



## Developmental Trauma

NEUROFEEDBACK TRAINING FOR ADOLESCENTS AND COUNSELING IMPLICATIONS

BY MEGAN SIMPSON MS, LPC, BCN

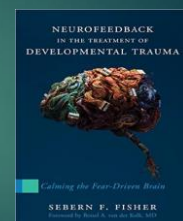
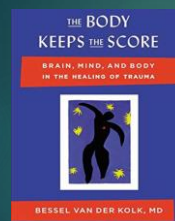
## Megan Simpson MS, LPC, BCN

- ▶ Play and marriage and family therapist for families of children with autism
- ▶ Neurofeedback: introduction in 2005
- ▶ Focus Centers of Asheville
- ▶ Residential treatment centers for adolescent and teenage girls
- ▶ Published research on gains due to neurofeedback training

## Overview

- ▶ What is developmental trauma and how does it affect our children?
- ▶ Developmental trauma versus PTSD
- ▶ Impact of developmental trauma on the brain
- ▶ Review of the research: Methods, results, and counseling implications, limitations

## Developmental Trauma



## What is Developmental Trauma?

► Developmental trauma is experienced in childhood. It is also referred to as adverse childhood experiences or complex trauma, and includes the following: (CDC, 2016; Stevens, 2013).

- Abuse: emotional; harsh discipline; domestic turmoil
- Neglect
- Assault: sexual; physical; sadistic
- Parental mental illness
- Primary insecurity
  - Parental absence
  - Food; malnutrition
  - Home/shelter
  - Domestic conflict, threats
  - Drugs

The lack of a secure attachment to a caregiver

(Fisher, 2014; Nemer, 2013)

## Developmental Trauma versus PTSD

### DSM V Definition of PTSD:

- A person who is exposed to a horrendous event "that involved actual or threatened death or serious injury or a threat to physical integrity of self or others," causing "intense fear, helplessness, or horror" which results in a variety of manifestations:
  - Intrusive reexperience of the event (flashbacks, bad dreams)
  - Persistent avoidance (of people or places)
  - Increased arousal (insomnia, hypervigilance or irritability)

(Fisher, 2014, Van der Kolk, 2014 p.157)

## Developmental Trauma Versus PTSD

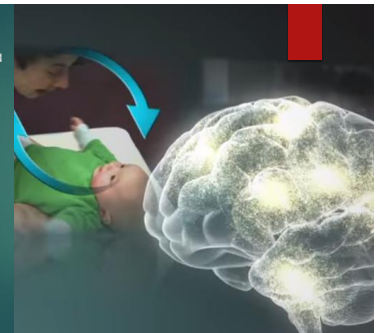
- Traumas in childhood are not an isolated incident.
- Assaults are typically chronic and pervasive.
- Lack of a clear and specific story line or memory.
- Children with chronic and pervasive trauma typically don't talk about their abandonment or abuse.

(Van der Kolk, 2014)

## The Impact of Developmental Trauma on the Brain

- Acute states of terror; chronic fear (dysfunction in the amygdala)
- Lack of development of pre-frontal cortex and cerebellum
- Lack of affect regulation (development of the right hemisphere)
- No cause and effect- the basis of all learning (issues with prefrontal cortex)
- Lack of self and other (challenges in pre-frontal cortex)

(Fisher, 2014; Van derKolk, 2014)



### Toxic Stress Can Affect Brain Development

Centers for Disease Control and Prevention

### Developmental Trauma Statistics

- ▶ 35 million children have experienced childhood trauma
- ▶ Twenty-six percent of children by the age of four will witness or experience a traumatic event
- ▶ 76% of those children will likely develop delays in emotional, brain, and language development if they experience five or more adverse events before three years of age
- ▶ Exposure to childhood trauma is associated with short-term and long-term consequences, including psychological, physiological, neurological, and social problems
- ▶ Chronic exposure to traumatic events affects neurobiological development and is correlated with adult health concerns such as cancer, diabetes, and heart disease and shows a substantial increase in the likelihood of becoming an addict

(Center for Disease Control/National Center for Health Statistics, 2012; Levent, 2013) (Briere-Gowan, Ford, Fraleigh, McCarthy & Carter, 2010; National Center for Mental Health Promotion and Youth Violence Prevention; 2012; CDC, 2014)

### The Adverse Childhood Experience Study

- ▶ Ten types of childhood trauma measured in the ACE study
- ▶ Five are personal –physical abuse, verbal abuse, sexual abuse, physical neglect, and emotional neglect
- ▶ Five are related to other family members: a parent who's an alcoholic, a mother who's a victim of domestic violence, a family member in jail, a family member diagnosed with a mental illness and the disappearance of a parent through divorce, death or abandonment

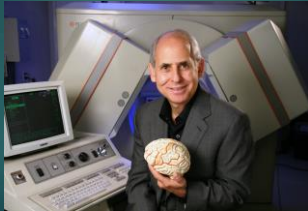
### Adverse Childhood Checklist Questions

Prior to your 18th birthday:

