The Neuroscience of Traumatic Stress in Early Childhood: implications for intervention and systems

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Complex Trauma Treatment Network (CTTN)

Complex Trauma-Informed (CTI) Systems of Care Initiatives
- Trainer Training
- CTI Strategic Planning
- CTI Training Content Development
- Curriculum &如果是设计相关的问题，可以根据提供的信息进行分析。
Physiology of Trauma

Brain process under typical conditions

Observe → Input → Interpret → Process → Evaluate Options → Plan → Act

Avidson, 2011
With repeated stress, the Alarm System “Express Route” becomes the main road.
Area of Scientific Advancement
Physiology of the Human Stress Response

- **THREAT**
  - Activation of Threat Appraisal and Response System
  - Increased Limbic System Activity
  - Alarm system “flood”

- **SURVIVAL RESPONSE**
  - Fight, Flight or Freeze
  - Survival Oriented Behavior

- **POST-STRESSOR**
  - Continued Arousal
  - Difficulty Modulating

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Adaptation of Brain Processes and Structure
- Physiological Changes in Brain Structure and Function, Decreased Volume of Amygdala and Hippocampus, Prioritization of Stress Pathways

Chronic Exposure to Stress Hormones
- Significant challenges to Regulatory Capacity, Dysregulation, State and Trait Characteristics

Physiological Adaptations
- Hypervigilance, Hyper and Hypo Arousal, Survival (as opposed to developmental) based orientation. Trauma turns a learning brain into a surviving brain.

Arvidson, 2013
Attachment allows children to safely explore the world and provides a healthy model for self and others.

Attachment is the dance of the limbic systems of the child and parent.

- Allan Schore

Contextualizing Trauma within the Attachment System

Internal Representational Models

Bowlby model delineates formation of Internal Representational Models:

- Model of SELF
  - e.g., “I am worthy or competent”; “I am unworthy or incompetent”

- Model of OTHER
  - e.g., “Others are reliable or trustworthy”; “Others are unreliable or untrustworthy”

- Model of SELF IN RELATION TO OTHER
  - e.g., “Others will respond to my needs”; “Others will not respond to my needs”

These models form the basis (“working models”) for future relationships.

Blaustein, 2005
Areas Impacted by Complex Trauma

Physiology and brain development: Tolerate, control and express emotions and sensations
Control impulses and concentrate: Form healthy attachments and social relationships
Safely negotiate conflict and differentiate safe from unsafe: Learn and engage in goal-directed behavior
Form a positive and cohesive sense of self


Children Served at the Alaska Child Trauma Center, 2005-2011
Types of Trauma Experienced

- Neglect
- Impaired Caregiver
- Traumatic Loss/Bereavement
- Domestic Violence
- Emotional Abuse/Psychological Maltreatment
- Physical Maltreatment/Abuse
- Sexual Maltreatment/Abuse
- Sexual Assault
- Other Trauma
- Physical Assault
- Community Violence
- Illness/Medical
- Extreme Interpersonal Violence
- Suicide Injuy/Accident
- Natural Disaster
- Forced Displacement
- School Violence
- Kidnap

Yes
Suspected
The Reproductive Cycle of Trauma: How Trauma Perpetuates Itself

Behavioral adaptation increases risk for re-exposure

Trauma: Alarm system activates

Dysregulation generalizes

Internalization of overwhelming experience (There is something wrong with me)

Confirmation that world and experience is overwhelming

The fundamental problem of chronic exposure to traumatic experiences in childhood is that overwhelming stress turns a learning brain into a surviving brain.

But, the brain and the physiological impact of trauma, is only the beginning of the story. Development is the context in which the impact of childhood trauma is fully realized...
...The developmental necessities of childhood: formation of healthy attachments and social development, attentional capacity and cognitive development, mastery, competency, and regulation, (the ability to control one’s body, emotions and behaviors) are compromised by chronic exposure to overwhelming stress...

...Childhood trauma can be understood, fundamentally as developmental derailment. Thus, trauma-informed care for children is about helping the child and parent “put the train of healthy development back on the tracks.”
...Trauma-informed care is about helping children and families chart new developmental trajectories that promote healthy development, build resiliency and restore functioning.

- J. Arvidson
Study Conditions: Complex Trauma Treatment using ARC Framework at a clinic serving predominantly child welfare involved clients.

ARC Framework

Competency
- Relational Connection
- Executive Functions
- Self-Development & Identity

Regulation
- Identification
- Modulation

Attachment
- Caregiver Affect Management
- Attunement
- Effective Response
- Engagement
- Psychoeducation
- Routines & Rituals

Graphic by Jeremy Karpen; Blaustein & Kinniburgh, 2010; Kinniburgh & Blaustein, 2005
Alaska Child Trauma Center
Child Trauma Clinical Outcomes Study
CBCL Score Changes with 1 – year Complex Trauma Treatment (Percentile)

Baseline CBCL  End of Trx (1-year average)

86
49

Treatment Complete

CBCL (T-Scores) at Completion of Treatment

Baseline  Trx Completed

CBCL NCTSN
AK Trauma Center

ARC: Attachment, Self-Regulation, and Competency
Kristine Kinniburgh, LICSW, Margaret E. Blaustein, Ph.D.
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The Trauma Center at JRI
Econometrics of Early Intervention & Prevention

- Funding early interventions provides the largest possible return on investment


From, M. Hirschfeld AAPP

Public Investment in Children by Age

From, M. Hirschfeld, AAPP
Population Attributable Fraction

Source: 2013-2015 Alaska BRFSS, Section of Chronic Disease Prevention and Health Promotion, Alaska Division of Public Health, Graphic by Alaska Mental Health Board Staff

Population Attributable Fraction
