The Effects of Trauma on Health and Behavior

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The Trauma-Violence Relationship

American children are exposed to high rates of violence at home, at school and on the streets. Children living in impoverished, crime-ridden neighborhoods are particularly susceptible to exposure to violence—in some studies over 80%.
What happens?

- Fear
- Terror
- Anxiety
- Guilt
- Shame
- Modeling
- Somatic symptoms

Generalized Anxiety Disorder 300.02

- Restless
- Difficulty concentrating
- Irritability
- Muscle tension
- Sleep disturbance

Symptoms result in impairment in social or occupational function (learning).

COMPLEX POSTTRAUMATIC SEQUELAE
What are the most common physical, emotional, behavioral and social reactions to trauma?

- Intrusive re-experiencing of fragments of the events, such as flashbacks and nightmares.
- Avoidance and numbing of people, places, things and feelings that are reminders of the events.
- Physiological hyper-arousal with increased startle response, changes in blood pressure, heart rate and other physical changes.
- Typical trauma responses are frequently mistaken for other problems. These include poor academic performance, drug and alcohol use, poor social interactions, inability to trust or to bond with others.
How does the diagnosis that we are most familiar with, “post traumatic stress disorder,” relate to other levels of trauma responses?

- Post-traumatic stress disorder is the “classic stress response.”
- It is useful to think of trauma as a spectrum of disorders as there are many associations between a past history of traumatic experience and the variety of behavioral and physical responses.

Complex Post-Traumatic Stress Disorder (PTSD) Problems

- Irritability, aggression, tension
- Sleep problems, nightmares, flashbacks
- Hair-trigger tempers
- Mood instability—depression, anxiety
- Poor impulse control—destructive behavior
- Dichotomous, extremist thinking and behavior
- Attachment to dysfunctional groups, relationships

Complex PTSD; Complex Problems

- Multiple addictions & compulsive behavior
- Psychosomatic and other physical illness
- Lack of empathy, conscience, meaning, purpose
- Failure of imagination, repetition, compulsion
Traumatic events impact children and adults differently

- Adults have more fully developed internal and external resources to make sense of and to cope with a traumatic event.
- The central nervous systems (brains) of children are not yet fully developed. They are unable to put their experiences into context or to make sense of them.
- The two most fundamental responses to trauma are the “fight or flight response” where the instinct for survival takes control; or disassociation, which is a protective mechanism that creates a barrier to the actual experience. Repeated exposure to trauma prevents normal brain development in children.
What do we mean by Adverse Childhood Experiences?

- Experiences that represent medical and social problems of national importance.
  - Childhood abuse and neglect
  - Growing up with domestic violence, substance abuse or mental illness in the home, parental loss, or crime

The Adverse Childhood Experiences (ACE) Study

Summary of Findings:

- Adverse Childhood Experiences (ACEs) are very common
- ACEs are strong predictors of later health risks and disease
- This combination makes ACEs the leading determinant of the health and social well-being of our nation

Categories of Adverse Childhood Experiences

<table>
<thead>
<tr>
<th>Category</th>
<th>Prevalence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Abuse, by Category</strong></td>
<td></td>
</tr>
<tr>
<td>Psychological (by parents)</td>
<td>11%</td>
</tr>
<tr>
<td>Physical (by parents)</td>
<td>11%</td>
</tr>
<tr>
<td>Sexual (anyone)</td>
<td>22%</td>
</tr>
<tr>
<td><strong>Household Dysfunction, by Category</strong></td>
<td></td>
</tr>
<tr>
<td>Substance Abuse</td>
<td>26%</td>
</tr>
<tr>
<td>Mental Illness</td>
<td>19%</td>
</tr>
<tr>
<td>Mother Treated Violently</td>
<td>13%</td>
</tr>
<tr>
<td>Imprisoned Household Member</td>
<td>3%</td>
</tr>
</tbody>
</table>
Estimates of the Population Attributable Risk* (PAR) of ACEs for Selected Outcomes in Women

