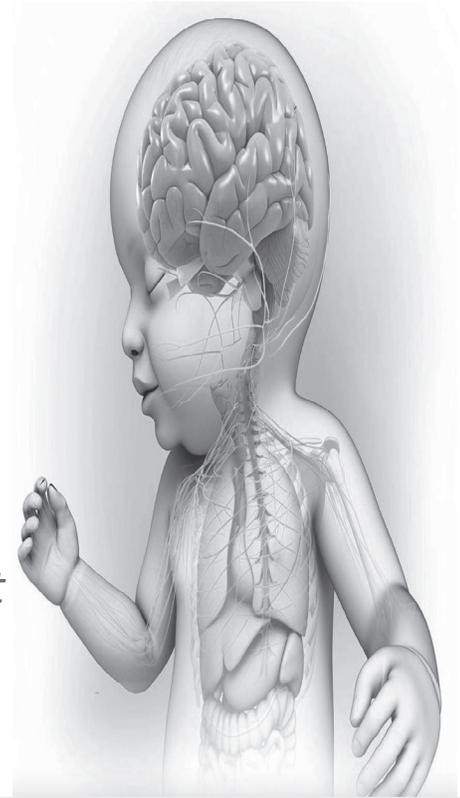




# The Invisible Injuries of Neurodevelopmental Trauma

*What it Means and What We Can Do About  
It for System-involved Youth*



If we are going to help trauma-affected children and youth, we must make a paradigm shift to viewing all behavioral, emotional, and cognitive problems as brain-related problems.

Bruce Perry, MD, PhD

Dr. Kate Messina www.wpwinstitute.org

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### What we need to improve...

- Knowledge of the brain and the *invisible structural and functional brain 'injuries'* that underscore 'visible' behavior problems
- Expedited and targeted screenings and assessments
- Heal the brain: use advanced neuromodulating therapies, i.e., listening therapies, neurofeedback, HRV



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## Working Definition of Social, Emotional, and Cognitive Maturity

*The ability to*  
**live well & live well with others**  
*in accordance with the social values and mores of the community, greater society, and for the greater good.*

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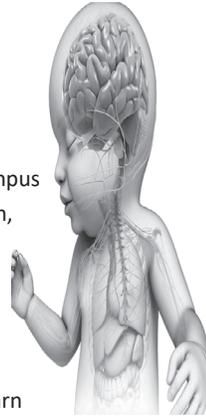
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- A brain injured in utero or preoccupied by fear and survival cannot develop the more complex brain regions or functions.
- There is less growth or activity in the prefrontal cortex, hippocampus and other areas of the brain responsible for emotional regulation, memory, and cognitive functioning.
- Diverts energy that would be used to learn about the world to scanning and readiness to defend against perceived threat.
- Hypersensitivity to danger means the sensory system doesn't learn to screen out extraneous information or process information accurately.




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## What Can We Do Differently?

Advocate for youth to have more comprehensive plans at CFTs that are built upon the assessments & feedback from adjunctive professionals, including all data from IEPs.

Advocate for referrals for advanced neuroscience strategies, i.e., neurofeedback/QEEG, HRV, therapeutic listening systems (SSP/Focus systems).

Advocate for the use of integrative mind-body activities that bypass cognitive processes and develop brain/body connection, i.e., bilateral/cross body movement activities, diaphragmatic breathing exercises, trauma-focused yoga, non-combat martial arts, expressive arts, family-play therapy, equine therapy, therapeutic drumming.

Dr. Kate Messina [www.wpwainstitute.org](http://www.wpwainstitute.org)

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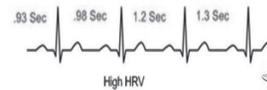
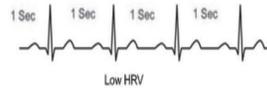
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## Use Heart Rate Variability Training (HRV)

- The autonomic nervous system is unbalanced for trauma-affected youth
- Trauma-affected brains rely heavily on excessive sympathetic arousal to stay protected
- Heart rate variability is low for kids with trauma histories
- Various computer and digital programs can be used by youth to improve HRV, resilience, and coherence



Low HRV	High HRV
"Fight or Flight"	"Rest & Digest"
Easily exhausted	Improved Performance
Low Adaptability	High Adaptability
Decreased Cognition	Improved Cognition

