

The Brain on Trauma: Understanding and Applying Knowledge to Improve Services and Supports

Child Protection Accountability Commission *and* Child Death, Near Death and Stillbirth Commission Conference

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Objectives

Goal: provide an overview, including **basic concepts and terms**.

1. Summarize the neurophysiology of trauma,
2. Summarize the **impacts** of unhealed trauma and the role of **resilience**.
3. Briefly discuss the phenomenon of **trans-generational trauma** and **parenting with unhealed trauma**.
4. Review **elements of trauma-informed** care and implications for **policy and practice**.

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What is Trauma?

An event, series of events or set of circumstances that are experienced as physically or emotionally harmful or threatening, and that overwhelm the person's usual coping mechanisms.


Source: Adapted from SAMHSA Concept and Guidance (2014)

Some Common Types of Trauma

<p>Individual</p> <ul style="list-style-type: none"> • Physical abuse and injury, sexual abuse, rape, intimate partner violence, neglect • Accidents, illness, dog attacks, "complex trauma" <p>Group</p> <ul style="list-style-type: none"> • Military-combat, sexual; vicarious trauma • Enslavement, internment, genocide • Discrimination—the 'isms' • Organizational trauma 	<p>Community</p> <ul style="list-style-type: none"> • Virginia Tech, Exxon Oil Disaster • Community Violence <p>Mass</p> <ul style="list-style-type: none"> • Katrina, Sandy; Haiti quake • War, displacement and evacuation, refugees <p>Note: Lots of overlap between categories...</p>
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Prevalence Rates Vary



- Experience of adversity/trauma is so common as to be practically normative (see ACE Study.)
- Higher rates among specific groups, some approaching 100%:
 - Psychiatric inpatient
 - Psychiatric outpatient
 - Homeless/Homeless women
 - Prison/Incarcerated women
 - Youth prison/detention
 - Health clinic/ER
- Male-female, urban-rural, race-ethnicity, family history, etc.

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Traumatic/Toxic Stress

Positive stress response: normal, essential part of healthy development: brief increases in heart rate and mild elevations in hormone levels; successful coping supports socio-emotional competency.

Tolerable stress response: unavoidable part of life; activates the body's alert systems to a greater degree as a result of more severe, longer-lasting difficulties; recovery for brain/other organs if activation is time-limited and with supportive adult relationships.

Toxic stress response: experience of strong, frequent, and/or prolonged adversity without adequate adult support; *prolonged activation of stress response systems can disrupt the development of brain architecture and other organ systems, and increase the risk for stress-related disease and cognitive impairment across the lifespan.*

Adapted from Harvard Center for the Developing Child,
http://developingchild.harvard.edu/index.php/key_concepts/toxic_stress_response/

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Time course of traumatic stress reactions

Traumatic event

First 48 hours 1 to 4 weeks 4-12 weeks 12+ weeks

Acute stress reaction Acute stress disorder Acute PTSD Chronic PTSD

Mediating Factors: Resiliency, family/social support, interventions, continued traumatic experiences...

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A Note on Diagnosis...

- Misdiagnosis or Missed Diagnosis of trauma?
 - Variable presentation: Adult Depression, Anxiety/Phobias, Bipolar Disorder, Personality Disorders; Child-Youth Conduct Disorders, ADHD, Bipolar Disorder.
- DSM: Categorize and assign billing codes; PTSD—useful for adults (who meet the criteria,) but not for children-youth or other adults with trauma history but not PTSD.
- No specific diagnostic category to describe the trauma profile(s) of children-youth; APA declined to include Developmental Trauma Disorder in DSM IV.

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Adverse Childhood Experiences (ACE) Study

Dr. Vincent Felitti (Kaiser Permanente, San Diego) and Dr. Robert Anda (Centers for Disease Control and Prevention.), first cohort 1995-1997.

Initial question: Why did successful weight loss patients drop out of treatment?

Surveyed 17,000 insured, employed participants

Male/Female, mostly white and middle aged, educated, employed and insured.

Comprehensive health assessment plus ten-item survey on adverse experiences.

