

Running head: MUSIC THERAPY AND AUTISM

The Effects of Music Therapy on the Social Behavior
of Children with Autism

by

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Submitted in Partial Fulfillment of the Master of Arts in Education

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November, 2007

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Abstract

The purpose of this study was to investigate if using music during instruction would increase the responses of children with autism. Specific objectives for this study included social skills of speech, sharing/turn taking, and eye contact. Six sessions were conducted, three without music and three using music specifically designed to address the specific targeted goals of this study. Data was collected using an observer approach during regular classroom instruction and tally marks were made for every response achieved. A comparison between the results of the conventional teaching methods and that of using music during instruction showed using music tended to increase awareness and attention of the participants perhaps allowing them to have more positive responses. Although the results indicated there was significant improvement when music was used for some students, not all students showed anymore improvement then when using conventional teaching methods. This research was done during a three week period thus the long term effects of participants continuing to exhibit these new learned behaviors are unknown. Future recommendations would be to involve a larger, more diverse group of participants with a longer time period to collect and analyze data to ensure that using music therapy in the special education environment would truly enhance and benefit those who receive it.

Key Words: Music therapy, autism, special education

Chapter One

Introduction

The perspective on how to best reach and educate students with Autism has evolved numerous times since its discovery in the early 1900s when schizophrenic patients, who appeared to be in a world of their own, were said to have “autism.” With the main characteristics of autism being “Deficits in social interaction, language, play and deficits in behavior causing self-stimulatory behavior and/or perseverance with a narrow range of routines or interests” (Dempsey, 2001, p.104), it can be a severely crippling disorder for an individual, preventing them from becoming an independent member in society. Even with the numerous programs and therapies available to help this population, the burden usually falls upon the parent to figure out what will work best for their child. These therapies and programs can range from repetitive, physical type therapy to various highly restrictive diets. All claim to help, but there has not been one proven therapy or program that can help all.

Each child with autism is unique in that they interpret and respond to their world differently than the next child thus adding to the burden of searching for what will work best for that particular child. The good news is some of the therapies such as Sensory-motor, and auditory integration, music therapy, and Applied Behavior Analysis do appear to be helpful in teaching children with autism to function as independent and caring individuals and help open them up to a whole new world of people.

The History and Nature of Autism

Autism was first thought to be caused by parents who didn't care and were neglectful toward their children. Today it is well accepted that autism is a neurological disorder that affects an estimated 3.4 out of every 1,000 children (Stock, 2007). An autism disorder is "characterized by varying degrees of impairment in communication skills, social interactions, and restricted, repetitive and stereotyped patterns of behavior" (Diagnostic and Statistical Manual of Mental Disorders, 4th edition as cited in NIMH Publication, 2007). There are varying forms of autism ranging from a mild to severe set of behaviors. This range is known as Autism Spectrum Disorder (ASD). "All children with Autism Spectrum Disorder demonstrate deficits in 1) social interaction, 2) verbal and nonverbal communication, and 3) repetitive behaviors or interests" (Stock, 2007, p. 1). Every child with ASD will have some form of these symptoms ranging from mild to severe with it presenting itself differently in each of them. One of the most severe problems children with autism seem to have is difficulty in picking up day to day social interactions. They have a hard time interpreting social cues such as voice tone, body language and facial expressions. Without these skills society tends to be a difficult and confusing place for them to live in. Children with autism often have difficulty in seeing things from another person's point of view, and come across as indifferent to others and antisocial. Some children with ASD are mute their entire lives while others may only use single words, or are unable to speak meaningful sentences or just

repeat phrases they have heard over and over. This repetition of speech is known as echolalia. If they can speak, many children have difficulty holding a conversation. They don't understand the give and take of day to day conversation and will often carry on a one sided conversation without allowing the other person to have a turn to speak. People with Autism have a tendency to speak in high-pitched, sing-song or flat monotone voice. As they get older, many become aware of the difficulties society has in understanding them and they in understanding society. This has led, for some, the need to be treated for anxiety and depression (Stock, 2007).

One therapy, music therapy, has shown impressive results for children with Autism in the areas of speech and social interaction. Music is a non threatening medium that helps a child to learn and develop the necessary communication and social skills that are essential for an independent adult life.

Statement of the Problem

The ability to speak, relate, be related too and understood by people in our society is priceless. The ability to see things from another's perspective, to feel a part of and to be able to relate and share experiences with family and friends is monumental in the development of close and nourishing relationships that allow one to have a fulfilling life. Even people with higher functioning Autism, who try very hard to have friends may be unable to keep them due to lacking the know how of reciprocity in their relationships. Thus they come off as being indifferent and standoffish or self centered creating an environment for continual relationship failure (Edelson, 1997).

This study explored the effects of music therapy on speech and social skills in children with autism.

Significance of Study

Children with autism deserve to have the best therapies and treatment known to allow them to develop the speaking and social skills they need to develop into productive and happy adults. Without these interventions many children would grow up without the ability to interact or relate with their peers thus becoming social outcasts in our society. Without these interventions many people would be completely dependent on others for their care throughout their lives. This study will provide evidence that music therapy is one such therapy that shows significant promise in helping children with Autism learn and develop speech and social skills that will allow them to be all they can be thus leading as independent and productive lives as possible.

Conclusion

Given that more and more children are being diagnosed with autism than ever before, it is imperative that we develop and utilize therapies that will enable them to learn and develop the skills they will need to lead productive and happy lives. Being able to interact and relate with other people is the foundation for a person to fit into their communities and to develop relationships with family and friends. Music therapy is one such intervention program that appears to have the potential to significantly help those with autism learn the speech and social skills that come naturally to most but are a significant problem for those diagnosed with autism. The

following chapter will look at the viability of using Music Therapy as an effective tool in reaching children with autism.

Definition of Terms

ADHD. Attention deficit/hyperactivity disorder.

Apraxia. A disorder of articulation characterized by difficulty with sequencing and organizing muscle movement for the production of speech.

ASD. Autism Spectrum Disorder.

Autism. Autism is a disability where individuals experience deficits in social interaction, language, play and deficits in behavior causing self-stimulatory behavior and/or perseverance with a narrow range of routines or interests (Dempsey, 2001, p. 104).

Autism Spectrum Disorder (ASD). “All children with Autism Spectrum Disorder demonstrate deficits in 1) social interaction, 2) verbal and nonverbal communication, and 3) repetitive behaviors or interests” (Stock, 2007, p.1).

Intervention program. A program that attempts to “help” a person using a set of techniques or therapies.

Music therapist. Is a graduate of a degree program in music therapy and is qualified to do interactive therapies for socialization and/or neurological improvement.

Music therapy. Established healthcare profession that uses music to address physical, emotional, cognitive and social needs of individuals.

Social skills. Social skills are a large set of skills that have to do with the ability to interact and communicate with others.

Chapter Two

Review of Literature

This chapter reviews current studies and research regarding the benefits of using music therapy on children with autism. There have been many interventions for autism with claims to be highly effective as a treatment but often times they do not meet up to their claims and it is a constant struggle for anyone associated with individuals with autism to sort through these treatments to find an effective therapy (Simpson, 2005). Not only do these false claims cause much heartache to parents and families but are usually very expensive. Studying music cognition is significant because music is often used both educationally and therapeutically for individuals with autism and it has been well noted that people with autism tend to have unusual sensitivities to music (Heaton 2005). One problem for all therapies, this one included, that makes finding an effective therapy even more difficult is that one therapy or intervention might work for one person with autism but not another thus goes the saying, “If you know one person with autism, you know one person with autism” (unknown). It has been my personal experience that music can make a huge difference with one student but does nothing for another. Although music therapy is not yet widely used as a therapy in public education, school districts have begun to take notice and it has become more popular as many recipients appear to be greatly benefiting from this type of therapy.