1. Did a parent or other adult in the household often or very often...swear at you, insult you, put you down, or humiliate you? or Act in a way that made you afraid that you might be physically hurt? Yes, enter 1 \_\_\_
2. Did a parent or other adult in the household often or very often... Push, grab, slap, or throw something at you? or Ever hit you so hard that you had marks or were injured? Yes, enter 1 \_\_\_
3. Did an adult or person at least 5 years older than you ever... Touch or fondle you or have you touch their body in a sexual way? or Attempt or actually have oral, anal, or vaginal intercourse with you? Yes, enter 1 \_\_\_
4. Did you often or very often feel that ... No one in your family loved you or thought you were important or special? or Your family didn't look out for each other, feel close to each other, or support each other? Yes, enter 1 \_\_\_
5. Did you often or very often feel that ... You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you? or Your parents were too drunk or high to take care of you or take you to the doctor if you needed it? Yes, enter 1 \_\_\_
6. Were your parents ever separated or divorced? Yes, enter 1 \_\_\_
7. Was your mother or stepmother: Often or very often pushed, grabbed, slapped, or had something thrown at her? or Sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard? or Ever repeatedly hit over at least a few minutes or threatened with a gun or knife? Yes, enter 1 \_\_\_
8. Did you live with anyone who was a problem drinker or alcoholic, or who used street drugs? Yes, enter 1 \_\_\_
9. Was a household member depressed or mentally ill, or did a household member attempt suicide? Yes, enter 1 \_\_\_
10. Did a household member go to prison? Yes, enter 1 \_\_\_

“Behaviors are an expression of  
brain wave functioning.”

—Dr. Daniel Amen



Working with Developmental Trauma:  
Results of Neurofeedback Training with  
Adolescent Females and Counseling  
Implications

Is neurofeedback an effective treatment for  
adolescents who had experienced  
developmental trauma?



## Methods

### Participants

- ▶ 30 adolescent females living in a residential treatment center from ages 10-19 years old (M=14.7)
- ▶ African-American (n=1), Asian-American (n=1), Pakistani-American (n=1), Indian-American (n=1), and white (n=24)
- ▶ Prior to RTC, all participants had experienced adverse childhood experiences or trauma
- ▶ Dually diagnosed: depressive disorders (n=18), ADHD (n=15), anxiety disorders (n=13), oppositional defiant disorder or anger issues (n=8), PTSD (n=3), and eating disorders (n=3)
- ▶ Began neurofeedback training approximately two months after residing at the RTC

## Methods

### Instrument

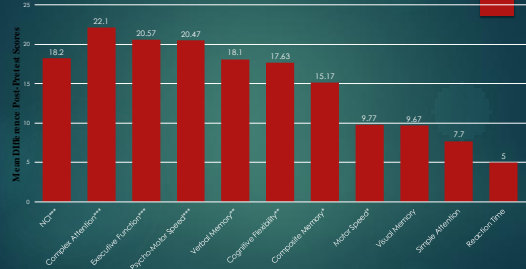
- ▶ The Central Nervous System Vital Signs (CNSVS) is a computerized battery of seven neurocognitive tests that measures symptoms, behaviors, and comorbidities (CNS Vital Signs, 2014; Triplett & Asato, 2015)
- ▶ Moderate to good test-retest reliability, significant reliability coefficients, comparable to other neurocognitive assessments
- ▶ Measures an individual's neurocognitive index (overall score), cognitive flexibility, complex attention, simple attention, composite memory, verbal memory, visual memory, executive function, motor speed, psychomotor speed, processing speed and reaction time
- ▶ Participants evaluated with the CNSVS assessment before they began and post tested after 50 sessions

## Methods

### Procedure

- ▶ Thorough assessment to develop individualized treatment plans (e.g. clinical interview, arousal check list, QEEG)
- ▶ Protocols were pre-determined and sensory placed on the scalp (e.g. CZ location, T4-P4, T3-T4, C3, C4)
- ▶ Neurofeedback training commenced and feedback in the form of a movie and auditory beeps
- ▶ Sessions were three times per week and lasted approximately 20 minutes

Difference in Post-Pretest CNSVS Scores after Neurofeedback



## Counseling Implications

"Counselors must understand neurobiological behavior in individuals of all developmental levels. This requires understanding the brain and strategies for applying neurobiological concepts in counseling practice, training and research."

(Myers and Young, 2012 p.20)



## Counseling Implications

- Basic understanding of neuroscience, the brain and the nervous system is required
- Can be used in academic settings and private practice setting
- Psychobiological basis of clinical behaviors
- How to make diagnosis supported by biological measures (ADHD, depression using QEEG and arousal assessments)
- Non-invasive design similar to counseling
- Clients strengthen and harness their own core abilities
- GREAT effort is being put forth by the NIMH to identify root causes and neurobiological basis of mental health and disorders
- Additional training to become proficient and certified in the field of neurofeedback and biofeedback

(Myers and Young, 2013, p.20)

## Limitations

- > The residents in the treatment center could afford this treatment
- > There was no control group
- > Participants were in a controlled environment with group therapy, individual therapy, exercise routines and academic instruction

## Endorsements

"The literature, which lacks any negative study of substance, suggests that EEG biofeedback therapy should play a major therapeutic role in many difficult areas. In my opinion, if any medication had demonstrated such a wide spectrum of efficacy, it would be universally accepted and widely used." - **Frank Duffy, MD, Neurologist, Head of the Neuroimaging Department and of Neuroimaging Research at Boston's Children's Hospital and Harvard Medical School Professor**

"In my experience with EEG Biofeedback (also known as Neurofeedback) and ADD, many people are able to improve their reading skills and decrease their need for medication. Also, EEG biofeedback has helped to decrease impulsivity and aggressiveness. It is a powerful tool..." - **Daniel Amen, MD, Noted researcher and author and ADD Specialist (Change Your Brain, Change Your Life, p.143-144)**

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