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ACE Survey Items

Abuse

- Physical
- Sexual
- Emotional

Neglect

- Physical
- Emotional

Family dysfunction

- Domestic Violence-Intimate Partner Violence
- Household Substance Abuse
- Household Mental Illness
- Parental Separation/Divorce/Death
- Household Criminal Behavior/Incarceration

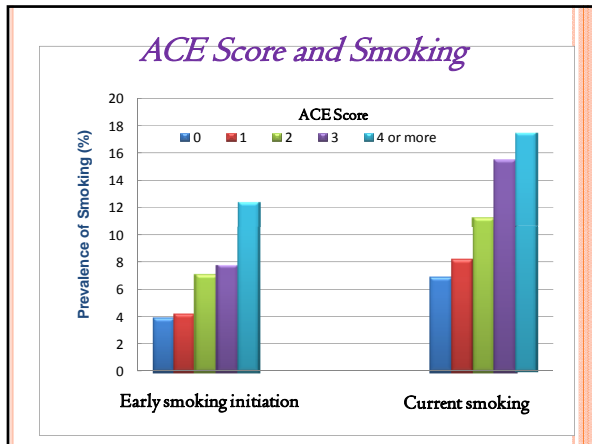
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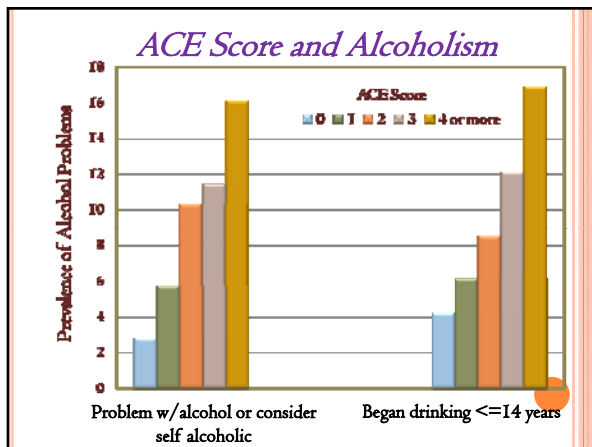
ACE Study Findings

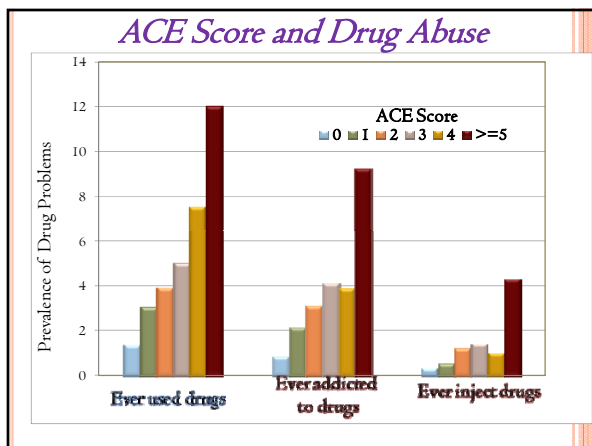
Childhood trauma is:

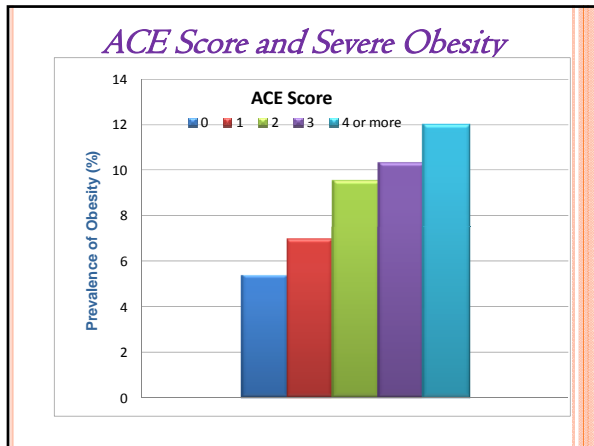
- Common: 2/3 had at least one ACE
- Clustered: Of this group,
 - 74% had > one ACE
 - 12.5% had > 4 ACEs
- Dose-response relationship—in 65+ conditions!
 - As ACEs increased, **negative outcomes** increased
 - Effects are **pervasive**—affecting multiple domains
 - Effects are experienced across the **lifespan**

