

**NORTHERN ILLINOIS UNIVERSITY**

**A LITERATURE REVIEW OF EFFECTIVE AND BENEFICIAL THERAPY PRACTICES FOR  
NON-VERBAL CHILDREN WITH AUTISM SPECTRUM DISORDER**

**A Thesis Submitted to the**

**University Honors Program**

**In Partial Fulfillment of the**

**Requirements of the Baccalaureate Degree**

**With University Honors**

**Department of**

**Communicative Disorders**

**By**

**Abby Barker**

**DeKalb, Illinois**

**December 2012**

University Honors Program

Capstone Approval Page

Capstone Title (print or type)

A Literature Review of Effective and Beneficial Therapy Practices for Nonverbal Children  
with Autism Spectrum Disorder

Student Name (print or type) Abby Barker

Faculty Supervisor (print or type) Dr. Danai Fannin

Faculty Approval Signature Danai Fannin

Department of (print or type) School of Allied Health/Communicative Disorders

Date of Approval (print or type) December 6, 2012

**HONORS THESIS ABSTRACT**

**THESIS SUBMISSION FORM**

**AUTHOR:** Abby Barker

**THESIS TITLE:** A Literature Review of Effective and Beneficial Therapy Practices for Nonverbal Children with Autism Spectrum Disorder

**ADVISOR:** Dr. Danai Fannin

**ADVISOR'S DEPARTMENT:** School of Allied Health/Communicative Disorders

**DISCIPLINE:** Health and Human Sciences

**YEAR:** Senior

**PAGE LENGTH:** 20

**BIBLIOGRAPHY:** Pages 17-19

**ILLUSTRATED:** N/A

**PUBLISHED (YES OR NO):** No

**LIST PUBLICATION:**

**COPIES AVAILABLE (HARD COPY, MICROFILM, DISKETTE):** Hard Copy

**ABSTRACT (100-200 WORDS):** Page 4

## Abstract

Autism Spectrum Disorder (ASD) is a neurological disorder that causes an individual to have struggles communicating with others (Web MD, 2010). People with ASD experience problems with verbal and nonverbal communication as well as social interactions (Gillon & Smith, 2004). Today there are many cases of ASD in the United States. The incidence of ASD has increased from 1 in 100, to 1 in 88 people (Stobbe, 2012). People with ASD who are nonverbal are sometimes thought to be deaf because of a lack of response when others speak to them (Web MD, 2010). There are several different therapy practices for individuals with ASD that can work separately or in combination to achieve the best outcome for the patient, which is better communication. The current investigation reviews the history and characteristics of ASD and relevant literature about beneficial therapy practices, such as music therapy, imitative interaction intervention, applied behavior analysis, play based therapy, art therapy, and family involvement for those individuals affected by the disorder.

## Introduction

Although it seems like ASD has recently developed among the population because of more and more cases appearing, the disorder has been known for at least 100 years. According to WebMD (2012), the first person to ever use the term “autism” was a Swiss psychiatrist named Eugen Bleuer in 1911. At the time, Bleuer used the term as a reference to a group of symptoms of Schizophrenia. In the 1940s, the term “autism” started being used by United States researchers for children with social and/or emotional problems. In the 1960s, it was realized that autism and Schizophrenia were not linked together and researchers started looking at autism as a separate disorder. It was not until the 1980s and 1990s that behavior therapy techniques became one of the initial therapies for ASD (Web MD, 2012).

ASD continues to be a puzzling disorder, and several questions remain about the disorder’s cause, diagnosis, and treatment. Diagnosing ASD can be a difficult task for professionals, but with the help of The American Psychiatric Association's (APA) Diagnostic and Statistical Manual-IV (DSM-IV-TR), it can be done. According to Centers for Disease Control and Prevention, the medical diagnostic criteria used by qualified personnel in DSM-IV-Tr for ASD is as follows:

- A. Six or more items from (1), (2), and (3), with at least two from (1), and one each from (2) and (3):
  - 1. qualitative impairment in social interaction, as manifested by at least two of the following:
    - a. marked impairment in the use of multiple nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction
    - b. failure to develop peer relationships appropriate to developmental level