Music Therapy

The Berklee College of Music (2007) defines music therapy as the functional and scientific application of music by a trained music therapist to enhance an individual's social, emotional, educational, and behavioral development. A music therapist is a trained musician and credentialed, professional therapist who assist as part of a treatment plan in a medical or educational program. Their training consists of music classes along with classes in special education, anatomy, psychology and other specific core classes with field experiences in music therapy. When their coursework is completed they must complete a six-month, full time internship and take a written board certification exam (Staum, 2006).

Music therapy involves the use of musical interventions with visuals to address behavioral, social, psychological, communicative, physical, sensory-motor and/or cognitive functioning. For many people on the autism spectrum, music therapy provides a non-threatening medium of musical experiences in a developmentally appropriate manner to illicit positive changes in behavior and to facilitate the development of skills (American Music Therapy Association, 2004).

Music therapy is considered a "related service" that is defined under the Individuals with Disabilities Education Act (IDEA) Part B. It states that a "related service" is any supportive service that is required to assist a child with a disability to benefit from special education services.

Music therapists are trained professionals and can provide consultation or direct person services. They are able to work one-on-one or with small groups and

use a variety of techniques, including musical instruments, pictures, books, and a variety of songs that entice children to become involved (American Music Therapy Association, 2004). “They involve clients in singing, listening, moving, playing instruments, and creative activities in a systematic, prescribed manner to influence change in targeted responses or behaviors and help clients meet individual goals and objectives” (American Music Therapy Association, 2004, p.2). After receiving a referral for a client they will observe and assess a variety of areas including behavioral, communication, sensory, cognitive and social-emotional. Music therapists create or help create goals and objectives that address a client’s specific needs. They may “implement individualized music therapy treatment programs with strategies, procedures, and interventions to develop skills necessary to achieve an optimum level of success” (American Music Therapy Association, 2004 p.2). Many music therapists work as part of a team with other professionals to best address the specific and individual needs of their clients.

Due to its non-threatening nature, music has proven to be very successful as a therapy for children with autism especially in the development of speech and social interaction. Using music along with activities such as passing a ball back and forth, participating in role playing or playing with musical instruments can be used to foster social interaction, while doing activities that focus attention on something near the face can help encourage eye contact (Staum, 2006).

People diagnosed on the autism spectrum may have “qualitative impairments in social interaction and communication” along with “restricted repetitive and

stereotyped patterns of behavior, interests and activities.” (Diagnostic Statistical Manual IV, pp.70-71, as cited in American Music Therapy Association website, 2004). These behaviors, often called stemming, may include constant rhythmic movements such as rocking back and forth, wiggling and talking to fingers in front of their face, tapping objects or turning them over and over. It is thought that these behaviors are a way of communication as this person is unable to communicate in a way we understand Carr (as cited by Turnbull, Turnbull, Shank, & Leal, 1999). It is not only important to decrease these socially inappropriate behaviors but to replace them with something more socially acceptable including learning verbal and non verbal ways to communicate that can be understood by other people.

According to Hooper (2002), music therapy may be used to develop a range of nonmusical skills such as physical or cognitive skills. People with learning disabilities often have an array of other problems such as communication, sensory, physical impairments and/or abnormal behavior patterns such as those mentioned in the previous paragraph. Often, due to these disabilities, there is a great challenge to their communicative process. Thus they often have great difficulty in establishing and/or sustaining any type of social interaction with other people often causing both themselves and those attempting to understand them extreme frustration (Hooper, 2002). “Music can be a valuable tool not only for reaching students with autism but also for working with any children delayed in language. Songs should be chosen in which the melodic intonation closely mirrors the intonation patterns of actual speech” (Clarkson, 1994, p. 31).

In a study carried out in the 1970s, Jorgenson, Parnell, Reid, and McCarthy (as cited in Hooper, 2002) noted when music therapy was used to address inappropriate behaviors using proper behavior techniques and music, it was established that the use of music not only taught but reinforced appropriate social behavior. In a study conducted by Hooper (2001) using music therapy, music was presented within the context of an activity which were structured to encourage the development of a particular nonmusical skill, such as social interaction or to facilitate changes in inappropriate social behavior. Hooper concluded that music within a structured activity was both an enjoyable and therapeutic experience.

It has been argued by some authors, that music therapy services could be a very effective tool used to help people on the autism spectrum (Dempsey, 2001). According to the American Music Therapy Association (2004) people with autism have a high response rate to music as they often have a heightened interest and response to music making it a strong therapeutic tool. Music therapy addresses many developmental issues, spans all degrees of abilities, helps to establish responses, expectations, interactions and communications. It tends to increase their attention spans, is highly motivating, often soothing to the agitated person and is used as a reinforcer for preferred behaviors and responses. It also helps reduce negative behaviors by repeatedly redirecting them to something more appropriate thus increasing preferred behaviors that are more socially acceptable.

“It has been noted time and again that [children with autism] evidence unusual sensitivities to music. Some have perfect pitch, while many have been noted

to play instruments with exceptional musicality. Music therapists traditionally work with [children with autism] because of this unusual responsiveness which is adaptable to non-music goals” (Staum, 2006, p.1).

In Australia, 80 children ranging in ages from 3-17 and on the autism spectrum, who were highly sensitive and became very distressed and agitated when hearing certain sounds were involved in a study that presented them with auditory training and had them listen to music through headphones for a couple of hours every day. There was a control group that listened to the same music without the auditory training. It was found that the experimental group had significant increases in verbal and performance IQ within 3 to 12 months after the interventions and significant improvement in behavior that lasted at least a year after the intervention (Bettison, 1996).

Auditory training was developed by Berard (as cited in Berklee Music Department, 2006) to help people who are hypersensitive to certain sounds. For some people with autism particular sounds can literally cause them great physical pain. It may also cause them to become over stimulated and act out with inappropriate behavior due to their inability to communicate their discomfort. Auditory training can vary but often consists of two 18 to 20 listening sessions per day for 10 days. During these sessions the person will listen to processed music that has randomly deleted high and low frequencies. This treatment helps to desensitize the listener to sounds that were previously painful for them to hear (Edelson, 1999).

Music therapy can also help those with verbal deficits to communicate in nonverbal ways. Communication and other language skills are often the objectives of a music therapy program along with peer interaction, sharing, play skills, expression of emotions and other interactive, socially oriented goals. Because music is processed in both hemispheres of the brain it can help stimulate cognitive functioning and is often used for speech and language skills. It provides multi-sensory stimulation such as auditory, visual, and tactile and its predictable rhythm provides critical, structured organization for the child with Autism (American Music Therapy Association, 2004).

The American Music Therapy Association (2004) also reports there are benefits for families and friends of those diagnosed on the autism spectrum. They may also benefit from the use of music therapy as it improves the speech, social behavior, and interaction skills of their loved one, there is less frustration and strain on the family as the child becomes more independent, socially interactive and able to express themselves in more appropriate ways.

According to Staum (2006), there has been great progress in helping children with autism eliminate monotonic speech and have a more normal speaking voice due to singing songs that are “composed to match the rhythm, stress, flow, and inflection of the sentence” and that nearly “all singing experiences are invaluable to the autistic child when songs are presented slowly, clearly, and with careful focusing of the child’s attention to the ongoing activity” (p. 3).

