



MONTCLAIR STATE
UNIVERSITY

Montclair State University
**Montclair State University Digital
Commons**

Theses, Dissertations and Culminating Projects

1-2012

The Effect of Music Therapy versus General Classroom Instruction on the Social Skills of a Preschooler on the Autism Spectrum in an Inclusive Setting

Rachel A. Crawford
Montclair State University

Follow this and additional works at: <https://digitalcommons.montclair.edu/etd>



Part of the [Music Therapy Commons](#)

Recommended Citation

Crawford, Rachel A., "The Effect of Music Therapy versus General Classroom Instruction on the Social Skills of a Preschooler on the Autism Spectrum in an Inclusive Setting" (2012). *Theses, Dissertations and Culminating Projects*. 802.

<https://digitalcommons.montclair.edu/etd/802>

This Thesis is brought to you for free and open access by Montclair State University Digital Commons. It has been accepted for inclusion in Theses, Dissertations and Culminating Projects by an authorized administrator of Montclair State University Digital Commons. For more information, please contact digitalcommons@montclair.edu.

MONTCLAIR STATE UNIVERSITY

The Effect of Music Therapy versus General Classroom Instruction on the Social Skills
of a Preschooler on the Autism Spectrum in an Inclusive Setting

by

Rachel A. Crawford, MT-BC

A Master's Thesis Submitted to the Faculty of

Montclair State University

In Partial Fulfillment of the Requirements

For the Degree of

Master of Arts

January 2012

College/School CART/Music

Department Music Therapy

Thesis Committee:

Karen Goodman, MS, RMT, LCAT
Professor, Music
Thesis Sponsor

Amy Clarkson, MMT, MT-BC, CP
Adjunct Faculty, Music
Committee Member

Dean, College of the Arts

12/20/11

(date)

Jon Robert Cart, DMA
Director, Cali School of Music

Brian Abrams, Ph.D., MT-BC, LPC, LCAT
Associate Professor, Music
Graduate Advisor/ Committee Member

THE EFFECT OF MUSIC THERAPY VERSUS GENERAL CLASSROOM
INSTRUCTION ON THE SOCIAL SKILLS OF A PRESCHOOLER ON THE AUTISM
SPECTRUM IN AN INCLUSIVE SETTING:

A THESIS

Submitted in partial fulfillment of the requirements

For the degree of Master of Arts

By

RACHEL A. CRAWFORD, MT-BC

Montclair State University

Montclair, NJ

2012

Acknowledgments

I would like to express my gratitude to the many people who made this study possible. Without their help, input, and support, I would not have been able to complete this study. I wish to give my utmost thanks to Prof. Amy Clarkson, part of my thesis committee and the music therapist at the Children's Center who ran the sessions I observed. I wish to thank Tara Evenson, the director of the Children's Center who granted me permission to perform the study. I also wish to thank Erin Clark, her teaching assistants, and the related service providers who assisted in her classroom. I would like to express my gratitude to the students who welcomed me into their classrooms and lives for ten weeks, and to their parents for trusting me as an objective observer. I appreciate all of the teachers from Montclair State University who have helped me learn and grow in this field of music therapy including Prof. Joke Bradt and Prof. Dorita Berger. I would also like to thank Prof. Meredith Krych-Appelbaum for her statistical input. My acknowledgments conclude with Prof. Brian Abrams, part of my thesis committee and graduate advisor, and my thesis advisor, Prof. Karen Goodman, who has embarked on a long, educational, and fulfilling journey with me from student to music therapist and teacher.

Abstract

The purpose of this case study was to examine the effects of music therapy on the development of the social skills of a preschooler on the autism spectrum in an inclusive setting. The study was performed in an inclusive preschool classroom at the Ben Samuels Children's Center on the campus of Montclair State University. A literature review related to this topic included information on Autism Spectrum Disorder (ASD), the etiology of the disorder and the use of music therapy in the inclusive school setting with students on the autism spectrum. The review also covered the effect music therapy has on the social communicative goals with students on the autism spectrum, comparing music and non-music conditions.

The participant observed in the case study is diagnosed on the autism spectrum and was observed in an inclusive music therapy group and an inclusive non-music classroom group at the Ben Samuels Children's Center on the Montclair State University campus.

Qualitative session notes based on the developmental milestones established by Greenspan & Wieder (1997) were written after observation of both the music therapy and classroom groups in order to study the student's social and communicative skills in his inclusive setting with and without the direct influence of music therapy. Further, relationship and expressive language (constituting social and communication) goals were observed in each group and quantified by reviewing videotapes of the sessions. These social communication goals were tracked by counting the number of times certain goals were achieved on an "Evidence of Progress Towards Goals" form, developed by the Ben Samuels Children's Center, Montclair State University. Comparative data at the

conclusion of the study indicated that a higher number of social and communicative goals were achieved during the music therapy sessions than in the classroom sessions. Session notes also describe behaviors and musical elements that were influential to create positive results towards attaining social goals. Results indicate that music therapy is a positive factor that helps the student on the autism spectrum attain his relationship and expressive language goals within the inclusive school setting. Discussion sections follow that describe the musical and classroom behaviors that counted toward achievement of the social goals. Conclusion and Consideration for future study are recommended.

TABLE OF CONTENTS

	Page
INTRODUCTION.....	9
LITERATURE REVIEW	
Autism Spectrum Disorder	
Etiology and Interventions.....	10
ASD in an Inclusive Setting.....	14
Music Therapy with ASD.....	15
Music Therapy with ASD in Inclusion.....	17
Music Therapy with ASD and Social Communicativeness.....	19
STATEMENT OF PURPOSE.....	21
METHOD	
Subject	
Research Design.....	23
Data Collection.....	24
Data Analysis.....	26
Music Therapy Room Set Up.....	30
Classroom Set Up.....	30
QUANTITATIVE RESULTS AND DISCUSSION.....	32-46
Results & Discussion-Table 1 & <i>Figure 1</i>	34
Results & Discussion-Table 2 & <i>Figure 2.1</i>	37
Results & Discussion-Table 3 & <i>Figure 3.1</i>	40
Results & Discussion-Table 4 & <i>Figure 4.1</i>	43

Results & Discussion-Table 5 & <i>Figure 5.1</i>	46
QUALITATIVE OUTCOMES.....	46
Results and Discussion.....	54
CONCLUSION AND CONSIDERATIONS FOR FUTURE STUDY.....	55
REFERENCES CITED.....	58
APPENDICES	
A. Raw Data-Session Observations.....	66
B. Letter of Agreement.....	80
C. Letter of Interest.....	81
D. Participant Consent.....	82
E. Class Consent.....	85
F. Participant Assent.....	88
G. Class Assent.....	91
H. Goal Sheet.....	93
I. IRB Approval.....	94
LIST OF TABLES	
1. Evidence of Progress Toward Goals Completed Circles.....	32
2. Initiate Play with Peer Representative Behaviors.....	35
3. Maintain Play with Peer Representative Behaviors.....	38
4. Produce Utterances Representative Behaviors.....	41
5. Contingent Exchange Representative Behaviors.....	44
LIST OF FIGURES	
1.1. Percentage of Social Goals Music Therapy & Classroom.....	33

2.1. Percentage if Initiate Play Goals Music Therapy and Classroom.....	36
3.1. Percentage of Maintain Play Goals Music Therapy and Classroom.....	39
4.1. Percentage of Produce Utterances Goals Music Therapy and Classroom.....	42
5.1. Percentage of Contingent Exchange Goals Music Therapy and Classroom.....	45

Introduction

Music Therapy has been proven to be an effective intervention for children with Autism Spectrum Disorder (ASD). Many studies have taken place to prove the value of the inclusive classroom on the social development of children with ASD. This case study examines the student in his inclusive classroom setting by comparing social goals achieved during his music therapy and non-music classroom sessions. I have been a certified music therapist for seven years and a certified teacher for three years who has worked with students with Autism Spectrum Disorder. I have worked in classrooms with children of varying disabilities and have often been interested in the role inclusion could play for both the typical student and the student on the Autism Spectrum.

The following includes a review of literature dedicated to the symptoms associated with Autism Spectrum Disorder, and studies completed on its prevalence and cause. Different interventions have been used in therapy and education to promote the social development of children on the autism spectrum. This case study takes place at the Ben Samuels Children's Center on the Montclair State University campus. It is a preschool and childcare center where children with and without identified disabilities learn, play, and develop together in an inclusive environment. The philosophy of the teachers and therapists at the Ben Samuels Children's Center is discussed as well as studies of music therapy interventions that reflect the same type of approach relevant to this study. Inclusion is an important factor in the study, which is becoming an important issue in today's educational system. Studies have shown that peer interaction is important for children of any age and developmental level. When working with children on the autism spectrum in an inclusive setting, "all of the successful strategies involving

peers, both peer-mediated approaches and peer tutoring, have involved typically developing peers” (Rogers, 2000, p. 406). The purpose of the study explains the role and effect music therapy plays in the development of social communication of the student on the autism spectrum in his inclusive preschool setting. The music in the group affects the students’ communication with the typically developing students, as well as with his teachers and music therapist. The method includes a description of the subject and research design. Based on a quantitative and qualitative research method, conclusions are made on how the social skills goals with a child on the autism spectrum have different outcomes in a music group vs. a non-music classroom group, and how music therapy is a positive factor with these outcomes.

Literature Review

Autism Spectrum Disorder

Etiology and interventions.

“The essential features of Autistic Disorder are the presence of markedly abnormal or impaired development in social interaction and communication and a markedly restricted repertoire of activities and interests” (American Psychiatric Association, 2000, p. 70). When reflecting on his first discoveries of children on the autism spectrum, Kanner noted that children with Autism Spectrum Disorder (ASD) were more cognitively and verbally active when they associated themselves with things that have patterns, rhymes, or repetitions. “Almost all the parents reported, usually with much pride, that the children had learned at an early age to repeat an inordinate number of nursery rhymes, prayers, lists of animals, the roster of presidents, the alphabet forward and backward, even foreign language (French) lullabies” (Kanner, 1943, p. 243).

Although these children sometimes appeared of typical intelligence and often above average intelligence, the parents noticed that their social communicative skills were lacking. This is perhaps the most important area that therapists and educators wish to focus on when working with children on the autism spectrum.

It has already been established that individuals on the autistic spectrum have deficits in social communication. Many studies have shown that these deficits are connected with their limbic system and problems with sensory overload.

Sensory overload is prevalent in persons on the autistic spectrum. Their systems are constantly being bombarded with sensory inputs that seem to come into the brain with no apparent rhyme or reason-no sequence, no temporal sense and no identifiable order. There is more information than the brain knows what to do with (Berger, 2002, p.42).

Recent studies have also found that a certain gene deficiency, NLGN4, “may lead to abnormal development of synaptic structures and may have dramatic effects on communication processes and cognitive development” (The American Society of Human Genetics, 2004, p.6). Parents, educators and researchers have become more aware of ASD in the last ten years. Alarming studies recently show statistics that in the United States “from 1 in 80 to 1 in 240—with an average of 1 in 110—children have an ASD” (Centers for Disease Control and Prevention, 2009). Many researchers believe, however, the numbers are very high due to the many subcategories associated with ASD such as PDD, Asperger’s, Rhett’s Disorder, Childhood Disintegrative Disorder, and PDD NOS (APA, pp. 69-84). All of these subcategories are included in these high statistics.