- c. a lack of spontaneous seeking to share enjoyment, interests, or achievements with other people (e.g., by a lack of showing, bringing, or pointing out objects of interest)
    - d. lack of social or emotional reciprocity
  - 2. qualitative impairments in communication as manifested by at least one of the following:
    - a. delay in, or total lack of, the development of spoken language (not accompanied by an attempt to compensate through alternative modes of communication such as gesture or mime)
    - b. in individuals with adequate speech, marked impairment in the ability to initiate or sustain a conversation with others
    - c. stereotyped and repetitive use of language or idiosyncratic language
    - d. lack of varied, spontaneous make-believe play or social imitative play appropriate to developmental level
  - 3. restricted repetitive and stereotyped patterns of behavior, interests, and activities, as manifested by at least one of the following:
    - a. encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus
    - b. apparently inflexible adherence to specific, nonfunctional routines or rituals
    - c. stereotyped and repetitive motor manners (e.g., hand or finger flapping or twisting, or complex whole-body movements)
    - d. persistent preoccupation with parts of objects
- B. Delays or abnormal functioning in at least one of the following areas, with onset prior to age 3 years: (1) social interaction, (2) language as used in social communication, or (3) symbolic or imaginative play.
- C. The disturbance is not better accounted for by Rett's Disorder or Childhood Disintegrative Disorder.

(CDC, 2009)

Although this is the current medical diagnostic criteria, the diagnostic criteria of autism are being revised for the DSM-V. The APA is the organization redefining autism, making the criteria stricter. Jabr (2012) stated that "the APA may have raised the bar for autism a little too high, neglecting autistic people whose symptoms are not as severe as others". In the DSM-IV,

autistic disorder, Asperger's disorder, childhood disintegrative disorder, and pervasive development disorder were all categorized individually, however, in the DSM-V some disorders like PDD-NOS and Asperger's disorder will no longer be in the autism spectrum. Unlike the criteria described above where a diagnosed patient must possess six of twelve symptoms, the DSM-V takes seven symptoms and puts them into two groups: deficits in social communication and social interaction, and restricted and repetitive behaviors and interests (Jabr, 2012).

After all the characteristics are assessed and a child is diagnosed with ASD, therapy planning should take place. As mentioned earlier, there are a few different therapy options. Because of the tendency for some people with autism to be motivated by music (Hourigan & Hourigan, 2009), music therapy is one of the treatment options that will be highlighted in detail.

Music therapy for autism first began in the 1940s, when early researchers most likely used this technique on patients with autism in psychiatric hospitals, institutions, and schools (Reschke-Hernandez, 2011). There is little known about the effects of music therapy and there are neither documents about how the therapy was conducted nor information about the results in the 1940s. In 1950 however, music therapists began to organize themselves and the National Association of Music Therapy was founded (Reschke-Hernandez, 2011). During this time, several different forms of music therapy were developed such as music education, folk dancing, group singing, and rhythm activities(Reschke-Hernandez, 2011). Two researchers at the time, Paul Nordoff and Clive Robbins, proposed that music therapy was working well for children with autism because, "children with autism experienced music as a nonthreatening medium and therefore were more likely to become engaged in a musical experience than in

other environments” (Reschke-Hernandez, 2011). In the 1970s and 1980s, music therapy began to grow internationally. Music therapy associations were formed in Germany, Canada, Australia, and the United Kingdom (Reschke-Hernandez, 2011). It is believed that the cause of this international spread of music therapy occurred because of a publication released by Nordoff and Robbins titled *Creative Music Therapy* (Reschke-Hernandez, 2011). This book revealed the foundations for music therapy, including case examples, clinical techniques, and standards for interventions (Reschke-Hernandez, 2011).

One music therapy technique used for autism included pairing speech syllables to rhythmic patterns to help improve expressive language skills (Reschke-Hernandez, 2011). To enhance joint attention, having a child use a bongo drum was customary (Reschke-Hernandez, 2011). To improve sensory functions, vibrations and resonances were used (Reschke-Hernandez, 2011). It was not until the 1990s that therapists began more focused practices for children with autism and in the 2000s, therapists began to provide evidence-based research to prove how beneficial music therapy was for children with autism (Reschke-Hernandez, 2011).

