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# Integrating Music Therapy Services and Speech-Language Therapy Services for Children with Severe Communication Impairments: A Co-Treatment Model

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## Abstract

Documenting how music therapy can be integrated with speech-language therapy services for children with communication delay is not evident in the literature. In this article, a collaborative model with procedures, experiences, and communication outcomes of integrating music therapy with the existing speech-language services is given. Using established principles of team planning, the co-treatment model is described in a case study, a 4-year-old child diagnosed with global developmental delay. Results indicated increased engagement in the classroom after integrating music therapy and speech-language therapy treatment strategies.

**Keywords:** *Speech Therapy, Music Therapy, Recreational Therapy, Music & Literature, Music Psychology, Speech Education, Communication Education, Speech Disorders Communicative Disorders*

## Introduction

As the number of cases of children being identified with communication disorders increases, the need for cost effective treatment has become more apparent. Music therapists assess and develop treatment for people with developmental disabilities and emotional issues in facilities such as hospitals, schools, and inpatient and outpatient treatment centers.

Speech-language pathologists not only work with people on speech and sound issues, but also work with individuals who have learning disabilities, memory problems and individuals who have problems with swallowing food or drink.

In the past 25 years, the field also added augmentative and alternative communication (AAC) to its scope of practice. AAC can include using signs or gestures, pointing to pictures in a communication book, or using a computer-based device with synthesized speech output.

Currently, speech-language pathologists (SLPs) and music therapists (MTs) are diligently working to improve techniques to address the varied and sometimes complex communication and educational needs of children with disabilities (Geist & McCarthy 2008)<sup>12</sup>.

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Music provides a structured medium to accentuate the prosody or meaning of language in the context of an enjoyable, motivating stimulus (Pelliteri, 2000)<sup>14</sup>. Music therapists are trained to adapt elements of music e.g. tempo, rhythm, melody, harmony, and texture to promote effective communication strategies. Although communication and music therapy treatment have the potential to complement each other in a therapeutic context, studies documenting this interdisciplinary approach are not common in the literature. This article illustrates an example of how SLPs and MTs can effectively co-treat for a child with complex communication needs. Short-term effects of this treatment are presented.

### **Brain Regions Implicated in Music Processing**

#### **Components of Music Sites**

##### **Pitch**

#### **Heschl's gyrus - The perceived fundamental frequency of a sound**

Planum temporale  
 Parietal lobe  
 Anterior superior-temporal gyrus  
 Insula  
 Left dorsolateral cortex  
 Right inferior frontal cortex

##### **Timbre**

#### **The quality of a musical sound that distinguishes different types of sound production**

Planum temporal  
 Parietal lobe  
 Anterior superior-temporal gyrus

##### **Rhythm**

#### **The organizational pattern of sound in time or the timing of musical sound**

Planum temporal  
 Parietal lobe  
 Anterior superior-temporal gyrus  
 Insula  
 Premotor cortex  
 Supplemental motor area

Cerebellum  
 Basal ganglia

##### **Melody**

#### **The dominant tune of composition**

Heschl's gyrus  
 Anterior superior-temporal gyrus  
 Planum temporal  
 Music Recognition  
 Anterior superior-temporal gyrus  
 Temporal pole  
 Insula  
 Middle/inferior temporal gyri  
 Frontal lobe

##### **Music Emotion**

Planum temporal  
 Parietal lobe  
 Insula  
 Limbic circuit  
 Nucleus accumbens  
 Ventral tegmental area  
 Orbitofrontal cortex

#### **Music Therapy and Speech-Language Therapy**

**Collaboration:** When describing how music can be added to a speech-language therapy setting as treatment, Zoller stated, "Musical activities stress nonverbal forms of communication and often surpass physical, cultural, intellectual, and emotional limitations.

Zoller continues by describing specific musical strategies that can be incorporated: relaxation exercises, breathing and vocalization exercises, song articulation experiences, word and phrase rhythm chanting experiences, and vocabulary and concept development singing.

One model of collaboration between music therapy and speech-language therapy was demonstrated by Bruscia . This research described a music therapy assessment and treatment for a 14-year-old male with mental retardation and autistic-like behaviors including echolalia. Working together the therapists developed a treatment intervention

that presented musical stimuli in various imitation exercises, singing experiences, and fill in the blank rhythmic exercises. As a result of this intervention, the subjects echolalia was reduced from 95% of the total utterances to under 10%

The purpose of the present study is to document the process of collaborative treatment with music therapy and speech-language therapy intervention, specifically Augmentative and Alternative Communication (AAC), for a child with severe speech impairments. This is an effort to derive best-practices for such intervention. Although the number of treatment sessions with the child was limited due to time constraints, short-term therapeutic outcomes are presented.

