

Music and Augmentative and Alternative Communication

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Abstract

Music is a pervasive presence in life, so much so that conceptualizing ways to integrate music into the lives of individuals who use augmentative and alternative communication or into one's clinical practice can be overwhelming. This paper reviews a framework for conceptualizing musical involvement based on the distinctions of appreciation, recreation, and creation of music. In terms of integration into the therapeutic process, music therapy is explored as a discipline. Some of the barriers music therapists have noted in collaborating with speech language pathologists are discussed along with potential proposed solutions. Finally 4 case studies are presented to outline ways in which music therapists and AAC specialists can collaborate with children with complex communication needs.

Keywords: Music; AAC; Music therapy

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I. Opening Reflection on this Topic from John McCarthy

As someone trained as a classical singer who then developed an interest in speech-language pathology and then in augmentative and alternative communication, I've always felt a connection in my own life with music and communication. I have experienced this on intuitive and intellectual levels. In 1997, I had the opportunity to explore the connection along with Sarah Blackstone in an issue of *Augmentative Communication News* (Blackstone & McCarthy, 1997). I still remember the opening sentence without having to refer to it, "Art is communication" (p. 1). Everything else I have done and all other aspects of discourse related to the topic must, I believe, hold this firm tenant in mind. If professionals are to talk about improving communication outcomes, there must be a recognition that the arts are an effective medium for communication. However, with this certainty comes a realm of questions for augmentative and alternative communication specialists. In particular finding ways to integrate music and the arts into existing interventions or findings ways to channel an interest and love of music into improving communication outcomes can be challenging.

II. A Framework for Incorporating Music into the Lives of Individuals Requiring AAC

One framework for conceptualizing music is to divide experiences into appreciation, recreation, and creation of music (Blackstone & McCarthy, 1997). It is interesting to reflect on how changes in technology have opened up new worlds of access to music. Appreciation of music might involve attending live performances or watching/listening to recorded performances. In 1997, "appreciating" via recordings was done via CD's and MP3's were just taking on a more shared presence through the growing Internet. Now, a virtually unlimited music library can be accessed through Internet streams or large capacity hard drives can store vast amounts of genres and music. Playing music can be done directly through AAC systems whether they are simple digitized systems or high-tech computer-based or through mobile devices. High-tech systems can have music playlists with opportunities to comment and share via social networks. All of the previous could be enabled for use via switches for those with challenges related to direct selection. Specialty hardware is available to access consumer electronics via switches. For individuals with a hearing impairment, music does not need to be a closed avenue. Tactile experiences related to music can be rich sources of enjoyment and sharing. The Soundbox[®] (www.soundbeam.uk) is a system that allows individuals to experience vibrations created through musical input via speakers driving a movable surface. The surface is durable enough to accommodate a wheelchair.

Appreciation need not be a passive experience. Deciding on music to listen to and then commenting on favorite parts or requests to hear certain parts or the entire song again are all open lines. Questions related to "why do you like..." or "what do you like..." provide ongoing topics. Inviting others to listen can open up avenues for inclusion and integration. Music videos can add

another dimension to enjoyment, and again can be accessed readily via the Internet and easily stored on a number of different media. Although currently middle-aged individuals may have childhood memories of painstakingly listening and re-listening to songs in the hopes of transcribing the lyrics, the words for songs along with accompanying background on the history and multiple blogs related to the sources of the music are frequently a click away. Once again, communication opportunities abound for reviewing and reading lyrics and backstories.

Recreation can certainly mean learning to play a musical instrument, but there is so much more. The discipline and sense of accomplishment in mastering a scale, a piece of music, and the coordinated part of a well orchestrated symphony is incredible, however the same sense of achievement can be won through a number of other avenues. Earlier iterations of dedicated AAC systems had onboard Song Editors or the ability to systematically replicate the pitch and duration of synthesized syllables to add a singing voice to a synthesized one. Recreation in this sense would be taking an existing song and realizing it through an adapted format. Certainly there is a creative element there as well. Non-dedicated systems now allow access to a variety of musical software and Apps to recreate existing music. Carefully timed digitized recordings can lead to group or individual recreation of music with simple digitized systems.