Although much research continues in search of the cause as well as treatment or a possible cure for ASD, it is imperative that research continue on the interventions that are effective in making strides towards early intervention and communication.

It is important that professionals and parents are informed about the progress they can expect for their child, as well as remain aware that most research does not support a “cure” or “recovery” from autism. “At this point, most of the programs focus on children of preschool age, and there is still much to learn about intervention for the birth to 3 age group” (Corsello, 2005, p.83).

Many related service providers offer interventions to children with ASD.

Occupational therapists have started using sensory-based interventions centered on Greenspan’s Developmental/Individual/Relationship-based model to address sensory and social developmental needs. “Sensory-based interventions, including modifying the sensory environment, appear to be most effective when children exhibit sensory-processing deficits with problems in arousal, attention, or behavior” (Smith & Arbesman, 2008, p.4). The DIR/Floortime model (Greenspan/Wieder, 2006) is a relationship-based model in which therapists and teachers educate while forming social bonds with the child on the autism spectrum.

The six milestones in the Greenspan and Wieder developmental model are:

- 1) Regulation and interest in the world (one to three months)
- 2) Engaging and relating (two to three months)
- 3) Intentionality and two-way communication (six to nine months)
- 4) Social problem solving, mood regulation, and formation of a sense of self (nine to eighteen months)

5) Creating symbols and using words and ideas (eighteen to thirty months)

6) Emotional thinking, logic and a sense of reality (two and a half to five years)

Speech therapists are related service providers who provide intervention to students with ASD. They help to address language/verbal, communication, and developmental needs. Many speech therapists follow the theoretical model of Applied Behavioral Analysis (ABA). As reported in the work of Rosenwasser & Axelrod (2001, p.672), behavior analysis interventions for children with autism began in the 1960's with the work of Ivar Lovaas and his colleagues at the University of California, Los Angeles. Early ABA programs produced progressive language gains for children, as well as facilitating the progress of children with autism in inclusive settings. One of the more popular augmentative and alternative communication (AAC) systems used among speech therapists and then transitioned into classrooms is the Picture Exchange Communication System (PECS). "The current research supports the hypothesis that aided AAC systems, such as PECS, may be efficacious in encouraging speech in individuals with ASD" (Ganz & Simpson, 2004, p. 405). These types of tools used within the ABA framework have shown to help "increase social initiations, self-management strategies, and classwide interventions" (Rosenwasser & Axelrod, 2001, p. 675).

Another related service used in interventions with children on the autism spectrum is physical therapy. Physical therapists help students on the autism spectrum with their sensory and motor development. A specific sensorimotor treatment that has been developed is called neurodevelopmental therapy (NDT). "Its focus is on normalization of muscle tone, integration of primitive reflexes, and facilitation of more

normal movement patterns through specific handling techniques” (Baranek, 2002, p. 414).

ASD in an Inclusive Setting

“The concept of "full inclusion" is that students with special needs can and should be educated in the same settings as their normally developing peers with appropriate support services, rather than being placed in special education classrooms or schools” (Mesibov & Shea, 1996, p.337). There are different views on whether or not full inclusion is an acceptable form of education for children with ASD. Many studies have focused on social communication being the most important aspect of development with these students, and inclusion for at least part of the day is a way to encourage socialization skills throughout the day. “A goal of inclusion is to facilitate positive interactions between children with disabilities and typical learners” (Robertson, Chamberlain, & Kasari, 2003, p. 124). Studies have also shown that positive interactions between children and their teachers can help increase social skills. “The results of our study also suggest that the relationships that children form with teachers are associated with subsequent peer relationships and children’s level of social inclusion” (Robertson, Chamberlain, & Kasari, 2003, p. 128).

What inclusion research has found is that although children with ASD benefit from it, they should continue to be supported by paraprofessionals and related service specialists within the classroom and in individual and small groups. “The skills of children with autism might be different from typically developing peers, but it is likely that with appropriate educational and social-communicative interventions in classrooms, children with autism spectrum disorders may develop some functional and appropriate

skills” (Chou, 2008, p. 7). Although there are different views as to the degree of inclusion in the classroom, most studies agree that the child on the autism spectrum needs additional support from paraprofessionals, often in a 1:1 ratio. “While the goals and values underlying the philosophy of inclusion are laudable, neither the research literature nor thoughtful analysis of the nature of autism supports elimination of smaller, highly structured learning environments for some students with autism” (Mesibov, 1996, p.345). This view represents a philosophy becoming more popular among inclusive environments today. Although students with autism or other disabilities may spend a majority of the day in the general education environment with typical developing peers, the student with special needs may be pulled from the group with his paraprofessional to go to individual specialized services. “Starting in self-contained classrooms makes it easier for many of these students to learn productive, independent routines. Some advocates of full inclusion argue that the only way to learn how to function in the community is to practice all skills there” (Mesibov, 1996, p. 344). The related services specialists become part of a transdisciplinary team that work on an individual basis with the student, in smaller group atmospheres with other students with special needs, and often within the classroom environment.

Music Therapy with ASD

Since individuals on the autism spectrum have deficits in language and social-communication, “It is not surprising that language/communication and behavioral/psychosocial (in rank order) were the goal areas most frequently selected by the music therapists” (Kaplan, 2005, p. 17). The pioneers of music therapy also discuss the powers that music can have over behavior. “Music in the child’s environment can

change his mood and behavior, from lethargy to activity, or from activity to lethargy. He may be either stimulated or hypnotized by the experience” (Alvin, 1991, p. 6). Nordoff and Robbins have shown the great powers of improvisation with the child on the autism spectrum. “Through improvisation, music can take on powers to calm or console, divert, engage interest, stimulate interaction, release tension, and meet the affective needs of a child” (Nordoff & Robbins, 2007, p. 209). Goodman based her individual work with special needs children on the six milestones developed by Greenspan & Wieder.

Goodman stated that “music therapy with its many avenues for nonverbal attunement and the expression of feelings and ideas is an ideal modality for floor time leading toward groupwork” (Goodman, 2007, p. 91). The music therapy Nordoff & Robbins improvisational approach combined with the principles of Greenspan & Wieder have become the foundation on which the music therapy sessions at the Children’s Center are based upon. A study was done by John Carpeno (2009) combining these two techniques and uses the DIR/Floortime method with music therapy as the music therapist does at the Children’s Center. The music therapist uses an improvisational approach that starts with a musical structure, then varies and extends based on the direction the students lead her.

Other studies have been done such as the one by Lim (2009) on the use of music to improve speech production in children with ASD. It was concluded that “the effect of music on speech production in children with ASD might be explained by the inherent structure of music stimuli and the intact capacity of pattern perception and production in children with ASD” (Lim, 2009, p. 113). This ties in with Kanner’s observations on the child with autism’s perceptions of patterns referred to earlier in *Nervous Child* (1943, p. 243). It has already been shown how music therapy can function as a facilitator of

cognitive concepts. Thaut (1984) used the conceptual areas of labeling, number concepts, color concepts, auditory memory, auditory-motor memory, matching skills, form perception, decoding and encoding symbols, and integration of music in the learning environment. The treatment model he presented divided into basic, intermediate, and complex levels based on the perceptual and motor development of the child.

Music Therapy with ASD in Inclusion

Research has been done illustrating the importance of not only peer-mediated interventions in the classroom but during socialization time such as on the playground in inclusive settings. Kern and Aldridge (2006) did a study using music therapy as an intervention to improve peer interactions and meaningful play for children with autism by adding music on the playground. Teachers and other peers were used as assistants. “Consequently, playgrounds are important and appropriate settings for implementing music therapy interventions to facilitate learning and development for both children with and without special needs” (Kern, 2006, p. 290). The results showed that the music facilitated the play and involvement of the children with their peers. The music attracted them to the sound on the playground and gave them opportunity to play the instruments. This idea has also inspired others to do research based on peer-mediated interventions of typically developing students with those on the autism spectrum. A study was done on the impact of music therapy on children with ASD in a structured outdoor inclusive setting (SOIS). The focus of this study included the use of joint attention, turn taking, and imitation. Caltabiano felt that “Maintaining effective play interactions with peers requires children to exercise self-control and a host of other important behaviours such as cooperation, attention and persistence that can affect learning in the classroom setting”

(Caltabiano, 2010, p.5). Longley did an individual case study with a student who was in an inclusive environment throughout the rest of the day. Her study focused on the aspects of joint attention, turn taking, and imitation in which she was able to conclude that the student “ began to communicate musically using aspects of verbal communication: listening, turn-taking, timing and initiating” (Longley, 2007, p. 53).

Music therapy has always provided a therapeutic relationship that addresses the emotional, social, cognitive, and physical needs of clients. At the Ben Samuels Children’s Center at Montclair State University, the teachers, therapists and staff work within a transdisciplinary model in an inclusive setting. They practice a team treatment approach that treats each child as an individual. Their work is based on the DIR/Floortime model developed by Greenspan & Weider (2006). Amy Clarkson, the music therapist at the Ben Samuels Children’s Center, incorporates the DIR model into her music therapy approach (2009).

The DIR/Floortime model (Greenspan& Weider, 2006) is an effective approach that fits well with the interactive and therapeutic use of music. Because music is most often a pleasurable and attention getting stimulus for children with ASD, because music is both structured and flexible, because music fosters communication and stimulates organized movement, it is an ideal medium through which to help children with ASD to grow and develop (Clarkson, 2009, p.273).

The transdisciplinary approach is one in which all of the therapists and teachers can use their different modalities to attain similar goals with the students with ASD. An important aspect of the approach at the center is the way in which they are exposed to the

ideas and techniques of the other departments. “Songs are used in the classroom to bring order out of lots of unorganized sound and to signal transitions throughout the day” (Clarkson, 2009, p.263). Collaborative research in the inclusive setting has been done with music therapists, occupational therapists, and classroom teachers, for example, describing the importance of the transdisciplinary approach when referring to the child with ASD learning self-care tasks: “When the potential for that independence is impeded by disability, it is important for music therapists to approach intervention with both tenacity and imagination, including consultation and collaboration with professionals in other disciplines” (Kern, et al, 2007, p. 50). Kern’s study enabled the child with ASD to use songs to perform self-care tasks in the inclusive classroom. This study on music therapy with a student on the autism spectrum in an inclusive setting made comparisons between music and non-music conditions (Kern, et al, 2007). This case study focused on social goals such as improving self-care tasks and compared using lyrics solely and using lyrics with music. It focused on the improvement of the self-care tasks an individual boy with ASD in the same inclusive classroom, and used musical and verbal interventions to compare the effectiveness of the task sequences. The results of this study showed that the song interventions were more effective than the lyric interventions for some daily living activities. “Because music is a natural part of children’s lives, it may be used to motivate and enliven engagement in challenging tasks, including activities of daily living” (Kern et al, 2007, p. 50).

