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Music, speech development and autism

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Music Therapy Tales

learner outcomes

As a result of this course, participants will be able to:

- identify neuroanatomy/physiology related to both speech/language and music functioning
- identify music-based interventions in speech/language treatment
- describe research related to music-based interventions with ASD

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historical overview

- throughout the history of ASD, there have been descriptions of music abilities
  - perfect pitch
  - awareness and attention to music
  - prodigious memory for music
  - savants

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meaningful entry points

- why music?
  - working with strengths
  - leveraging against weaknesses
  - repetition in music is natural
  - it is non-threatening, compelling and motivating
  - enhanced attention
  - innate human skills
    - rhythm perception
    - melody perception

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savants

- combinations of congenital blindness, autism
- march to the beat of their own drummer
  - Rex Lewis-Clack
  - Derek Paravacini

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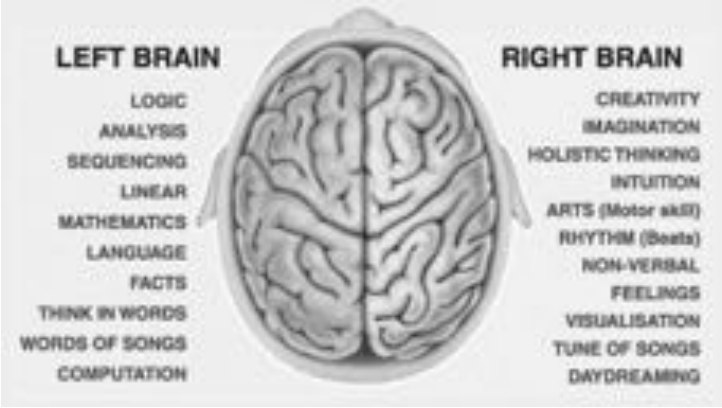
neuroanatomy and physiology of speech and music



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music and speech

- shared and distinct networks for
  - motor preparation
  - motor execution
  - sensory feedback and control for vocal production

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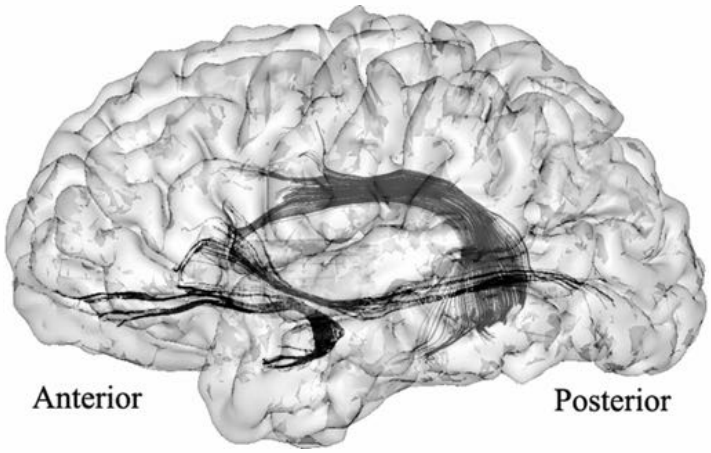
white matter matters!



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The therapeutic effects of singing in neurologic disorders

- Wan, Ruber, Hohmann & Schlaug (2010)singing is a "universal form of musical expression that is as natural as speaking"
  - the right AF of the singer is more developed compared to that of the nonmusician
  - Auditory Motor Mapping Training (AMMT)

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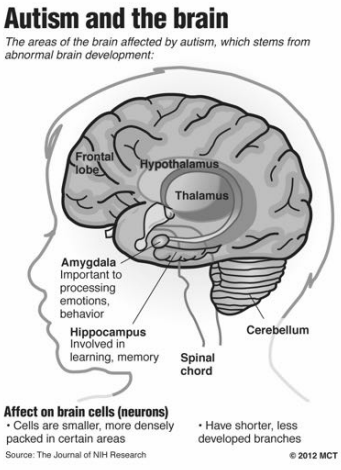
the autistic brain



- reduced volume
  - cells in certain areas are smaller and more densely packed
  - others have shorter and less developed connections
- denser AF on the right than the left (Wan)

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music-based interventions

- functions
  - sound discrimination for speech perception and production
  - sensory regulation
  - emotional regulation to ameliorate interfering behaviors
  - prime and sustain attention

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sound discrimination

- Melodic Intonation Therapy (Sparks and Holland, 1976)
- Auditory Motor Mapping Training
  - involves singing
  - motor activity (2-tone drums)
  - imitation of model

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attention

- attention is the bedrock of all cognition
- music is a temporal art
- sung versus spoken cues

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sensory regulation

- the introduction and exploration of familiar and especially unfamiliar sounds
  - instruments offer tactile, visual and auditory stimulation
  - varied degrees of loudness
  - varied timbres

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emotional regulation

- soothing songs
- play songs
- songs and instruments that reflect or express emotions
  - anger
  - happiness
  - sad

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resources for music development

- Music Together programs
- do not use lyric substitutions
- ukelele lessons
- electronic keyboard
- developmentally appropriate musical instruments song books
- drums

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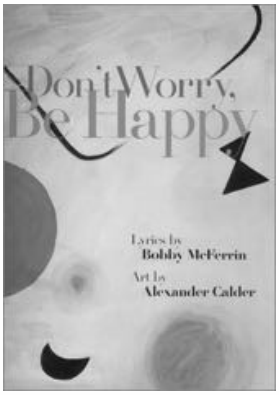
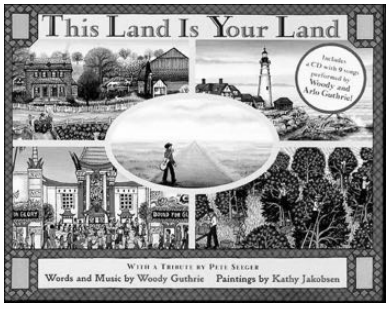
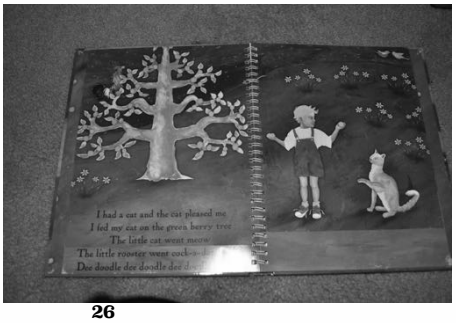

Don't Worry, Be Happy
Lyrics by
Bobby McFerrin
Art by
Alexander Calder


This Land Is Your Land
With a Tribute by Pete Seeger
Words and Music by Woody Guthrie Paintings by Kathy Jakobsen



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summary

- music and speech have shared and distinct neural networks
- music is an engaging and motivating entry point for speech development
- music skills, both innate and learned can be leveraged toward delays in development
- music skills can easily be developed by SLPs

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