The communication opportunities created by such music making is just as rich as with appreciation. There is anticipation and evaluation of performance. There is selection of pieces to play and pieces to play next. Software programs may allow a choice of the instrument to be heard playing a song, the tempo at which it is played, or the number of instruments to join with a single playing. Folk songs from different countries offer chances to share musical traditions and to learn about different heritages. Images can be selected to accompany different parts of music or selections of images can be done to learn about music characteristics or parameters. In the best spirit of criticism, feedback can be offered relative to a person's performance or for suggestions in the future from the basic level of "I liked it" vs. "I did not like it," to "Try that last line again, but more softly."

Creation of music through current technology is an incredibly exciting endeavor. Certainly for those with skills in harmony and voice-leading or other composition traditions, a musical score and access to it may be all that is needed. But penning a composition is such a small part. Ever since MIDI (Musical Instrument Digital Interface) electronic composition has been within the reach of so many with access to electronics but not necessarily traditional instruments. Current software tools allow for laying down multiple tracks with a variety of instruments. One can even choose from preexisting phrases and motives to create a pastiche completely one's own. Products such as the Soundbeam[®] and Skoog[®] and Beamz[®] allow individuals with a variety of physical abilities and disabilities to create their own music using spaces rather than through an interface with a traditional instrument. There are even current tools that can turn anything (even fruit) into a playable keyboard (<http://www.makeymakey.com/>). It is particularly in creation that the lines of communication via words and music blur. An individual could sum up her entire day through music themes stitched together. Currently social media sites allow for this through photos, emoticons, or Emojis but the relative ease of access to music allows for such mosaics to be constructed as well. An experience

could be portrayed through music rather than words. Emotions can be vented or shared through musical expressions. The technique of improvisational music therapy (see music therapy below) allows for an exploration of individual expression to be at the heart of connecting with an individual with a communication disorder.

There are also words related to creation. Partnerships can exist whereby an individual's personal expressions in words are set to music either by oneself or in conjunction with a local artist. Once again, the Internet allows for incredible collaborations with musicians all over the world. The creation of a musical piece allows for literally thousands of choices depending on the level of detail one wishes. As a group activity, the genre, instruments involved, tempo, and overall line can be basic starting choices. Music produced by groups can allow for increased visibility of groups and a way to bridge partnerships with the local community.

Certainly since my earlier writing on this topic, technology has allowed for a huge increase in the number of possibilities for musical expression and an exploration of its intersection or overlap with communication. One might wonder if there are any potential downsides. From my perspective, the only downside is one that is not unique to music. Anytime technology is involved, there is always a risk that tools are emphasized over communication. The tools are meant to achieve some end. Music is an end in itself, but even the framework of appreciation, recreation, or creation at the most basic level is something to be considered lest the experience be drained of meaning and enjoyment.

III. Music Therapy

Music therapists are highly skilled professionals whose training helps with bridging the gap between personal interest in music and clinical applications. Including the music therapist as part of the assessment and intervention team can be a valuable experience for both client and clinician.

The first music therapy national association in the United States, the National Association of Music Therapy (NAMT) was created in 1950 and it allowed for standardized curriculum in universities and creation of a nationally recognized credential. The current association in the U.S., the American Music Therapy Association (AMTA) provides standards for education and clinical training and professional competencies to guide the curriculum delivery efforts. AMTA supports its members through providing advocacy and continued professional development training opportunities, as well as access to current music therapy research sources. The Certification Board for Music Therapists (CBMT), a separate organization, grants the credential of MT-BC (Music Therapist-Board Certified), and monitors maintenance of the credential through continuing music therapy education credits. The entry-level degree for music therapists in the United States is a 4-year undergraduate degree plus a 6 ~ 9 month internship. Many schools offer advanced competency training with the master's degree and some with doctoral degrees. Since being a musician is the foundation of being an effective music therapist, universities that offer music therapy as a degree must be approved by AMTA and accredited through the National Association of the Schools of Music (NASM).

The AMTA Standards of Clinical Practice guide music therapists in their work. “After assessing the strengths and needs of each client, the qualified music therapist provides the indicated treatment including creating, singing, moving to, and/or listening to music. Through musical involvement in the therapeutic context, clients’ abilities are strengthened and transferred to other areas of their lives. Music therapy also provides avenues for communication that can be helpful to those who find it difficult to express themselves in words” (AMTA, 2015). Music therapists are trained to be part of a multi-disciplinary treatment team supporting treatment strategies already in place but adding musical elements to enhance current interventions to promote possibly quicker and more predictable behavioral responses (Davis, Gfeller, & Thaut, 2008).