Social Behavior and Social Skills

One of the key defining characteristics of autism is the dysfunction in social behavior. “The level of social skills plays a major role in the overall level of adaptive behavior of individuals” (Kraijer, as cited by deBildt, 2005). Children with autism have trouble engaging in everyday social interactions with others. Often there are deficits in verbal and nonverbal communication. They do not comprehend the give-and-take of conversation, avoid eye contact and tend to be indifferent to other people, including family members. They are slow to learn, or never do learn, to interpret facial expression, body language, tone of voice and seeing things from another’s perspective. Many also have stereotypical, repetitive behavior patterns such as hand or arm flapping and often have mixed-up responses to sensory experiences (National Institute of Mental Health, 2007). These dysfunctional behaviors are classified into three categories: “socially avoidant, socially indifferent, and socially awkward” (Edelson 1997, p.1).

To the child that is “socially” avoidant, they will avoid any and all forms of social interaction. This avoidance is possibly due to a sensory malfunction that may cause pain with a touch or sound of a voice, or a smell that makes them feel ill (Edelson, 1997).

Children that are classified as “socially indifferent” do not seem to care whether they are with people or not. If they have a need or want they will communicate that need, either verbally or nonverbally, to another person. According to Edelson (1997), research by Pankseep regarding the theory that people with autism

do not receive 'biochemical' pleasure from being with other people, has shown that beta-endorphins are released in animals when they engage in social behavior. Beta-endorphins are an opiate-like substance that is found in the brain and "there is evidence that the beta-endorphin levels in [individuals with autism] is elevated so they do not need to rely on social interaction for pleasure" (Edelson 1997, p. 1).

"Socially awkward" individuals try very hard to get friends but have a hard time maintaining a friendship often due to their lack of normal give-and-take interactions among their peers and their self-centered, one-sided conversations. They tend to lack the ability to "read" other people and "without the ability to interpret gestures and facial expressions, the social world may seem bewildering" (National Institute of Mental Health 2007, p. 1). The inability to read body language on others also carries over into their inability to use it appropriately themselves. "Facial expressions, movements, and gestures rarely match what they are saying" (National Institute of Mental Health, 2007). Children with autism will often have a very flat, monotone or a high-pitched, sing-song type of voice that does not reflect their proper emotions. They also have a hard time comprehending other people's point of view and do not understand that they also have emotions and thoughts of their own (Edelson, 1997). According to Baron-Cohen (as cited in Quill, 2000), this incapacity to understand the feelings of others is termed "theory of mind" and it is extremely important for communication and socialization. If a person is unable to interpret the meaning, whether verbal or nonverbal, from another person, they will not be able to

regulate their own language and behavior to properly interact with them (Quinn, 2000).

Problems with social skills become more apparent as a child ages and it is obvious that they are falling further and further behind their peers. This tends to be noticed by parents as the child withdraws, loses language, or develops unusual behaviors characteristic of autism, usually between 12 to 36 months of age (National Institute of Mental Health, 2007).

“For individuals with diagnoses on the autism spectrum, music therapy provides a unique variety of music experiences in an intentional and developmentally appropriate manner to effect changes in behavior and facilitate development of skills” (American Music Therapy Association, 2004, p. 1). Music is a “universal language” and can be used in a non-threatening setting to help in developing relationships, learning academics, developing self expression, communication, social skills and both gross and fine motor skills. According to Hooper in research conducted in the 1970’s, established that using behavioral techniques along with music therapy reinforced desired, appropriate social behavior. As stated by Gunter (1993), aberrant and repetitive behaviors are not very well accepted in society but even more problematic is their interference with learning in the classroom. Thus it appears to be in everyone’s best interest to replace inappropriate behaviors with acceptable ones as soon as possible. This benefits both the person and those around them as the person with autism will be more widely accepted if their behaviors are more consistent with the behaviors of their peers without autism.

Children with autism need to have organization, structure and predictability.

They have an extensive need to know what come next as the element of surprise is very unsettling for them. The rhythm of music is very organized and predictable for their sensory systems and allows the child to have an enjoyable, yet non-threatening, experience with peers. In a study conducted by Hooper (2002) that evaluated a 'deliberate approach to interaction,' including a turn taking session, concluded that "music activities and ball games encouraged purposeful interaction by offering a nonverbal and non-threatening form of intervention," furthermore, "the results highlight that making music within a structured activity was not only an enjoyable experience but also one of therapeutic value" (Hooper 2002, p. 169).

In the same study though, which involved activities along with music and encouraged interaction without any verbalizations, Hooper found that using music therapy was the least effective intervention when attempting to get two people to interact with one another. The biggest problem with this study was only two participants were involved and both were moderately to severely disabled. As stated earlier in this paper, no two people with autism are the same so what may have not worked for these two people may have worked wonderfully for two others. Another factor contributing to the low response is much more time was allowed during the music therapy sessions then the controlled sessions thus resulting in fewer interactions per minute as an average. Thus this study doesn't have much credence for an accurate result.

Conclusion

In conclusion, a review of this literature shows that, in many cases, music may be used as a non-threatening and enjoyable way for children with autism to possibly develop some of the speech, interactions, and social skills they lack but some of the evidence isn't as conclusive as seen in the results from Hooper's (2002) study.

Chapter 3 describes the methodology used by the researcher to determine if using music assists children with autism to develop social skills, including the improvement of speech and social interactions.

Chapter Three

Methodology

The purpose of this quantitative study, using pre- and post-intervention data comparisons, was to examine the effects of using music therapy verses conventional teaching strategies for the acquisition of interactive social skills for children with a primary diagnosis of autism. Social skill objectives were turn taking/sharing, verbal or physical interactions (such as a wave), eye contact and any other forms of interaction such as spontaneous speech or turning toward a peer. The goal of this study is to determine if using music with instruction increases responses in children with autism.

Description of Subjects

The participants in this study consist of five children with a primary diagnosis of Autism. Two participants have secondary diagnosis of Attention Deficit Hyperactivity Disorder (ADHD) and one also had a diagnosis of Apraxia. This is a convenience study as all participants were students in the researcher's classroom and are enrolled in a mild to moderate special day class. There were four males and one female. They ranged in ages from six years to eight years old and were ethnically diverse with one child being African American, one Caucasian, one Asian, one Filipino and one Hispanic. The researcher had taught each of these students from one to two years and they were well known to her. Each participant is considered to be within the mild to moderate range on the autism spectrum according to the Childhood Autism Rating Scale (Schopler, Reichler, & Renner, 1986). Each participant receives

speech therapy services outside their regular academic classroom and all have a varying degree of communication skill with one using an Alternative Augmentive Communication Device and all using, in some form, Picture Exchange Communication System. The five participants all have a varied range on the autism scale with two being considered in the “high range,” one in the “mid range,” and two in the “low range.”

Research Design and Procedure

This study was an AB (i.e., baseline followed by intervention) single subject quantitative study. This researcher used observation to collect data in the form of tally marks under specific categories.

This research consisted of one baseline session for the conventional teaching method followed by two more sessions then one baseline session for the music therapy followed by two more music therapy sessions. The study consisted of a total of six, twenty-five minute sessions, three without music, three with music, with five student participants.

The participants were observed during the first session for a baseline for each objective for the conventional teaching method. After three conventional teaching sessions, three music therapy sessions were held. Again, the first session of the music therapy session was used for a baseline. Before and after comparisons were documented and combined to obtain a mean score that was determined for each child using both the pre and post session data information to note any change in the student’s progress. Data was collected by the researcher and a classroom aide who

had been instructed on what to look for. Each student would get three chances to meet the objective. If they didn't get it within three attempts by the researcher, no tally was marked.

