The top right corner of the slide features a decorative arrangement of overlapping triangles in various shades of pink and magenta, creating a modern, abstract geometric pattern.

# *Music & Language:* Effectiveness of using Music in Speech Therapy

# Background

- ❖ Regularity of using visual media to increase participation
- ❖ Brain's responsiveness with language and music
- ❖ Previous experience with Aphasia Choir

There is growing research behind this skill and no matter the age it can be a great tool to have ready in our toolbox of engaging and motivating reinforcers and treatment strategies!




# Agenda

## General Information

- Definitions/purpose
- Science overview
- Compare music and language

## Treatment Strategies

- Children/Adults
  - Research
  - Implementation
- 

# Did You Know?

- Seven in ten Americans (71%) say that the learnings and habits from music education equip people to be better team players in their careers (Harris Poll, July 2014).
- Two-thirds (67%) of Americans say music education provides people with a disciplined approach to solving problems (Harris Poll, July 2014).
- Two-thirds (66%) of Americans say that music education prepares someone to manage the tasks of their job more successfully (Harris Poll, July 2014).
- A review of 23 studies covering almost 1,500 patients found that listening to music reduced heart rate, blood pressure and anxiety in heart disease patients (Bradt & Dileo PubMed.Gov, 2009).

# Why is this important?

Music instruction can improve phonological awareness.

Music instruction refines auditory discrimination.

Music instruction increases auditory sequencing ability.

Music instruction strengthens listening and attention skills.

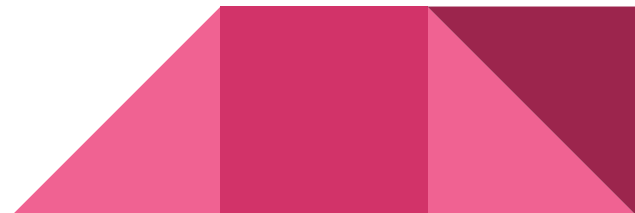
Music instruction heightens oral language development.

(Montico, Zoia, Schon, 2015)

# Communication is Key

Meaningful communication is a multimodal construct; it relies on musical components. Spanish music therapist Patxi Del Campo states:

*“In any oral interaction only 15% of the information corresponds to verbal language, while 70% of the message is performed through body language; the final 15% belongs to intonation, the musical character of language”*



# Definitions

- Rhythm: music's pattern in time
- Tempo: pace of the fundamental beat
- Prosody: general term for larger properties of syllables/units of speech
- Intonation: rise and fall of voice in speaking

## Example:

Same words, syntax and grammar communicate different meanings depending on how they are said:

**"You hate me."**

**"You hate me?"**

The rising inflection that distinguishes the question from the statement.

# Learning Styles

## Gardner's Theory of Multiple



- ❑ Linguistic and musical intelligences are separate
- ❑ The two domains work together
- ❑ Task sharing occurs all of the time; in fact, language intonation relies heavily upon perception of musicality



# Brain Functions and Music: Science Review

Music activates different parts of the brain such as:

- Temporal lobe: auditorily hear sounds; temporal gyri help process tone and pitch.
- Cerebellum: process and regulate rhythm, timing, and physical movement.
- Amygdala/hippocampus: emotions and memories

All of these areas work together and integrate the various layers of sound across space and time for us to perceive a series of sounds as a musical composition.

(Harvard Medical School neurologist and psychiatrist David Silbersweig, MD).