Music Therapy with ASD and Social Communicativeness

There have been studies to show the effectiveness of music therapy on the social communication skills of children with ASD. The National Standards Project conducted

by the National Autism Center (2009) classified music therapy as an “emerging evidenced-based practice useful in teaching individual skills or goals by initially targeting the skill through song or rhythmic cuing”. Some researchers compared music and non-music conditions in hopes to show the effectiveness of music therapy as an intervention to improve social communicativeness in children with autism. Whipple (2004) analyzed nine studies in which music and non-music conditions were compared with adolescents and children with autism. Whipple reported that music was an effective intervention with participants of all ages. Gold (2006) conducted three studies which compared music and non-music conditions with children on the autism spectrum who were under 10 years of age. Significant results were reported for gestural and verbal communicative skills during the music conditions.

Another study was completed by Kim, et al. (2008) that compared music and non-music conditions. Improvisational music therapy sessions were compared to play sessions to determine which condition was more effective for developing joint attention and positive emotional communication. This research was conducted during individual sessions, and results showed the music condition to be significantly more effective than the play sessions in increasing responses to joint attention and initiating low level joint attention such as eye contact.

Other research was conducted which involved the use of music therapy interventions to regulate behaviors of children with autism. Brownell (2002) used the social story as a tool to compare target behaviors during reading and singing. The results showed a significant reduction in the target behaviors for both conditions. The behaviors were also recorded less frequently for the singing condition. Carnahan, et al. (2009 a, b)

studied the use of music within a group setting to determine the effects of music on active engagement during an interactive book session for children with ASD. The participating staff read the material, read and used three dimensional materials, and added music while singing the text. The results of this study showed that the levels of engagement increased for all children when interactive books were used with music.

Edgerton (1994) studied the effect of improvisational music therapy on the communicative behaviors of children with autism. She used improvisational music therapy based on Nordoff and Robbins' (1977) *Creative Music Therapy*. The Checklist of Communicative Responses/Acts Score Sheet (CRASS) was designed for this study and used to measure the musical and nonmusical communicative behaviors of the subjects. Musical behaviors had the categories of tempo, rhythm, structure and pitch. The non-music behaviors had the categories of speech production skills, communicative-interactive skills, and communicative intent skills. Overall results of this study showed that as musical vocal behaviors increased, nonmusical speech production behaviors also increased on the average.

Statement of Purpose

As reported in the literature review, there have been many studies on the effects of music therapy on the social communicative skills of children with ASD. Although there are studies describing music therapy techniques for social communicative goals within inclusive settings for children on the autism spectrum, there does not exist a comparative study of a single subject within the same inclusive classroom, accomplishing the same goals within a music and a non-music classroom setting. This case study tracks and analyzes the progress toward social communicative goals of a student with ASD who

is being seen in both a music therapy group and a classroom group in his inclusive setting. Results and discussion will include anecdotal information related to the positive effects of music therapy on social and communication skills on this student on the autism spectrum that may also lead to greater understanding of the outcomes. Quantitative data of attained relationship and expressive language goals are identified and described, through the different behaviors the student portrays in the class sessions. More research needs to be done on the effect of music on the social development of students with ASD both in the music therapy setting and in the classroom setting. As mentioned before, students on the autism spectrum not only have difficulty with social and communicative goals, but transitioning within and in between classes during the day.

At the Ben Samuels Children Center, the same student on the autism spectrum has been observed in his inclusive to determine how music therapy affects his communication skills. By observing and tracking at what points throughout the music therapy session the student is attaining his goals, elements within the music can be identified and associated with specific skills. Both in the music room and the general classroom, the teachers follow the transdisciplinary approach based on the Greenspan/Wieder DIR/Floortime model (1997). The student follows a learning plan based on his Individualized Education Plans (IEP's). This plan is meant to follow goals that are structured within Greenspan's DIR (Developmental/Individual/Relationship-based) model and the six milestones Greenspan used in his technique to engage the child with ASD in a social and communicative world. The purpose of this case study is to examine the effects of music therapy on the development of the social skills of a preschooler on the autism spectrum in an inclusive setting. The total number of social skills goals outcomes for a student with

autism spectrum disorder will be compared between his inclusive music therapy and general classroom environments.

Method

Subject

This case study consisted of one four year old male student diagnosed on the autism spectrum. He was participating within the context of a group of 5-7 typically developing preschool students aged 3-5, and one other student receiving support services at the Ben Samuels Children's Center. The student with ASD who was chosen for the study was observed in each class with a special education teaching assistant, or SETA. This is the paraprofessional assigned to the same child on a 1:1 basis. The student had displayed a basic interest in music, and was considered an appropriate candidate for the study. The student with the diagnosis of Autism Spectrum Disorder, who I will refer to as "Bob" for the purposes of this study, was always required to have a SETA with him.

Research Design

This study was a quantitative and qualitative single case study design between two groups. It was conducted over a period of 10 weeks, consisting of consecutive sessions of music therapy and general classroom groups that were observed and filmed. Qualitative session notes were taken throughout the duration of the study based on videotapes of the sessions, focusing on identifying and describing behaviors that would count toward the social and communication (relationship and expressive language) goals. Quantitative notes were also taken on the total number of relationship and expressive language goals met that were taken from the student's quarterly assessed learning plan.

Consent and assent forms were drawn up, as well as a letter of interest for participation in the study for the parents of the students to sign. A letter of agreement for the Children's Center was also written for the director of the school to sign. These documents were sent to the Institutional Review Board along with its application describing the purpose of the study. A letter of approval from the IRB was then sent for the study to commence (see *Appendix I*).

Data Collection

Quantitative.

A modified version of an "Evidence of Progress Towards Goals" sheet developed by the Ben Samuels Children's Center was used to quantify the social skills goals of the student in each music and classroom session as observed by the researcher (see *Appendix H*). The social skills goals met and counted in the study were categorized into relationship and expressive language goals.

Relationship goals included:

- Initiate play interactions with a peer (associative play): This goal was met when the student used words or actions with another child or got close to another child to play.
- Maintain play interactions with a peer: This goal was met when the student copied or matched the actions of a peer with musical, verbal, or physical interactions.
- Expressive Language Goals included: Produce utterances to get another to respond: This goal was met when the student

directed a statement or question to another in his space which needed an answer

- Contingent exchange, related utterances following utterances of others: This goal was met when the students imitated the words of others or added words or phrases to the phrases of others to create conversation.

Areas that were filled out on the goal sheet included what goal (with description), type of activity, support provided, and how many times the goal was completed (quantitative summary).

Qualitative.

Extensive notes were collected on the behaviors that counted toward goals tracked in each session. These notes were analyzed in order to discover variables and themes that were present in both environments. Because of the nature of the transdisciplinary model of the Children's Center, there were added variables in use by the classroom teacher to aid in transitioning within the classroom activities, such as the use of singing. The therapist incorporated the use of visual aids (PECS) that the child knew from his classroom teacher's approach. Other variables in the qualitative outcomes included common themes which were present in both the music therapy and classroom sessions. Differences in the structure of the class for example, as well as the use of prompting by the SETA were ways in which the classes were compared. The differences in structure tended to have an effect on the predictability of the scheduling, which affected the comfort level of the student. This appeared to affect the productivity of his attaining his social (relationship and expressive language) goals. Both classroom sessions used the

methodology of DIR and this was evident in the way the therapists and teachers interacted with the students. The musical elements found in the music therapy sessions were important factors in Bob's attainment of goals. Tempo, movement in music, lyrics, rhythm, dynamics, as well as creative play and the use of instruments were additional themes discussed in the qualitative outcomes from the review of the sessions.

Data Analysis

Quantitative.

Goals relevant to the study were chosen with collaboration efforts of Amy Clarkson, MT-BC, the music therapist of the Children's Center. Relationship and expressive language goals were considered to be the types of goals conducive to the music therapy environment. The goals were then narrowed down to be more easily identifiable and to make the comparisons more efficient. Each class had different activities or actions that were able to define the completion of each goal, due to the differences between a music therapy and classroom session. Comparisons were made on the progress of developmental goals as well as any progress made based on the six milestones of the Greenspan/Weider DIR/Floortime model. Some of the goals that coincided with music, and were therefore going to be the focus of this study, were in the areas of relationship and expressive language.

Each session was viewed from the video tape, tracking one goal at a time and counting the number of times it was met. Each goal was isolated in this way and specific behaviors were counted after they were identified as a behavior counting towards a goal. The numbers were then quantified and placed in different tables (see Tables 1-5) in order for the music therapy and classroom sessions to be compared.

The quantitative data of the total of the attained goals are shown in the following five tables of the quantitative results section. The first table is a general summary of the total outcomes of the relationship and the expressive language goals completed in the music therapy sessions and the classroom sessions. This is a gross comparison between the two classes of “completed circles” the child achieved in each class that counted toward an accomplished goal. Completing a circle is a term used by Greenspan describing a child being able to interact in the world of another by completing an action of socialization and/or communication that another person has initiated (Greenspan & Wieder, 1997). Although at times the actual activities differed between the two classes, the social goals completed were counted as the same.

Tables 2 through 5 take the two relationship and two expressive language goals and put them each in a separate table where the behaviors observed and counted toward each goal in each class could be described in more detail. Figures 1.1 through 5.1 show graphs representing proportions of the total outcomes of attained goals. Total numbers of met goals that were observed by the researcher were turned into a percentage of total attained relationship and expressive language goals. Figure 1.1 represents a percentage of total number of social goals met in music therapy and classroom sessions in the areas of relationship and expressive language. Figures 2.1 through 5.2 represents total percentages of each goal attained.

Tables 2 through 5 consist of behaviors that were present in both classes, some of which have common themes in both sessions. Each table describes the behaviors that were identified in each class for each separate goal. Table 2 gives examples of representative behaviors of ways in which the student initiated play with a peer. In this

table, “makes requests or verbalizations to a peer” overlaps in both types of classes. Two similar behavioral examples would be “joins peer group to move with music” in the music therapy session and “moves to enter peer’s play space” in the classroom session. These can both be counted as an initiation of play even though one involves music with movement and one involves movement alone.

Table 3 gives examples of representative behaviors of ways in which the student maintained play with a peer. Behaviors that may be considered similar to count for this goal include “receives instrument from peer/physical contact” (music) and “trades with or receives toy from peer in same play space/physical contact” (classroom).

Table 4 consists of representative behaviors of different ways in which the student produced utterances to get another person to respond. “Requests instrument” and “requests tool/toy for project/play” may be considered similar behaviors between the music and non-music classes to count for this goal. Both of these behaviors involve the student asking for an object.

Table 5 contains representative behaviors of the final expressive language goal of contingent exchange, or ways in which the student produces related utterances following utterances. Similar behaviors between the music therapy and classroom sessions that could count toward this goal are “comments on/asks about activity schedule” (music) and “comments about project or ways of playing” (classroom).

Qualitative.

The qualitative session notes were analyzed after viewing the video tape and themes were found in the music therapy session such as musical elements, structure, and prompting that could help support the student meet his social and communicative goals.