Setting

District. This study took place in a large Southern California school district which consists of 114 elementary schools, 23 middle schools, 27 high schools, 34 charter schools and 18 alternative schools.

School. The school is a kindergarten through fifth grade elementary school located in a lower socioeconomic neighborhood. It is a Title 1 School with over 50% of the students on a free breakfast and lunch program. It serves nearly 700 students with an extremely diverse population consisting of Hispanics (23%), Caucasians (28%), African Americans (12%), Filipinos (21%), Asians (6%), Indochinese (8%) and Pacific Islanders and Native Americans at (2%). It is also a Gifted and Talented Education (GATE) magnet school and has three special day classes for students diagnosed within the mild to moderate range of disabilities.

Classroom. The classroom is located next to the other special day classrooms and regular education classrooms. This classroom consists of 11 students; eight boys and three girls. All the children qualify for special education services. Six children have a primary diagnosis of Autism, two with Mental Retardation, two with "Other Health Impairment," and one with Down's syndrome. The participants of the study will receive instruction as a group in the classroom or another room by themselves.

Materials

The materials used in this study were developed and designed by Coast Music Therapy. Coast Music Therapy is a privately owned company in San Diego that offers private music lessons to children with disabilities but also has a contract to provide music therapy services to students in the San Diego Unified School District.

Students are recommended for music therapy by their teacher and then the student is assessed by a trained and certified music therapist from Coast Music Therapy. If it is decided that a student would be a good candidate for music therapy, they develop a spiral bound book with accompanying CD, picture cards and words to the songs that directly correspond with a student's Individual Education Program (IEP) goals. Every student's book is different as they are developed to support specific goals for that particular student. New books are made every year for the student to support the new goals on their IEP.

Working closely with the teacher, the music therapist chooses several goals that they feel could be well supported with music. An example would be if a student has an IEP goal that is for greeting a person, the music therapist could use the "Hello" song. The songs all have upbeat tunes with visuals and usually physical involvement. In the Hello song the words say to "Look at your neighbor and just say hi." While this is being sung the student is encouraged to look at the child seated next to them and either say hi or wave. These music therapy services are then implemented by a trained music therapist, classroom teacher and/or classroom aide.

Usually the music therapist will come weekly to have a music therapy session with the children and on the other days the teacher or classroom aide will provide the lesson. As the students master the steps of learning the goal, more complex steps are added until the child has mastered the entire goal. The materials used in this study will be songs, pictures or other types of visuals, and music applying to the specific study objectives.

The songs and music used for this study were songs that were developed for some of the participating children. The songs included a song and visuals for saying hi and for sharing and turn taking. Each song encouraged eye contact and initiation of speech.

Baseline and Intervention Procedures

Each participant received the same treatment for all six sessions. Each participant was allowed a maximum of three attempts. In this researcher's opinion during all six sessions every participant participated to the best of their abilities and all appeared to be in their "everyday" mood. None appeared to be upset, agitated, scared or not within their normal personalities. A description of the baseline and intervention conditions follow.

Baseline. Each student was observed during an initial 25 minute conventional instructional session for a baseline assessment of their performance on the specific targeted areas of this study; namely, spontaneous speech, turn taking/sharing, greeting, eye contact or some other form of interaction with a peer such as stating their name. The data was taken by observation of the participants by the classroom

aides as the researcher gave instruction. If a desired objective was noticed a tally mark would be placed in the specific category for that participant. The first baseline was taken during session one during the conventional teaching method without using any music. The conventional teaching method sessions consisted of the participants seated on the rug with the researcher. Using visuals and regular speaking, the researcher attempted to get the participants to share, look at one another, say hi or any other form of interactions with their peers. These sessions were set up in a play type of structure with toys being used to help facilitate responses from the subjects. After this baseline was established for each student, there were two more conventional teaching sessions given the following week.

Intervention with music therapy. Beginning with the fourth session, three 25-minute consecutive music therapy sessions were conducted over a two week period with all five participants. Again the participants sat on the rug and for two sessions a trained music therapist provided the instruction while the researcher observed and collected data. For the last session, the researcher provided the instruction while the classroom aides observed and collected data. During these sessions, the participants were involved in singing to music while participating in the object of the song such as looking at you neighbor and saying or waving hello. See Appendix A for examples of materials used for the music sessions which include, CD's, music book with visuals, advanced visual cards and instructions for teachers on the best ways to implement these materials.

Data Collection Methodology

Each music therapy intervention session was observed by the teacher, music therapist or classroom aide. Data was collected for each student involved in the music session. Data was collected before, during, and after the music therapy intervention sessions. The measures consist of direct observations by the researcher and classroom aides who looked for indications of spontaneous speech, turn taking, sharing, greetings, eye contact, or other form of interaction with a peer.

Data was collected by observers by recording tally marks on the observation form presented as Table 1. The word “participant” replaces the students’ names. On this form, each observer noted with a tally mark whenever a student exhibited any of the targeted behaviors during a session. Each participant had three chances during every session to perform each objective. If a student did not exhibit a behavior, no tally marks were placed on the data collection form. Nothing was indicated should the participant not do one of the targeted objectives.

For all six music therapy sessions, data was collected in the same way. Every observer had been instructed and trained to look for the same type of response in every category as to keep the data as accurate as possible. To help ensure better accuracy in data responses, during each session two people would collect data. If there was a discrepancy between the two observer’s observations, an average of the two scores was computed, unless there was a difference of one or great. In this case, the lower score was accepted as the accurate score.

Table 1. Data collection tally form

Session #	Spontaneous Speech	Turn taking/ Sharing	Eye contact	Speech/ Interaction with prompts
Participant 1				
Participant 2				
Participant 3				
Participant 4				
Participant 5				

Data Analysis

A quantitative comparison of each student’s pre- and post data was made to determine any change in interaction with peers, speech, eye contact or turn taking/sharing. The data was displayed graphically as show in Figure 1 to visually note differences between pre- and post-intervention skills.

The data will be grafted and compared between the music and non music sessions. The first three sessions’ responses without music will be combined together and the

last three sessions responses will be combined together then compared to one another for each student in every category.

Conclusion

This study investigated the effects of music therapy verses conventional teaching (i.e., without music) on the performance of students with autism with regard to the targeted social skills of speech, eye contact and turn taking/sharing. The participants included five students with a primary diagnosis of autism who had varying range of vocal communication skills and social interaction skills. All five participants attended a special education class for children within the mild to moderate disability range. Each participant was observed pre, post and during all music therapy sessions. Data was collected for the targeting sets of behaviors or skills. The materials used were those developed by Coast Music Therapy and adapted for use to support student-specific goals.

Chapter Four

Results

Introduction

This study was an attempt to verify if the results of using music to teach children with Autism were more effective than conventional teaching without using any music. In the first phase of this experiment, the participants attended three teaching sessions, for social skills and speech, where conventional teaching methods were used - auditory and visual instruction. The second phase of this research involved the participants attending three more teaching sessions but this time using music instruction along with visuals that were developed by Coast Music Therapy for specific types of instruction for children with special needs. Data was collected for all six sessions by direct observation and recording participant's responses with tally marks for each positive response.