At first there were no publications about music therapy, and today there are many more articles about evidence-based studies designed to prove the benefits of music therapy for children with autism (Reschke-Hernandez, 2011). Thus, the remainder of this paper will include a small introduction of imitative interactions, applied behavioral analysis techniques, art therapy, play based therapy, and family involvement, culminating in a primary focus on music therapy.



## Review of Literature

One form of therapy for nonverbal children with autism is imitative interactions. Heimann, Laberg & Nordoen (2006) conducted a study on imitative interaction therapy which found a significant increase in the amount of social interests in nonverbal children with autism after treatment. Their study included twenty participants, all having ASD with a mean age of 6 years and 5 months, and a mean mental age of 2 years and 1 month. Participants used little functional communication, mostly relying on nonverbal signals. This study consisted of four different phases, each session occurring for 3 minutes. Phase one was titled *Still-face*, where a child walked into a room alone and an unfamiliar adult stood like a statue. Phase two was titled *Intervention Phase*, where a child would receive one of two responses from researchers, which were imitative interaction or contingent interaction. If a child walked into an imitative interaction, the experimenter would imitate everything that the child did, including all movements and sounds. If a child walked into a contingent interaction, the experimenter responded to every behavior the child did, but did not do so in an imitative way. Phase three was identical to phase one and was named *Still-face 2*. The final phase, titled *Free play*, consisted of play time where the experimenter was to play freely with the child without being imitative. After these four phases of 3 minutes each occurred, a break of a half-hour to an hour was given, and then the phases of the procedure were all repeated one time. The only difference that occurred during the second round was the children were familiar with the adult in the room because of the first session encounters. Results showed that imitative interactions played a large role in improving social interactions for children with autism. Specifically,

nonverbal children with autism showed increased amount of social interactions as a result of this therapy (Heimann, Laberg & Nordoen, 2006).

Although imitative interaction intervention showed promising results, there are few controlled studies about imitative interactions conducted with nonverbal children with autism (Heimann, Laberg & Nordoen, 2006). Applied behavior analysis (ABA) therapy, however, has been better studied than imitative interaction.

Along with changing many other human behaviors across disciplines, ABA techniques are also used to improve expressive communication skills in nonverbal children with autism. ABA takes into account three things: behavior, behavior changes, and basis for change (Gillon & Smith, 2004). ABA is conducted in such a way that a child is given intense instructions to alter particular behaviors and if they respond correctly, they are rewarded with positive reinforcement (Gillon & Smith, 2004). If the child does not respond correctly, the response is disregarded and a correct response is prompted to happen (Gillon & Smith, 2004). Research has shown that some nonverbal children with autism have progressed with this method, while others have not (Dempsey & Foreman, 2001). It is unknown as to why some children benefit from this type of therapy and others do not (Dempsey & Foreman, 2001). The problem that arises is that data is not constantly collected throughout time at both therapy sessions and at home, and children participating in ABA may not react the same way in a therapy session as they do at home (Fisher, W., Groff, R., & Roane, H., 2011). ABA, however, along with the use of augmentative communication strategies such as an electronic typewriter, or in combination

with other more naturalistic, socially valid treatment methods has been found to enhance communication skills for nonverbal children with autism (Dempsey & Foreman, 2001).

Another communication therapy technique that is beneficial to nonverbal children with autism is art therapy, which can be used to enhance both social and communication skills. Art therapists have the ability to look past the fact that children with autism often possess imagination difficulties, and work with the child to excel (Martin, 2009). Through working on age-appropriate art and creating individualized visual tools, an art therapist can help improve a child's communication (Martin, 2009). Because children with autism often experience feelings of stress, anxiety, depression, and frustration, they can use art to express those feelings. Art therapists can then work with children on their art by providing feedback and using the project to build a relationship (Martin, 2009). Martin (2009) found that using art therapy to communicate can be not only a great social interaction, but also a great stress relief for children, while reducing anxiety and facilitating the child in building relationships with the art therapist. However, because of a lack of information, art therapy is not mentioned on lists of common treatment options for autism and there are few guidelines about art therapy (Martin, 2009).

