Epigenetics, Trauma, & Resilience: Moving From Understanding to Healing

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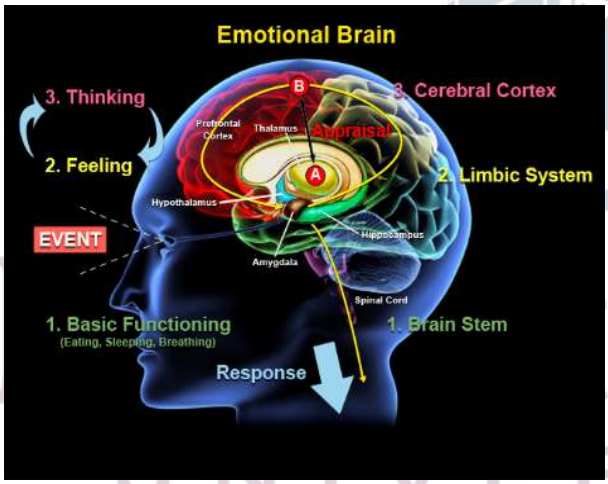
Agenda

- What is toxic stress and why has it received so much attention?
- Epigenetics
  - what it is and what it isn't
  - what we know
  - what we don't know
- The role of resilience in transforming Trauma Informed Care (TIC) into Trauma Informed Healing (TIH)

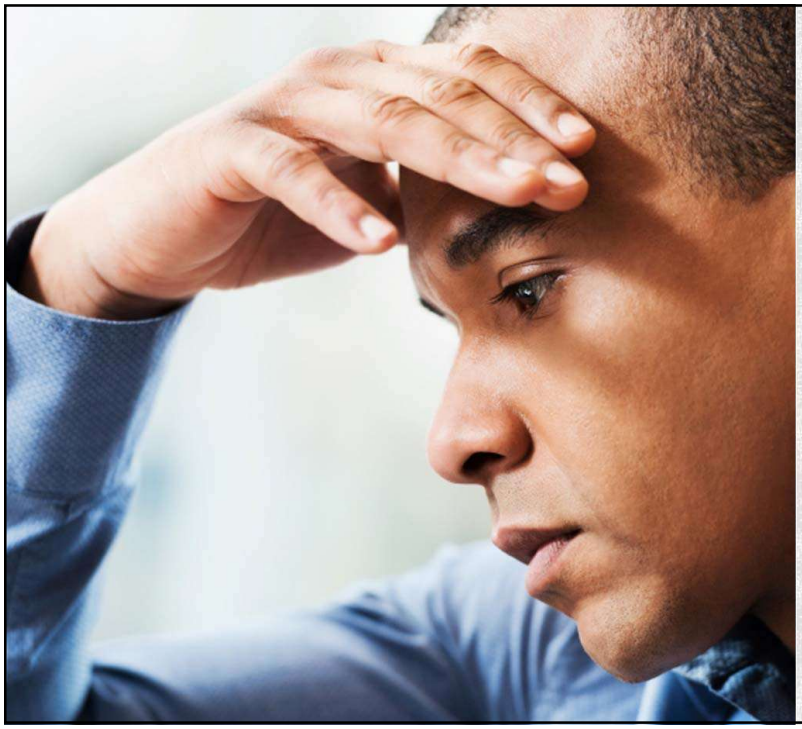
The Neurobiology of Stress



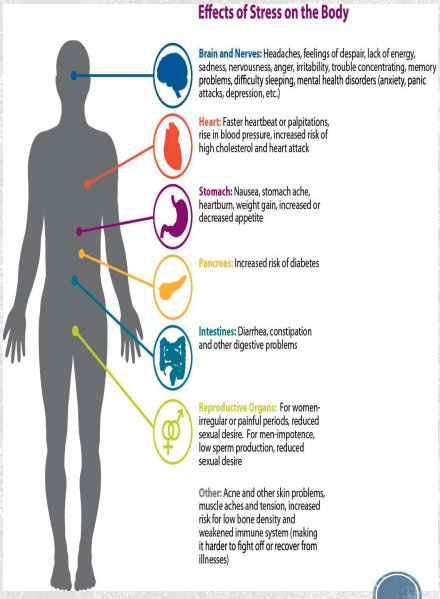
Positive
Brief increases in heart rate, mild elevations in stress hormone levels.