Results for Spontaneous Speech

Figure 1 shows the combined results for spontaneous speech for each student under each of the two conditions. The blue columns represent the combined total for all participants for the first three sessions without music therapy. The brown columns represent the combined total for the three sessions with music therapy. This color combination applies to all charts in this chapter. Three participants scored significantly higher for spontaneous speech when music was used while two participants stayed the same.

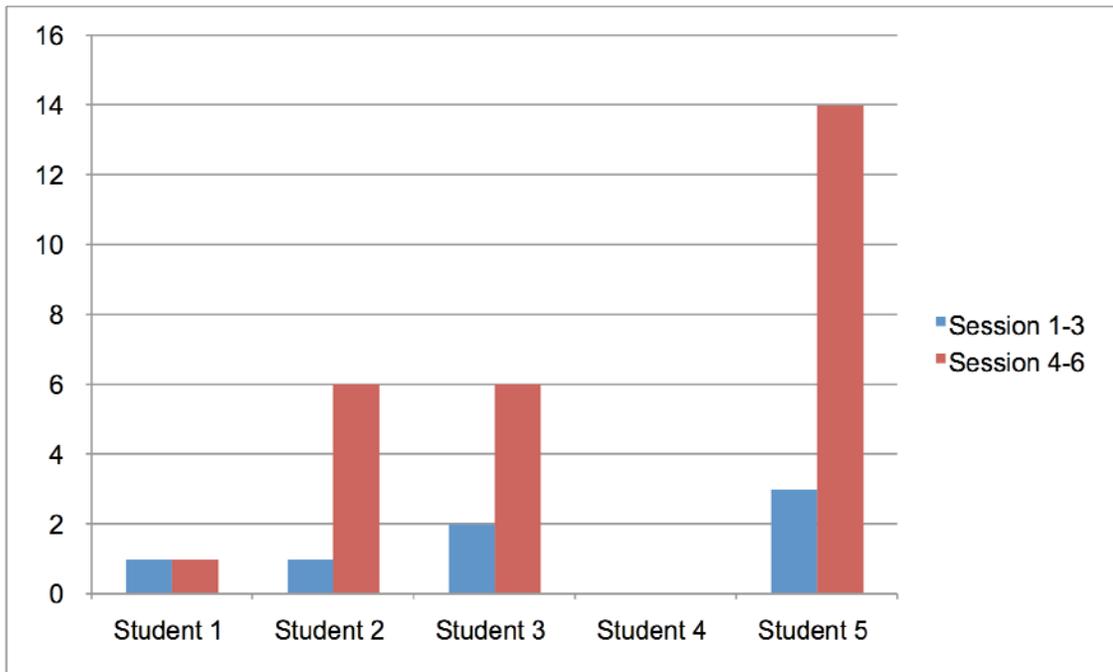


Figure 1. Spontaneous speech results by student for non-music and music sessions

Results for Turn Taking and Sharing

Figure 2 represents the combined results for turn taking and/or sharing of a toy. The toys used were a variation of “preferred” toys, which were known to the researcher, selected for each participant. As the bar graphs show, each participant had significantly more positive responses when music was used.

Results for Eye Contact

Figure 3 represents the combined total number of times of eye contact with no differentiation made for duration of time such as in a brief glance or full face eye contact over 10 seconds. Again, as in the previous chart there was improvement with each participant when music was used with instruction.

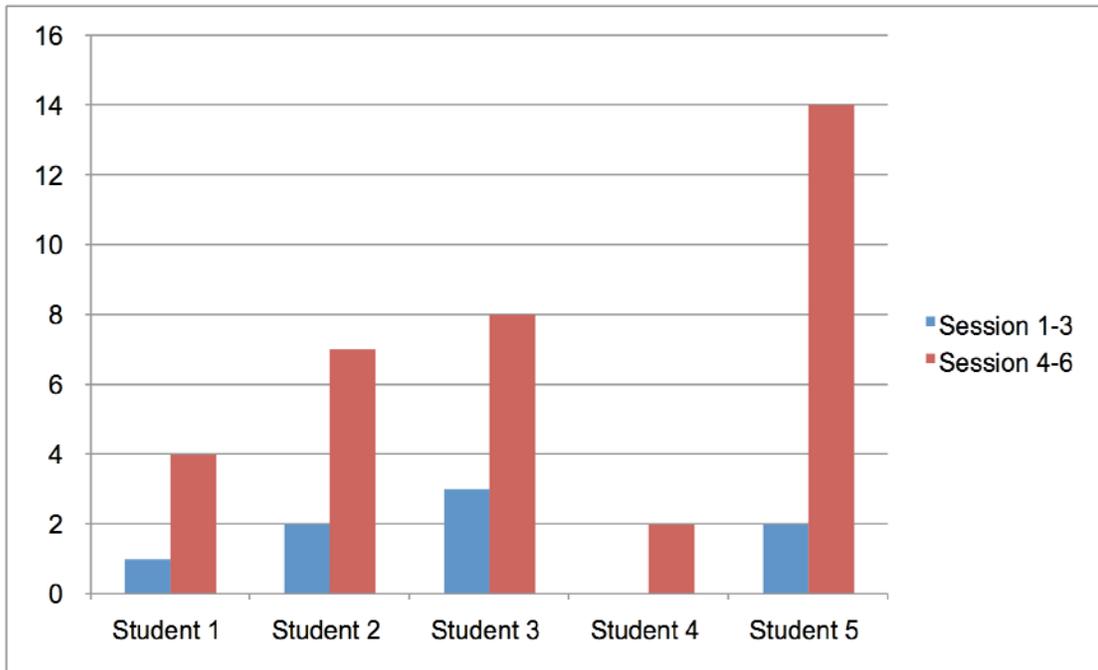


Figure 2. Turn taking and sharing results by student for non-music and music sessions

Results for Interaction with Adult Prompting

Figure 4 represents the combined total number of times a student used speech or some other form of interaction such as handing over a toy to a peer or accepting a toy from a peer with adult prompting. Each student was allowed to have up to three verbal prompts to exhibit a positive response. The chart shows an increase of such responses for four of the five participants when music was used with instruction.

