This Is Your Brain On Music

BIA-MA Brain Injury Conference
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- Board Certified Music Therapist
- 30+ years of experience
- Musician
- Director, Creative Arts Therapies @ South Shore Conservatory
Music Therapy Defined

- The **clinical** and **evidenced-based** use of music interventions to accomplish **individualized goals** within a **therapeutic relationship** by a **credentialed** professional who has completed an **approved** music therapy program.

- Established health profession

- Addresses physical, emotional, cognitive, and social needs of individuals

- Research supports music therapy’s effectiveness

Music Defined

- The science or art of ordering tones or sounds in succession, in combination, and in temporal relationships to produce a composition having unity and continuity

(Merriam-Webster)
Elements of Music

- Rhythm
- Dynamics
- Melody
- Harmony
- Tone Color
- Texture
- Form
Music Is...

- Highly structured auditory language
- Involves complex perception, cognition, and motor control in the brain
- Can be used to retrain and reeducate the injured brain

(Thaut, M., & McIntosh, G., “How Music Helps to Heal the Injured Brain”, (2010).)
In Our Brain

- Music processing is widely distributed
  - Auditory cortex
  - Frontal lobe
  - Temporal lobe and more

- No single “music center” in the brain

- Brain areas activated by music are not unique to music
  - Networks that process music also process other functions

- Music learning changes the brain
Brain Areas

- Accessed and activated by music are brain areas that:
  - Process language
  - Auditory perception
  - Attention
  - Memory
  - Executive control
  - Motor control
Broca’s Area

• Processes the sequencing of physical movement
• Tracks musical rhythms
• Converts thought into spoken word

So, this area supports

Appropriate timing sequencing, and knowledge of rules that are common and essential to

MUSIC, SPEECH, and MOVEMENT
Neuroplasticity

MUSIC LEARNING CHANGES THE BRAIN

• Brain changes in structure and function as a result of learning, training, and environmental influences

• Exposure and experience create new connections between neurons

• Brain can change on multiple levels, from individual synapses to entire cortical networks

• Hebbian theory

This is Your Brain on Music

Cochrane Review of 29 studies, 775 participants. Acquired Brain Injury

- Gait velocity, Stride length, General gait, Gait cadence
- Timing of upper extremity function
- Communication: naming, speech repetition
- Quality of life
Music Therapy as Treatment

Neurologic Rehabilitation

- Cognitive function
- Physical function
- Communication function
- Socioemotional function
Music Therapy

Population: ASD

Goal areas: communication, movement, social, cognitive

Population: Alzheimer’s

Goal areas: memory, social, mood

Population: TBI & Movement disorders

Goal areas: movement, communication, social, cognition
References


References