Finding similar representative behaviors that meet the goals within the two classes made it possible to compare the data. The structure, classroom environment, activities, and other variables such as methods and materials used may have differed but the social goals met were counted as the same. Although Bob was being observed in the inclusive classroom in the music therapy and classroom sessions and different behaviors were being completed, the same goals were being met. A similar behavior in both classes for “initiating play with a peer” was “makes requests or verbalizations to peer”. Another relationship goals behavior shared between the two classes is the act of receiving or trading an object, such as an instrument or toy. Both of these behaviors count toward the goal of “maintaining play with a peer”. Another relationship goal behavior found in both music therapy and classroom sessions was imitating an action or movement. This behavior description counted toward a “maintain play with peers” goal.

There were common behaviors in both classrooms that were counted towards expressive language goals as well. The most common behavior shared between the two sessions appeared to be commenting or asking about the schedule, project, or activity going on in the class. Requesting was also a theme found in the expressive language goal area, such as requesting an instrument or a toy. Another theme appeared to be suggesting ways to play, such as instruments or toys and games. These behaviors counted toward meeting the produce utterances goal.

By finding and targeting these similar representative behaviors in the two classes, it was possible to compare the two groups and find more relevance in the way in which Bob completed his social goals. One can conclude that despite the differences in

structure and variables, it is possible for music to be a motivating factor for socialization and/or communication in the classroom.

Music Room Set Up

The music therapist at the Children's Center was Amy Clarkson, MT-BC. She set up her room with a semi-circle of chairs and a few chairs diagonally behind certain students. These students require additional prompting or redirecting throughout the session. Bob usually sat in the end seat of the semi-circle with his SETA positioned diagonally behind him. The other preschool students sat in the seats next to him in the semi-circle. There was a piano next to the circle and a chair for the MT in front of the circle with a guitar lying next to it. There was also a cabinet on one side of the room that contained a variety of instruments.

The structure of the music therapy session was often the same, beginning with a hello song, followed by a fingerplay song, an instrumental song, a creative movement song, and a goodbye song. All of these activities had opportunities for Bob to accomplish the social and communication goals described on the Evidence of Progress Towards Goals sheet used in this study.

Classroom Set Up

The special education teacher had her room arranged so that the students may work in different areas or "play stations". During the sessions that I observed, the student had free decision-making time in which he could take his nametag and bring it to the play station in which he would like to spend his time. The different areas included sensory materials such as Legos/bristle blocks, cars/trains, a kitchen set, and clay and moldable items. At the main table the special education teacher instructed a daily art project in

which she rotated her students with 2 or 3 at a time at the table. If the students seem to be spending too much time in one area, the teacher or SETA would encourage the student to move to a different area of their choice.

Quantitative Results

Table 1

*Evidence of Progress Toward Goals**Completed Circles*

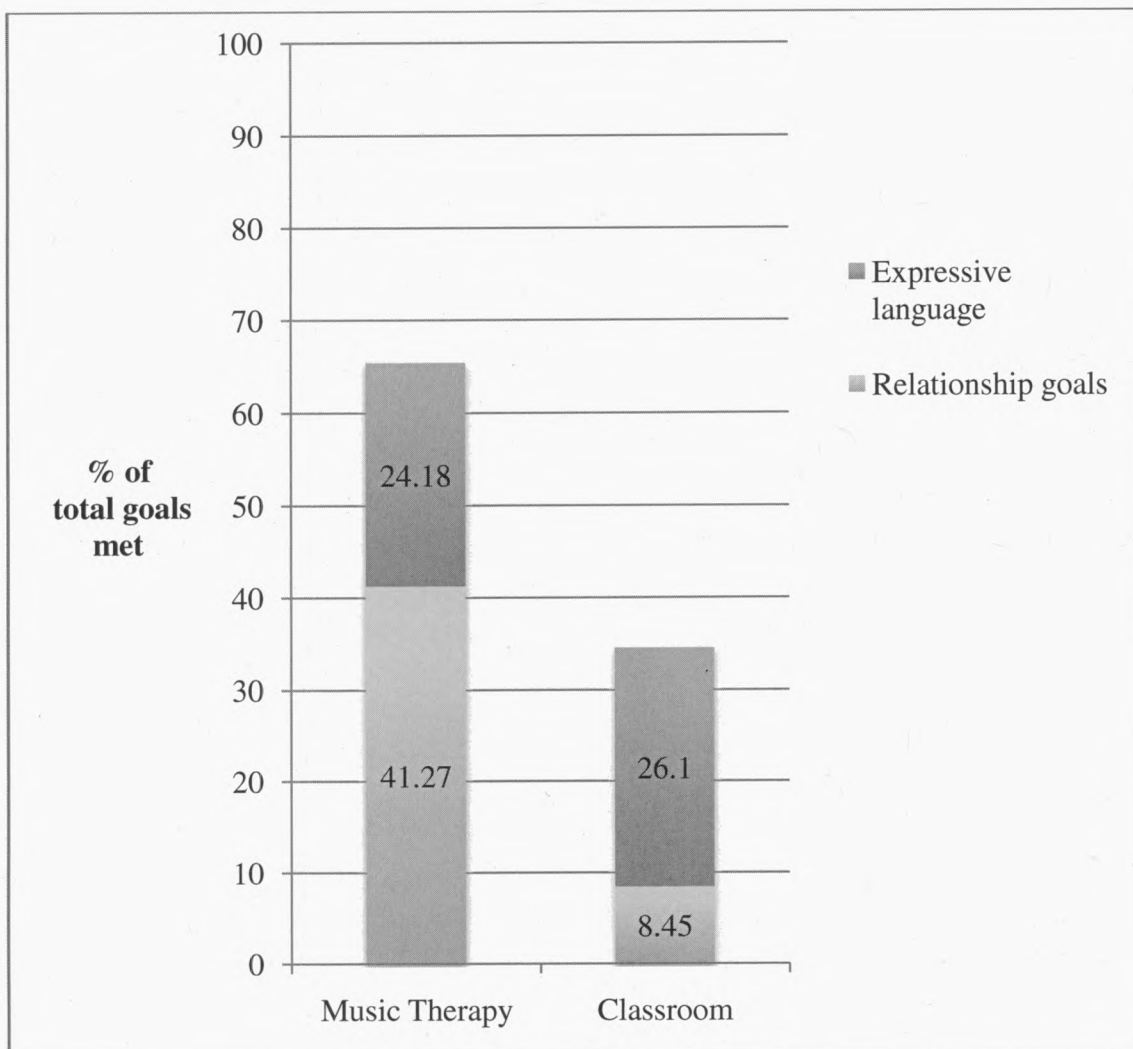
(Sessions)	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten	Totals
Relationship Goals (Music Therapy)											
Initiate Play	4	4	4	6	1	5	5	1	1	2	33
Maintain Play	12	17	31	26	12	20	8	21	24	11	182
											215
Expressive Language Goals (Music Therapy)											
Produce Utterances	7	5	6	11	3	4	6	10	11	8	71
Contingent Exchange	6	5	3	6	3	3	2	8	9	10	55
											126
Relationship Goals (Classroom)											
Initiate Play	3	0	0	7	0	3	2	1	1	4	21
Maintain Play	1	0	0	9	3	3	1	4	1	1	23
											44
Expressive Language Goals (Classroom)											
Produce Utterances	9	5	2	12	2	9	1	4	2	10	56
Contingent Exchange	12	4	8	11	2	15	7	15	0	6	80
											136

Note: Each incident noted above is described more specifically in the narrative outcome and

Tables 2-5.

Note: Discussion also becomes anecdotal context for outcomes above.

Figure 1.1. Percentage of total number of social goals met in music therapy and classroom sessions-relationship and expressive language



Results and discussion.

Table 1 displays the total number of relationship and expressive language goals met in each session over the duration of the ten sessions of the study. Results of the data show that 341 social (relationship and expressive language) goals were completed in the music therapy sessions and 180 social (relationship and expressive language) goals were completed in the classroom sessions. Figure 1.1 shows the data in a column graph with the proportions of expressive language and relationship goals divided within each bar. Results of the data indicate that more of Bob's total combined social goals (over 65%) were met within the music therapy sessions while he about 34% of them were met in the classroom sessions. The greatest difference between the two classes occurs between the "maintain play with a peer" goal. Due to the definitive structure of every music therapy session, the student had more opportunities to interact with his peers, (182 times) as it was inherent in the activities. Often within the classroom session the student had the freedom to choose to play without interacting with other children. He often worked individually with a therapist or he chose to play by himself at one of the stations without moving to another play place. He maintained play 23 times within the 10 sessions. "Contingent exchange" was the one area in which the student met more goals in the classroom (80) than in the music therapy session (55). According to Figure 1.1, 26% of his total expressive language goals were met in the classroom, only slightly more than in the music therapy sessions (24%). Bob also required prompts from his SETA during the classroom sessions more often, especially to complete the expressive language goals. The speech therapist also worked with him during a few of the classroom sessions which could have helped in his greater achievement of the contingent exchange language goals.

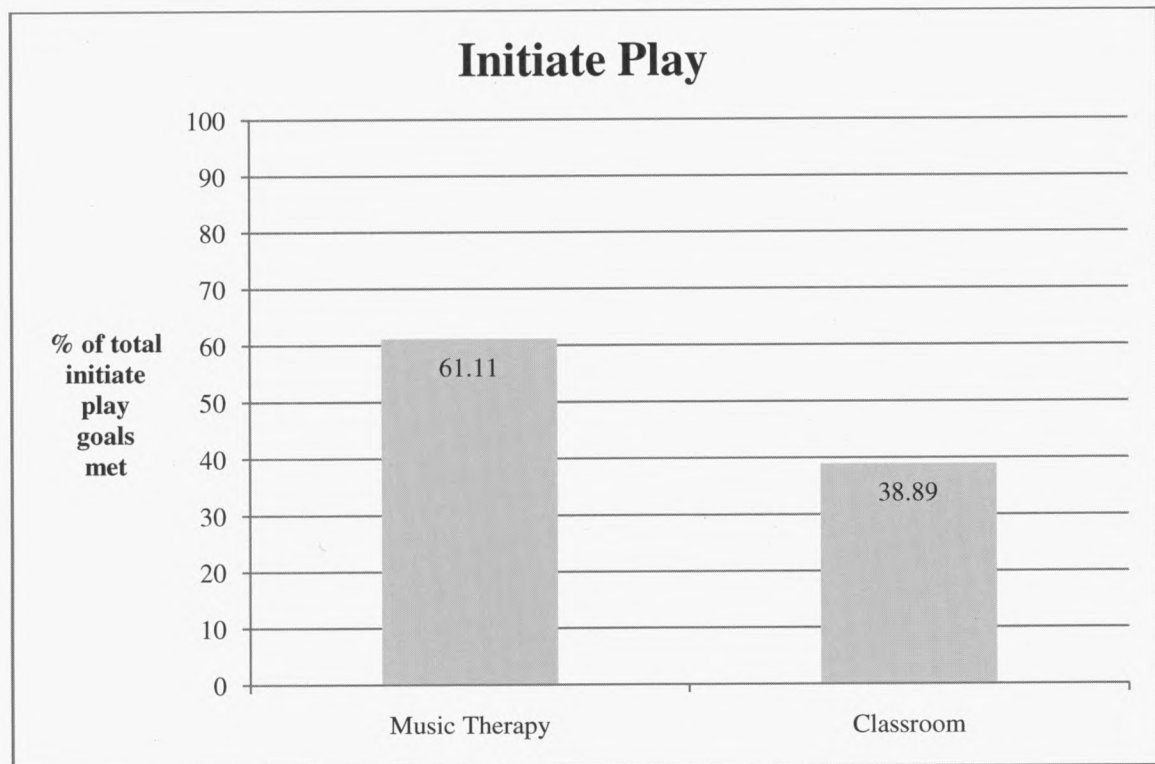
Table 2

*Relationship Goal-Initiate Play with Peer (Associative Play)**Representative Behaviors Toward Goal*

(Sessions)	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten	Totals
Music Therapy Initiate Play Goals:											
Joins peer group to move with music	0	0	2	0	0	1	0	0	0	0	3
Leads movement for peers to imitate	0	1	0	0	0	0	2	0	0	1	4
Says hello/make physical contact with peer	1	0	2	3	0	2	0	0	1	0	9
Makes requests or verbalizations to peer	2	3	0	1	0	1	1	0	0	1	9
Passes instrument to peer	1	0	0	2	1	1	2	1	0	0	8
											33
Classroom Initiate Play Goals:											
Moves toy close to peer	1	0	0	0	0	0	1	0	0	1	3
Makes requests or verbalizations to peer	2	0	0	3	0	1	0	1	0	3	10
Moves to enter peer's play space	0	0	0	1	0	2	1	0	0	0	4
Initiates play idea	0	0	0	3	0	0	0	0	0	0	3
											21

Note: Descriptions of goals and specific incidents are more detailed in the narrative outcomes.