The AMTA and CBMT Scope of Music Therapy Practice (AMTA & CBMT, 2015) describes the collaborative function of Music Therapists, “Music therapists function as independent clinicians within the context of the interdisciplinary team...” (p. 2). It can be challenging when music therapists have difficulty connecting with professionals who are interested, but not necessarily aware of the opportunities that working with a music therapist can provide. Register (2002) noted that 44.6% of music therapists surveyed reported collaborating with speech-language pathologists. There is significant evidence that music therapists are working with students, in particular students with complex communication needs, where collaboration could be beneficial (Gadberry, 2012; Smith & Hairston, 1999). There are multiple reasons for reduced collaboration but also multiple potential benefits. Since AAC offers an added scope of knowledge to consider, collaborations with individuals with complex communication needs adds an additional complicating factor, but not an insurmountable one.

To better understand the nature of collaboration with music therapists and speech-language pathologists serving individuals who use AAC, the authors administered a survey of Music Therapists in the USA (McCarthy, Geist, Zojwala, & Schock, 2008). We surveyed 1,834 American Music Therapy Association Members via an Internet-based survey. The response rate based on deliverable messages was 50.6%. In this case, the majority of music therapists (73.6%) noted that they had worked with an SLP in some capacity at some point in their career. Also noteworthy was that 57.9% of participants noted addressing AAC goals in their work with SLPs. Of the 50.1% currently working with someone requiring AAC, only 42.8% were also working with an SLP.

IV. Dealing with Barriers to Collaboration

Several open-ended questions allowed for exploration as to why there was a gap. We offer some potential ways to deal with these challenges here. One key challenge involved scheduling, in particular a lack of time to plan or coordinate. Although suggestions as to how to overcome this barrier were not specifically solicited, once again, it appears that the same technologies that have allowed for increased musical access could also allow for increased collaboration. There are a number of mobile tools that allow not only for video conferencing, but also for simultaneous

document viewing and markup. Documents, plans, and assessments (de-identified) can be shared in the cloud to allow for multi-person access.

A second barrier had to do with a different orientation in addressing goals. Although the words may be different, it is important to note that often the approaches are similar at their core. Music therapy generally has behavioral objectives and can use a fairly standard behavioral approach, but there are also more open ended approaches as in improvisational music therapy where the therapist follows the client's lead (Pellitieri, 2000). These two approaches are not all that different from clinician directed and client centered approaches that speech-language pathologists use. In fact, some child centered, play therapy can be very unstructured. This does not mean that therapy should not be rigorous or data driven. It is the nature of the data though that could be causing confusion. Music therapists may consider responsiveness via proximity or via imitation of facial expression, whereas a speech-language pathologist might look for joint attention, turns taken, or choices made. Both therapists can quantify these results, consider their level of prompting, and find a common ground for discussion.

A third barrier noted had to do with skepticism about music therapy. Music therapy has an evidence base and a growing body of literature to support its effectiveness. Once again, the language used could present a barrier, but careful consideration of the similarities rather than differences in goal orientation can be helpful. The only other piece of information for both music therapists and speech-language pathologists to consider is in the value of music across a number of domains. Usually anecdotal accounts of success related to music that I hear from parents or teachers don't relate to easily quantifiable metrics. Although clinicians should strive to be rigorous in data collection, the concept of social validity (Foster & Mash, 1999) involves verification that results are meaningful to a wider audience on a more visible level. Having individuals view before and after videos or listen to before and after audio files (blinded to the condition) of students involved in music therapy can be powerful gauges of the success of therapy and can influence a variety of audiences about the meaningful impact of music.

Not all speech-language pathologists are musical. Some have a much more intense interest in music than others. This is not exclusive to speech-language pathologists. It is true of the general population. It is important to distinguish individual style preferences from client interests and motivators. For individuals highly motivated by or responsive to music, a clinician's individual preferences should be of secondary consideration. This does not mean that the speech-language pathologist should go out and study music, but rather it could be viewed as the perfect opportunity to engage a music therapist. The ease of obtaining and sharing recorded music can also help with speech-language pathologists not comfortable with singing or skilled in playing instruments.