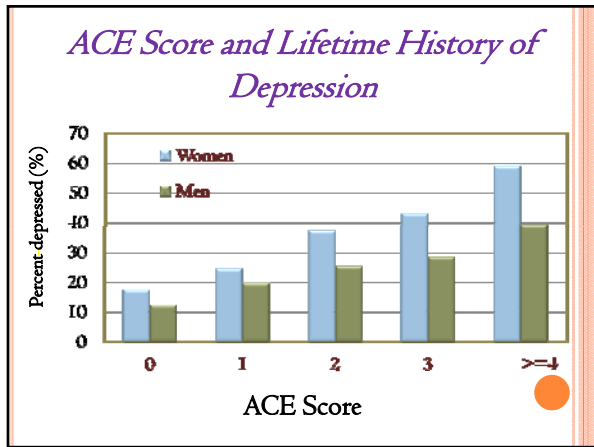
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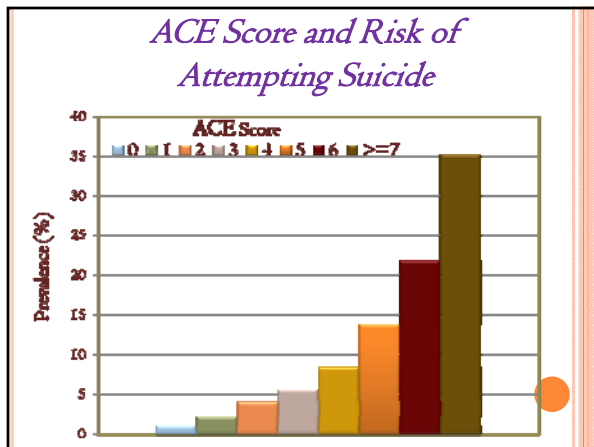




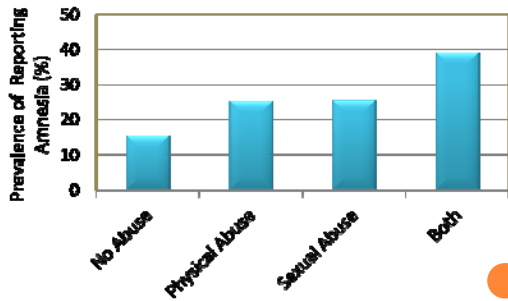




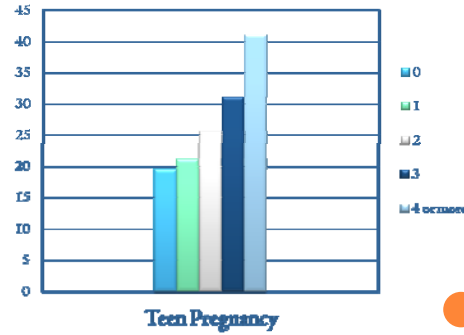




ACE Score and Gaps in Childhood Memory



ACE Score and Teen Pregnancy



What's the Connection?

Research: neglect and abuse affect the physical as well as the psycho-social person.

Normal stress response, if unabated, produces:

- Cognitive and psychological effects: encoding of memories; executive functions; learning and information processing; depression and anxiety; poor emotional self-regulation; suicide, overdose, risky behavior.
- Neuro-chemical effects: Autonomic, sympathetic, neuromuscular and sensory systems; disease and early death via cellular inflammation, gene expression ("epigenetics.")

Toxic Stress and Brain Development

Exposure to toxic stress can permanently change how the brain's stress response system works.

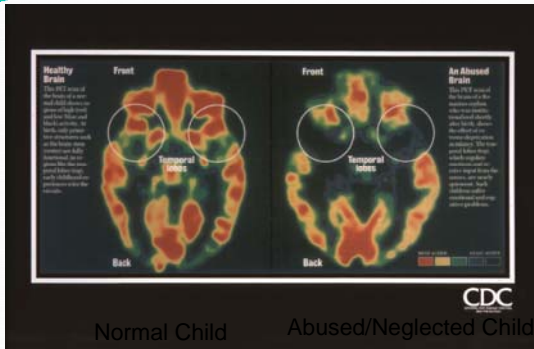


<http://www.youtube.com/watch?v=vMseNYpOOvEs://>

<http://www.youtube.com/watch?v=rVwFkcOZHJw&feature=youtu.be>

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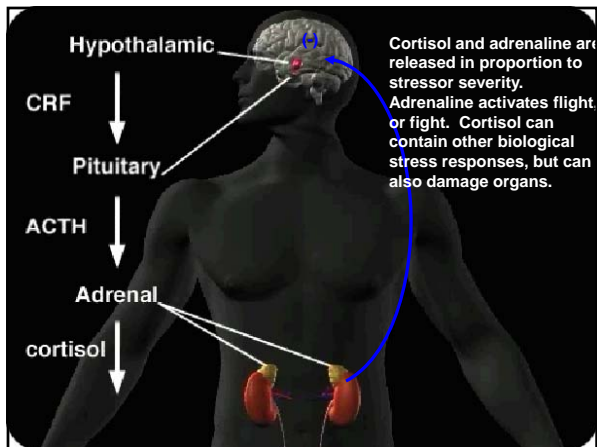
Abused v. Normal Brain