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

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



Toxic Stress



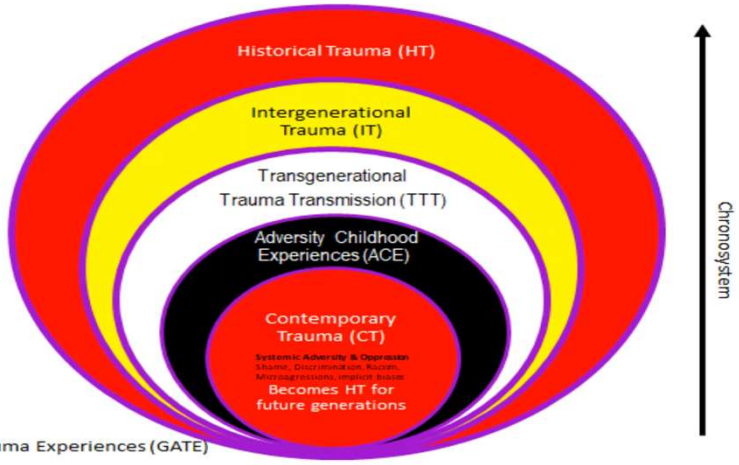
Toxic Stress: What creates profound suffering, loss, & cultural suppression?

- Genocide
- Removal of children from their parents/culture
- Racism
- Microaggressions
- Poverty
- Adverse Childhood Experiences
- Violence
- Prenatal & postnatal exposures
- Food Deserts

Groups that are impacted by HT…

- SAMHSA (2016) recognizes historical trauma in the following populations:
  - 1st Nations Tribes
  - Immigrants
  - People of color
  - Families impacted by intergenerational poverty

Interchangeable Terms? Trauma experienced by one's ancestors that presently impacts individuals and subsequent offspring (NREPP, 2016).



Generational Adversity & Trauma Experiences (GATE)
Lea S. Denny, 2018 ©

EPIGENETICS

The Intersection of Historical Trauma and Current Knowledge

Genetics vs. Epigenetics

- Genetics = The Light
- Epigenetics = The dimmer switch that regulates the lights

Epigenetics literally means "above the genes"

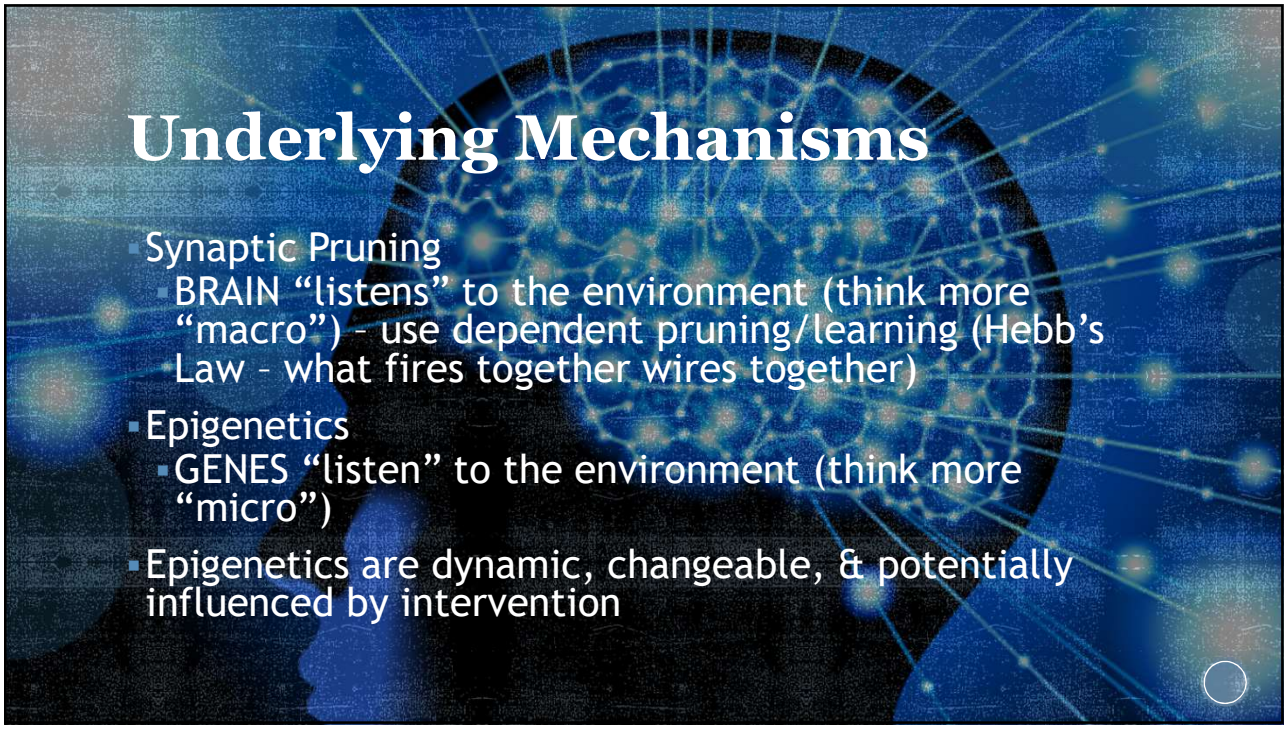
Refers to the processes (external to a DNA strand) that act to either suppress (i.e., turn off) or activate (i.e., turn on) the way a gene is expressed.