V. Models of Collaboration: Case Studies

A single clinician in a session can manage the pace and make adjustments based on clients'

responses. In cases where more than one professional is involved at a time, it can be difficult to coordinate efforts where changes may be required. Effective and efficient integration when two clinicians may be working together in the same room requires careful planning ahead of time but also the kind of working relationship where clinicians can act in a complementary fashion. In addition to scheduling time for music therapists and speech-language pathologists to meet, time may also be required to follow up related to specific clients and then to plan individual sessions. This kind of time goes beyond scheduling problems. It is the result of building a program where music therapy is a more integrated service. Generally these kinds of programs need to be built over time and have a structure that supports collaboration and co-treatment not only with speech-language pathologists and music therapists, but also across multiple other disciplines such as physical and occupational therapy. In cases where such services are already offered in a single facility, meetings may start very informally (over lunch) and with effort can progress to more formal and regular planning meetings with a final culmination in plans for cooperative sessions. Not all clients are necessarily served by co-treatment by both speech-language pathologist and music therapist. The authors through a series of case studies (Geist, McCarthy, Rodgers, & Porter, 2008; McCarthy & Geist, 2008) proposed that music therapists and speech-language pathologists can collaborate in four major ways with children: classroom-based models, music therapist and consultant, speech-language pathologist as consultant or dynamic assessment-co-treatment. We developed these models after working together through discussions and then through some case studies. An outline of four case studies illustrating the four models can be found in Table 1. The cases were completed after an assessment of their communication needs and skills and meeting with their intervention team.

Table 1
Summary of Four Children Illustrating Different Models of Collaboration between Music Therapists and Speech-Language Pathologists

Child	Age	Diagnosis	Language Skills	SLP/MT-BC Collaborative Model
Allen	4	Global developmental delay	Comprehension of routines, 1 step commands	Classroom Based
Marcy	2; 11	Cerebral Palsy	Comprehension of simple routines	Music Therapist Consultant
Soichi	5	Autism	1 step commands with gestural cues	AAC Therapist Consultant
Walker	4; 2	PDD, abuse/neglect	1 step commands	Dynamic Assessment/ Co-treatment

i. Case 1: Allen. Classroom-Based Model (Geist et al., 2008)

This case has been previously discussed in detail in another publication (Geist et al., 2008) and so is only summarized here. Allen was a 4-year-old boy born premature and with a global

developmental delay with particular weaknesses in language comprehension, language expression, and gesturing. He communicated mostly through a limited number of single words and a picture exchange low-tech system. Allen's parents were very concerned with his lack of participation in his preschool classroom. In particular, they noted his lack of greetings and closings and his lack of participation during group story reading. His teachers noted that Allen was most likely to join with others in musical activities. At a team meeting the music therapist and speech-language pathologist developed a range of hello and goodbye songs and adapted existing classroom stories with simple melodies where a cadence cued a response from the students. The speech-language pathologists programmed the simple digitized systems needed and the music therapist provided melodies to accompany books and songs to be used in greetings and closings. Both therapists assisted the classroom teacher in implementing the intervention in the classroom. Classroom-based models worked well when participation was the focus.

ii. Case 2: Marcy. Music Therapist as Consultant

1. Background Information

Marcy was a 2 year 11-month-old girl with spastic cerebral palsy. She lived in a dual-parent home, as an only child. Marcy was nonspeaking and nonambulatory with severe motor involvement. Physical assistance was required for Marcy to sit upright, stand, and perform other motor acts. An R82 Pony Walker (GTK Rehab) was used during physical therapy sessions to assist Marcy in walking and a foam wedge with clinician support was typically used to assist in upright sitting. At home, a wooden pediatric positioning chair aided in upright sitting for feeding and other upright activities. Speech and language therapy was administered alongside physical therapy in an early intervention resource room.

Marcy was an intentional but minimally symbolic communicator. She was able to understand one-word utterances particularly naming of toys. Expressively she used active eye gaze for social referencing and choice making. Marcy also responded to her name with smiles, head turns and eye gaze. Oral communication included laughing, crying and some vowel utterances. In addition, Marcy protested with cries and whines, although there had been a decrease in the frequency of crying in the 6 months prior to her evaluation. Marcy's mother reported that Marcy had a visual impairment although she could recognize familiar people and toys. Her hearing was reported to be within normal limits.

