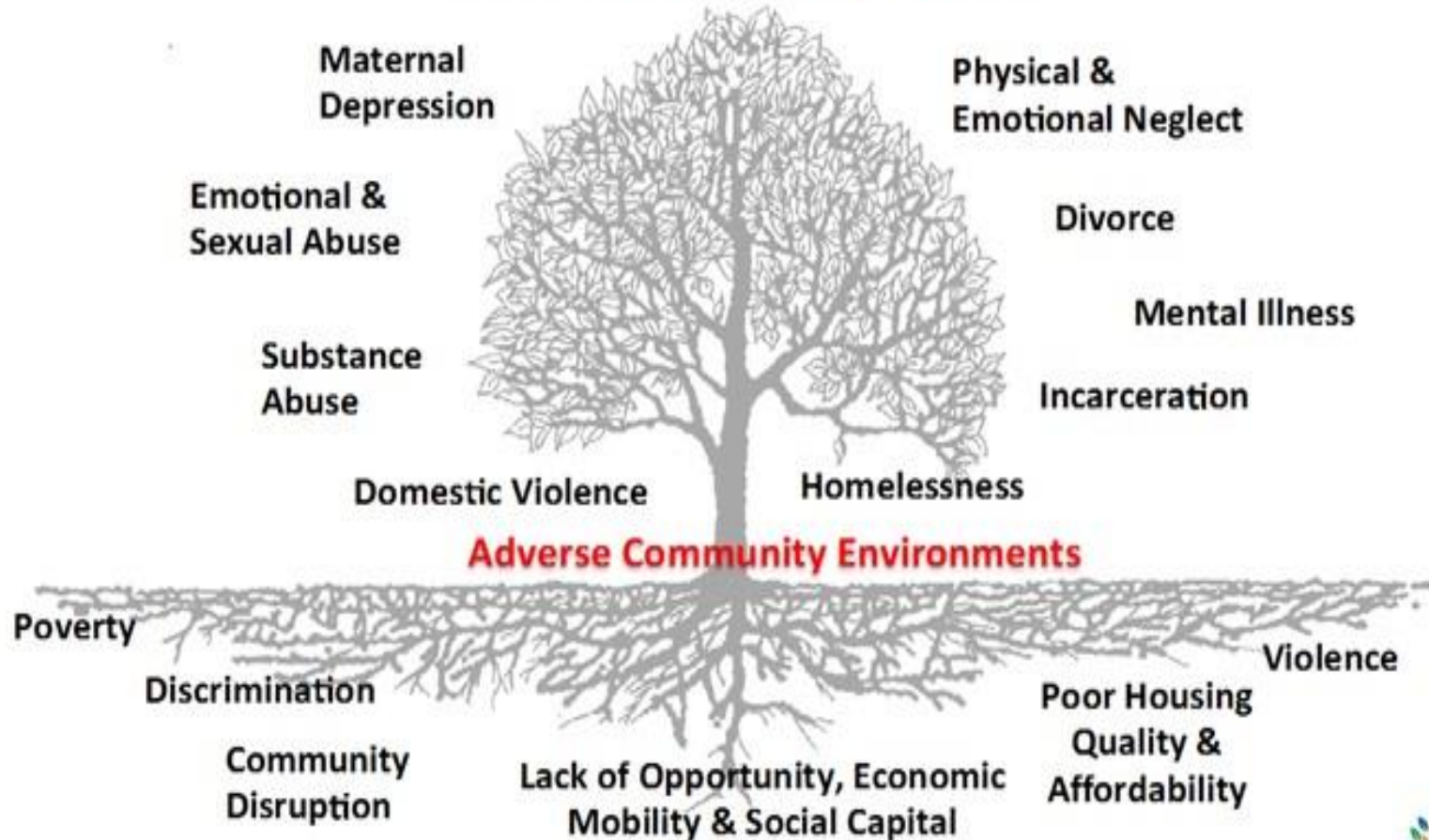
Resilient Community Coalitions



How is the COVID-19
pandemic impacting
children and adults with
ACEs?

The Pair of ACEs

Adverse Childhood Experiences



Ellis W., Dietz W. BCR Framework *Academic Peds* (2017)



Building Community Resilience

Effects of ACEs in response to a novel biological and behavioral threat

- ACEs may be having profound effects on patients through both biological and behavioral responses
 - Recent research suggests that one of the effects of ACEs on systems dysregulation is immune function via epigenetic modifications to genes regulating proinflammatory and HPA axis responses*
 - ACEs may reduce problem-solving, emotion-regulation, impulse control, and increase health-harming coping behaviors in adults and children
- Children are at increased risk of child abuse and neglect if parents are not getting help in dealing with stresses of pandemic and social distancing
- Parents need access to resources and support

Resources

Felitti, V. J., Anda, et al.(1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The adverse childhood experiences (ACE) study. *American Journal of Preventive Medicine*, 14(4), 245-258.

Nelson, C. A. (2013). Biological embedding of early life adversity. *The Journal of the American Medical Association Pediatrics*, 167(12), 1098-1100.

Teicher, M. H., & Samson, J. A. (2016). Annual research review: enduring neurobiological effects of childhood abuse and neglect. *Journal of child psychology and psychiatry*, 57(3), 241-266.

Bush, N. R. et al. (2018). The biological embedding of early-life socioeconomic status and family adversity in children's genome-wide DNA methylation. *Epigenomics* 10, 1445–1461