Figure 2.1. Initiate play-relationship goal- percentage of total goals met in music therapy and classroom sessions



Results and discussion.

According to the data in Table 2, “Bob” completed the goal of initiating play 33 times in the music therapy sessions compared to 21 times in the classroom sessions. Figure 2.1 illustrates that 61% of his initiated play goals were met within the music therapy sessions and 38% were met in the classroom. Although the activities or actions are different, the social goals met are equivalent and can be compared when looking at the intent behind the action. For example, “leads movement for peers to imitate” and “initiates play idea” both have the intent of the student creating an original action of play to share with their peers.

One behavior that counted toward the initiating play goal that did not have a specific behavior in the classroom session to compare it to was the “says hello/make physical contact with peer” behavior. This was a specific behavior inherent in the “Hello Song” which was sung every day at the beginning of the music therapy session. This is another example of how the structure of a session can help offer opportunities for the student with ASD to predict his schedule and accomplish his social goals.

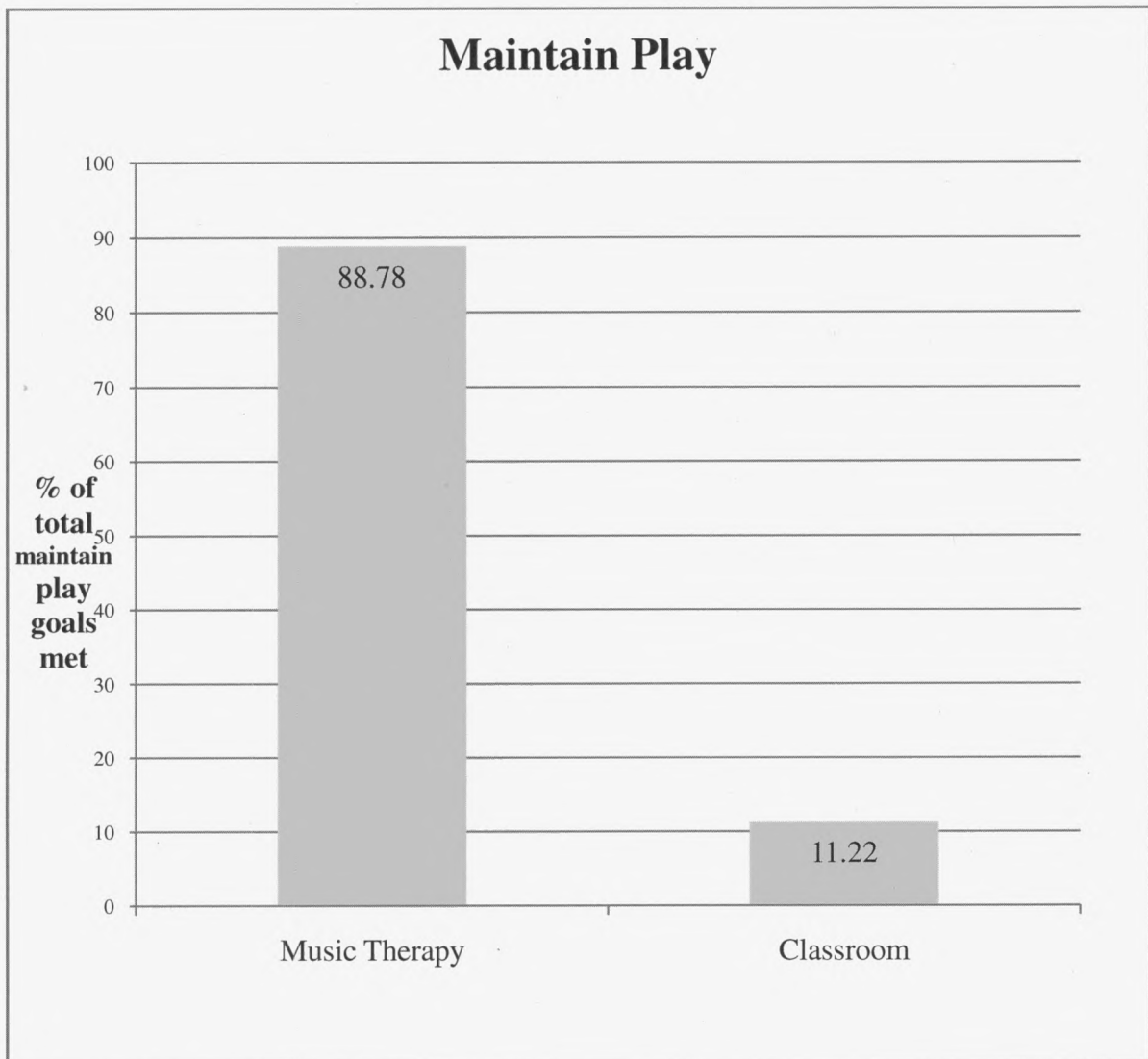
Table 3

*Relationship Goal-Maintain Play with Peer**Representative Behaviors Toward Goal*

(Sessions)	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten	Totals
Music Therapy Maintain Play Goals:											
Receives instrument from peer/physical contact	1	1	1	0	0	2	0	1	1	1	8
Match actions of peer during instrumental play: shake faster/slower, up/down	7	7	13	14	3	2	3	2	0	3	54
Imitate actions of peer during movement with music	4	9	17	12	9	16	5	18	23	7	120
											182
Classroom Maintain Play Goals:											
Shares play space with peer	1	0	0	3	2	0	1	1	0	1	9
Trades with or receives toy from peer in same play space/physical contact	0	0	0	3	0	0	0	3	1	0	7
Imitates actions of peer in pretend play within same play space	0	0	0	3	1	3	0	0	0	0	7
											23

Note: Descriptions of goals and specific incidents are more detailed in the narrative outcomes.

Figure 3.1. Maintain play-relationship goal- percentage of total met in music therapy and classroom sessions



Results and discussion.

Table 3 shows the biggest difference in the outcomes of the goals between the music therapy and classroom sessions. The results show that 182 of the maintain play with peer goal were met in the music therapy session compared to a total of 23 in the classroom session. The results in Figure 3.1 indicate that he met 88% of his total maintained play goals within his music therapy sessions and 11% in the classroom sessions. The structure of the music therapy session consists of activities in which the music therapist allows for opportunities for the student to engage in social behaviors in which a peer can initiate a movement during an instrumental or movement activity and the rest of the class can imitate that movement. These actions come during the lyrics of the song or are prompted by the MT.

Letting the child take the lead and come up with the ideas during play is based in the Greenspan technique. Using this method gives way for the child to open and close circles of communication. The music therapist would often offer the opportunity to engage in a circle of communication by using the different musical dimensions and elements. Through song lyrics, rhythms, and tempo, for example, the music was able to provide support and a firm foundation upon which Bob could meet his social and/or communication. "Bob" had times where he shared the play space with peers in the classroom, it was more easily identified in the music therapy sessions due to the specific directions the MT gave, as each action and imitation or movement was counted as a completed goal.

Table 4

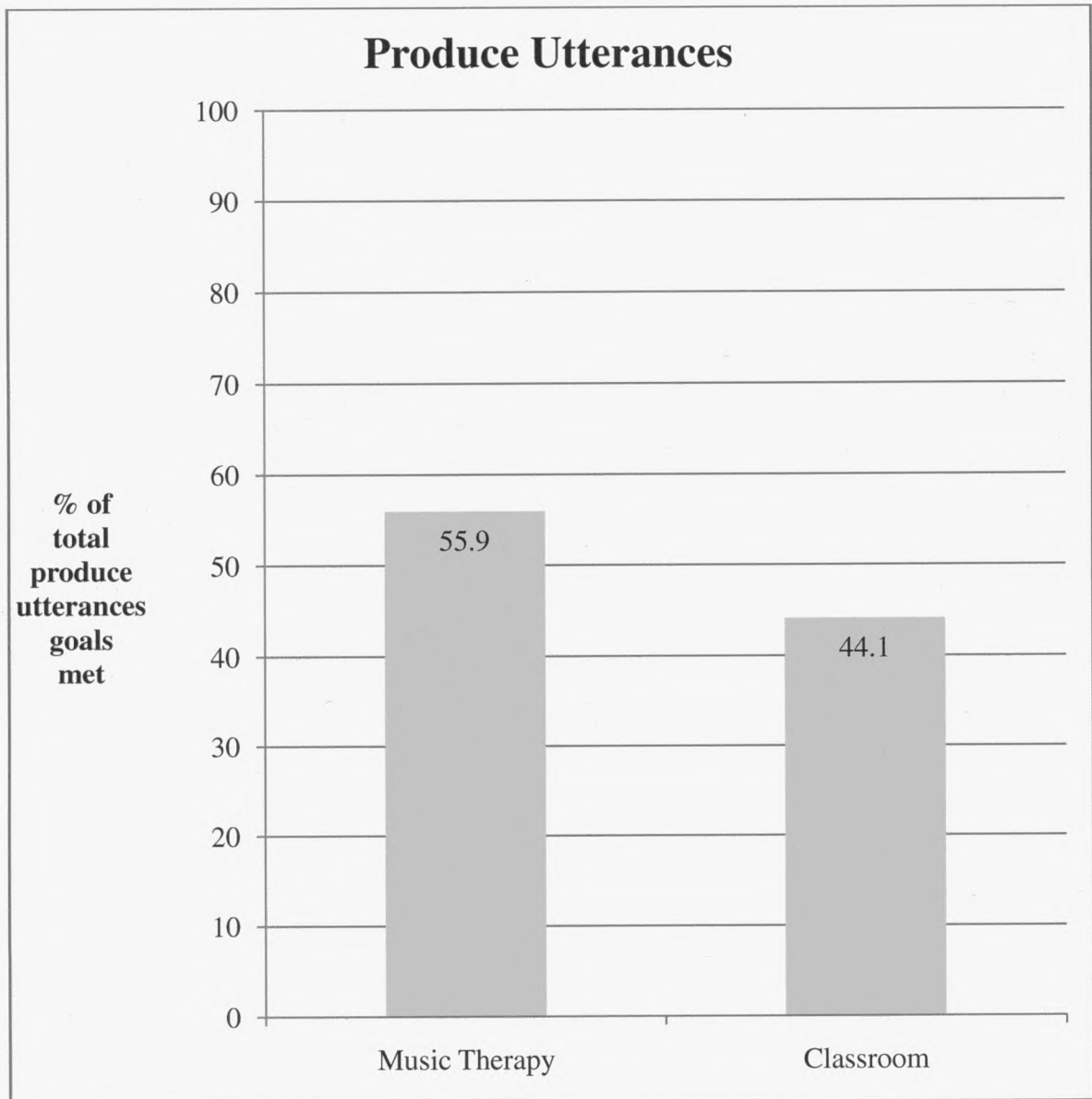
*Expressive Language Goal-Produce Utterances to Get Another Person to Respond**Representative Behaviors Toward Goal*