Intervention prior to the study focused on encouraging of vocalizations through the use of turn-taking vocal play games, and eliciting choice making between preferred and non-preferred objects through eye gaze or reaching toward objects. She was making minimal progress.

2. Goals

The team agreed that the goals they had previously been working on were important, however they reported having difficulty because of Marcy's restricted interests and hypersensitivity to sounds.

The goals selected were to increase choice-making between preferred and non-preferred objects/activities and to request continuation of an activity.

3. Challenges

Some songs and sounds were highly motivating for Marcy, while others made her cry. Similarly, some musical toys were motivating, while others were not. The professionals working with Marcy and even her parents had difficulty predicting which sounds would be interesting to her.

4. Actions

The music therapist observed her in speech therapy then assessed her musical responses at her home. During the music therapy assessment, she did not express a preference for musical tasks such as listening to music or playing musical instruments, in fact she cried when some music was played or turned her head away when certain instruments were played. Marcy participated longer when musical interventions were used such as keeping a beat or chanting the directions. The music therapist was able to categorize the songs and sounds Marcy was interested in and suggested two additional ways to capitalize on some of Marcy's musical interests. First, the music therapist suggested songs that were similar to the ones already being used. For example, the only song used at the beginning was "Ring around the Rosie." The music therapist also suggested the song "Shoo Fly." Secondly, the music therapist suggested ways a single song could be used in multiple ways by changing tempo, key, verses, and pause points. For example, when Marcy responded quickly, the music therapist suggested the SLP sing quickly. When altering the position of items in front of Marcy, the starting pitch of the song could be raised or lowered. The music therapist also provided multiple verses to songs Marcy showed an interest in to help increase variety. For "Shoo Fly," the music therapist suggested the verse "Shoo Fly get off (pause point here to wait for movement) my arm..." and then other verses for other parts of her body promoting movement. The music therapist also suggested changing the range of vocalization from low when the fly was low to high when the fly was high to gain attention of Marcy promoting looking at the "fly." The therapist used her thumb and first finger rubbing together to make a pretend fly.

5. Data Collection Strategy

Data were collected on Marcy's choice making. When using a least to most prompting hierarchy, Marcy made selections after a natural cue in 17% (average across four sessions) of opportunities prior to expanding musical cues, and in 83% (average across two sessions) of opportunities after consultation from the music therapist.

iii. Case 3: Soichi. Integration of AAC into Existing Music Therapy Services

1. Background Information

Soichi was the 5-year-old son of two native Japanese speaking parents. While Japanese was

the primary language spoken in the home, Soichi was also exposed to English. Soichi was diagnosed with autism at 2 years 6 months of age. He displayed restrictive play patterns, lack of social reciprocity, and lack of joint attention skills. His mother was concerned because, at 4 years 4 months, he was still nonspeaking. Soichi had also been diagnosed with hyperactivity and was taking Strattera to manage the symptoms.

Soichi produced several CVCV combinations (e.g., mama, koko). He also used signs (“want” and “more”) to request and he demonstrated inconsistent eye contact. He was able to indicate “no” consistently by saying “I-ya” (Japanese for “no”). Typically he made requests by leading others to the desired objects. He would also bring items associated with the desired objects to represent his wants/needs (e.g., deliver a spoon in request for some food). Soichi did not ask questions or comment on his environment, and comprehended one-step instructions and some two-step instructions with gestures or picture support.

After weekly speech-language, occupational and physical therapy focusing on “preverbal skills,” at the age of 1 year 4 months, Soichi’s team tried an intensive Applied Behavioral Analysis (ABA) approach. After one month, Soichi’s parents decided to discontinue ABA because of concerns the intervention was dampening Soichi’s happy and receptive qualities. At the initiation of the study, Soichi was enrolled in a pre-K classroom for children with autism. He used The Picture Exchange Communication System (PECS) to communicate activity choices and express food and drink requests. According to Soichi’s school SLP, he responded well to music by making eye contact and smiling. Soichi localized to speech and warble tones at 500, 1,000, 2,000, and 4,000 Hz within normal limits. The results were obtained in a sound field using visual reinforcement audiometry.

