Neurobiology and Social Work Practice

Judith Siegel, Ph.D., LCSW
neuroscience research has clarified:

• How emotional neglect and exposure to prolonged stress and trauma changes the brain

• The importance of attachment and attunement

• Emotional regulation
fMRI technology
Stress activates the HPA axis
The term "fight or flight" describes a mechanism in the body that enables humans and animals to **mobilize a lot of energy rapidly** in order to cope with threats to survival.
The stress of maltreatment during childhood, produces dysregulation of this finely balanced system while it is still developing.

Dysregulation can result in the production of too much or too little cortisol and a variety of other hormones and neurotransmitters.

The situation is complicated even further because brain cells can respond to the abundance of a substance by down regulating the number of receptors for that substance, resulting in a brain that is different from one that develops in the absence of abuse and neglect.

Twardosz S & Lutzker, J. R
Adverse Consequences to the Developing Brain

• Reduction of corpus callosum, the tract of nerve fibers that connects the left and right hemispheres of the cortex which allows for unified perceptions and memories

• Disruptions in the endogenous opiate system that governs the ability to be comforted

• Synaptic pruning due to excess cortosone
What predicts dissociative responses?

At a certain stage of development, excess and redundant connections are sculpted to speed the performance of acquired skills and to reduce metabolic demands and sleep requirements while sacrificing a certain degree of plasticity. Because the brain is designed to develop in this fashion, it is intrinsically shaped by the effects of early experience, and the consequences of inadequate or deleterious experience may be enduring and irreversible.”

3 Year Old

Children

Normal

Extreme neglect
Neglect as a source of trauma

“Research indicates that neglect terrorizes the child enough to stunt his neurodevelopment and may thus be included as a source of trauma along with direct or witnessed sexual, physical and emotional abuse (Laszloffy, 2007). Thus even noninvasive but chronic breaches in attunement appear to short-circuit growing attachment and self-regulatory abilities.” (Alexandra Katehakis, (2009) Affective Neuroscience and the treatment of sexual addiction. Sexual Addiction & Compulsivity, 16:1–31).
Neurobiology and Infant Development

• Exposure to trauma in childhood adversely effects brain structure and functioning; result of severe neglect, abuse, family or community violence

• Attachment Theory post-Neuroscience: we now know about social nature of brain, i.e. social relationships (via attachment) are necessary for brain development (Siegel, 1999)

• Attachment process allows immature brain of infant to use mature brain of parent to develop processes of emotional regulation & social relatedness
Importance of Attunement

Still face experiment  Dr. Ed. Tronick

https://www.youtube.com/watch?v=C8ZTx1AEup4
The importance of Attachment
Security & survival
Connection & Attunement
Comfort & soothing
Attunement

“The mother’s ability to resonate with the infant’s internal states and translate them into action & words creates emotional regulation”

Emotional Dysregulation
the inability to comprehend, tolerate and manage stress
Exploder
Imploder
Or ..............

SHUT DOWN
The ultimate surrender of helplessness
Cutting
Dissociation
Children who are exposed to excessive childhood stress frequently show externalizing problems during childhood that later manifest as problems with substance abuse & affective disorders. ie changes in stress hormonal regulatory systems and neural patterns predict difficulty processing intense emotions (Gunnar, 2006; Cicchetti & Tucker, 1994, Twardosz 2010)
escape
PREVENTION

• How can we help high risk moms?
  – Engaging Moms through support, not pathology
  – Respect that parenting is challenging, and parents are doing the best they can
  – Families with poverty, substance use and/or family violence have too many stressors

• What are Community interventions for early intervention and prevention?