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Perspectives on Deafness With Autism: Changing How We Think

Deafness with Autism: A Music Therapy Perspective

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Deafness with Autism
A Music Therapy Perspective

Christine Barton, MM, MT-BC
May 6, 2014

First Encounter
Jake

- Mom said, “He knew music before words.”
- How did they know?
Agenda

• Introduce selected current research on deafness and autism
• Highlight key issues in music perception in children with ASD and those who are deaf or hard of hearing
• Provide music experiences and resources to support communication in children with deafness and autism

CDC Prevalence of ASD 2014

http://www.cdc.gov/ncbddd/autism/data.html

• 1 in 68 (eight year old) US children identified with ASD
• Increase of 30% from 2008
• Boys 5 times more likely than girls
• Most not diagnosed until after 4

CDC Prevalence of HL 2014

http://www.cdc.gov/ncbddd/hearingloss/facts.html

• 1 to 3 children per 1000 are born with a hearing loss
Deafness and ASD
Gallaudet Research Institute (2009-2010)

- 40% of D/HH children have comorbid conditions
- 1 in 59 D/HH children receive services for ASD
- More children (35.4%) with profound loss have the dual diagnosis
- Result: deaf children receive ASD diagnosis later than hearing peers (Vernon and Rhodes, 2009)

Deafness and ASD
Rosenhall et al., 1999

- 1-6% of children who are deaf also have ASD
- 1.6% unilateral
- 7.9% mild to moderate
- 3.5% profound

The Treatment Conundrum
Treatment Approaches (D/HH)

- Listening and Spoken Language (LSL)
  - Hearing culture
- American Sign Language (ASL)
  - Deaf Culture
- Total Communication
- Cued Speech

Music Therapy Defined

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

-American Music Therapy Association, 2005
Why Music Therapy?

• Takes advantage of the child’s enhanced musical abilities
• Current meta-analysis reveals music therapy to be effective in developing communication, interpersonal, personal responsibility and play skills (Kern & Humpal, 2013)
• May involve families in shared music-making experiences which can be carried over in the home
• Can target gross and fine motor skill development through playing instruments or creatively moving to music
• The structure and sensory input inherent in music help to establish response and role expectations, positive interactions and organization (AMTA, www.musictherapy.org)

NAC Standards Report

1. Established
2. Emerging
3. Unestablished

www.nationalautismcenter.org
**The Music Connection**

![Diagram](image1.png)

**The Communication Connection**

![Diagram](image2.png)

**DIR®/Floortime™ Model**

- A developmental framework which identifies the child’s unique social, emotional and intellectual capacities. It is relationship based and emphasizes the importance of parents and family members in the therapeutic process.


![Diagram](image3.png)
Nordoff-Robbins Music Therapy

- *Music child* - music is innate
- The musical interactions promote change which follows the child out of the therapy room and into daily life
- *Social reciprocity, mirroring, shared attention and emotional attunement*

MT Assessment Tools (ASD)

- Special Education Music Therapy Assessment Process (SEMTAP), Coleman & Brunk, 2000
- Music Therapy Communication and Social Interaction (MTCSI), Hummel-Rossi et al., 2008
- Individualized Music-Centered Assessment Profile for Neurodevelopmental Disorders (IMCAP-ND®), Carpente, 2011
- Four-Step Assessment Model, Lazar, 2007
- Music Therapy-Music Related Behavior (MT-MRB), Snell, 2002
- SCERTS® Model in Music Therapy, Walworth, 2007

MT Assessment Tools (D/HH)

- Primary Measures of Music Audiation (PMMA), Kdg-Grade 3, Gordon, 1979 & 1986
- A standardized music aptitude test for music education students w/o hearing loss

### Music and Language Milestones

<table>
<thead>
<tr>
<th>Age</th>
<th>Music</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth-3 months</td>
<td>Alerts and echoes to music, responds to noise; smiles and laughs when sung to</td>
<td>Moves to the sound of a familiar voice; smiles and laughs; sometimes cries</td>
</tr>
<tr>
<td>3-6 months</td>
<td>Movements become repetitive; smiles in response to music; begins to show differences in pitch and volume</td>
<td>Babbling, babbling, smiling, beginning to understand melodies and rhythms</td>
</tr>
<tr>
<td>6-9 months</td>
<td>Occasionally matches pitch, large repetitive movements, recognizes familiar melodies; uses decreasing vocalizations</td>
<td>Smiles at speaker, uses voice and gestures to show pleasure or displeasure</td>
</tr>
<tr>
<td>9-12 months</td>
<td>“Sings” spontaneously; recognizes and attempts to sing along with familiar songs</td>
<td>Recognizes names of family members in songs (fathers, mothers, family members)</td>
</tr>
<tr>
<td>12-18 months</td>
<td>Dances to music; pays attention to lyrics; enjoys repetitive musical patterns, matches movements to music</td>
<td>Dances to music, sings along to music, uses voice and gestures to show expression</td>
</tr>
</tbody>
</table>


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**Music. The Language of Autism?**

Christine Barton 2014
Music, the Language of Autism?
Leo Kanner, 1943

- At the age of 1 year "he could hum and sing many tunes accurately."
- About 2 1/2 years, he began to sing. He sang about twenty or thirty songs, including a little French lullaby.