Soichi had received music therapy for five months prior to the initiation of the study. He was referred by his parents because he demonstrated an affinity for listening to music and playing the keyboard. His parents indicated that he liked classical music and would sit and listen. During the music therapy assessment it was found that Soichi calmed while classical music was played. It was also noted that he would sit periodically to listen or to play instruments. He showed an interest in instruments such as the drum, the cabasa, the finger cymbals, the kokiriko, or the piano. He did not consistently pick the same instruments in each session, but would display patterns. For example, one session he played only instruments that made a soft wooded sound such as rhythm sticks or a wooden xylophone. Another session he played instruments that were shiny and made crisp high frequency sounds such as the finger cymbals, the miniature chimes, or the cabasa which has shiny small silver beads that help produce the sound. The music therapist would provide music for jumping, marching, and clapping when Soichi came into sessions exhibiting these behaviors. Identifying the appropriate sensory modality for music experiences was a challenge at times because it might change in the middle of the session. However, if the music therapist matched the sensory modality during music therapy, Soichi would point or look at digital pictures of 2 objects and point to the desired object. Eye contact increased and time attending to a book sung to him increased. In music therapy more than other treatment, Soichi would seek out desired objects and would have a variety of interests.

2. Goals

Soichi was making basic requests for food and for the bathroom in his classroom, but his teacher noted that he had very inconsistent interests in classroom activities. Further he did not often continue with selected activities for more than 3 ~ 5 minutes. His team all expressed an interest for Soichi to broaden the range of his communication interactions beyond basic requests. The group wanted to explore voice output options but was unsure how best to proceed. The music therapist reported success in Soichi maintaining his interest in musical activities over time. Consequently, the goals chosen were to increase Soichi's engagement in activities that could be implemented in the classroom and to include voice output in his participation. In particular, the classroom teacher was interested in capitalizing on the strengths Soichi showed in individual music therapy sessions.

3. Challenges

Soichi was easily distracted from activities in the classroom and outside. He also tended to vary day to day in his interest in activities. Further, beyond requests in the PECS program he had no experience with AAC.

4. Actions

Soichi had a simple digitized system, but it was not currently being implemented in any setting. With the right representations and field sizes, assessment revealed this device would be able to meet his communication needs in a variety of music activities and situations with group responses. The team decided to implement a new activity within a music therapy session with voice output support and track his levels of interest. The activity selected was "Old MacDonald." Soichi was given the sound effects of different animals with photographic representations on a voice output device to participate. The classroom teacher would then use the examples from music therapy to develop new classroom activities.

5. Data Collection Strategy

Because Soichi's sustained interest in activities was of primary concern, the team decided to track his levels of engagement. The team wanted to track his engagement over time in an activity that was familiar to him ("If You're Happy and You Know It") as well as within a new activity ("Old MacDonald"). Videos were taken of Soichi participating in each of these activities over 7 sessions. Time sampling was then used according to the procedures from Suen and Ary (1989). While viewing each session on video, a trained coder would hear a tone every ten seconds for a ten minute period. On hearing the tone, the coder would mark whether Soichi was engaged (attending, activating a VOCA or other AAC, moving with the music) or not engaged (attempting to leave the activity, looking away, engaging in self-injurious behavior). The total segments of engaged versus not engaged were then summarized for each session.

iv. Case 4: Walker. Co-Treatment

1. Background Information

Walker was a 4 year 2-month-old boy who experienced neglect and abuse at an early age. His grandmother currently took him to medical and therapy appointments. At the time of the initial assessment, Walker expressed himself primarily through kicking, screaming, and a limited expressive vocabulary, including “no” and “don’t want.” Walker reportedly continually vocalized using adult-like intonation patterns but no isolated words. Walker expressed wants and needs by leading caregivers to desired objects. Walker was described by caregivers as being “combative” and having a “bad temper.”