Play based therapy is a more well known technique that can be used to help children with autism. Play based therapy was a part of the aforementioned imitative therapy (O'Brien & Parker, 2011) and is considered to be very beneficial because in the play setting, children are more natural and at ease (O'Brien & Parker, 2011). For children with autism, it is easier to use objects to communicate than communicate verbally, and with play based therapy, children are

able to be expressive through objects and toys (O'Brien & Parker, 2011). Sandplay is a popular form of play based therapy, where children shape and mold sand into various shapes while socially interacting with the therapist (O'Brien & Parker, 2011). Sandplay is advantageous because children are able to be expressive through the ways they form the sand and the objects they use in the sandbox; and they are able to project their feelings onto the toys they use (O'Brien & Parker, 2011). O'Brien and Parker (2011) found using playtime, toys, and sandplay can help a child be more expressive and communicate and socialize with others.

All of these studies found positive results for nonverbal children with autism. Across all therapy types, however, more and more researchers are finding that a very effective way to improve communication for children with autism is to involve the family of the child receiving therapy (Pang, 2010). The first step in family involvement is to find out characteristics about the family. These characteristics should include socioeconomic status, cultural background, family health, and substance abuse (Pang, 2010). After learning about the family, the therapists might feel more knowledgeable about how to work with them to reach their goals. Working in therapy as a family can help members interact with each other and also help each client gain individuality and independence (Pang, 2010). The family can help the child socialize and communicate with a group because a child may feel more comfortable socializing with the family and may gain communication skills easier as a result (Pang, 2010). Research has shown that after a nonverbal child with autism receives therapy with family involvement, they are better able to generalize the skills they gain with others in social interactions (Pang, 2010).

With play based, family included therapy strategies showing the most promising results for nonverbal children with autism, interventionists have found ways to integrate music into naturalistic, play based programs in which the family can participate. One such music therapy study, conducted by Gold, Kim, and Wigram (2008), investigated its effects on joint attention and nonverbal communication skill in children with autism. Thirteen boys and two girls with autism between the ages of 3 and 5 participated. None of the fifteen participants had ever experienced music or play based therapy before and they were recruited from the Department of Child and Adolescent Psychiatry at Seoul National University Hospital. The research team for this study consisted of two music therapists, one play therapist, and three music therapy graduate students (Gold, Kim, & Wigram, 2008).

The intervention consisted of twelve weekly, 30 minute sessions. These sessions would later be compared to a control condition of play sessions, consisting of the same duration as music therapy sessions. The children were split into two groups: group one attended music therapy first, then play based therapy and group two attended play based therapy first, then music therapy. There were three measures taken from these sessions: Pervasive Developmental Disorders Behavior Inventory (PDDBI), Early Social Communication Scales (ESCS), and duration of eye contact and turn taking (Gold, Kim, & Wigram, 2008).

Before, during, and after therapy sessions, the PDDBI was administered. The authors of this study describe PDDBI as, “an informant-based scale that can reliably measure responsiveness to interventions in individuals within autism spectrum disorder” (Gold, Kim, & Wigram, 2008). The mothers were instructed to fill out a questionnaire about the child and

observe the child's responses during therapy through a computer screen. The results showed that participants in group one showed improvement of responses to intervention after music therapy, significantly more than play based therapy. Those who participated in group two improved largely in music therapy with a small improvement after play based therapy according to professionals. However the mothers' score reports showed that participants gained in both music and play based therapy at about the same amount of improvement (Gold, Kim, & Wigram, 2008).

Early Social Communication Scales (ESCS) testing was conducted while the child played with toys and the test evaluated both Initiation of Joint Attention (IJA) and Responding to Joint Attention (RJA) (Gold, Kim, & Wigram, 2008). There are two types of IJA: low level behaviors (IJAL), such as making eye contact, and high level behaviors (IJAH), such as pointing and gesturing (Gold, Kim, & Wigram, 2008). The result from ESCS testing proved that music therapy was more effective for improving joint attention skills than play based therapy alone (Gold, Kim, & Wigram, 2008).

Duration of eye contact and turn taking was collected to account for treatment session analysis. Music therapy had a significant effect on eye contact and turn taking, more so than play based therapy (Gold, Kim, & Wigram, 2008).