## Method

### Participant Selection

Requirements for inclusion in this case study were that the child

- (a) Was between ages 2-12;
- (b) Had a severe communication impairment such that their natural speech was inadequate to meet his/her daily communication needs;
- (c) Demonstrated an observable, positive behavior change (e.g., increased alertness, change in affect) in the presence of musical stimuli;
- (d) Had parental consent to participate. The subject presented here, Allen, met all of the requirements for this study.

### Procedures:

#### The intervention procedure consisted of:

- (a) Assessment of the child's current communication needs and skills;
- (b) Assessment of the child's potential to benefit from music therapy;
- (c) Team meetings with the parent(s) and investigators to target priority communication goals
- (d) Target communication goals selected;
- (e) Collaborative music therapy/speech-language therapy intervention determined; and
- (g) Implementation and evaluation of treatment.

### Case Study: Allen — Classroom-Based Collaborative SLP/MT Model

**Background Information:** Allen was a 4-year-old only child, living with both parents. Allen was born at 27 weeks gestation and was subsequently placed on a respirator for the first 17 weeks of life. At 8 months of age, Allen received a tracheostomy and was decannulated at 21 months. He received speech-language therapy services in the home prior to decannulation. Allen was diagnosed with bronchopulmonary dysplasia resulting in an increased susceptibility to illness. For this reason, his opportunities to interact outside of the home were greatly decreased in his earliest years.

Allen used gestures to protest or request actions. For example, he gained attention by tapping others and raised arms to be picked up. He exhibited problems in the comprehension of words and commands and did not produce any intelligible words or sentences. Allen's parents reported that he was familiar with social routines such as brushing teeth and initiated interactions with adults by pulling the adult's hands toward a desired object.

According to the results of The Rossetti Infant Toddler Scale (Rossetti, 1990)<sup>16</sup> Allen's skills in language comprehension, language expression, and gesturing were commensurate with a child of 9-12 months. Allen demonstrated pragmatic and play skills in the 15-18 month age range by participating in turn-taking games, such as "hide-and-goseek" and vocalizing when his name was called.

Prior to this study, focuses of speechlanguage therapy included decreasing sensory defensiveness, transitioning from bottle-feeding to cup drinking, and expressing wants and needs by exchanging appropriate picture cards to choose activities/objects. Allen signed "again" to request continuation of an activity. He also used Mayer Johnson Picture Communication Symbols to request favorite items, such as, a toy star and a ball. He did not receive music therapy services prior to this study. During the team meeting, it was discussed how Allen needed strategies for one on one and group situations. He had limited experience with AAC and no experience with voice output. Further, he had difficulty generalizing and participating in repeated practice of greetings in a therapy room. First, Allen's parents were concerned with Allen's lack of greeting other children, despite greetings being an important part of the classroom routine. Observation of Allen in the

classroom confirmed that he never greeted classmates. Allen's teachers also noted that during story time Allen would play with his toes, try to leave the circle, or would otherwise be unengaged in the activity. Other children in the classroom would ask questions or say repeated lines in a story together.

**Speech-Language Therapy and Music Therapy Assessment Summary:** During the speech-language therapy assessment, Allen responded to "no" by stopping whatever he was doing, communicated by gestures such as "want up" by looking at the person and holding his arms up. He consistently used specific vocalizations for different family members, imitated nonspeech sounds, and gestured to caregivers (e.g. swinging arms to request being swung and raising arms to be picked up).

During the music therapy assessment, it was found that Allen consistently walked toward a sound source, such as a cd player playing a recording of classical music, an instrument such as a drum or piano. When the sound stopped, he would indicate by signing "more" for the experience to continue. He participated in music experiences by playing the drum, piano, and strumming the guitar.

Most significant communication interactions included choosing a picture of an instrument that he wanted and pressing a voice output device to say Hello at appropriate times during the Hello Song. Results also indicate that social interaction increased in a 1:1 setting when using music as reinforcement. For example, he attended to listening to a book sung to him, "Brown Bear Brown Bear, What Do You See?" (1991) by sitting, looking at the book, smiling, and looking at the therapist for the duration of the 5 minute experience. Behaviors such as playing with his toes, standing up and walking around the room, seen quite often in private speech therapy and in his classroom, decreased as Allen demonstrated an increased engagement when music was used in an activity.