Normal Child

Abused/Neglected Child

(As cited by Felitti & Anda, 2003; Source CDC)



Neurophysiology

- Toxic stress and brain architecture
https://www.youtube.com/watch?v=chhQcoHShCo&feature=player_embedded
- Neglect and parent support
https://www.youtube.com/watch?v=bF3j5UVCSA&feature=player_embedded

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Neurophysiological Changes

Fight, Flight Freeze: Amygdala hyper-active, frontal cortex under-active. Excessive or reduced cortisol:

- Cardiovascular: elevation of blood pressure
- Metabolic: obesity, hyperinsulinemia, hyperglycemia, insulin resistance, and dyslipidemia; memory impairment.
- Digestive: bloating, gas, indigestion, heartburn, acid reflux, irritable bowel problems, eroded stomach lining via inflammation, inhibited digesting of foods.
- Immune system: vaccines less effective, wounds heal slowly, increase vulnerability to infections, increase in organ inflammation, auto-immune diseases.
- Sleep: difficulty falling or staying asleep.

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The ACE-Health Connection

Mechanisms by which Adverse Childhood Experiences Influence Health and Well-being throughout the Lifespan

Source: The Adverse Childhood Experiences Study website: www.acestudy.org, "About the Adverse Childhood Experiences Study."

Impact of Trauma

Depends on:

- Age – cultural or chronological
- Source – natural or man made
- Nature of the trauma – accidental or deliberate
- Relationship with the perpetrator
- One or many experiences
- Resiliency-- inherited and learned
- World's view vs. own view of the experience

Source: Giller, Sidran Press, 2001

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Adaptive Behavior

- We are hard-wired to adapt to traumatic stress—"It is hard to get enough of what *almost works* to relieve stress." (Dr. Vincent Felitti, 1997)
- Adaptive coping often creates new problems while trying to solve the original problem.
 - Self-soothing with substances, risky relationships and activities.
 - Avoidance, pharmaceuticals, somatic complaints.
- Goal: Build healthy coping capacities to self-regulate, create the relaxation response—ideally before unhealthy adaptations develop, or while developing alternatives.

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Resilience, Post-Traumatic Growth and Vulnerability

- The quality of being able to manage and 'bounce back' from challenges.
 - Some are born more resilient than others.
 - Resilience is also acquired through *successfully* navigating challenges.
- Resilience co-exists with vulnerabilities...it does not immunize one from pain or problems.
- (Trauma) history is not destiny! People can and do recover/heal; many experience 'post-traumatic growth.'

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Childhood Trauma

Why is trauma **in childhood** so problematic?

- Children need Safe, Stable, Nurturing Relationships (SSNRs) to promote healthy neurological development.
- Complex/chronic stress affects brain's "wiring" and chemistry, interferes with meeting normal developmental milestones:
 - Self-image and relationships: betrayal by caretakers, conditioned helplessness, hopelessness, and compliance; failure of empathy (attachment, attunement)
 - Memory and learning: impaired memory encoding and retrieval (dissociation, stress response)
 - Emotional self-regulation: chronic stress response, lack of opportunities to learn and practice self-regulation

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What happens when the child grows up...but hasn't healed...?

Parent is likely to reflect her/his early experiences:

- family structure and style of interaction
- social roles and functions, adaptive behaviors
- relationships with partners
- ability to correctly interpret and 'sync' with the child's cues
- parental presence, physical and emotional
- consistency and type of discipline
- decision-making, judgment and planning
- *ability to protect the child.*
- Children of caregivers with unhealed trauma are at higher risk of experiencing trauma and adversity.

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Interrupting the Cycle

- "Trans-Generational Transmission of Trauma"
 - Adaptive coping—adversity repeats but behaviors and symptoms may change.
 - "Epigenetics" research: Adversity disrupts gene expression, transmitted to subsequent generations; reversible?
- **Helping parents/caregivers heal is essential to prevent traumatizing the next generation!**
- There are a number of effective individual and family-based interventions and interventions designed for specific settings (prison/detention, schools, mental health and addiction services, child welfare, community violence/gangs, emergency department and clinics.)