ANOVAs (analysis of variance) were collected to determine whether changes in the children after therapy were clinically meaningful. Using ANOVAs helped the researchers infer that music therapy was significantly more beneficial for children with ASD than play based

therapy. The authors suggested replication to verify the current results (Gold, Kim, & Wigram, 2008).

An anecdotal example of how music therapy can advance communication skills for individuals with autism is a story about a man named Jerry. Jerry had autism and was nonverbal for approximately twenty-four years. He grew up in a family that was highly involved with music which brought about Jerry's interest in music. At the age of eighteen, Jerry attended a school that offered music therapy for children with autism. During this time, while Jerry was not able to verbally speak, he used music to interact with therapists. Throughout his years of music therapy, Jerry gained the skills of using eye contact and smiling with others. After establishing these communication skills, the therapists decided to teach him how to use an electronic typewriter. Because he was not timid around the therapists, due to the several encounters of music therapy making him more comfortable, Jerry began communication through his typewriter, writing whole sentences without punctuation (Clarkson, 1994). By first developing communication skills through music therapy, individuals with ASD may learn to use other facilitating devices to communicate with others as Jerry did.

Aside from music therapy resulting in better communication skills for nonverbal people, acquisition of music skills in children with autism is another interesting topic. Many children with autism have an interest in music before ever being involved in music therapy (Hourigan & Hourigan, 2009). This is one of the reasons why music therapy can be advantageous specifically for those with autism. Learning what kind of learner the child is, such as visual or aural, or if the child has any sensitivities, such as loudness of sounds, can help determine what kind of music

therapy to implement, if appropriate (Hourigan & Hourigan, 2009). A self-evaluation completed by the student and therapist can show the child how music therapy is going for them, and let the child be aware of his progress (Hourigan & Hourigan, 2009). Showing this progress can improve communication between the child and therapist because it lets the child know that they are obtaining knowledge and communication skills.

In conclusion, there are several different therapy options for nonverbal children with autism and the selected therapies have been found to be beneficial (Leblanc, Richardson & McIntosh, 2005; Johanson, 2011; Heimann, M., Laberg, K., & Nordoen, B., 2006; Epp, K., 2008; Mastrangelo, S, 2009; Pang, Y., 2010). This paper only included a few that are beneficial to children with autism and of most interest to me. Using music therapy, imitative interactions, applied behavior analysis, art therapy, play based therapy, and family involvement, or different combinations of the above, have been found to help a child progress socially or use nonverbal tactics to better communicate with others (Lovaas, 1993; Freeman, S., Kasari, C., & Paparella, T., 2006; Laurent, A., Rubin, E., Prizant, B., & Wetherby, A., 2003; Charlifue-Smith, R., Hall, T., Hayden, D., Hayes, A., Hepburn, S., & Rogers, S., 2006; Gold, C., Holck, U., & Geretsegger, M., 2012; Bodil, N., Heimann, M., & Laberg, K., 2006). With the advent of new technology and continued increase in autism treatment research, families and practitioners are hopeful that therapy techniques will be further refined and disseminated for nonverbal children with autism.



## References

- Bodil, N., Heimann, M., & Laberg, K. (2006). Imitative interaction increases social interest and elicited imitation in non-verbal children with autism. *Infant and Child Development*, 15, 297-309.
- Centers for Disease Control. (2009). *Centers for disease control and prevention autism spectrum disorders diagnostic criteria*. Retrieved from <http://www.cdc.gov/ncbddd/autism/hcp-dsm.html>
- Charlifue-Smith, R., Hall, T., Hayden, D., Hayes, A., Hepburn, S., & Rogers, S. (2006). Teaching young nonverbal children with autism useful speech: A pilot study of the Denver Model and PROMPT interventions. *Journal of Autism and Developmental Disorders*.
- Clarkson, G. (1994). Creative music therapy and facilitated communication: New ways of reaching students with autism. *Preventing School Failure*, 38, 31-33.
- Dempsey, I., & Foreman, P. (2001). A review of educational approaches for individuals with autism. *International Journal of Disability, Development, and Education*, 48, 103-113.
- Epp, K. (2008, January). Outcome-based evaluation of social skills program using art therapy and group therapy for children on the autism spectrum. *Children & School*, 30, 27.
- Fisher, W., Groff, R., & Roane, H. (2011). Applied Behavior Analysis: History, Philosophy, Principles, and Basic Methods. In *Handbook of Applied Behavior Analysis*, 1.
- Freeman, S., Kasari, C., & Paparella, T. (2006). Joint attention and symbolic play in young children with autism: A randomized controlled intervention study. *Journal of Child Psychology and Psychiatry*, 47, 611-620.
- Gillon, G., & Smith, D. (2004). Autistic spectrum disorder: Caseload characteristics, and interventions implemented by speech-language therapists. *Kairaranga*, 5, 46-54.
- Gold, C., Holck, U., & Geretsegger, M. (2012, January). Randomised controlled trial of improvisational music therapy's effectiveness for children with autism spectrum disorder: Study protocol. *BMC Pediatrics*, 12.