(Sessions)	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten	Totals
Music Therapy Produce Utterances Goals:											
Suggests moving body part	1	0	1	2	1	1	0	0	0	0	6
Suggests way to play instrument	1	0	0	2	0	0	1	0	0	0	4
Requests instrument	1	1	0	2	0	0	0	4	4	8	20
Requests song	1	0	5	3	0	0	1	1	0	0	11
Asks about activity or schedule	1	0	0	1	0	0	1	1	3	0	7
Requests peer to be partner	1	3	0	1	0	1	1	0	0	0	7
Other (i.e.: asks to turn on lights)	1	1	0	0	2	2	2	4	4	0	16
											71
Classroom Produce Utterances Goals:											
Requests tool/toy for project/play	1	0	0	2	0	0	0	4	1	1	9
Asks for help during play	2	5	0	1	0	1	0	0	0	2	11
Asks about project/story	5	0	1	1	0	4	1	0	0	0	12
Suggests ways to play to peer	0	0	0	7	0	4	0	0	1	4	16
Other	1	0	1	1	2	0	0	0	0	3	8
											56

Note: Descriptions of goals and specific incidents are more detailed in the narrative outcomes.

Note: Many of the goals above overlap with contingent exchange goals in table 5

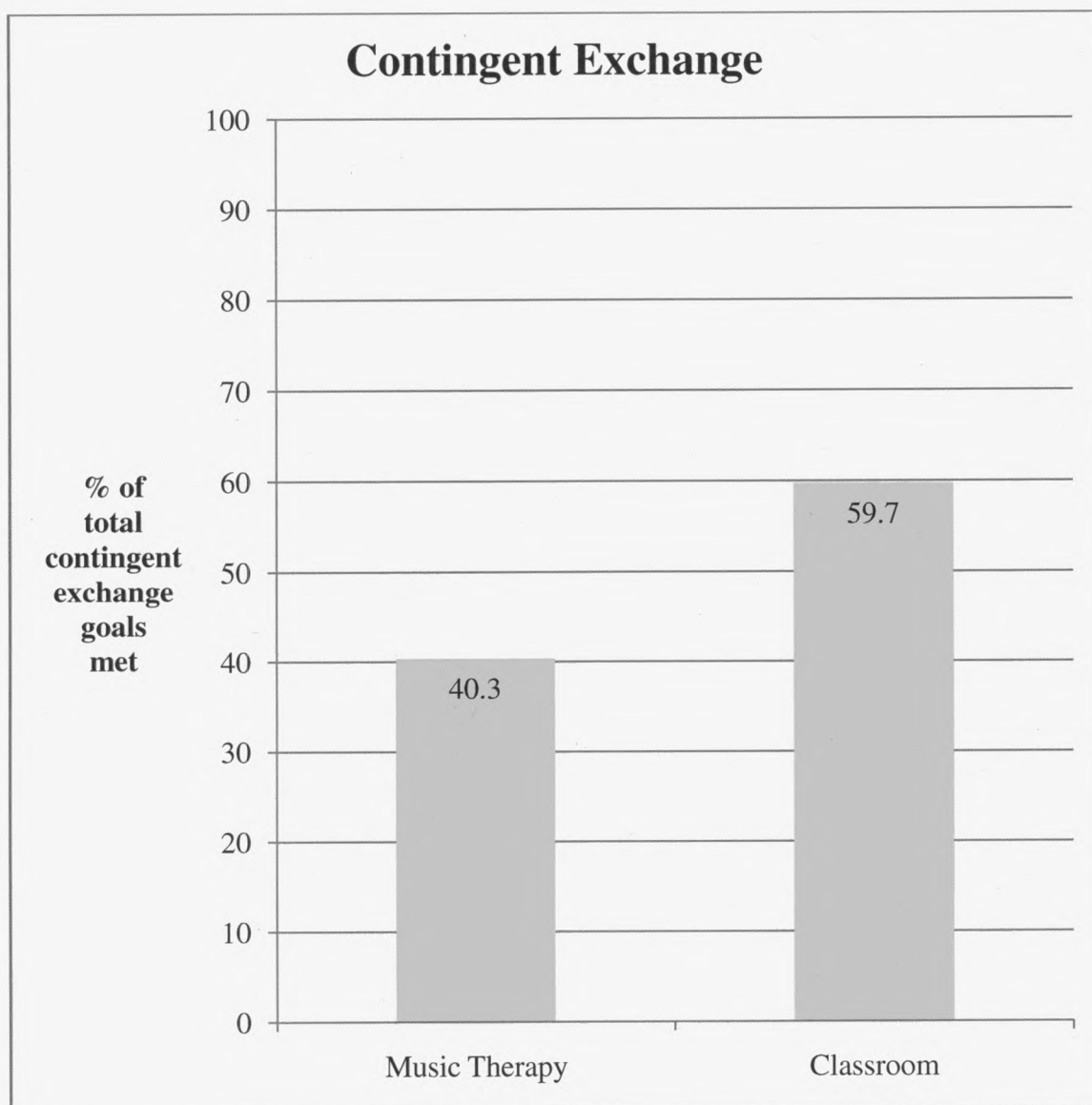
Figure 4.1. Produce utterances-expressive language goal-percentage of total goals met in music therapy and classroom sessions



Results and discussion.

The results of Table 4 indicate that Bob produced a total of 71 utterances within the 10 observed music therapy sessions compared to 56 utterances within the 10 observed classroom sessions. Figure 4.1 illustrates that he met 55% of his produced utterances goals in the music therapy sessions and 44% in the classroom. The expressive language goals brought more variance in the types of behaviors represented in each session. Table 4 not only has more types of behaviors represented in the music therapy sessions, but the behaviors are more specific to the music activities. For example, “suggests moving body part” refers to a specific song that is sung during each session. “Requests instrument” and “requests tool/toy for project/play” during the classroom session may be more comparable because he is producing an utterance to ask for an object. By “suggesting ways to play an instrument” and “suggesting ways to play to a peer” he is producing utterances with ideas of play. This is also an example of the ways these goals tend to overlap, as this is also a way of initiating play. It was interesting to note that Bob only made requests for specific activities in the music sessions (“requests song”), and only “asks for help during play” during the classroom sessions.

Figure 5.1. Contingent exchange-expressive language goal—percentage of total goals met in music therapy and classroom sessions



Results and discussion.

Of the four goals observed and quantified in this study, contingent exchange was the only one in which the total goals met were higher in the classroom session than in the music therapy session. The results displayed in Table 5 indicate that 80 contingent exchanges were attained in the classroom sessions compared to 54 in the music therapy sessions. Figure 5.1 illustrates that 59% of Bob's total contingent exchange goals were met in the classroom and 40% were met in the music therapy sessions. It has already been discussed that the SETA and the speech therapist were given more individual time with Bob in the classroom sessions and more prompting and verbal cuing was noted. The music therapy sessions were also structured in a way that more visual and aural cues were used, and much of the focus was geared towards movement and socialization. Much of the focus in the music therapy sessions was focused on the music and it was therefore important to listen to and communicate through the music, and not as much through words.

Qualitative Outcomes

Structure.

The music therapy session had a definitive structure to it. Different songs may have been used at different sessions, but it was led by a therapist and was more predictable than the classroom group. The same types of songs were being utilized in each session beginning with the "Hello Song" and ending with the "Goodbye Song". In between were the same amount of songs with a fingerplay, instrumental, and movement song in each session. The students followed the PECS schedule that the music therapist

provided, which she sang and used her voice to transition the students toward the next activity. In the classroom group, the student was able to choose what station he wanted to play in and although the teachers were prompting him to change activities, it was not always required. The following session notes discuss events that occurred during the specific sessions, incorporating themes present throughout the music therapy sessions.

Session one-prompting.

After reviewing the first set of music therapy and classroom sessions, I was able to conclude that Bob appeared to need more prompting during the classroom group and seemed more easily redirected back to the activity in music if he did get distracted. Many of the prompts used in the music session are cues from within the music itself. It was interesting to observe the use of music used as a teaching device in the classroom group. The speech therapist used singing with Bob after she saw him singing when he was making an art project. The ST believes he sings to himself as a “self-soothing device” and often uses his singing when he is asked to complete a project or try something new. The teacher also sings directions during transitions such as “clean up” time. This is showing how music is used as a prompt to attain his goals in the classroom.

Session two-tempo.

After analyzing these two class sessions, one might begin to see how see how the elements in the music helped to cue Bob to accomplish his goals. The rhythm and tempo assist him in joining in movement with a peer or imitate movements as ways of maintaining play. The element of tempo was used when he maintained play by matching

the tempo of the egg shaker by going faster or slower. He maintained focus with his peers with the continuous support of the music and its elements.

If given the choice, it was interesting to note that Bob chose not to play with his peers when asked in the classroom session. An example of this was how he took apart the train and rebuilt it over and over again instead of trying something new. Repetitive actions and resisting change is a common characteristic within the ASD diagnosis. However, in the music therapy session, contingent exchange goals were achieved when he answered the music therapist when what animal he would like to be and what instrument he would like to pretend to play. These are both new and different activities, and offering music and movement to the student appeared to create interest and motivation to accomplish his relationship goals in particular. The music therapist would use tempo increases to get Bob to move or play his instruments faster or slower to the music.

Session three-movement in music

Although Bob rotated to another station in his classroom station today, he still did not engage with his peers as much as he did in his music therapy session. There were other peers seated at the table with Bob, but he was focused on his own project and the speech therapist engaged him in conversation while prompting expressive language goals on an individual level. There still appeared to be more opportunities in the structured music therapy setting for the accomplishment of relationship goals within the inclusive group setting. The element of movement within the music therapy group is an extremely important aspect and is very relevant when quantifying the relationship goals. It appears that movement helped Bob achieve many of his initiate play and maintain play goals.