**Communication Goals:** Despite seeing some success in individual speech-language therapy, Allen's team was most concerned with his lack of interactions with other children in his preschool classroom. Consequently a broad goal chosen was to increase his classroom participation. The team decided to target greetings and increased engagement during story time activities.

**Classroom Based Collaborative Model:** A music therapy and speech-language collaborative approach

was ideal for Allen. Since he demonstrated increased social interaction and engagement in music experiences, it was decided that the music therapist would support speech therapy goals during individual music therapy sessions, moving toward small group music session, and finally to the classroom environment where the teacher would implement the music experiences during group time. The speech therapist's role in the model would be as a consultant to the music therapist and the classroom teacher on appropriate communication strategies. When the teacher utilized the music treatment experiences in the classroom, the music therapist was available as a consultant to the teacher.

**Treatment Intervention:** The treatment setting determined was for Allen to begin in a 1:1 music therapy setting where specific music experiences were introduced. These experiences were a greeting song, an active listening songbook experience, an instrument playing experience, and a closing song. Significant positive behavioral responses during 1:1 music therapy included, spontaneous greetings, increased time engaged in one activity, and expressing choice. After 3 initial 1:1 music therapy sessions, Allen was introduced to a small music group setting with 4 or 5 of his classroom peers at his school. The music therapist conducted the 4 music group sessions while the classroom teacher observed/assisted and the SLP observed and consulted on appropriate clinical techniques of using a voice output device during music experiences.

The same experiences were used as in the 1:1 music therapy sessions. The challenge for Allen in this setting was to wait his turn. This would require that he sit and wait. Allen practiced greetings during two different "Hello" songs. He also said repeated lines at the appropriate time in the music, using a voice output device, from several songs, e.g. "all through the town" from *Wheels on the Bus* or books where the text was sung, e.g. "looking at me" from *Brown Bear Brown Bear What Do You See?*

At first, Allen used a Big MacD to participate but later moved to spontaneous greetings of waving his hand. Again, Allen picked from a choice of instruments moving from reaching for the actual instrument to picking a picture and giving it to the therapist. Data indicated that Allen increased time waiting for his turn. Off task behaviors of playing with his shoes and getting up during experiences were evident at the first session but decreased as the sessions progressed. With these positive results in mind, both the MT and SLP then taught the teacher the

proper techniques, both with the voice output device and the music experience, specifically for the Brown Bear Brown Bear What Do You See? book. The teacher then implemented the strategy when asking Allen, using the Big Mac®, to say “looking at me” 10 times during the large classroom setting along with 20 of his classmates.

## Results of Treatment

In addition to tracking Allen’s progress during small group sessions pre and post videos of Allen’s participation in the classroom were taken to confirm the social validity of the results. Ten pre-service teachers blind to the treatment condition were asked to review the videos in random order and select the one they felt Allen appeared more involved in the class. The activities in both videos were similar (involving reading a book). Ten out of ten pre-service teachers selected the post-treatment video as the one where Allen was more involved in the classroom. There were no instances of off task behaviors in the final group session.

**Summary:** Although music therapists and speech-language pathologists do collaborate in schools, hospitals, and other treatment facilities across the country the results of significant improvement in communication with children as a result of this collaboration are not evident in the literature. In this article a model demonstrating positive results of SLP/MT-BC collaboration within a short time has been presented

**Clinical Implications:** Several benefits were noted in incorporating music therapy. First, music allowed opportunities for repeated practice than would seem natural in non-music activities. For Allen, one “Hello” song allowed for 10 opportunities to practice hello within a 3-minute song and to see others modeling it as well.

It is not always easy to quantify the value of music in a person’s life. When music is incorporated to augment other communication goals however, some of its influence may be easier to track. Social validation, and engagement may be useful tools across multiple goals whereas other goals that are already a part of therapy can also be charted before and after the introduction of music.

It should be noted that not all children with communications delay may benefit from music therapy treatment. Generally, children who demonstrate a motivation to exhibit more communicative behaviors

when music is present vs. when it is not will most likely benefit more from collaboration. Therefore before trying out the models, both a music therapy and speech assessment should be conducted to see if the student is a candidate for the services.

The current findings are preliminary. The short-term effects have been noted but each model should be tested over time with larger numbers of students. The current study did not address children in elementary and secondary schools who may already be involved in music classrooms. There is a need to document the role of music therapist acting as a liaison between music teachers and SLPs to help students achieve classroom and communication skills. As speech and language pathologies and music therapists continue to explore the possibilities of collaboration with children with communication delay, the definition of the models can be expanded.

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**Conflict of Interest:** Nil

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