Adverse Childhood Experiences, Neurobiology, Trauma-Informed Care and Resilience
- Adversity, Health and Well-being Across the Life Span
- The Biology of Personal, Social and Historical Experience
- Building Resilience, Healing and Hope
Well, we're both fruit.
The Hidden Epidemic – ACES

The three types of ACES include:

**ABUSE**
- Physical
- Emotional
- Sexual

**NEGLECT**
- Physical
- Emotional

**HOUSEHOLD DYSFUNCTION**
- Mental Illness
- Incarcerated Relative
- Mother treated violently
- Substance Abuse
- Divorce

The True Nature of Preventive Medicine

Mechanisms By Which Adverse Childhood Experiences Influence Adult Health Status

Types of Adverse Childhood Experiences
Image courtesy of the Robert Wood Johnson Foundation
ACE Score

- Total number of ACE that each participant reported
- Used to assess negative experiences during childhood
- Example: Experiencing physical abuse as a child is an ACE score of one. Experiencing physical abuse plus witnessing IPV is an ACE score of two.
ACE Study Major Findings

ACE Categories (ACEs) are Interrelated
- 87% of people with 1 have >1

ACEs are Common
- Nearly 2/3 of adults have ≥1; 27% have ≥3; 5% have ≥6

Accumulation of ACEs Matters
- Higher # (ACE Score) = higher population risk

Graded Relationship: Disease, Disability, Social, Productivity Scores= Good Proxy Measure Childhood Toxic Stress Dose

ACEs are the Most Powerful Known Determinant of Health
- Mental, Physical, Behavioral, Productivity, Disability, & Social Problems
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.

Risk for Negative Health and Well-being Outcomes

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

www.cdc.gov
POPULATION ATTRIBUTABLE RISK

A large portion of many health, safety and prosperity conditions is attributable to Adverse Childhood Experience.

ACE reduction reliably predicts a decrease in all of these conditions simultaneously.
States Collecting ACEs Data 2009 - 2015

Source: CDC National Center for Injury Prevention & Control
Subsequent ACEs Work

• In 2009, 85% of a homeless population reported at least 1 ACE, 55% reported 4 or more

• In 2013 BRFSS, 60% of adult Illinois residents and in NCHS, 40% of children Birth-17 had at least 1 ACE

• In 2014, Juvenile offenders in Florida had an average composite ACE score of 3.5-4.3
1202 low income, minority participants born 1979-80

2/3 had experienced >=1 ACE by age 18

After controlling for demographic factors and early intervention >=4 ACE had poorer outcomes

- Decreased high school graduation
- Increased risk of depression and health compromising behaviors
- Juvenile arrest and felony charges
- Less likely to hold skilled jobs

Adverse Childhood Experiences and Adult Well-Being in a Low income, Urban Cohort, Alison Giovanelli et al, Pediatrics 2016
ACE Score and Teen Sexual Behaviors

Percent with Health Problem (%)

ACE Score
- 0
- 1
- 2
- 3
- 4 or more

Intercourse by 15
Teen Pregnancy
Teen Paternity
Relationship Between Number of ACEs and the Age at Initiation of Illicit Drugs

- 0 ACEs: 4%
- 1 ACE: 6%
- 2 ACEs: 9%
- 3 ACEs: 12%
- 4 ACEs: 14%
- ≥ 5 ACEs: 16%

Dube et al., 2003, Pediatrics
Effects of ACES in Childhood

- Impaired development in the first 3 years
- Language difficulties
- > risk for failing a grade
- Designated special ed
- Suspended or expelled
- Have poorer health
- At risk for incarceration

Anda, Blodgett, Burke-Harris
ACE Exposure Associated with Academic Problems

Risk for Academic Problems

- Academic Failure
- Problems with School Attendance
- School Behavior Concerns

ACE Score:
- 0
- 1
- 2
- 3 or more

Adapted from C. Blodgett et. al., 2014
ACEs in the Classroom

- ACEs are the greatest single predictor for health, attendance and behavior.
- ACEs are the second strongest predictor, after special education status, for academic failure.
- The relationship between academic achievement and health status appears much less related to income than to ACEs.
OLDER CHILDREN - High School Sophomores and Seniors

Washington School Classroom (30 Students)
Adverse Childhood Experiences (ACEs)

6 students with no ACE  
5 students with 1 ACE  
6 students with 2 ACEs  
3 students with 3 ACEs  
7 students with 4 or 5 ACEs  
3 students with 6 or more ACEs