DNA is not changed in the epigenetic process rather it changes how cells READ genes.

The Science of Epigenetics can provide HOPE and a path to HEALING.

Separating Fact From Fiction and Understanding the EMERGING Science

- The Human Epigenomic Project (different that the Human Genetic Project)
- Has moved from animal studies to human studies
- The science of epigenetics involving human subjects is in its infancy and problems exist with:
  - Small sample size
  - Non- generalizable sampling techniques
  - Study design problems
- The BEST to date
  - Twin studies
  - Seth Pollak and colleagues at UW-Madison (Pollak, 2015, Papale et al., 2018)



Underlying Mechanisms

- Synaptic Pruning
  - BRAIN "listens" to the environment (think more "macro") – use dependent pruning/learning (Hebb's Law – what fires together wires together)
- Epigenetics
  - GENES "listen" to the environment (think more "micro")
- Epigenetics are dynamic, changeable, & potentially influenced by intervention

How early traumas impact development: The role of critical/sensitive Periods

Early Pre & Postnatal Environments are Highly Sensitive

"The quality of the prenatal & postnatal environment is shaped by parent-offspring interactions that promote growth & survival & can lead to divergent developmental trajectories with implications for later-life neurobiological & behavioral characteristics (Kundakovic & Champagne, 2015).

Early Covert Traumas

Don't always leave visible marks

- "Marks" via Biological embedding – changes at the epigenetic level rather than the genetic level.

Four Factors That Promote Resiliency (National Scientific Council on the Developing Child, 2018)

1. Supportive, Positive Adult-Child Relationships;
2. Scaffolding Learning to Build Self-efficacy & Control;
3. Build Adaptive & Self-Regulation Skills; and
4. Leverage Faith & Cultural Traditions to Provide a Foundation for Hope & Stability.

In brief: The science of resiliency (Center for the Developing Child, Harvard University, 2016)

Goal: Reduce an individuals' exposure to adversity/toxic stress and build adaptive capacities and coping skills

How do we build healthy brain architecture?

- Consistent "serve and return" interactions between children and their primary caregiver.
- https://developingchild.harvard.edu/resources/inbrief-resilience-series/

Resilience

- The role of the FULCRUM in resilience and wellness
- "Illness becomes Wellness when I becomes We" (Denny, 2017)

Trauma Informed Healing: Moving the Paradigm Forward

Strategies that Work

Assessment

- Appropriate
- Strength-Based Assessment
  - Neurosequential Model of Therapeutics (NMT, Perry & Dobson, 2013)
  - ACE Questions – Expanding to Inform Treatment (add PSQs)

Intervention

- Lower Brain Stem Strategies
  - The 6 R's
- Social Connections (Saeri et al., 2018)
  - Community-Based Participatory Research and Healing

How can this type of epigenetic trauma transmission be transformed into wellness?

https://www.preventioninstitute.org/countering-inequities

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