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# Resources

This chart is attributed to Kate Messina, PhD, LCSW

Youth with Unmet Complex Core Needs - Assessment Chart

A	B	C	D	E	F	G	H
Disrupted Development	Inflexible Problems	Visual Problems	Examples of Assessment Needed	Professional Best Equipped to Conduct Assessment	Treatment Support	Corresponding CAMS Score Child Behavioral Emotional Needs	IEP
Parental Substance, Neglect, Abuse	Smaller brain due to neonatal pruritus, alterations in structure and functionality	Disorganized, dysregulated, reactive, unable to be soothed, aggressive, impulsive, intellectual disability (agoraphobia, avoidance, dissociative, disorganized relationship style with adults/peers; learning difficulties; self-harm; substance use)	The Comprehensive Assessment Battery for Children; CABC- Working Memory Neurocognitive Task/MS; QEEG Neurofeedback (Brain Mapping) Assessment of attachment style	Educational or Neuropsychologist/Neurologist SEP/LS Practitioner Neurofeedback practitioner Mental health/behavioral health practitioner	Neurofeedback; Integrative Listening Systems/Safe & Sound Protocol Mentalization (Treatment & Parenting) Repetitive, rhythmic, playful, relational	1-3	Why?
Visual Processing	Occipital lobe: May not be able to use the eyes together, can't track, misses details/over, figure-ground problems, trouble locating figures in space, visual motor deficits	Hard to focus/concentrate, reading difficulties, gives up easily, frustrated easily, avoids learning/school, lies about homework, dysregulates in response to expectations, can't coordinate or use vision to engage in physical activity; awkward; externalizes or internalizes blame for social problems	Visual Perceptual Testing, i.e. visual discrimination, form constancy, figure-ground, spatial relations, visual closure, sequencing, memory	Developmental Optometrist/Ophthalmologist	Neurofeedback Integrative Listening Systems Parent Coaching Re. Strategies	1-3	↓
Auditory Processing	Temporal lobe; auditory cortex: Difficulty with receiving, organizing, and making sense of sound; figure-ground discrimination problems, auditory memory and association problems.	Distracted, hard to focus/attention, difficulty with directions, frustrated, academic struggles, angry/frustrated, labile mood, forgetful; may be about task completion; externalizes or internalizes blame for social problems.	Auditory Processing Disorder Assessment SCAN 3 Tests for APD	Audiologist	Neurofeedback Integrative Listening Systems Parent Coaching Re. Strategies Repetitive, rhythmic, playful, relational.	1-3	
Sensory Integration	Integrative brain functions cannot integrate touch, sight, sound, movement, body position, smell, taste, internal sensation.	Over/under arousal states, reactive, sensitivities to touch, frequent dysregulation, frustration, tired easily, distracted, focus and concentration problems; self-harm; learning and academic performance problems.	SCREENINGS: The Sensory Profile; Sensory Processing Three Dimensions ASSESSMENTS: Sensory Integration & Praxis Test	Occupational Therapist	Occupational Therapy Neurofeedback Integrative Listening Systems Parent Coaching Re. Strategies	1-3	
Executive Functions	Prefrontal cortex/orbitofrontal gyrus: weak, diffuse, underdeveloped vs focal, dense, and robust.	Impulsive, reactive, labile mood; aggressive, stuck in "I want/don't want," behavioral, learning, and school problems; minimal to no conscience; poor judgment, externalizes or internalizes blame for social problems; self-harm; substance use; low motivation; "lazy," disorganized; attentional problems.	BRIEF: The Behavior Rating Scale of Executive Functions "Not necessarily screened or assessed as an individual function but all of the above screenings/assessments together can provide clinical picture"	Educational Psychologist Neuropsychologist Licensed Mental Health Practitioner	Neurofeedback Integrative Listening Systems Mentalization Treatment & Parenting) Repetitive, rhythmic, playful, relational. Parent Coaching Re. Strategies	1-3	
Hypo/hyper-arousal chronic fear states	Dysfunctional autonomic nervous system; reliance on sympathetic dominance (fight/flight) or parasympathetic dominance (freeze/dissociation); weak vagal brake.	Positive aggressive, reactive, overreactive, angry, fear-based, dissociative; shuts down, cannot be soothed easily; self-harm/harms others; learning and academic performance problems	Mental Status assessment Psychosocial assessment of trauma hx	Licensed Mental Health/Behavioral Health Practitioner	Safe & Sound Protocol Integrative Listening Systems Neurofeedback Mentalization (Treatment & Parenting) Rhythmic, predictable, playful, relational	1-3	

Dr. Kate Messina www.wpwinstitute.org



Thank you...

Kate Messina, PhD, LCSW  
www.wpwinstitute.org