# TEMPORAL LOBE

## WHAT

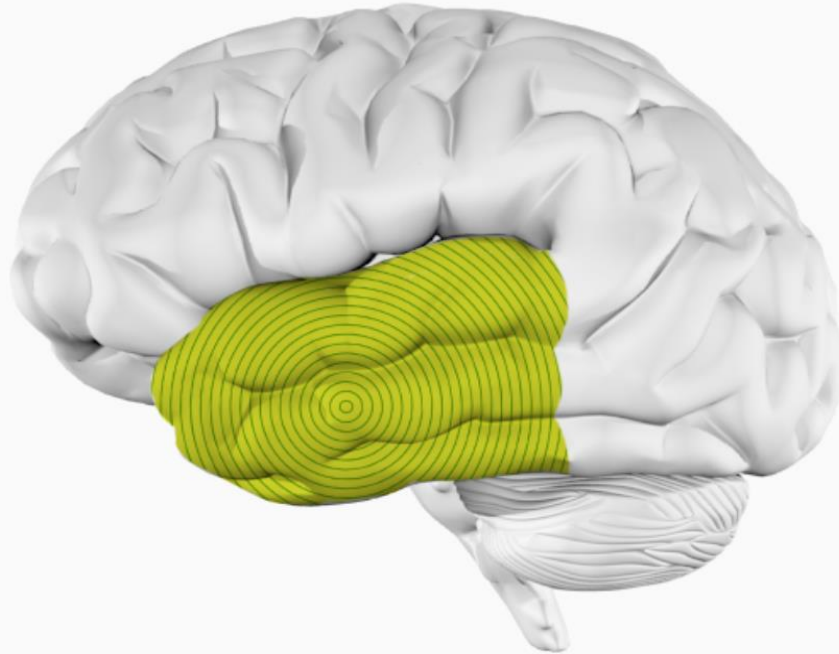
Processes what we hear

## HOW

"We use the language center to appreciate music, which spans both sides of the brain, though language and words are interpreted in the left hemisphere while music and sounds are interpreted in the right hemisphere," Yonetani says.

< PREVIOUS

NEXT >



<https://www.ucf.edu/pegasus/your-brain-on-music/>

# Music and Language

Within the speech and language setting, music and games can foster a mode of communication for children of all ages and abilities. It plays an important role in:

- Attention
- Participation
- Supports memory
- Predictability and a cueing system

Populations in which music therapy have been used that were relevant to the field of speech-language pathology have included:

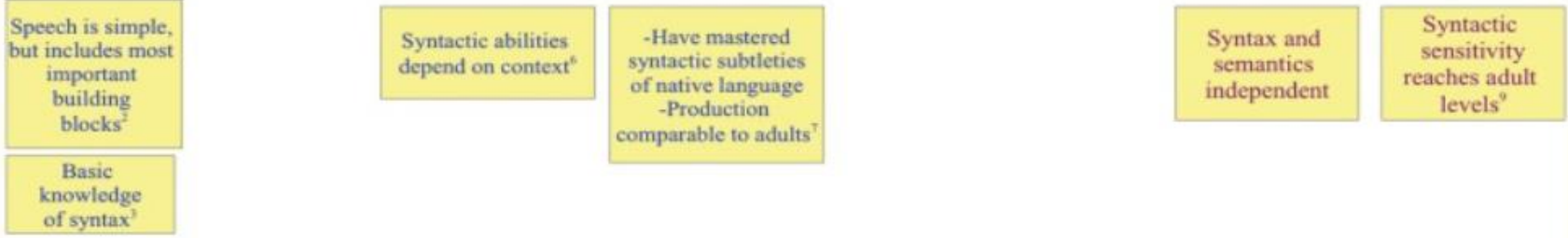
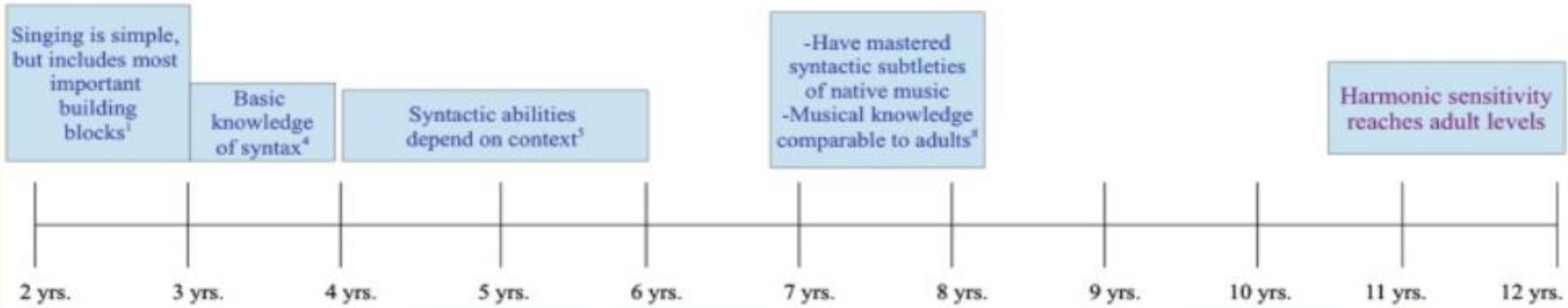
- Articulation disorders
- Language disorders
- Apraxia
- Clients with aphasia
- Clients using augmentative and alternative communication (AAC).