<table>
<thead>
<tr>
<th>Mental Health:</th>
<th>PAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current depression</td>
<td>54%</td>
</tr>
<tr>
<td>Depressed affect</td>
<td>41%</td>
</tr>
<tr>
<td>Suicide attempt</td>
<td>58%</td>
</tr>
<tr>
<td><strong>Drug Abuse:</strong></td>
<td></td>
</tr>
<tr>
<td>Alcoholism</td>
<td>65%</td>
</tr>
<tr>
<td>Drug abuse</td>
<td>50%</td>
</tr>
<tr>
<td>IV drug abuse</td>
<td>78%</td>
</tr>
<tr>
<td>Promiscuity</td>
<td>48%</td>
</tr>
<tr>
<td><strong>Crime Victim:</strong></td>
<td></td>
</tr>
<tr>
<td>Sexual assault</td>
<td>62%</td>
</tr>
<tr>
<td>Domestic violence</td>
<td>52%</td>
</tr>
</tbody>
</table>

*Based upon the prevalence of one or more ACEs (62%) and the adjusted odds ratio > 1 ACE.

What is conventionally viewed as a problem is actually a solution to an unrecognized prior adversity.

Children Experiences Underlie Chronic Depression

(Bar chart showing the percentage of women and men with a lifetime history of depression by ACE score)
Adverse Childhood Experiences and the Risk of:

<table>
<thead>
<tr>
<th>ACE Score</th>
<th>Intimate Partner Violence*</th>
<th>Being Raped*</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>1</td>
<td>1.9</td>
<td>2.0</td>
</tr>
<tr>
<td>2</td>
<td>2.1</td>
<td>2.8</td>
</tr>
<tr>
<td>3</td>
<td>2.7</td>
<td>4.2</td>
</tr>
<tr>
<td>4</td>
<td>4.5</td>
<td>5.3</td>
</tr>
<tr>
<td>&gt;5</td>
<td>5.1</td>
<td>8.9</td>
</tr>
</tbody>
</table>

*Adjusted Odds Ratio

Well-being

ACE Score and the Risk of Being a Victim of Domestic Violence
Estimates of the Population Attributable Risk* of ACEs for Selected Outcomes in Women

<table>
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<tr>
<th>Outcome</th>
<th>PAR</th>
</tr>
</thead>
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<tr>
<td>Depression and Suicide</td>
<td>48%</td>
</tr>
<tr>
<td>Crime Victim</td>
<td></td>
</tr>
<tr>
<td>Sexual Assault</td>
<td>62%</td>
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</tbody>
</table>

*That portion of a condition attributable to specific risk factors

We find that....

“Addiction highly correlates with characteristics intrinsic to that individual’s childhood experiences.”

ACE Score vs. Intravenous Drug Use

![Graph showing the correlation between ACE score and % have injected drugs.](image)

N = 8,022, p<0.001
### Adverse Childhood Experiences and the Risk of:

<table>
<thead>
<tr>
<th>ACE Score</th>
<th>Alcoholism*</th>
<th>Parenteral Drug Abuse*</th>
<th>Attempted Suicide*</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>1</td>
<td>1.9</td>
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<td>4.5</td>
<td>3.8</td>
<td>7.2</td>
</tr>
<tr>
<td>&gt;5</td>
<td>5.1</td>
<td>9.2</td>
<td>16.8</td>
</tr>
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*Adjusted Odds Ratio

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Dismissing them as "bad habits" or "self-destructive behavior" totally misses their function.

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Adverse Childhood Experiences determine the likelihood of the ten most common causes of death in the United States.

Top 10 Risk Factors: smoking, severe obesity, physical inactivity, depression, suicide attempt, alcoholism, illicit drug use, injected drug use, 50+ sexual partners, h/o STD.
With an ACE Score of 0, the majority of adults have few, if any, risk factors for these diseases.

However, with an ACE Score of 4 or more, the majority of adults have multiple risk factors for these diseases or the diseases themselves.

Effect of ACEs on Mortality

- ACE Score
  - 0
  - 2
  - 4

- Percent in Age Group
  - 19-34
  - 35-49
  - 50-64
  - >=65
Many chronic diseases in adults are determined decades earlier, in childhood.

Trauma Symptom Checklist for Children (TSCC; Briere, 1996)
- 54-item self-report
- Boys and girls, ages 8-12 and 13-16, with normative adjustments for 17 year olds.
- Two validity scales: Underresponse (UND) and Hyperresponse (HYP)
- Six clinical scales: Anxiety (ANX), Depression (DEP), Posttraumatic Stress (PTS), Sexual Concerns (SC), Dissociation (DIS), and Anger (ANG).
- Rated on a 0 (“never”) to 3 (“almost all of the time”) scale.