58% (17) students with no exposure to physical abuse or adult to adult violence
29% (9) of students exposed to physical abuse or adult to adult violence
13% (4) of students exposed to physical abuse and adult to adult violence

Population Average
CHILDREN LIVING IN VIOLENT HOMES

- New generations of violent families
- Runaways
- Violence in our streets
- Substance abuse
- Food addictions
- Sexual assaults
- Date rape
- Sexual harassment
- Use of pornography
- Teen pregnancy
- Violence at school
- Truancy
Improving the ACE Scale by Acknowledging Additional Adversities

The Pair of ACEs

Adverse Childhood Experiences

- Maternal Depression
- Physical & Emotional Neglect
- Emotional & Sexual Abuse
- Divorce
- Substance Abuse
- Mental Illness
- Domestic Violence
- Incarceration
- Homelessness

Adverse Community Environments

- Poverty
- Violence
- Discrimination
- Community Disruption
- Lack of Opportunity, Economic Mobility & Social Capital
- Poor Housing Quality & Affordability

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

- **Brainstem**: ancient brain. Regulates basic processes, states of arousal, fight-flight-freeze.
- **Limbic System**: emotions, evaluation of good vs bad, forming relationships and emotional attachment, memory
- **Cerebral cortex**: think, imagine, combine facts and experiences, create
Attachment and Neurodevelopment

- A special emotional relationship that involves an exchange of comfort, care, and pleasure.

- Early attachment styles are established in childhood through the infant/caregiver relationship. (secure, avoidant, ambivalent, disorganized)

- ACEs can cause attachment disruption and emotional misattunement which will affect neurodevelopment as well as capacities for interaction and self-regulation both short and long-term.

- Secure attachments protect and heal from later stress, distress and trauma
Three Levels of Stress Response

Positive
Brief increases in heart rate, mild elevations in stress hormone levels.

Tolerable
Serious, temporary stress responses, buffered by supportive relationships.

Toxic
Prolonged activation of stress response systems in the absence of protective relationships.

Center on the Developing Child, Harvard University
Stress

Positive or Tolerable
• Predictable
• Moderate
• Controlled

Resilience

Toxic
• Unpredictable
• Severe
• Uncontrolled

Vulnerability
Fight/Flight vs Rest/Digest

Stress Response “Fight/Flight”

- Breathing Rate
- Blood Pressure
- Heart Rate
- Metabolism
- Blood Sugar
- Adrenaline
- Sensory Awareness

Relaxation Response “Rest and Digest”

- Thought Processes
- Creativity
- Concentration
- Immune System
- Digestive System
The Impact of Stress on Physiology

Stressor → Hypothalamus → CRH → Anterior Pituitary → ACTH → Adrenal Glands → Glucocorticoids

Glucocorticoids → Cardiovascular, Liver, Musculoskeletal → Other Body Systems

Glucocorticoids → Autonomic Nervous System → Cytokines

Cytokines → Immune System:
- Spleen
- Thymus
- Bone Marrow
- Immune cells
EPIGENETICS

How the experiences of previous generations can affect who we are

THE THEORY

Until recently, all our characteristics were thought to be shaped by two different factors

1. Nature
   The genetic information that we inherit from our mother and father

2. Nurture
   The influence of our environment

Epigenetics suggests a combination of these

In other words...

The life experiences of our parents and
Lifespan Impacts of ACEs

Critical & Sensitive Developmental Periods

Adverse Childhood Experience
MORE CATEGORIES – GREATER IMPACT
Physical Abuse, Sexual Abuse, Emotional Abuse, Neglect
Witnessing Domestic Violence
Depression/Mental Illness in Home
Incarcerated Family Member
Substance Abuse in Home
Loss of a Parent

Genetics
Experience triggers gene expression (Epigenetics)

Brain Development
Electrical, Chemical, Cellular Mass

Adaptation
Hard-Wired Into Biology

Chronic Disease
Psychiatric Disorders
Impaired Cognition
Work/School
Attendance, Behavior, Performance
Obesity
Alcohol, Tobacco, Drugs
Risky Sex
Crime
Poverty

Intergenerational Transmission, Disparity

Source: Family Policy Council, 2012
Secondary Trauma
What is Trauma-Informed Care?