# Music and Language Comparison

5 similarities between music and language:

1. Music and Language are universal and specific to humans
2. Both have pitch, timbre, rhythm, and durational features
3. Spontaneous speech and spontaneous singing typically develop within infants at approximately the same time.
4. Music and language have auditory, vocal, and visual uses (both use written systems) and are built on structure and rules.
5. Distinct forms of music and language exist and vary across cultures

# Music



# Language

# Music and Multicultures

Songs teach linguistic elements, such as vocabulary, grammar and syntax.

- Singing phrases can lead to better vocabulary recall and memory for younger learners

Songs can prove helpful in learning paralinguistic elements

- Accents and tones help improve pronunciation and comprehension of the language.



# Multicultural Research

## Combining Song-And Speech-Based Language Teaching: An Intervention With Recently Migrated Children

Recently migrated children ( $N = 35$ ) received three 40-min sessions where all students learnt the lyrics of two songs designed to simulate language learning through alternating teaching modalities (singing and speaking).

Children improved their language knowledge significantly including on tasks targeting the transfer of grammatical skills, an area largely neglected in previous studies.

The two teaching modalities did not show differential effects on cued recall of song lyrics indicating that singing and speaking are equally effective when used in combination with one another. Taken together, the data suggest that singing may be useful as an additional teaching strategy, irrespective of initial language proficiency, warranting more research on songs as a supplement for grammar instruction.

(Busse, Jungclaus,,Roden, Russo, Kreutz, 2018)




# Population Specific Treatment Ideas

## Children

- Nursery rhymes
- Vocal play
- Verbal routines
- Visual and verbal manipulations

## Adults

- MIT
  - Co-Treatment
  - Motivational and Relatable
- 



# Children Tips and Tricks

## Strategies:

- Reduce the rate
- Over exaggerate and enunciate
- Incorporate manipulatives
- Facial expressions/ expectant pause
- Present visuals

## Example:

1. Pre-teach skills/vocabulary
2. Sing the song
3. Follow-up with post activities and questions

Preview the song then pause during the song to allow children to respond in a manner similar to a cloze procedure.

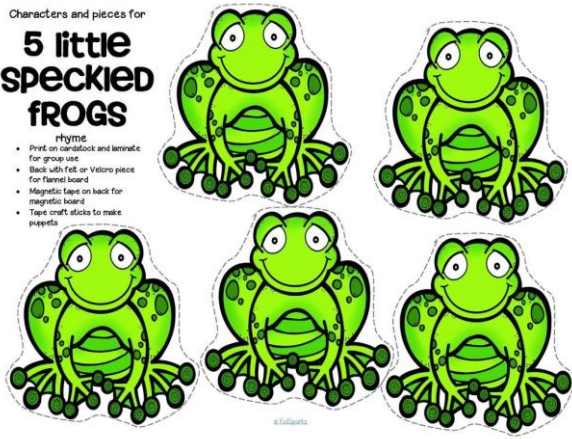
# Motivating Music

1. **Musical Noise Makers** – listening and word identification skills, keeping a pattern, attention for “I do and you do” (example: used water bottles and dried pasta or beans).
2. **Who Took the Cookies from the Cookie Jar** – routine song that can help support question-and-answers, verbs, nouns,, articulation of speech sounds.
3. **Drumming** – The use of drums in speech therapy sessions can be valuable for fostering enthusiasm and interest in speech therapy, while helping children attain goals with retention and word recall.
3. **Monkeys Jumping on the Bed** – Watch a video or sing the song with pictures and target multi syllable targets and words, counting, colors, and actions.