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Trauma, Parenting and Healing

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

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Working with Parents

- Assess behavior as possible reaction to trauma history
- Approach without blame, judgment or being punitive
- Help parents understand connection of past and present
- Build on parents' desire to be effective parents; educate and coach on attunement, 'being present.'
- Help parents anticipate and manage their stress reactions to triggers.
- Cultivate referral sources providing trauma-focused services.
- Advocate for TIC in all settings

Source: NCTSN, "Birth Parents with Trauma Histories and the Child Welfare System."

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Trauma-Informed and Trauma-Focused

"Trauma-Focused" or "trauma-specific" refers to the services, programs or interventions specifically designed to achieve healing from trauma.

"Trauma-Informed" refers to a way of perceiving and responding to people who have experienced trauma, which is embedded in the culture of an organization or community. The 4 Rs:

- *Realize (history)*
- *Recognize (manifestation)*
- *Respond (patience, empathy, services)*
- *Resist re-traumatizing (avoid, prevent triggers)*

SAMHSA Concept of Trauma and Guidance for a Trauma-Informed Approach (2014)

Why “Trauma-Informed” ?

Traumatic experiences are so common that when working with ANYONE...practice “universal precautions.”

- Assume the presence of current or past trauma.
- Adhere to the principle of “First do no harm.”
- Ask “What has happened to you?” not “What is wrong with you?”
- Screen for trauma history and assess for current distress.
- Refer or seek consultation for trauma-focused services, as indicated.

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Characteristics of Trauma-Informed Approaches

- Ensure SAFETY (physical, psychological)
- Demonstrate Trustworthiness and Transparency
- Engage Peer Supporters
- Invite Collaboration and Mutuality
- Encourage Empowerment, Voice and Choice
- Develop Cultural, Historical and Gender Responsiveness

(SAMHSA, 2014)

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Implications for Policy and Practice

- Universal screening and assessment of children and caregivers.
- Family-focused interventions (sequential, concurrent, or parallel modalities.)
- Provide and arrange for holistic care for whole family:
 - Parent training/psycho-education
 - SSNRs-Safe, Stable, Nurturing Relationships with partners
 - Social supports, community resources
 - Arts and expression
 - Grounding, body work (exercise, yoga, massage, nature)
 - Encourage and model healthy coping
- Care for the care-givers: Create trauma-informed organizational workplaces, reduce vicarious trauma.

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Trauma and Our Communities' Health

Trauma is a community problem—not just a problem for the individual or family; it affects every health, education, social and economic challenge we face. This requires a *community* perspective:

- Framework that is comprehensive, holistic, integrated.
- Helping all people to heal, interrupt cycle of transmission.
- Everyone to participate in creating safe, stable, nurturing environments.
- Do many things at once; be imaginative, take advantage of opportunities, create energy for transformation of our systems;

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Video links

Be a “BRAIN HERO!” :

https://www.youtube.com/watch?v=s31HdBeBgg4&feature=player_embedded

Improve adult capabilities to improve child outcomes!

https://www.youtube.com/watch?v=urU-a_FsS5Y&feature=player_embedded

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- Giller, Esther et al. “Risking Connection: Helping Agencies Embrace Relational Work with Trauma Survivors,” The Journal of Trauma Practice, 2006.
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- SAMHSA, TIP 57, HHS Publication # (SMA) 14-4816, Rockville, MD, 2014.
- Van Der Kolk, Bessel. The Body Keeps the Score. Viking, New York, 2014.

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Adverse Childhood Experiences Study Websites


- <http://www.cdc.gov/ace/outcomes.htm>
- http://vetoviolence.cdc.gov/childmaltreatment/phl/health_department.html
- www.ACEstooHigh.org
- <http://ACEsConnection.com/>

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Other Websites

- National Child Traumatic Stress Network (NCTSN) www.nctsn.org
- Harvard Center on the Developing Child developingchild@harvard.edu
- National Center for Trauma-Informed Care (NCTIC) nctic@nasmhpd.org
- National Center for PTSD (US Dept. of Veteran's Affairs) www.ptsd.va.gov
- National Center on Domestic Violence, Trauma and Mental Health www.nationalcenterdvtraumamh.org
- International Society for Traumatic Stress Studies (ISTSS) www.istss.org

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