The music therapist used the elements of rhythm as well as the lyrics in the song to help prompt the directions as to what movements Bob should make, which led to the attainment of his goals. The music was a constant support and motivating factor to lead Bob to the movement and the lyrics in the song led by the music therapist often served as prompts to meet his goals.

Session four-lyrics.

Today was the second time I noticed Bob singing to himself during the classroom session. He was singing, "I'm a Little Teapot" which is the song he suggested that the class sing during the music therapy session. This is an example of a way in which music may have crossed over into the classroom. He had begun singing during many of the vocal activities in the music therapy sessions. He could follow the PEC schedule that the MT provided and verbalize what is coming next or request something similar that he knew the class had done last time. The lyrics in the songs themselves provide directions as to how to play the instruments (direction, tempo, dynamic), as well as ways to move his own body. As the music therapy sessions have progressed, I have noticed him participating more often during the echo songs and would sing independently at times. It was interesting to note that he didn't appear to prefer to sing in unison with the rest of the group, but he would during the echo songs. His speech therapist had stated she believed he sings on his own in class to self-soothe and transition himself into doing something new. She often used the lyrics of songs in the classroom not only for transition but to teach him a new activity like reading a book or starting an art project. The ST would provide social and verbal support for Bob in the classroom and gradually fade her support so that he would be able to play on his own with the peer by the end of the session. Both

the MT using the PECS during music therapy and the ST providing support in the classroom were helpful methods of prompting to help Bob achieve more of his social goals.

Session five-the instruments.

The instruments used in the music therapy session seemed to provide motivation for Bob to meet his expressive language as well as relationship goals. For example, Bob initiated play by passing the frog guiro to his peer during the hello song, and achieved contingent exchange by asking for a drum when he saw the drums. Bob has also requested to play the guitar when he sees it and asks about new instruments when the music therapist takes them out to be passed around. Although it was more difficult to track Bob's goals outside on the playground during the classroom session, I noticed that all of the relationship and expressive language goals he did achieve were done without any support or prompting by a SETA or teacher. For example, Bob had noticed when the train had passed outside and responded by asking where the train was. The ST had told me of her belief in the importance of play which is part of their philosophy at the Children's Center. The music therapy session, as mentioned before, has a definitive structure to it as to allow a certain level of predictability. The instruments can provide cues for what is coming next in the session.

Session six-transitioning through music.

The music therapy sessions were structured with a PEC schedule so that the students were able to see and predict which activity would come next and what the order of the actions would be within each activity. This is a factor that may have contributed to the higher amount of unprompted relationship goals achieved by Bob within the music

therapy session. For example, Bob played different instruments in the music therapy sessions, but within similar frameworks of the hello songs or instrumental songs so he knew what to do with the new instruments. This offers him easier transitions into trying new things within the framework of the familiar songs that he knows. He initiated play in today's session by passing a rainstick to a peer and then maintained play by sharing the instrument with her and playing it together. The classroom session was structured differently than the music session. Although it appeared to give fewer opportunities for Bob to achieve relationship goals, there were more spaces for verbalizations because of the freedom of choice and space given to the students. The ST or SETA provided much 1:1 support for Bob in the classroom session which may have contributed to his higher total of utterances and contingent exchanges than in the music therapy session. Also, the music therapy session provided many aural cues within the music that Bob and the class knew they needed to listen for to be able to do the activity, therefore leading to fewer verbalizations.

Session seven-dynamics.

The music therapist often would use a "cool down" song before they sang the goodbye song at the end of the session. It had a slow tempo and soft dynamic which served to bring down the energy of the room and relax the students to prepare them for their transition back to their classroom. One of the songs they sang became one of the songs Bob would request (he would also look at the PEC schedule). During today's session he maintained play by playing a chime bar along with a peer and was able to match the slow tempo and soft dynamic that the music therapist had set.

Today the order of the sessions was switched and Bob had his classroom session first. Although switching the order of the classes may not have appeared to have an immediate difference on Bob's attainment of his goals, I had noticed that he appeared to need fewer prompts in the music therapy sessions than in the classroom sessions. I believe this may have to do with the use of the PEC schedule used by the MT. It could also be due to the individual attention and prompting he gets in the classroom prior to the music therapy session. During most of today's classroom session Bob was working on an art project with the speech therapist. Although peers were present at the table, he didn't appear interested in those around him, but remained focused on his project and what the therapist was helping him to do. Bob appears to rely on and be comfortable with the structure and predictability of the scheduling in music and many of his verbalizations stem from knowing the schedule of the class. I observed Bob initiating play with his peers during the drumming song when he suggested putting the drum on his head, placing his own drum on top of others' and starting a "drum tower". He also requested a peer to stand up and join him in the marching circle in the movement song. Many of his utterances are similar from week to week and reappear in the same place in the music therapy class. He seems to be comfortable with the class, which could be a reason that the ST suggests he uses music with soft dynamics to calm himself or "self-soothe" at other points throughout the day when he may be less familiar with his environment or new projects he may have to tackle.

Session eight-creative play in music

There appear to be more opportunities for Bob to attain his relationship goals in the music therapy sessions since it is more structured toward peer interaction. The

movement songs in particular allow for this sort of freedom of creative play with peers with movement. The rhythm provides a beat and structure the students must stay within while pretending to be a certain animal and the lyrics provide the directions as to the different things the animals are doing. The students are up and marching around the room pretending to swim, fly, gallop, etc. Today, Bob maintained play with his peers by matching their movements when he was pretending to be a fish. Although the classroom sessions have had more opportunities for him to achieve his expressive language goals, he does appear to need more prompting to verbalize in the classroom sessions than in the music therapy sessions. Even though the goal outcome for expressive language is slightly higher in the classroom, he verbalizes more independently in the music therapy sessions.

Session nine-rhythm

Predictability and structure appear to be common ways Bob uses the music therapy session to achieve his goals. He often asks questions about the schedule, sings along with the songs or completes the lyrics of songs being presented. He produced contingent exchange in the music therapy session when the class was discussing the animals inside the ocean drum and he said, "That's a sea horse". He also answered the MT's questions about animals that live in the sea during the drumming song. The element of rhythm acts as a support during the drumming activity when the music therapist beat the drum along with the syllables of the sea animals. The SETAS during the classroom session do an excellent job of asking questions or "prompting" Bob to engage in verbalizations and socializing when possible. Bob produced utterances to get another person to respond by asking the SETA if he could have the ball. Bob also asked him if he was ready when he was about to throw it. These utterances, I observed, were unprompted

and occurred after he had been prompted to maintain play. What I have found by observing both of these particular sessions is that there is a crossover and the classes definitely seem to work together. For example, the music therapist was singing songs about sea animals through rhythmic drumming songs when the classroom teacher was teaching about ocean and fish in the classroom.

Session ten-DIR in music.

Perhaps another reason fewer prompts occur in the music therapy sessions is due to the relationship between the music therapist and the students during the sessions. She leaves spaces for the students to create their own ideas and offer their own movement suggestions, animals to act like, and instruments to pretend to play. This “entering the child’s world” or “meeting the child at his level” is part of the Greenspan philosophy also used as part of the play therapy technique in the classroom sessions. His contingent exchange occurred in the music therapy session when he began to verbalize the names of the sea animals as he was beating their names on the drum. The goals met throughout the sessions may be thought of as closed circles of communication in which the therapist or teacher that engaged the student had received a response from the student. The drumming to the syllables of the sea animal activity may show a crossover of learning from his classroom where they were also learning about sea animals.

Results and discussion.

There were different themes present in the music therapy sessions that became important aspects of Bob’s attainment of his relationship and expressive language goals. The structure of the session was considered a positive factor in the music therapy sessions. Bob was able to predict what was next in his schedule and felt comfortable

requesting upcoming songs or activities. Prompting was also an important part of both the music therapy and classroom sessions. The musical element of tempo was important as part of the music to provide direction and support. Movement in music also played a major part in Bob's physical actions and attainment of relationship goals. The lyrics in the songs sung and moved to provided support and direction as well. The instruments in the music therapy sessions served as sensory objects as well as visual and aural cues which helped Bob to meet his goals. Music in the music therapy sessions also provided transitions between activities. The musical element of dynamics was often used to transition Bob into a more relaxed state after being very active during throughout the session. Creative play was also used often within the music therapy sessions during the movement songs. The musical element of rhythm was important to provide cueing and direction in attaining his social goals as well. The DIR influence is evident in the way in which the music therapist interacts with Bob and the other students. Each goal met is an opened and closed circle of communication.

Conclusion and Considerations for Future Study

Combining a qualitative and quantitative research method has helped to illustrate the positive effect music therapy can have on the social communication skills of a child with ASD in an inclusive classroom. By observing the same child in a music therapy and classroom group, it is possible to see how effective music interventions are on social communication skills and specific relationship and expressive language goals. Through this kind of observation it was possible to determine in what ways music may be incorporated in a music therapy session as well as throughout the rest of the day as part of the transdisciplinary approach at the Children's Center or any other inclusive school

setting. This study has illustrated the use of music as a transdisciplinary tool to accomplish social and communicative goals to help meet the needs of the child on the autism spectrum in an inclusive setting. By comparing the data in the social goals tables, the results of this study conclude that more relationship and expressive language goals combined were accomplished in the music session than in the classroom session, and with fewer prompts. The results of the data in both the tables and the graphs indicate that approximately 65% of the total social goals achieved were met in the music therapy sessions and approximately 34% were achieved in the classroom. The majority of the goals achieved in the music therapy session were relationship goals. Although approximately 2% more of the expressive language goals achieved were reached in the classroom session, more prompts and individual assistance were required.

It was difficult to equally compare the two classroom sessions due to the difference in structures of the sessions. The music therapy session was predictable, had a definite schedule that the student could follow, and didn't require as much prompting. The setting of the classroom session occasionally changed as well, for example when the class was held outside. For future studies, the variables should be equal and it may be beneficial for both groups to be led by the teacher. The total number of behaviors found to represent each goal were not always equal, and the behaviors noted were determined to count as goals was subjective.

Technical problems also seemed to exist as well. At times it was difficult to hear the student due to noise in the classroom or because of his voice being rather low, or the position or distance of the camera from the subject. A consideration for the future may be for the subject to wear a wireless microphone if he were agreeable.

Results of this case study indicate that music therapy could be a positive intervention for children on the autism spectrum in their achievement of social communicative goals in the inclusive classroom. With structure and predictability, fewer prompts were required with this subject in the music therapy sessions. A confounding variable to be explored might be the student's use of music within the classroom environment to help him with transitioning and exploring new activities. This may have been a result of his experience in his music therapy sessions with his therapist and peers. More music therapy studies need to be performed with children on the autism spectrum in an inclusive environment and their social and communication skills. The trend toward inclusion is increasing and music therapy has proven to show positive results within the music therapy session. Music may also be used as a transdisciplinary tool to be used in other classes as a transitioning and learning tool.