Characters and pieces for

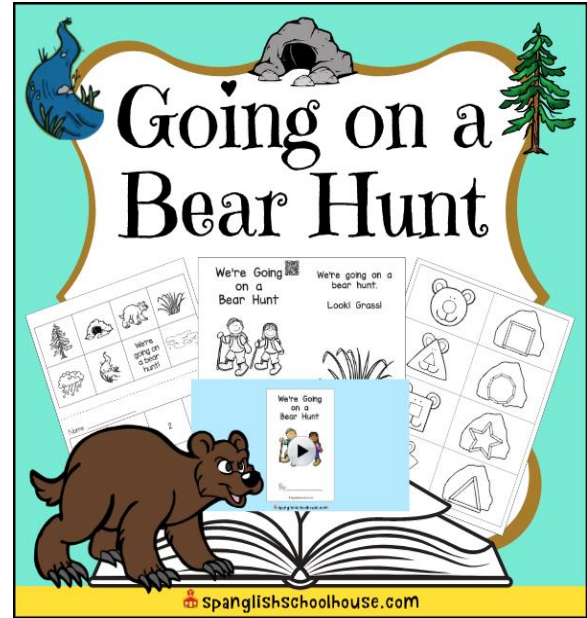
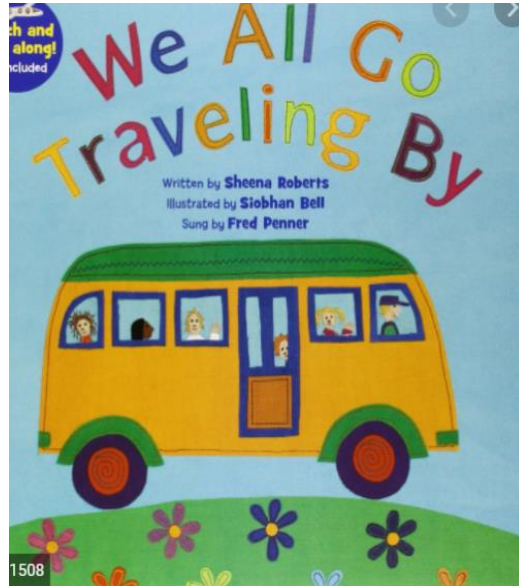
# 5 little speckled frogs

- Print on cardstock and laminate for group use
- Back with felt or Velcro piece for flannel board
- Magnetic tape on back for magnetic board
- Tape craft sticks to make puppets



## ITSY BITSY SPIDER

ITSY BITSY   
 WENT UP THE  SPOUT  
 DOWN CAME THE   
 AND WASHED THE  OUT  
 OUT CAME THE   
 AND DRIED UP ALL THE   
 NOW THE ITSY BITSY   
 WENT UP THE  AGAIN



# Research Effects of music therapy in the treatment of children with delayed speech development - results of a pilot study

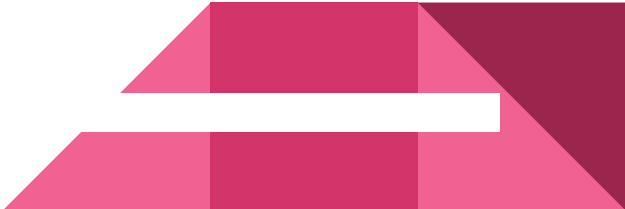
## Methods:

Observational study with 18 children aged 3.5 to 6 years with delayed speech development. Music therapy and no treatment were compared to demonstrate effectiveness. Individual music therapy was provided on an outpatient basis. An ABAB reversal design with alternations between music therapy and no treatment with an interval of approximately eight weeks between the blocks was chosen. Before and after each study period, a speech development test, a non-verbal intelligence test for children, and music therapy assessment scales were used to evaluate the speech development of the children.

## Results:

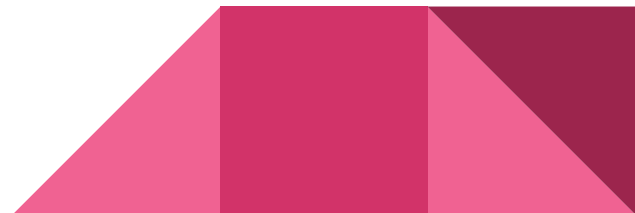
Compared to the baseline, we found a positive development in the study group after receiving music therapy. Both phonological capacity and the children's understanding of speech increased under treatment, as well as their cognitive structures, action patterns, and level of intelligence. Throughout the study period, developmental age converged with their biological age. Ratings according to the Nordoff-Robbins scales showed clinically significant changes in the children, namely in the areas of client-therapist relationship and communication.