• Trauma-informed care is an approach or framework related to delivering services that acknowledges the impact of trauma and attempts to create a sense of safety within the program. *Trauma-informed transformation is a cultural shift, a move toward safety-focused, strength-based, consumer-driven, empowerment-rich programming that allows consumers to take charge of their recovery, addresses unsafe behaviors and prioritizes safety as a platform for recovery.*

The Path to Becoming a Trauma Informed Organization

**Trauma aware**
- Form a change team
- Conduct an organisational assessment
- Define goals
- Identify trauma champion
- Implement goal
- Test outcomes
- Identify new goals
- Repeat

**Trauma sensitive**
- Be welcoming
- Maximise safety
- Educate your staff
- Have parent resources available
- Focus on empowerment
- Use first person language
- Promote strength through practices
- View holistically
- Share vision across service systems
- Address staff issues

**Trauma responsive**
- Recognise and respond to traumatic stress
- Screen for trauma history
- Strengthen resilience and protective factors
- Address the impact on the family
- Assist children in reducing overwhelming emotion
- Help children make new meaning of their lives

**Trauma-informed care**
- Whole system is based on understanding trauma
- Safety
- Recovery
- Collaboration
- Client agency
- Empowerment, strength and resilience

For Systems Change
Build New Mental Models

Iceberg... Seeing What’s Below the Surface

What is seen

What is generally unseen

Events
What happened?

Patterns of Behavior
What’s been happening?
What are the trends?
What changes have occurred?

Structure of the System
What has influenced the patterns?
(e.g. policies, laws, physical structures)
What are the relationships among the parts?

Mental Models
What assumptions, beliefs, and values do people hold about the system?

<table>
<thead>
<tr>
<th>Traditional Paradigm</th>
<th>Trauma Informed Paradigm</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Clients are sick, ill, or bad</td>
<td>• Clients are hurt and suffering</td>
</tr>
<tr>
<td>• Client behaviors are immoral and need to be punished</td>
<td>• Client behaviors are survival skills developed to live through the trauma but are maladaptive in everyday society</td>
</tr>
<tr>
<td>• Clients can change and stop immoral destructive behavior if they only had the motivation</td>
<td>• Clients need support, trust and safety to decrease maladaptive behaviors</td>
</tr>
<tr>
<td>• Manage or eliminate client behaviors</td>
<td>• Provide opportunities for clients to heal from their trauma</td>
</tr>
<tr>
<td>• Staff should come to work every day at their best and perform to leadership’s expectations</td>
<td>• Leaders need to create strong organizational culture to combat trauma and stress associated with work with traumatized clients</td>
</tr>
<tr>
<td>• System of care should be created to minimize short term costs and contain immoral behaviors</td>
<td>• System of care invests in healing trauma, saving money over the long term</td>
</tr>
</tbody>
</table>
Fundamental Principles of Trauma Sensitive Schools

- Comprehend the Prevalence and Impact of Trauma
- Trauma Informed Lens
- Using Relationships to Heal and Build School Connectedness
- Caregiver Capacity
- Empowerment and Resiliency
Prevention Starts with Caregiver Capacity

Self-Care 360°

- Exercise
- Nutrition
- Sleep
- Healthy Relationships
- Stress Management
- Work/Life Balance
- Self-Appréciation
- Social Interaction

Life is not about how fast you run or how high you climb but how well you bounce.

~Vivian Komori
Maslow Theory of Human Motivation
1943
To Screen or Not To Screen
For Healing, Support the Mind Body Connection
Building Resilience from the Bottom Up

Reason

Relate

Regulate
## The ZONES of Regulation®

<table>
<thead>
<tr>
<th>BLUE ZONE</th>
<th>GREEN ZONE</th>
<th>YELLOW ZONE</th>
<th>RED ZONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sad</td>
<td>Happy</td>
<td>Frustrated</td>
<td>Mad/Angry</td>
</tr>
<tr>
<td>Sick</td>
<td>Calm</td>
<td>Worried</td>
<td>Mean</td>
</tr>
<tr>
<td>Tired</td>
<td>Feeling Okay</td>
<td>Silly/Wiggly</td>
<td>Terrified</td>
</tr>
<tr>
<td>Bored</td>
<td>Focused</td>
<td>Excited</td>
<td>Yelling/Hitting</td>
</tr>
<tr>
<td>Moving Slowly</td>
<td>Ready to Learn</td>
<td>Loss of Some Control</td>
<td>Out of Control</td>
</tr>
</tbody>
</table>
Rhythm, Self-Regulation and Relationships
The Evidence-Based Solutions
Grounding Exercise
Name 3 things

- you see
- you smell
- you hear
- you feel

Breathe in and out slowly 3x

Social Work Career Development
• Adverse Experiences are the Most Powerful Determinants of Health and Well-Being
• Experiences Influence Our Biology
• Creating New Mental Models Helps Change Systems
• Rhythm, Regulation, and Relationships are the Evidence-Based Solutions
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