The Rossetti Infant-Toddler Language Scale (Rossetti, 1990) indicated that Walker’s expressive and receptive language skills were commensurate with a child of the 6 ~ 12 months age range. It was determined that Walker exhibited severe expressive and receptive language delays, as well as delays in play and social-emotional development. Walker’s vocalizations contained several age-appropriate consonant sounds (/m/, /p/, /n/, /b/, /d/, /k/, /g/, /h/, /f/, /ng/, /w/), however, Walker did not produce all of his sounds in the consistent and systematic manner required for intelligible speech. Walker also exhibited several emotional and social behaviors and play skills which are atypical for a child of his age. For example, he showed aversions to social touch and did not demonstrate joint attention or symbolic play skills. Walker localized to speech and warble tones at 500, 1,000, 2,000, and 4,000 Hz within normal limits. The results were obtained in a sound field using visual reinforcement audiometry.

A large part of previous interventions had focused on managing Walker’s challenging behaviors and giving him choices focused on increasing spontaneous utterances, choosing between activities, and indicating agreement (yes) and disagreement (no). Within the 10-week quarter, in highly structured sessions Walker indicated preferences for activities by pointing to pictures on an activity board, and indicated “no” by head shaking, pushing the object/card away, and verbally saying “no.” His team reported modest gains in spontaneous vocalizations with 10 new words.

2. Goals

Walker’s team was happy with the reduction in challenging behaviors, but expressed an interest in a more play-based approach so that Walker could gain some play and social skills. Within this approach, the team also wanted to support Walker’s natural speech development and increase the range of communicative functions expressed.

3. Challenges

Walker continued to exhibit some challenging behaviors particularly when confronted with new tasks with required responses.

4. Actions

Walker was only able to complete four co-treatment sessions before discontinuing due to

transportation and conflicting other appointments. The music therapist and SLP tried milieu teaching techniques together after setting up a room with various electronic, toy, and musical opportunities. For example, Walker could activate an electronic aquarium via a timed switch, blow bubbles with a bubble wand or by making them appear on the computer screen with an IntelliKeys adapted keyboard, read books, or assemble puzzles. Some items were made inaccessible to encourage requests. A dynamic display VOCA was also made available with vocabulary for commenting on activities (e.g., “cool,” “that was fun!”). Musical instruments such as a drum, keyboard, and various percussion instruments were also made available. The therapists would support Walker’s behaviors vocally by repeating or commenting on things that he said or vocalized. The SLP would also model use of AAC after Walker demonstrated an emotional reaction to an item or activity. Each therapist gave suggestions to the other when working with Walker. For example, when Walker was vocalizing certain tones, the music therapist suggested that the speech therapist incorporate these tones into the activity. Walker did not consistently attend to musical activities but rather would incorporate drum playing when appearing frustrated. For example when appearing frustrated during a computer-based communication experience, Walker walked out into the middle of the room and hit the drum then returned to the computer. The speech therapist then verbally reflected and the music therapist musically reflected.

5. Data Collection Strategy

The original plan was to chart reductions in challenging behaviors but Walker did not exhibit any during his three sessions. Data were also collected on the number of spontaneous utterances from Walker as well as on the number of times he initiated music play. Walker increased his spontaneous (unprompted) utterances during the joint sessions making an average of 25 single words. Although this is comparable to the number of utterances in previous sessions, the majority of previous utterances were prompted (e.g., “You say [x]”). Walker consistently initiated musical play as a natural break between activities. He generally would play an instrument for 5 minutes before moving to a different activity in the room and he did so 3 ~ 4 times per 40 minute session. Occasionally he would need redirection with musical instruments (e.g., using a toy to bang on a drum rather than a mallet, or twisting the strings in a chime).

VI. Conclusion: Final Reflection from John McCarthy

Schubert’s Lied, *An die Musik*, has always reminded me that music has an uplifting effect that serves as an antidote to life’s grey and overwhelming hours. There are times I believe the effect of music is difficult to capture and describe when I reflect on its place in my life. The reason though has more to do with its pervasiveness throughout my life rather than an inability to capture its effects. The problem is that there are too many things to discuss, not that they are too elusive. Once focused on, music is a platform for enjoyment but also a milieu rich with communication opportunities and chances for multiple disciplines to interact. The inherent benefits of music only serve to reinforce

the goals and activities it is tied to. Although the process may seem difficult to integrate at first, it is one that is well worth it. In this small piece I have offered frameworks, technology solutions, and collaborative models that are just starting points. I hope that many will use them as starting points toward a richer intervention landscape.

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