impact of trauma on the developing brain: STARTTS Neurofeedback clinic

STARTTS Master Evening Class
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14 March 2017
Outline

• Working with refugee children
• Neurofeedback clinic at STARTTS
• EEG & what we see in our assessments
• Case presentation/comparison
• Children and their Families - what needs addressing
• What is next?
Impact of traumatic experiences on families

Disrupted attachment & parenting strategies

Insufficient or Adverse sensory experiences

Reduced family & social support

Settlement issues

Multiple losses

Displacement

War & Trauma

Normal life cycle issues

Perinatal experiences including loss, deprivation

Parent’s inability to engage emotionally, nurture or stimulate a child

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Referrals to the NF clinic:

- Learning difficulties
- Behavioural problems
- Sleeping issues
- Affect dysregulation
- Anger
- Bedwetting
- Social isolation
- Attachment issues
Treatment plan

Creating a space for change to happen

Assessment

Neurofeedback

Working with Parents/Caretakers
EEG Assessment

• EEG is the brain-imaging tool used to measure the brain’s bioelectrical system.
• It measures spontaneous brain activity
• Has the highest temporal resolution of all brain imaging tools.
• The activity of groups of neurons is represented by specific wave patterns.
EEG assessment at STARTTS

• Is used to complement other forms of clinical assessment
• To get better understanding of clients’ symptoms (such as headaches, memory loss or attention difficulties)
• To determine which therapeutic interventions/ or medication might be useful
• To guide Neurofeedback intervention
The TOVA

- Non-language based stimuli (like in the T.O.V.A) minimize the potential confounding of the results by language, cultural effects, and/or a learning disability.
- Can help indicate the existence and severity of ADHD
- Can be used to help titrate medication
- Can give ideas for Neurofeedback training & measures of effectiveness of Neurofeedback training
- Length of the test: 21.6 minute. For children ages 4 and 5, the T.O.V.A. is 10.8 minutes in length.
- A score of 100 is average. 115 is above average. 85 is below average. 70 is poor. 55 is very poor, and 40 is extremely poor.
- An improvement of 8 points, or half a standard deviation, is clinically significant; that is, observable by others.
The TOVA

The test gives 4 major variables

• Inattention (Omission errors) – how often the client did not click the “clicker” when they were supposed to

• Impulsivity (Commission errors) – how often the client clicked when they weren’t supposed to (“Ooops! I shouldn’t have clicked”)

• Response Time – average response time for correct responses

• Variability – Consistency of the response times (standard deviation)
The T.O.V.A. visual stimuli

‘GO’

‘No Go’
Temporal & Parietal lobe changes

- Excess temporal lobe alpha suggest idling of the temporal lobe.
- Slower alpha was also observed in the parietal area PZ.
- Dysfunction of the memory processing/consolidation network (T3, T4).
- Dysfunction of the face perception/recognition of emotional expression network (T6).
- Dysfunction of the neural circuitry underlying positive emotional processing – emotional numbing (T5)/language processing
- Dysfunction in sensory processing and sensory integration issues (Pz).

Poor understanding of social cues
Sensory processing issues
Language processing, Emotional numbing
Use of EEG Biofeedback (Neurofeedback) in addressing psychophysiological effects of chronic trauma

Neurofeedback is a tool to improve CNS regulation through “holding a mirror” to the brain

Neurofeedback trains the brain’s ability to self-regulate

This is done by providing a feedback on selected EEG rhythms related to regulation

Repeated sessions enable permanent learning

The brain itself does the work

The clinician’s screen view

The client’s screen view
Emma:

- 9 y.o. F
- COB: West Africa
- Grown up in a refugee camp in Kenia
- Supported by a single mum
- 2 siblings (11 and 6 years old brothers)
- Mum working never at home
- Never met her father

Presenting symptoms:

- Learning difficulties
- Anger and irritability
- Socially withdrawn
- Would not speak or keep an eye contact
- No information about her behaviour at home

The TOVA pre NF
A score of 100 is average. 115 is above average. 85 is below average. 70 is poor. 55 is very poor, and 40 is extremely poor.

An improvement of 8 points, or half a standard deviation, is clinically significant; that is, observable by others.
Nina:

• 6 y.o. F
• COB: Iran
• Family came as asylum seeker to Australia
• Was in DC age 2y.o.
• Family issues
• Parents ‘separated’ but still living together
• Father – gambling addiction
• Mum – depression (?)

Presenting symptoms:

• Learning difficulties
• Sleeping difficulties
• Issues with attention and focus
• Described by her parents as being ‘in your face’ all the time
• Irritable
• Constantly fighting with her 3 y.o. sister
Nina. Post NF

- Enjoyed therapy
- Father was committed to bring her 2x per week
- No feedback on the session progress from the parents
- Mother not involved

The percentage of power of parietal slow activity has changed dramatically pre to post treatment (from 45% to 28%). This means that the overall power of parietal slow alpha is reduced.
What have we learned?

• Optimising assistance available to the families i.e. involving the parent in HRV at the same time as their child is receiving NF

• Understanding and checking metabolic issues

• Understanding sensory issues

• Providing NF and HRV to the parents

• Parents/caregivers need their own therapy

• Are parents/caregivers able to support the change? What are secondary gains if any?

• The more we can do for children and families by intervening at an early age the better their future will be

What’s next?

STARTTS Multimodal approach; use of biofeedback, auditory training and movement exercises for optimal sensory integration
“Brains are exquisitely designed to be able to interact socially, pay attention and comprehend information; to achieve full human potential; to focus, think, reason, dream, and create”

Robert Hill Phd. & Eduardo Castro, MD ‘Healing Young Brains: The Neurofeedback solution’

Thank you for listening