INTENSIVE
OSTEOPATHIC
UPDATE
VIRTUAL

THE VIRTUAL EXPERIENCE:
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ACEs and PACEs: Adverse and Protective Childhood Experiences

Jennifer Hays-Grudo, PhD
Regents Professor, Psychiatry,
OSU Center for Health Sciences
Director, CIRCA
jenennifer.hays.grudo@okstate.edu
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Learning objectives

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

https://www.cdc.gov/violenceprevention/acestudy/
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
ACEs are prevalent

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?

- ACEs pyramid
- ACEs disrupt brain development
- Cause developmental impairments
- Risky health habits result
- Disease/disability
- Premature mortality (20 years with 6+ ACEs)

ACEs alter brain development

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

Allostatic load: Wear and tear from chronic stress
Health-Harming Behaviors Seen 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.”

- Dr. Vincent Felitti
ACEs impair normal development

Early Life Experiences
• ACEs, including
  • Adversity
  • Abuse & Neglect
  • Institutional Care
  • Exposure to Violence
  • Poverty
  • Household Dysfunction

Physical Adaptations to Stress
• Endocrine System
• Immune Function
• Brain Structure
• Brain Function
• Epigenetic changes

Developmental Impairments
• Cognitive Development
• Emotion Regulation
• Behavioral Control
• Social Connection
• Other Executive Function Skills
Epigenetic alterations observed following exposure to maternal separation or “abusive” care in

- Glucocorticoid receptor gene promoter 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

Intergenerational Transmission of Adversity

ACEs impact on the developing child
- Allostatic load (stress dysregulation)
- Neural development (brain structure & function)
- Epigenetic changes
- Behavioral dysregulation
- Developmental impairments

Adult Neurobiological & Behavioral Effects
- Immune system impairments (health problems)
- Neuroendocrine (oxytocin, cortisol)
- Biophysical (obesity, susceptibility to addiction)
- Mental skills (cognitive, emotion regulation)
- Health-harming behaviors (smoking, drugs)
- Psychological (depression, anxiety)

Environmental Effects on next generation
- Family instability
- Family violence
- Social isolation
- Economic instability
- Neighborhood violence
- Maltreatment

What can we do to reduce the effects of ACEs?
• **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)

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

<table>
<thead>
<tr>
<th>Relationship PACEs</th>
<th>Month</th>
<th>Environment and Resources PACEs</th>
<th>Month</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Love.</strong> I know that I am loved and love someone unconditionally. I do not doubt that I am cared for.</td>
<td></td>
<td><strong>Home.</strong> I live in a home that is clean, uncluttered, safe, with healthy food to eat.</td>
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</tr>
<tr>
<td><strong>Current status:</strong></td>
<td>Actions taken:</td>
<td><strong>Goal:</strong></td>
<td>Actions taken:</td>
</tr>
<tr>
<td><strong>Goal:</strong></td>
<td></td>
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<tr>
<td><strong>Friendship.</strong> I have at least one best friend, someone I can count on and have fun with.</td>
<td></td>
<td><strong>Learning.</strong> I make opportunities for lifelong learning, and have the resources I need to learn and grow in my work and as a person.</td>
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<td><strong>Goal:</strong></td>
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<tr>
<td><strong>Volunteer.</strong> I do something regularly to benefit others or participate in community helping projects.</td>
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<td><strong>Physical activity.</strong> I get some type of physical exercise every day, either alone or with others.</td>
<td></td>
</tr>
<tr>
<td><strong>Current status:</strong></td>
<td>Actions taken:</td>
<td><strong>Goal:</strong></td>
<td>Actions taken:</td>
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<tr>
<td><strong>Goal:</strong></td>
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<tr>
<td><strong>Mentor.</strong> I have someone I can look to for advice, information, or support.</td>
<td></td>
<td><strong>Hobby.</strong> I have a hobby that gives me pleasure and allows me to be creative and productive and feel proud of my accomplishments.</td>
<td></td>
</tr>
<tr>
<td><strong>Current status:</strong></td>
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<td><strong>Goal:</strong></td>
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<tr>
<td><strong>Community connection.</strong> I am an active member of at least one civic, social, or faith-based group.</td>
<td></td>
<td><strong>Routines and rituals.</strong> I make a point to get enough sleep, eat regular meals with family and friends and have other opportunities to spend time with others.</td>
<td></td>
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<tr>
<td><strong>Current status:</strong></td>
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</table>
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

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 (Dr. Vincent Felitti)
- MBSR, other programs to address dysregulated stress response

Screen parents
- Identify parents with ACEs (Dr. Nadine Burke-Harris)
- Early interventions – pregnancy, parents with infant/toddler programs

Screen children (AAP)
- Challenges - mandatory reporting, referrals

Evidence-based treatment

• **Medications** that shut down inappropriate alarm reactions, or other technologies that change the way the brain organizes information

• **Top down** – talking, re-connecting with others, allowing past and current experiences to be acknowledged and processed); e.g., tf-CBT

• **Bottom up or Body-based** – activities that allow the body to have experiences that viscerally contradict the helplessness, rage, or collapse that result from trauma (fight/flight/freeze).

Van Der Kolk, 2014. *The Body Keeps the Score.*
Two levels of Intervention: **Traditional** and **ACEs-based**

- Treat disease
- Address problematic behaviors

- Build executive function skills
- Address underlying neurobiological effects

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Mindfulness Interventions

MBSR
Mindfulness Based Stress Reduction
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.
Participate in research

• March 2020 first issue
• Springer/Nature
• Jennifer Hays-Grudo, Editor-in-Chief; Amanda Morris, OSU, and Hiram Fitzgerald, Michigan State University, Associate Editors
• Interdisciplinary, international editorial board
• Basic and applied research
• Creating new approaches to understanding and treating childhood trauma and adversity
Join/create resilient community coalitions

Proliferation of state and community organizations coordinating trauma-informed care, ACEs prevention, and healing from historic trauma
How is the COVID-19 pandemic impacting children and adults with ACEs?

ACEs occur in context
• Disasters often increase ACEs via increased parental stress
• And via reduction of resources (PACEs) in communities and families
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
  • ACEs increase distress and loneliness from social distancing
• Children are at increased risk of child abuse and neglect if parents are not getting help in dealing with stresses of pandemic
• Parents and children need access to resources and support
Further readings


Thank you
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