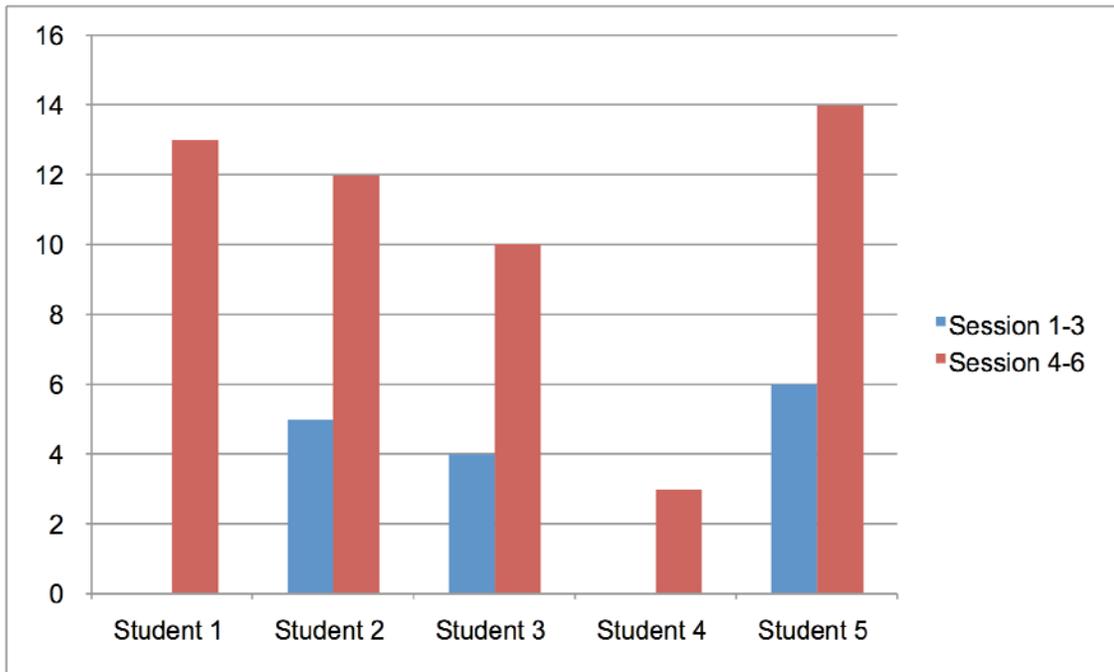


Figure 3. Eye contact results by student for non-music and music sessions

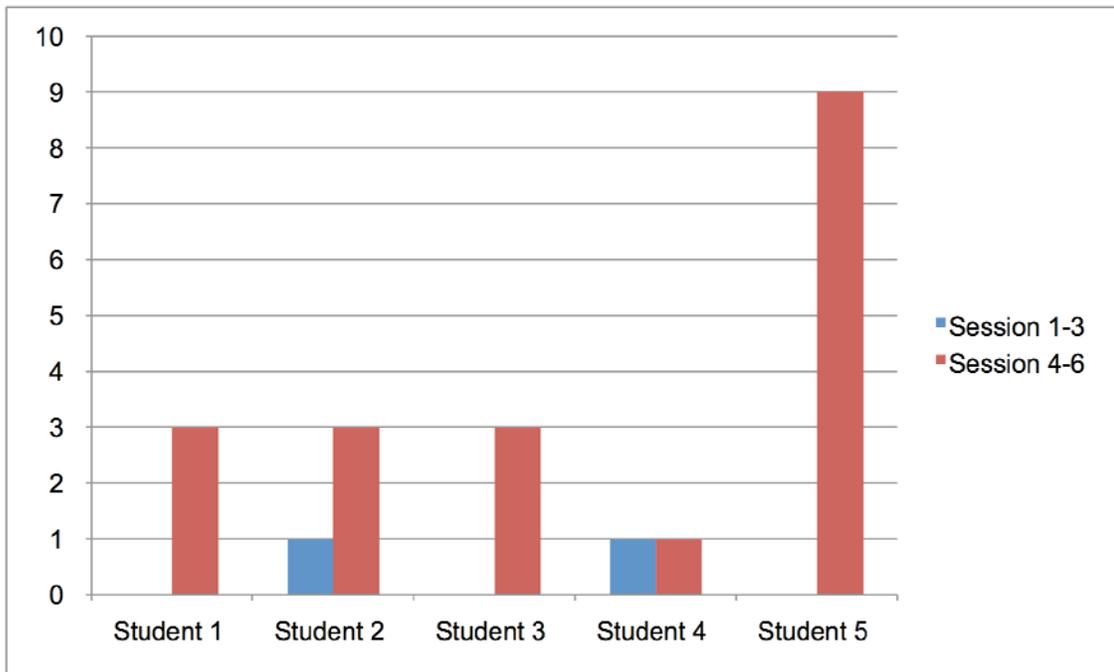


Figure 4. Adult prompting results by student for non-music and music sessions

As Figures 1 through 4 reveal, on the whole, the students performed at a higher level on targeted behaviors when music was used with instruction, although some students were more responsive than others. For example, Student #4 was the least responsive of the five students. However, he had no recorded responses under the non-music condition for three of the four measures, with responding in three of the measured areas under the music condition.

Chapter Five

Discussion

This research study sought to provide support for the integration of music when teaching speech or social skills to children with Autism as opposed to using conventional teaching methods. While the results indicate that most of the students performed better using music with instruction, there may be some flawed data due to several factors including but not limited to bias of the researcher. Ideas for future ideas will also be addressed in this chapter.

Challenges in Integrating Music Therapy Into the Curriculum

Student differences and preferences. Results of this study suggest that adding music into the curriculum for children with autism has promising positive outcomes. Music therapy enhanced the targeted skill performance for most but not all of the five participating students. It may be that some children are no more receptive to using music than conventional methods. The participants that made the most gains in this research were the students that had music therapy as one of their services on their Individual Education Plans (IEP). They already had been identified as a strong candidate for using music therapy techniques. Students with IEP goals that easily link to a music therapist writing a song or developing materials for a student may advantage one student over another in terms of how readily available music therapy services might be.

Classroom and instructor variables. Finding the right time to use music therapy in the classroom can sometimes be difficult as not all students find music to

be therapeutic thus it causes them undue stress. Another consideration is the cooperation of the teacher as he/she is the one that will need to utilize the materials provided by the music therapist for it to be effective.

Finally, the music and materials are only as good as the person presenting them to the student. While this researcher attempted to teach the music lessons to the best of her ability, she is not a trained music therapist and has only been using music therapy in her classroom for the last two years and personally doing the instruction for the past year thus she is still relatively new to this method of teaching and does not or ever had any musical background. Given more experience and/or training in music therapy, the data collected for the targeted objectives may have a more positive result as a result of better instruction by the researcher.

Researcher Bias Limitations

Researcher bias may be a limitation with this study as the researcher personally knew each subject and may have understood certain responses as positive reactions and not tallied data in a completely objective manner. Although each data collector knew after three tries per objective they were to move on to the next objective, it is this researcher's opinion that some students were given more chances for a response than the three agreed to for this criteria.

Lastly, the researcher and a paraeducator both took data on four of the sessions while a trained music therapist worked with the students and two paraeducators took data when the researcher herself conducted two of the sessions. Due to the difference of the observer's own opinions of subject's and one another,

data may not have been collected in exactly the same manner even though the researcher had set and explained a criteria of what exactly to look for.

Limitations Due to the Nature of the Students Involved in the Study

One large problem that arose from this study was access to subjects. Because the investigator was limited to students in the special education program within her classroom, only five students met the qualifications for this study. This may weaken the data results, as a larger pool of subjects would have most likely led a more accurate result.

The six observations sessions were mixed between the morning and afternoon with three taking place during the morning and three taking place during the afternoon. It is the researcher's observation that the students tended to be more tired and restless during the afternoon sessions, thus being less attentive to what was happening in the sessions. This may have negatively affected afternoon results.

Because of the nature of the subject's disability, there may have been outside factors occurring before school or the sessions that could have affected the outcome of the results due to the subject's inability to feel at ease at that particular time. Even though sensory integration was provided to each subject as needed during the sessions, outside factors may still affect the ability of the subject to concentrate and give the most accurate results for this study.

For the target objective of turn taking and sharing, a less preferred item for a subject may provide more positive reactions for sharing but a more preferred item would be less likely to be shared. Thus this researcher, using her personal knowledge

of the subjects, attempted to use an equal number and variety of preferred and non-preferred objects for this objective.

Recommendations for Future Research

Performing a study with a much larger population of subjects would allow for more accurate results than this study where only five students were utilized.

Preferably obtaining subjects from a more diverse population, age and ability group, instead of one chosen on a basis of convenience should also give the researcher more accurate results. I believe having a more controlled environment would also make for better data collecting as there were outside distractions happening while the sessions were in progress and it may have disrupted the subjects or the observers taking data.