Universal Precautions as a Core Trauma informed Concept
Presume that every person in a treatment setting has been exposed to abuse, neglect and other traumatic experiences.
What promotes healthy development of the human brain

Good nutrition
A Stimulating environment
Healthy relationships with loving caretakers

Experience Affects Brain Development

- Childhood is a time for learning
- Number of synapses increases dramatically after birth
- Environment-stimulated neuronal activity is critical for elaboration of synaptic territories and ‘proper’ connections

Neurodevelopmental Windows of Opportunity

- Emotional intelligence: 0-48 months
- Motor Development: 0-24 months
- Vision: 0-24 months
- Music: 0-36 months
- Second language: 0-60 months
Early Brain Development

- All behavioral development has to do with the brain
- Brain development is dependent upon both experience and genetics
- The brain has a great deal of plasticity and can recover over time.

The Brain's Composition

The brain is comprised of four areas:
- stem
- diencephalon
- limbic system
- cortex

- Growth of the brain occurs from the inside out and the bottom up
- You are born with 100 billion brain cells
- There are 15,000 synaptic connections for each cell

Early Experiences are Crucial

- By age 3, 80% of synaptic connections are already made
- By the second decade of life growth levels off and pruning begins
- Increased experiences define the wiring of an infant’s brain
Nature vs. Nurture

- During the first 10 years of life the brain is twice as active as that of an adult’s
- 60% of nutrition is used by the brain during the first year of life. This decreases to 30% by age 3
- Genetic and environmental factors have a more dynamic, qualitative interplay that cannot be reduced to a simple equation
How the brain “gets on with life” (LeDoux, 2003)

Threat

Active coping
- Planning
- Action

Passive coping
- Freezing
- Despondency

Attachment - Human Studies

Dorsolateral Prefrontal Cortex
Sensory Cortex
Medial Prefrontal Cortex
Amygdala
Thalamus
Hippocampus
Early Care Experiences

- Babies thrive when they receive warm, responsive early care
- Early care has a decisive, long-lasting impact on how people develop, their ability to learn, and their capacity to regulate their own emotions

Developmental Processes Implicated in Trauma

- Attachment
- Experience-dependent maturation of neuronal systems
- Development of emotional regulation
- Development of impulse control
- Consolidation of Integrated sense of self
- Socialization

Factors Related to Symptoms

- Relationship to abuser
- Intensity, length of trauma
- Age of first trauma
- Lack of community safety, poverty
- Losses associated with the trauma
- Poor pre-morbid functioning
- Cognitive/developmental delays
- Insecure attachment
Treatment of Trauma Effects

Core Components
- Safety
- Self Regulation (Body, emotion, behavior)
- Relationship attachment
- Self Reflective Information Processing
- Positive Affect Enhancement
- Trauma Experience Integration

Safety
- Trauma victims see the world as dangerous
- Unable to shift from defensive reactions until safe
- Perceptions of being unsafe are profoundly somatic experiences

Self Regulation
- Overwhelming levels of arousal lead to reliance on maladaptive (but immediately effective) coping strategies
- Affective, behavioral, somatic
- Self soothing capacity
- Up/down modulation of emotional states
- Healthy self expression
- Impulse control
Relational Engagement
Attachment is the dance of the limbic systems of the child and parent
Interpersonal connection: Build capacity to effectively build meaningful relationships with others
- Initiating communication
- Nonverbal communication
- Self expression

Self Reflective Information Processing
- Executive functions: attention, anticipation, problem solving, planning
- Identity
- Coherent narrative of self and other
- Future orientation

Positive Affect Enhancement
- Creativity
- Imagination
- Pleasure/joy
- Achievement
- Competence
- Mastery-seeking
Trauma Experience Integration

- Understanding how past experiences trigger current responses
- Shifting from reactive to active lifestyle
- Building ability to live ‘in the moment’
- Addressing and mastering frightening experiences in a safe environment
- Mourning loss
- Incorporating history into larger sense of self and identity

"The past is never dead, it's not even past"
(Requiem for a Nun, Act I, Scene III).