- Gold, C., Kim, J., & Wigram, T., (2008). The effects of improvisational music therapy on joint attention behaviors in autistic children: A randomized controlled study. *Journal of Autism and Developmental Disorders*, 38, 1758-1766.
- Heimann, M., Laberg, K., & Nordoen, B. (2006). Imitative interaction increases social interest and elicited imitation in non-verbal children with autism. *Infant and Child Development*, 15, 297-309.
- Hourigan, A., & Hourigan, R. (2009). Teaching music to children with autism: Understandings and perspectives. *Music Educators Journal*, 16, 40-45.
- Jabr, F. (2012, January 01). Scientific American. *Huffpost Healthy Living*. Retrieved from [http://www.huffingtonpost.com/2012/01/30/dsm-5-autism-spectrum-disorder-definition\\_n\\_1241495.html](http://www.huffingtonpost.com/2012/01/30/dsm-5-autism-spectrum-disorder-definition_n_1241495.html)
- Johanson, J. (2011). Utilizing Music in Speech and Language Therapy for Preschool Children and Children with Autism: A Systematic Review. Retrieved from <http://search.proquest.com/eric/docview/894261838/13AB255BE0644A7A866/2?accountid=12846>
- Laurent, A., Rubin, E., Prizant, B., & Wetherby, A. (2003). The SCERTS Model: A transactional, family-centered approach to enhancing communication skills and socioemotional abilities of children with autism spectrum disorder. *Infant and Young Children*, 16, 296-316.
- Leblanc, L., McIntosh, J., & Richardson, W. (2005). The use of applied behavioural analysis in teaching children with autism. *International Journal of Special Education*, 20, 13-32.
- Lovaas, O. (1993). The development of a treatment-research project for developmentally disabled and autistic children. *Journal of Applied Behavior Analysis*, 26, 617-630.
- Martin, N. (2009). Art therapy and autism: Overview and recommendations. *Art Therapy: Journal of the American Art Therapy Association*, 26, 187-190.
- Mastrangelo, S. (2009, January). Play and the child with autism spectrum disorder: From possibilities to practice. *International Journal of Play Therapy*, 18, 13-30.

- O'Brien, P., & Parker, N. (2011). Play therapy-reaching the child with autism. *International Journal of Special Education*, 26, 80-86.
- Pang, Y. (2010). Facilitation family involvement in early intervention to preschool transition. *The School Community Journal*, 20, 183-196.
- Reschke-Hernandez, A. (2011). History of music therapy treatment interventions for children with autism. *Journal of Music Therapy*, 40, 169-201.
- Stobbe, M. (2012, March 29). Better diagnosis, screening behind rise in autism. *NBC News*. Retrieved from [http://www.msnbc.msn.com/id/46892046/ns/health-childrens\\_health/t/better-diagnosis-screening-behind-rise-autism/](http://www.msnbc.msn.com/id/46892046/ns/health-childrens_health/t/better-diagnosis-screening-behind-rise-autism/)
- Web MD. (2012, May 29). History of Autism. Retrieved from <http://www.webmd.com/brain/autism/history-of-autism>
- Web MD. (2010, April 12). Autism: Topic Review. Retrieved from <http://www.webmd.com/brain/autism/autism-topic-overview>