A Neurodevelopment Lens into Play Based Trauma Intervention

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Learning Objectives

- Understand the neurodevelopmental lens of trauma
- Identify the elements of effective intervention and why they work
- Apply a range of play based sensory processing interventions to a comprehensive treatment and recovery program

Trauma

Trauma occurs when overwhelming, uncontrollable experiences psychologically impact a child, creating feelings of helplessness, vulnerability, loss of safety and loss of control.
What do we know already?

- How can children be traumatized?
- What behaviors do we see that reflect trauma?
  - Developmental differences
  - Gender differences
  - Behaviors specific to different kinds of trauma

What do we know already?

- Why do we need to know normal development?
- Why can the same trauma event(s) affect two similar individuals so differently?
- What are the fundamental principles of trauma informed care and intervention?

How many lenses are there?

- Attachment lens: Safety, security, love and relationship models; primary wounds
- Developmental lens: Age-appropriate developmental mastery; impaired trajectory
- Cultural lens: Ecological context drives interpretation of trauma
How many lenses are there?

- Cognitive lens: How you think and reason; talk about it
- Behavioral lens: How you are conditioned to feel about it; recondition
- Neurodevelopmental lens: The body remembers and developmental struggles reflect it; homeostasis is the base of recovery, experiential narrative is the path

What do you see through a Neurodevelopmental lens?

- The developing nervous system
- Structure/function of parts of the brain
- Hormones, Neurotransmitters, Neural networks
- Drive for homeostasis and developmental mastery
- Nature and Nurture

General Assessment of Child

- Biological rhythms:
  Eating, sleeping, somatic complaints
- Emotional regulation:
  Age-appropriate self control, states, and affect
- Sensory processing:
  Hyper, Hypo, Seeking, Avoiding
General Assessment of Child

- Social connectedness:
  Quality of attachment with adults, peer relations

- Cognitive functioning:
  Reasoning, problem solving, means of communication

What are you doing?

- Encouraging normal development: engagement with present activities and future goals
- Supporting functional levels of affective arousal
- Encouraging trust in bodily sensations; appropriate control of states
- Allowing the narrative to be told

What is the child doing?

- Engaging in age appropriate play
- Using all her senses to experience reality
- Learning to self regulate and control affect
- Telling her story through “doing”
- Differentiating reliving and remembering
- Normalizing the traumatic response
In the beginning…

- Our developing nervous system: Structures and Functions
  - Central Nervous System
    - Brain Stem
    - Midbrain
    - Cortex
  - Sensory Systems
  - Peripheral Nervous System

Critical Concepts

- Nature and Nurture
- Activation
- Hyper-arousal
- Hormones and Neurotransmitters
- Fight, Flight, Freeze
- Somatic memories

Critical Concepts

- What it ends up looking like on the “inside” directly reflects what we have experienced on the “outside”.
- “Earliest” neuro-structures are those most disrupted during early childhood trauma.
  - sub-cortical structures
  - ~brain stem
  - ~mid-brain
Brainstem

Sympathetic and parasympathetic divisions typically function in harmonious opposition to create homeostasis. Consider sympathetic as "fight, flight or freeze" and parasympathetic as "rest and digest".

Peripheral Nervous System

Midbrain or Diencephalon
Midbrain

- Master **Regulator**: appetite, arousal, sleep patterns
- Master **Relay and Integration Station** of sensory inputs to the Cortex or to the ANS
- **Emotional Center** of the Body via the limbic system

Limbic System

Located between the cortex and the brain stem to facilitate communication between cognitive and emotion/affective states
- Made up of amygdala, hippocampus, basal ganglia, cingulate cortex
- Regulates body chemicals, interprets body and emotional memories

Limbic System

Important to survival by chemical build up for attachment, sexual and reproductive drives
- Hippocampus is key to memory consolidation that later converts to long term storage
Limbic System

The hippocampus is extremely vulnerable to traumatic stress due to its slow development and density of cortisol receptors. Not completely functional until after 3-4 years old.

Limbic System

The primitive/basic emotions of safety, contentment, fear, and anger are believed to be hard-wired here during the first 3-4 years. Because of its structural and neuronal connection to hippocampus it influences how memories are "encoded"

Other important neurological concepts

- Neurons that fire together wire together
- Environmental stimulation of neuronal activity is critical for elaboration of synaptic networks, neighborhoods and convergent neuron power
- The levels of hormones and other brain chemicals are influenced by the internal and external environments
Sensory Systems

<table>
<thead>
<tr>
<th>Touch</th>
<th>Hearing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taste</td>
<td>Smell</td>
</tr>
<tr>
<td>Vestibular</td>
<td>Vision</td>
</tr>
<tr>
<td>Proprioception</td>
<td></td>
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</tbody>
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So what does trauma do to the developing brain?