Another consideration would be to ensure the instructor had training in the best and most proper ways to instruct students using music therapy instead of the researcher attempting to copy the trained specialist just from observations. Adding more instruction sessions instead of just six would give a more accurate average result of actual positive responses from the subjects. Lastly, I believe having a completely objective researcher, who has no personal knowledge of or involvement with the subjects, would allow for more objective data collection as they would not perceive implied responses as positive reactions from the subjects.

Although it would be very difficult to eliminate all problems or unwanted factors in any research study, it is possible to ensure there are as few as possible. However, during this research every attempt was made to provide the most accurate information. All observers taking data were informed of the criteria for the study and

this researcher believes that they were as impartial as possible. One recommendation is to use more precise prompts and to note which responses required prompting and which responses were received without any prompting. Noting the amount of prompting would give a more accurate data result as participants who would respond without a prompt often had the same increase of responses as the participants that had many prompts. If all participants were given the same number of prompts there would most likely be a far greater difference between conventional teaching methods and those incorporating music.

Summary

In summary, given all of the limitations of this study described above, the results suggest that music therapy can be a very effective tool in the instruction of people with autism, yielding positive social and communicative behavioral changes.

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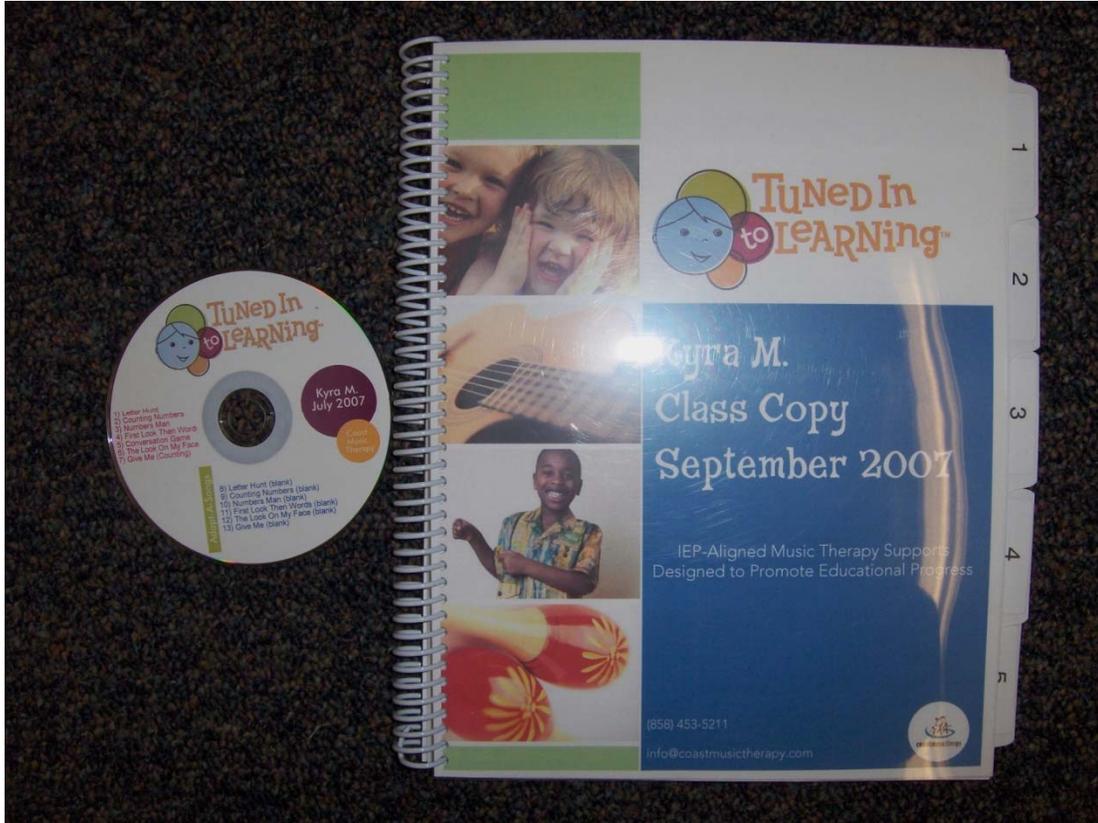
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Appendix A

Examples of Materials



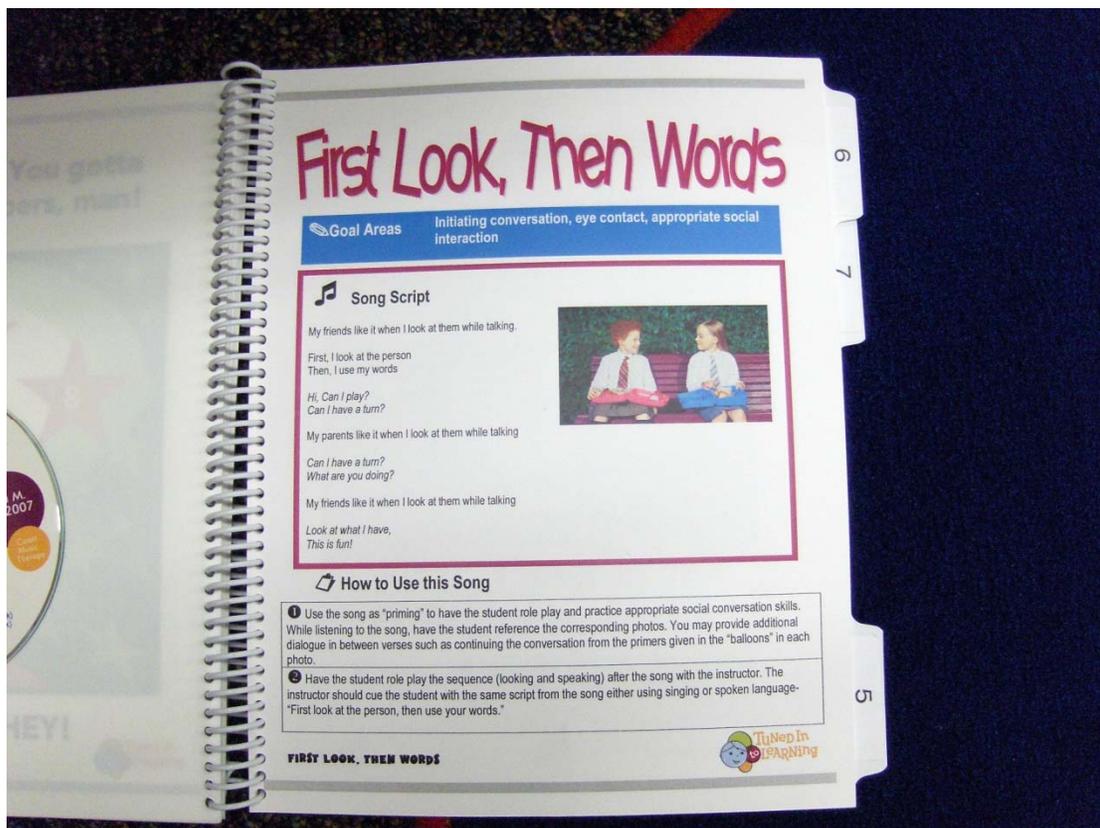
Photograph of book and CD made for student with autism for their specific IEP goals.

