

Second Annual Southeast Adult Autism Symposium

Discovering the Collective Rhythm: Neural and Societal Connections Through Music

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July 21, 2018 – 8:30 a.m.

Session Topics

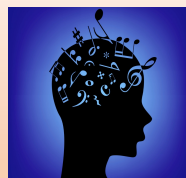
- Introductions
- Neural Connections Through Music
- Societal Connections Through Music
- Experiential Music
- Suggestions for Best Practices
- Resources
- Conversation with Q and A

Music can be utilized as a tool to facilitate therapeutic growth as well as a sensory delight for enjoyment and communication.



- Therapeutic Music:
 - Manage Stress
 - Alleviate Pain: Procedural/Chronic
 - Psycho-Social Goals
 - Cognition Rehab/Development
 - Speech Rehab/Development
 - Motor Rehab/Development
- Music for pleasure: Music is a deeply enriching sensory experience that was probably the first form of sophisticated communication dating back 100,000 years. As immersion into the musical experience interacts in the brain, the brain actually grows and develops further.

Neural Connections Through Music



Neuroplasticity results as the brain listens or creates, and then interacts with music.

Rhythm is key

- Steady Pulse
- Intrinsic
- Functional tempo range

Entrainment Exercise

- Entrainment maintained below conscious perception
- Brain “listens” to the space between stimuli
- Plus or minus 5% of the tempo will be automatically adjusted without the body realizing the entrainment beat is going faster or slower

(Thaut, Miller, & Schauer, 1998)

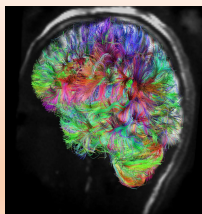
PET studies show tapping activates:

- ▶ Left primary sensorimotor areas
- ▶ Bilateral sensory association areas
- ▶ Right ventro-lateral prefrontal cortex
- ▶ Bilateral opercular premotor areas
- ▶ Contralateral insula
- ▶ Putamen
- ▶ Thalamus
- ▶ Right cerebellar anterior hemisphere
- ▶ Right cerebellar vermis

Stephan et al. (2002)

Effects on Brain and CNS

- Change in brain oscillations, motor responses, heart rate
- Strengthening of alternate routes for processing nonmusical information
- End result is neuroplasticity and/or better quality of life



Example of music in speech therapy

- M.I.T. – Melodic Intonation Therapy
- Create music for a spoken phrase
- Rhythm taps, humming, singing



Societal Connections Through Music

Communication

- *“Where words fail, music speaks.”* - Hans Christian Andersen
- *“When playing music, it is possible to achieve a unique sense of peace.”* - Daniel Barenboim
- *“Music - that wonderful language - should be a source of communication among men.”* - Pablo Casals
- *“My heart, which is so full to overflowing, has often been soled and refreshed by music when sick and weary.”* - Martin Luther
- *“So long as the human spirit thrives on this planet, music in some living form will accompany and sustain it and give it expressive meaning.”* - Aaron Copland

Improvisational Music

(Dr. Charles Limb TED talk)

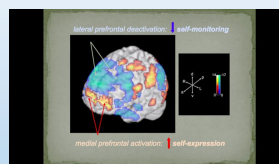


Image credit: https://www.ted.com/talks/charles_limb_your_brain_on_improv

Solo:

- Activates self-expression (language and expression)
- Quiets self-monitoring and inhibitions -> better creativity

Group:

- Language centers extremely active

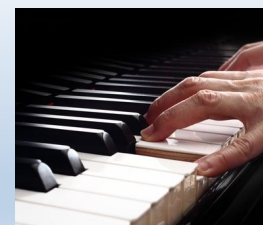
Tony DeBlois – Don't Count Me Out



[Source = <https://www.youtube.com/watch?v=7Rt18Cq2Q8E&list=PL1F1V6Z2MG5L2j5t1r1C0A9t0MEW5L8n-D8&index=77>]

Can I learn to play as an adult?

- YES!!!!
- Adults learn differently, but that can also be a good thing.
- It is NEVER too late to learn to play a musical instrument.



Experiencing Music

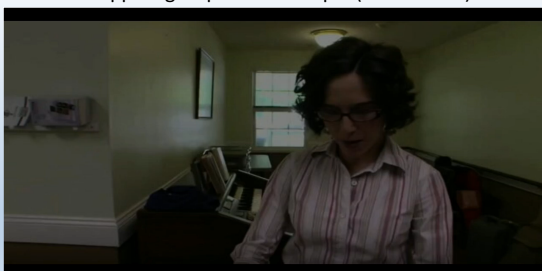
- Various rhythms
- Various timbres (sound type)
- Various tempi (speed)
- Various levels of difficulty
- Percussion instruments
- Stringed instruments
- Wind instruments
- Keyboard instruments
- Singing

Suggestions for best practices

- More music in schools
- More pedagogical material needed
- Autism music support groups needed



Support group choir example (Parkinson's)



Resources

- Music Teachers National Association : www.mtna.org
- American Music Therapy Association : www.musictherapy.org
- Martha's website: www.marthasumma.com
- Martha's TED talk: Dance of the Neural Tango - <https://www.youtube.com/watch?v=wCM4JPmPJcl>
- Levitin, D. (2006). *This is Your Brain on Music – The Science of a Human Obsession*. New York: Dutton, a member of Penguin Group.
- Sacks, O. (2007). *Musicophilia – Tales of Music and the Brain*. New York, Rotonto: Alfred A. Knopf
- Thaut, M., Hoemberg, V., eds. (2014) *Handbook of Neurologic Music Therapy*. Oxford, United Kingdom: Oxford University Press.

Conversation with Q & A