Music, the Language of Autism?
Heaton, P. (2005)

Experimental investigations have highlighted exceptional pitch discrimination and memory in individuals with ASD.

Music, the Language of Autism?

Meta-analysis revealed:
All music intervention, regardless of purpose or implementation, has been effective for children and adolescents with autism.
Music, the Language of Autism?

Brenton JN, Devries SP, Barton C, Minnich H, Sokol DK. (2008)

Absolute pitch is thought to be attributable to a single gene, transmitted in an autosomal-dominant fashion. The association of absolute pitch with autism raises the speculation that this talent could be linked to a genetically distinct subset of children with autism. Further, the identification of absolute pitch in even young children with autism may lead to a lifelong skill.

Music, the Language of Autism?


Absolute Pitch (AP) in ASD individuals was at least 20 times the prevalence of the general population.

Music and Hearing Loss

• HA and CI children perceive rhythm nearly as well as their hearing peers (Gfeller, 2000)
• CI users less accurate than hearing peers in song recognition (Stordahl, 2002)
• Pitch perception and production more of a challenge
• For some, music may not be as enjoyable, but for others it is very motivating and desirable
Music and Hearing Loss

A handful of studies have shown that music training for individuals with hearing loss can have positive effects in cognitive, linguistic, memory, and music perception domains.

(Abdi, Kahlessi, Khorsandi, & Gholami, 2001; Galvin, Fu, & Nogaki, 2007; Peterson, Mortenson, Gjedde, & Vuust, 2009; Yuba, Itoh, & Kaga, 2007).

Music as a Sensory Experience

- Hyperacusis
- Novel sounds
- Modulate sound quality and volume

Nordoff –Robbins Music Therapy

- Meet and engage a child by creating music that supports a child’s spontaneous behaviors
- Use imitation as a way to connect without the barrier of spoken language
- Interactive music-making provides shared attention opportunities
Music Experiences

• Meet the child
  – Hello songs (Piggyback Songs)
    • Tune: Goodnight Ladies
    Hello Susie (3X)
    Everybody say hello!

  All wave and say hello. Choose a different body part to wave with.

Music Experiences

• Meet the child
  – Hello (Piggyback Songs)
    – Tune: When Cows get up in the Morning
    When Susie gets up in the morning, she always says hello (2X)
    Hello (echo) Hello (echo)
    She always says hello

  Use a mic as a prompt

Music Experiences

• Foolproof Instruments
  – Use pentatonic moon harp (DEGAB)
  – Use uke open tuning (GCEG)
  – Large pick
Music Experiences

• Engage the child
  – Rhythm Sticks/Paper Plates
  – Rhythmically Moving CD/Phyllis Weikert
  – Copy me (bilateral, symmetrical movements)
  – What can you do?
  – Leader/follower

• Imitate the child
  – Provide a pentatonic xylophone or glockenspiel
  – Studio 49 Easycussion AG500
  – Non-verbal or add syllables/lyrics

• Interactive music making/shared attention
  – Provide Floor drum
  – Remo Tubano10 Inch, KD-0010-01, Rain Forest Fabric
  – Non-verbal or add syllables/lyrics
Strategies
• Utilize the team with the family at the core
• Enlist and coach parents to help generalize targeted goals across multiple settings
• Provide structure/routine
  – Visual schedule/class rules
• Provide music experiences/instruments that require no formal training

Strategies
• Simple directions (use fingers as mnemonics)
• Get attention first (“show me you are thinking about me”)
• Appeal to all the senses
• Repetition
• Choices and alternatives
• Tell them what they can do
• Do not ask rhetorical questions!

Considerations/Observations
• Each child is unique
• Hearing loss is usually addressed first
• Intervention/placement is chosen based upon the most current need (sometimes the puzzle and sometimes the ear)
• Spoken language (and even reading) can occur after 5!
• Hearing devices make a positive difference in the quality of life for individuals and families
• Music offers the potential to create relationships and provide life long enjoyment
### Resources

- West Music
  - [www.westmusic.com](http://www.westmusic.com)
  - Rhythmically Moving CDs (Weikert)
- The Listening Room (Advanced Bionics)
  - [www.hearingjourney.com](http://www.hearingjourney.com)
- American Music Therapy Association
  - [www.musictherapy.org](http://www.musictherapy.org)
- Gallaudette Clerc Center
  - [http://www.gallaudet.edu/clerc_center.html](http://www.gallaudet.edu/clerc_center.html)

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### Resources

- Guidelines for MT Practice in Developmental Care - Chapter 9: Children with Hearing Loss (Barton, 2013) Barcelona Publishers

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For More Information …

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Write down something new that you learned from today's presentation.

Perspectives on Deafness With Autism: Changing How We Think

Deafness with Autism: An Occupational Therapy Perspective

May 20, 2014 • 12:00 p.m. Eastern/9:00 a.m. Pacific