Neurodevelopment of Deaf Children: The role of Special Educators and Interpreters with the child and the school
Part 1

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Child Development - cont.

- A significant outcome of development are Self-Regulation abilities

Self Regulation

- wake/sleep cycles
- bowels bladder
- muscle control - sit, stand, walk, move your head
- behavior
- emotions
- attention

Dysregulation

Inability to manage deep primitive reactions and emotions (Fight or Flight or Freeze)...

Inability to settle fear and anxiety...

Reactions instead of responses

Inability to sustain attention

Inability to learn
What is developing is an integrated system that results from connecting neurons...the more connections the better the organism functions.
Emergence

emergence is a phenomenon whereby larger entities arise through interactions among smaller or simpler entities such that the larger entities exhibit properties the smaller/simpler entities do not exhibit.
Complex Systems

- Comprised of many smaller parts that connect and integrate to become the more complex whole
- Open to influences from outside
- Self-organizing toward maximum complexity
- Unintegrated systems become Chaotic and/or Rigid
- Integrated systems achieve a FACES flow

Complex systems go through a

Process of emergence

Results in either integrated or non-integrated system

FACES  Chaos and/or Rigidity
**Definition of Mental Health**

A well integrated brain that is able to adapt to its environment flexibly, maintain stability, generate adequate energy to task demands, and regulate its arousal by itself as well as being able to be regulated (soothed) by someone else

*Daniel Siegel*
It's not Nature vs. Nurture that determines developmental outcomes....

It's both...

Nature and Nurture
It's not nature vs nurture...it both

Neuroplasticity

Experience changes synaptic connections in the brain (learning), interactions with the outer world and the inner world (the body) determines how, when, if, and what kind of growth occurs.

Epigenetics

The study of how our environment and experience influences genetic expression during one's lifetime.
We are cells

- Biology of Belief
- sense their environment
- perceive safety = open
- perceive threat = closed

2 basic rules about how neurons function:

Neurons that fire together...wire together

Use it or lose it

Critical and Sensitive Periods
In the first three years, a child's brain has up to twice as many synapses as it will have in adulthood.

“Use it or lose it”
Adverse Childhood Experiences Study
ACES

Minnesota Longitudinal Study of Risk and Adaptation (MLSRA)
MLSRA

Findings:
attachment security with a primary caregiver in infancy predicted important aspects of adjustment and functioning throughout childhood and into adulthood

40

MLSRA - Findings continued
securely attached children:
greater sense of self-agency
better emotionally regulated
higher self esteem

41

Miranda

Howaste

English/ASL proficiency...Hearing/Deaf Cultural Competence

English Proficient

Bilingual English/ASL

No Functional First Language

English Users – Functional First Language (L1)

Cochlear implant

Oral

Culturally Deaf

Visual Gestural "VG"

Minimal Language Skills "MLS"

Prelingually Deaf

Traditionally Underserved Deaf “TUD”

Late Deafened

Hard of Hearing

Deaf of Deaf Parents

Deaf of Hearing Parent
Incidental Learning

The lack of access to environmental stimuli and information, direct and indirect, deprives deaf and h-o-h children of incidental learning contributing to critical delays and pruning of vital areas of cognitive and social development.
The Brain is a Social Organ

The structure and function of the brain is to engage with other people, other brains, in the shaping of its development over time and in shaping its activity in the present.

More on the Social Brain

How one brain interacts with another has important effects on how the brain functions:

Social interactions are one of the most powerful forms of experience that help shape how the brain becomes organized.
"The self-organization of the developing brain occurs in the context of a relationship with another, self, another brain. --(Schore 1994).....

Integrated regulated brains come from interacting with other integrated regulated brains....
Outcomes of Attachment

Patterns of attachment
- Secure
- Insecure - Dependent
- Insecure - Avoidant
- Insecure - Disorganized

Outcomes of Attachment (cont.)
- Self - I am worthwhile, loveable, valuable or not
- Others/relationships - relationships are worth or not worth pursuing, they are beneficial or not
- World - the world is a safe or unsafe place worth or not worth moving into

Outcomes of Attachment (cont.)
- Interactive Regulation - the ability to be settled and soothed by others
- Self Regulation - the ability to be settled and soothed by oneself
Attachment, Teaching, and Learning

Love them, have a real relationship with them…

Don’t be a machine waving your hands

Recognize what part of their brain they are operating from and help them become more regulated and integrated so they can access learning

Attachment, Teaching, and Learning

Notice your own energy, change yours to change theirs

Blow up the box

Be the child’s hero, guide, advocate, mentor, teacher, etc… etc…
**Presence, Resonance, & Attunement**

- **Trust**
- **Security**

**Interpreter’s Roles**

*Neurobiopsychosocial regulators*

Language models, language stimulus

Bridges - socially to others; connect what the child knows and has experienced with the new learning

Advisors and consultants to admin, teachers, parents

Social mediators

Attachment figures (mom, dad, buddy)