- ANS dominates
- High levels of stress chemicals (cortisol and adrenaline)
- Suppressed serotonin levels
- Networks, neighborhoods and convergence are suppressed

So what does trauma do to the developing brain?

- Subcortical structures are damaged
- Low thresholds for sensory inputs
- Affect dysregulation
- Suppresses higher cortical function
- Depressed executive functions
So what does trauma do to the developing brain?
A cascading effect of negative outcomes

What might the behavior look like?
- Depression
- Attention problems
- Impulsivity
- Hypervigilence
- Fearful
- Cognitive deficits

What might the behavior look like?
- Disorganized
- Risk taking
- Panic attacks
- Hypersensitive to touch, movement, some sounds and smells
- Impaired social skills
What might the behavior look like?

- Anger
- Withdrawal
- Rage
- Immediacy driven
- Can’t self soothe or modulate emotions

Why is Childhood Trauma so Powerful?

- It occurs during sensitive neurodevelopmental periods (e.g. synaptogenesis, experience dependent neuronal systems, mirror neuron optimization, sensory modulation and state regulation)
- It impacts fundamental psycho-developmental processes (e.g. attachment, affect regulation, socialization, integration of self, learning)

In the middle...

Goals of Intervention:
- Sense of SAFETY (internal and external)
- Internal modulation and regulation for homeostasis
- Affect regulation
- Sense of competence and control
- Resiliency and future orientation
How do you do that?

Structured Sensory Play Based Interventions that influence the nervous system and that allow the child to tell her story.

The activity can be sensory, and/or the environment can be sensory, the equipment can be sensory.

Keep in mind…

One foot in the present, one foot in the past.

One foot in the present, one foot in the future

Keeping in mind…

Face to Face
Side by Side
Trains Passing
Front to Back
Generally speaking…

Provide plenty of opportunities for self expression, dance, music, drawing, dramatic and, sensorimotor PLAY

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Sensory Processing Strategies

The sensory system informs the rest of the brain

Decrease arousal
Increase arousal
Maintain balance for homeostasis
Moving from the inside out

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Decrease Arousal

Let’s look at each sensory system…

Use the sensory strategies while child draws, talks, plays, rests, etc. Associate the body sensations with self regulation and affect control
**Decrease Arousal (too high)**

- Drink from a straw
- Lava lamp or lava tube; falling color sand
- Fish tank
- Therapy ball (feet must be able to be flat on the ground, gentle rocking/swaying)
- Warm water play
- Music
- Warm smile (not a lot of teeth)

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**Decrease Arousal (too high)**

- Heavy work
- Hair brushing
- Lamp light (versus florescent)
- Soft, but chewy food
- Gentle swing (porch swing style)
- Weighted stuffed animal to hold
- Bean bag chairs/big pillows
- Soft chewing
Increase Arousal (too low)

- Therapy ball (sit and bounce, but gentle)
- Chewy crunchy food
- Water play with a straw (blowing in straw)
- Dancing
- Finger painting
- Dancing music
- Pull apart fidgets
- Balance beams, tunnels, climbers
Help the child develop a sensory strategy toolkit to use when s/he needs to change states! Add to the concept of “safe place”
Moving from the inside out

Somatic memories come to present and are released by the narrative; a future template is installed.
- TLC Intervention programs
- Maps
- Dancing
- Mantras

Moving from the Inside Out

- Feelin’ it games
- Stories/Books
- Video modeling
- I can do it myself!
- Sand tray
- Colorforms
- Obstacle course
- Break Bread

Moving from the Inside Out

- Renewed sense of self without the trauma
- Helping others
- In the presence of the “doing”
- Fake it till you make it (Imagining or rehearsal happens in the same brain regions as the “doing”!) Neurons that fire together wire together.
Your ideas include…

Three ideas per table

Questions and other thoughts

?????????????
What did she say?
What did she mean by that?
I have another thought…

Parting message…

Do not let what you cannot do interfere with what you can do

(John Wooden)
Bibliography


A Neurodevelopment Lens into Play Based Trauma Intervention: Bibliography


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