(Grobbs, Linden, Osterman, 2010)



# Collaboration

The American Music Therapy Association argues that “music therapy is the use of music to address physical, emotional, cognitive, and social needs of individuals of all ages” (The ASHA Leader, 2012). Whether it’s a collaboration between the two therapists in a therapy session or just the speech pathologist leading the session, when music is used in speech therapy, it can have a significant impact on people who suffer with speech and language disorders (The ASHA Leader, 2012, Introduction paragraph and “Where is Music Therapy Headed” paragraph).



# Co Treatment

“Musical activities stress nonverbal forms of communication and often surpass physical, cultural, intellectual, and emotional limitations” (Zoller, 1991)

Musical strategies that can be incorporated:

- relaxation exercises
- breathing
- vocalization exercises
- song articulation experiences
- word and phrase rhythm chanting experiences
- vocabulary and concept development singing.



# Music Impact for the Adult Population

Science behind music, memory, and language isn't conclusive, researchers know that it's likely a combination of

- patterns
- repetition
- connections

Aphasia: is a loss of language. This can range from simply not being able to find a word or words that one wants to say, e.g., anomia, to having difficulty structuring sentences that are grammatical, or having so much difficulty that only single words or phrases are expressed

Apraxia of Speech: motor planning disorder in which a child's brain has difficulty coordinating the oral movements needed to create sounds into syllables, syllables into words, and words into phrases.


# Adults

Background music to support a relaxing environment

Music as a teaching tool

- Sing a song or play an instrument depending on the patient's interest and speech-language needs

Music as a social activity

- Listening
  - Turns talking
  - Imitation & repetition
  - Development of ideas, rather than passive listening
- 



# Relatable Music

- Calming someone who was agitated so that they could more readily engage and interact with others
  - “The Music Never Stopped” highlights the power of music therapy
- Orientate someone to discuss a time and place that they recall
  - Therapist plays live music that has personal significance so slp can have meaningful discussions and provide communication strategies).



# Adults: Research

## A Case Study Using a Multimodal Approach to Melodic Intonation Therapy

### Purpose

To assess the efficacy of increasing spontaneous expressive language using a modified melodic intonation therapy (MIT) approach with an male individual diagnosed with acquired aphasia and apraxia who was 10 years post onset.

### Method

A therapeutic protocol consisting of vocal and linguistic tasks was administered. The participant attended two 50-min individual sessions and a 4-hr/week socialization program for three 12-week semesters. Measures of speech and language were administered before intervention and at the completion of each of the 3 semesters.

### Results

At the completion of the study, the participant demonstrated reduced apraxia of speech as measured by The Apraxia Battery for Adults, Second Edition (Dabul, 2000). He also showed improvements in auditory comprehension skills as measured on the Boston Diagnostic Aphasia Evaluation (Goodglass, Kaplan, & Barresi, 2000). His spontaneous utterances were characterized by an increased number of complete sentences and questions. Several language parameters including mean length of utterance, total number of spontaneous (untrained) utterances, and number of different words spoken were also improved as revealed through language analysis.

(Slavin, Fabus, 2018)

# Treatment Adults

## Apraxia and MIT

Melodic Intonation Therapy (MIT):

- Evidence-based treatment method that uses intoning (singing) to improve expressive language
- Takes advantage of the undamaged right hemisphere by engaging areas that are capable of language
- It is thought that the melodic & rhythmic prosody, slower rate of articulation, and continuous voicing that result from MIT may reduce the dependence on the left hemisphere.

(Norton, Zipse, Marchina & Schlaug, 2009)

# Who MIT Helps

Left hemisphere damage to the brain

Moderately good auditory comprehension

Non-fluent speech with effortful speech production of only a few words or only nonsense syllables

Poor ability to repeat even single words

Some ability to produce words while singing familiar songs

Alert, motivated, emotionally stable, and have a good attention span

(Norton, Zipse, Marchina & Schlaug,  
2009)

# Key Components of MIT

## MIT program



- Verbal material: numerous sentences of daily living
- Intoned pattern : exaggeration of normal prosody on two notes
- Tapping with the left hand
- Visual material: relevant picture for each sentence
- Lip-reading allowed

**Level 1** until session score  $\geq 90\%$   
for five consecutive sessions

Steps for each sentence:

Humming  
**Int** Unison  
**Int** Unison with fading  
**Int** Repetition  
**Int** Response to a question

**Level 2** until session score  $\geq 90\%$   
for five consecutive sessions

Steps for each sentence:

**Int** Listening  
**Int** Unison with fading  
**Int** Delayed repetition  
**Int** Response to a question

**Level 3** until session score  $\geq 90\%$   
for five consecutive sessions

Steps for each sentence:

**Int** Delayed repetition  
**Spq** Listening  
**Spq** Unison with fading  
**NSp** Delayed repetition  
**NSp** Response to a question

# Food for Thought

“We don’t just speak to be heard, we speak to be *understood* – to make declarations of love, order a meal, and ask for directions. But while speech is symbolic, sound is the bearer of its message.

Depending on how one listens, the same stimuli can be perceived as language or music. When one repeatedly listens to the same looped recording of speech, it can begin to sound like singing (Deutsch et al., [2011](#); Tierney et al., [in press](#)): as attention to meaning is satiated, the melodic features of prosodic inflection come to the force.”

(Brandt, Gebrian, & Slevc, 2012).

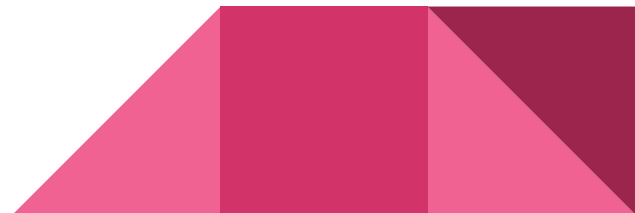
# Avantages

- Several ways to incorporate music and adapt to client's needs
- Engaging with groups
- Insightful methods
- Parent support to apply generalization



# Disadvantages

- Research still growing for quantitative group data
- Not all individuals may benefit the same way
- Depending on group and needs of the class may cause distraction
- Important to maintain scope of practice for each profession SLP's and MT's
- MT's may be required to incorporate specific training strategies





# What is the biggest take away?

Music is universal

Used for all populations and all ages

Listen. Create. Make. Reinvent.



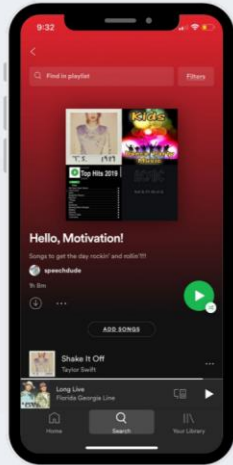
# Resources



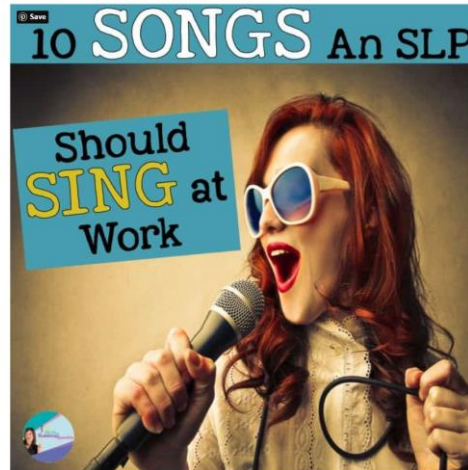
Search "SpeechDude" (all one word)

Playlists include:

- Figurative Language
- Motivational & Upbeat
- Ceremony Celebrations
- Calming
- Opportunities



**GETTING THE MOST OUT OF OUR  
CORE VOCABULARY SONGS**



# References

<https://txsource.com/2016/08/30/12-ways-incorporate-music-games-speech-therapy-sessions/>

<https://cornerstone.lib.mnsu.edu/cgi/viewcontent.cgi?article=1041&context=etds>

<https://leader.pubs.asha.org/doi/10.1044/speech-language-therapy-and-music-therapy-collaboration-the-dos-the-donts-and-the-why-nots/full/>

<https://neuro.hms.harvard.edu/harvard-mahoney-neuroscience-institute/brain-newsletter/and-brain/music-and-brain>

[https://www.wcmt.org.uk/sites/default/files/migrated-reports/995\\_1.pdf](https://www.wcmt.org.uk/sites/default/files/migrated-reports/995_1.pdf)

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2921108/>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4583182/>