Instructional Hierarchy and Generalization of Skills

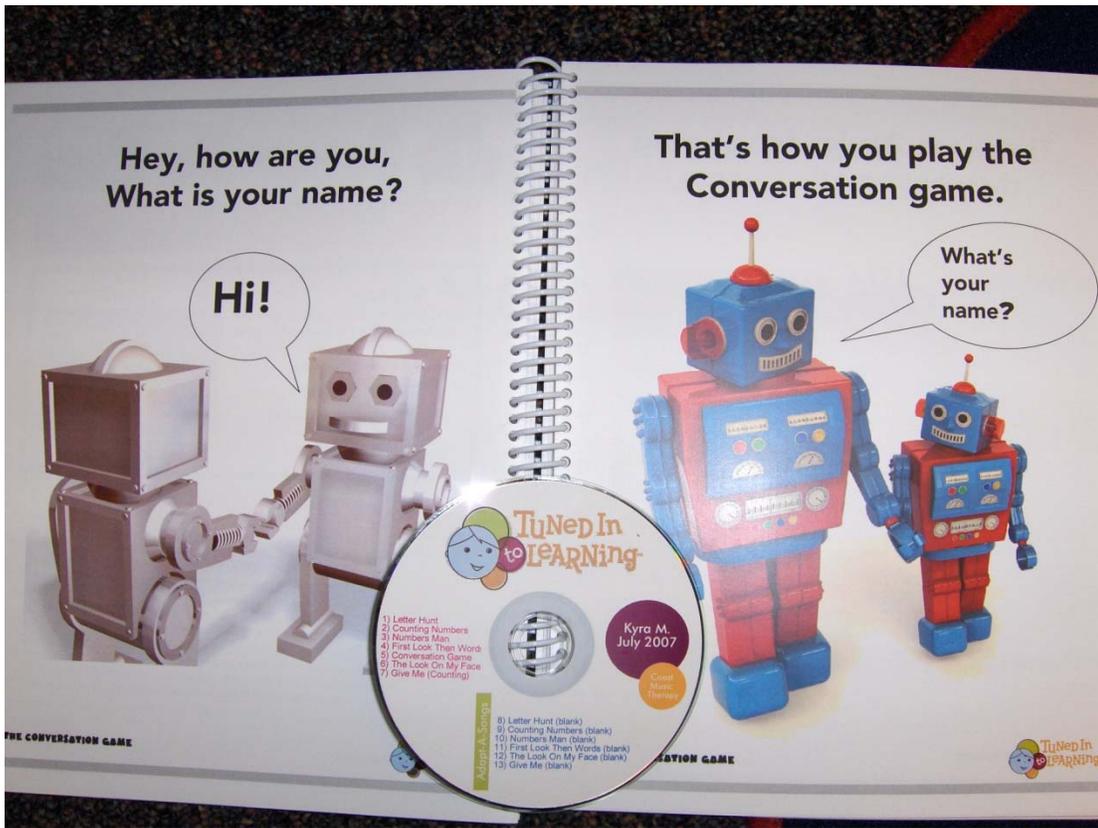


<p>1 FAMILIARIZATION & ROLE PLAY OF TARGET SKILLS</p>	<ul style="list-style-type: none"> ■ Encourage the child's active participation during songs in the form of role play or verbal/sung response to instructions. ■ It is suggested to utilize an "errorless" teaching format in order to reduce student errors and provide a systematic way to fade prompts. This method starts by providing the student with the highest level of prompt (i.e. physical assistance, gestures, modeling) needed to obtain a correct response, followed by fading of prompts as soon as possible to prevent prompt dependence. ■ For students who require increased response time, pause the CD after an instruction has been given to allow the child additional time to respond. ■ Provide delivery of reinforcement for correct responding during response time provided between song verses.
<p>2 "ADAPT-A-SONG" VERSIONS</p>	<ul style="list-style-type: none"> ■ These versions allow you to adapt songs to new content areas after the student has mastered the initial songs. In each Adapt-a-Song, the main chorus describing the target social skill remains the same, whereas the verses are left out, allowing you to speak or sing new instructions or questions for the student to respond to.
<p>3 GENERALIZATION</p>	<ul style="list-style-type: none"> ■ Immediately following song presentation, the instructor should provide a review of material learned to practice the target skill without music. This can be accomplished by having the child verbally describe or label pictures from the song, answer questions relating to song lyrics, or by having the child follow instructions related to song lyrics such as "Show me a happy face." or "Give a high five to a friend." ■ Visual supports, scripts, and checklists are consistently carried over into multiple environments without the song to encourage generalization across settings.

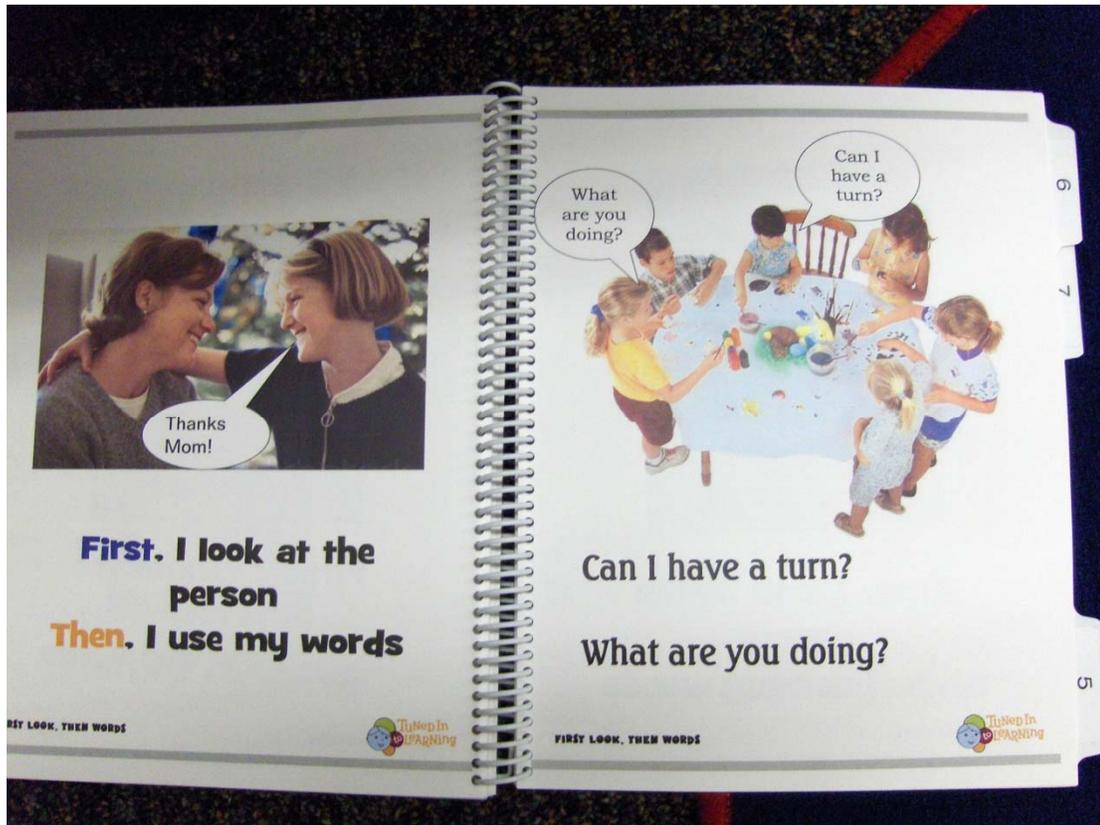
Instructions provided in book to help teachers in ways to best utilize the book, CD and visuals for students.



One of the songs developed by Coast Music Therapy with visuals to help promote initiating conversation, eye contact, and appropriate social interaction.



Another page in book from a song that helps to promote social interaction.



Song with visual to help promote eye contact, use words, initiate conversation and to take turns.