References

- Alvin, J. & Warwick, A. (2nd ed.). (1991). *Music therapy for the autistic child*. New York: Oxford University Press.
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders: DSM-IV-TR* (4th ed., pp. 69-84). Washington, DC: Author
- American Society of Human Genetics. (2004). *X-linked mental retardation and autism are associated with a mutation in the NLGN4 gene, a member of the neuroligin family*. pp. 1-9
- Baranek, G.T. (2002). Efficacy of sensory and motor interventions for children with autism. *Journal of Autism and Developmental Disorders*, 32 (5) 397-422
- Berger, D. S. (2002). *Music therapy, sensory integration and the autistic child*. London: J. Kingsley Publishers.
- Brownell, M. D. (2002). Musically adapted social stories to modify behaviours in students with autism: Four case studies. *Journal of Music Therapy*, 39, 117-144.
- Caltabiano, A. (2010). *The impact of music therapy on the social behaviours of children with autism in a structured outdoor inclusive setting*. Submitted bachelor's thesis, University of Sydney.
- Carnahan, C., Basham, J., & Musti-Rao, S. (2009a). A low-technology strategy for increasing engagement of students with autism and significant learning needs. *Exceptionality*, 17, 76-87

- Carnahan, C., Musti-Rao, S., & Bailey, J. (2009b). Promoting active engagement in small group learning experiences for students with autism and significant learning needs. *Education and Treatment of Children, 32*, 37-62.
- Carpente, J. (2009). Contributions of Nordoff-Robbins Music Therapy Within a Developmental, Individual-Differences, Relationship-Based (DIR)/Floortime Framework to the Treatment of Children with Autism: Four Case Studies. Submitted Dissertation, Temple University, Pennsylvania
- Case-Smith, J. & Arbesman, M. (2008). Evidence-based review of interventions for autism used in or of relevance to occupational therapy. *The American Journal of Occupational Therapy, 62*, 416-429
- Centers for Disease Control and Prevention. (2009). Prevalence of the Autism Spectrum Disorders (ASD) in multiple areas of the United States, 2004-2006. *Autism and Developmental Disabilities Monitoring Network*.
- Chou, Y. (2008). *The effect of music therapy and peer-mediated interventions on social-communicative responses of children with Autism Spectrum Disorders*. Submitted master's thesis, University of Kansas.
- Clarkson, A. (2009). Sound relationships: Music therapy for children with Autistic Spectrum Disorder in an inclusive preschool setting. In S. L. Brooke (Ed.). *The use of creative therapies with Autism Spectrum Disorders*. (pp. 255-275). Springfield, IL: C.C. Thomas Publisher.

- Corsello, C. M., (2005). Early intervention in autism. *Infants & Young Children*, 18 (2), 74-85.
- Crain, W. (2005). *Theories of development concepts and applications*. Upper Saddle River, NJ. Prentice Hall Publisher
- Dawson, G., Meltzoff, A. N., Osterling, J., Rinaldi, J., & Brown, E. (1998). Children with autism fail to orient to naturally occurring social stimuli. *Journal of Autism and Developmental Disorders*, 28 (6), 479-485
- Dawson, G., Carver, L., Meltzoff, A. N., Panagiotides, H., Mcpartland, J., & Webb, S. J. (2002). Neural correlates of face and object recognition in young children with Autism Spectrum Disorder, developmental delay, and typical development. *Child Development*, 73 (3), 700-717
- Edgerton, C. L. (1994). The effect of improvisational music therapy on the communicative behaviours of autistic children. *Journal of Music Therapy*, 31, 31-62.
- Fombonne, E. (2005). Epidemiology of Autistic disorder and other Pervasive Developmental disorders. *Journal of Clinical Psychiatry*, 66(10), 3-8
- Giangreco, M. F., Edelman, S. W., Broer, S. M., Doyle, M. B. (2001). Paraprofessional support of students with disabilities: Literature from the past decade. *Council for Exceptional Children*, 68 (1), 45-63.

- Gold, C., Wigram, T., & Elefant, C. (2006). Music therapy for autistic spectrum disorder. *Cochrane Database of Systematic Reviews*, (2). Art. No: CD004381.doi:10.1002/14651858.CD004381.pub2.
- Goodman, K. D. (2007). *Music therapy groupwork with special needs children: The evolving process*. Springfield, IL: C.C. Thomas Publisher.
- Greenspan, S. I. & Wieder, S. (1997). *The child with special needs: Encouraging intellectual and emotional growth*. Cambridge, Books, MA: Perseus Publisher
- Greenspan, S. I. & Wieder, S. (2006). *Engaging autism*. Cambridge, MA: Da Capo Press.
- Havlat, J. J. (2006). The Effects of Music Therapy on the Interaction of Verbal and Non-verbal Skills of Students with Moderate to Severe Autism. Submitted Thesis, California State University San Marcos.
- Kanner, L. (1943). Autistic disturbances of affective contact. *Nervous Child*, 2, 217-250.
- Kanner, L., Rodriguez, A., & Ashenden, B. (1972). How far can autistic children go in matters of social adaptation? *Journal of Autism and Childhood Schizophrenia*, 2 (1), 9-33.
- Kaplan, R. S. (2005). An analysis of music therapy program goals and outcomes for clients with diagnoses on the autism spectrum. *Journal of Music Therapy*, 42(1), 2-19.

- Kern, P., & Aldridge, D. (2006). Using embedded music therapy interventions to support outdoor play of young children with autism in an inclusive community-based child care program. *Journal of Music Therapy*, 43 (4), 270-294.
- Kern, P., Wakeford, L., & Aldridge, D. (2007). Improving the performance of a young child with autism during self-care tasks using embedded song interventions: A case study. *Music Therapy Perspectives*, 25 (1), 43-51.
- Kim, J., Wigram, T., & Gold, C. (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
- Lim, H. A. (2009). Use of music to improve speech production in children with Autism Spectrum Disorders: Theoretical orientation. *Music Therapy Perspectives*, 27 (2), 103-114.
- Longley, C. D. (2007). *The use of music to stimulate joint attention as a developmental step in the language acquisition of children with autism: A descriptive case study*. Unpublished master's thesis, Montclair State University, Upper Montclair, NJ
- Magyar, C. L., Pandolfi, V. (2007). Factor structure evaluation of the Childhood Autism Rating Scale. *Journal of Autism and Developmental Disorders*, 37, 1787-1794.
- Mesibov, G. B., & Shea, V. (1996). Full inclusion and students with autism. *Journal of Autism and Developmental Disorders*, 26 (3), 337-346,

- Nadig, A. S., Ozonoff, S., Young, G. S., Rozga, A., Sigman, M., Rogers, S. (2007). A prospective study of response to name in infants at risk for autism. *Pediatrics & Adolescent Medicine*, 161 (4), 378-383.
- National Autism Center. (2009). National standards project: Addressing the need for evidence-based practice guidelines for autism spectrum disorder. Findings and conclusions. Retrieved from <http://www.nationalautismcenter.org/pdf/NAC%20Findings%20&20Conclusions.pdf>.
- Nordoff, P., & Robbins, C. (2007). *Creative music therapy: A guide to fostering clinical musicianship* (4th ed.). Gilsum, NH: Barcelona Publishers.
- Oller, D. K., Niyogi, P., Gray, S., Richards, J. A., Gilkerson, J., Xu, D., Yapanel, U., & Warren, S.F. (2010). Automated vocal analysis of naturalistic recordings from children with autism, language delay, and typical development. *PNAS*, 1-6
- Parker, S. K., Schwartz, B., Todd, J., & Pickering, L. K. (2004). Thimerosal-containing vaccines and Autistic Spectrum Disorder: A critical review of published original data. *Pediatrics*, 114, 793-804
- Rellini, E., Tortolani, D., Trillo, S., Carbone, S., & Montecchi, F. (2004). Childhood Autism Rating Scale (CARS) and Autism Behavior Checklist (ABC) correspondence and conflicts with DSM-IV criteria in diagnosis of autism. *Journal of Autism and Developmental Disorders*, 34 (6), 703-708.

- Robertson, K., Chamberlain, B., & Kasari, C. (2003). General education teachers' relationships with included students with autism. *Journal of Autism and Developmental Disorders, 33* (2), 123-130.
- Rogers, S. J. (2000). Interventions that facilitate socialization in children with autism. *Journal of Autism and Developmental Disorders, 30* (5), 399-409.
- Rosenwasser, B. & Axelrod, S. (2001). The contributions of applied behavior analysis to the education of people with autism. *Behavior Modification, 22*, (5), 671-677.
- Szatmari, P. (1992). The validity of Autistic Spectrum Disorders: A literature review. *Journal of Autism and Developmental Disorders, 22* (4) 583-600.
- Thaut, M.H. (1984). A music therapy treatment model for autistic children. *Music Therapy Perspectives, 2* (4), 7-13
- Walworth, D. D. (2007). The use of music therapy within the SCERTS model for children with autism spectrum disorder. *Journal of Music Therapy, 44*(1), 2-22.
- Walworth, D. D., Register, D., & Engel, J. N. (2009). Using the SCERTS model assessment tool to identify music therapy goals for clients with Autism Spectrum Disorder. *Journal of Music Therapy, 46* (3) 204-216.
- Weiss, M. J. (2001). Expanding intervention in intensive programs for children with autism: The inclusion of natural environment training and fluency based instruction. *The Behavior Analyst Today, 2* (3), 183-185.

Whipple, J. (2004). Music in intervention for children and adolescents with autism: A meta-analysis. *Journal of Music Therapy, 41*, 90-106.

Yoder, P. & Stone, W. (2006). Randomized comparison of two communication interventions for preschoolers with Autism Spectrum Disorders. *Journal of Consulting and Clinical Psychology, 74* (3) 426-435..

*Appendix A***Raw Data-Session Observations****Music therapy session one.**

Relationship goals Bob accomplished in this session include initiating play with a peer by touching a student and waving hello, telling a student to sit down as he began an activity, touching an instrument while a peer was playing, and asking a peer to be his partner in a song. These goals were all accomplished without any prompts from his SETA. Bob maintained play with a peer next to him by making physical contact when he received her instrument. He also maintained play when he looked at peers and imitated their actions during the hello song by clapping his hands, stretching his neck, and getting up out of his chair like they did. He copied the way they shook their eggs (fast, up and down, tapping with a friend, etc.). He also maintained play during the movement song by imitating his peers' animal movements such as jumping like a frog and flying like a bird. He needed some support and redirection at times to stay within the circle of peers and continue to follow the circle around the room.

Expressive language goals Bob accomplished include producing utterances to get another to respond such as when he asked "what's next?" and "what animal are we going to see next?" He also called out a student's name when the MT suggested they have partners. During the hello song, he suggested playing faster and stretching noses. He also produced utterances that were original questions such as "Can we do `I Know a Chicken`?", "What's the bird's name?" and "Can I play the guitar too?" All of the utterances produced in this session were not prompted by the MT or SETA. Bob also accomplished contingent exchange goals by completing the title of the song when the MT

began to introduce the activity, he commented on the elephant picture that the MT showed, and asked what animals were next (he was imitating other peers asking).

Classroom session one.

Bob was working individually with the occupational therapist when he got up and initiated play by asking two of the girls about the story they were reading. When he was playing with the train, he also initiated play by asking his peer to move his train. He was prompted by the Speech Therapist to ask these questions of his peers for these play initiations. He was maintaining play with one of the boys, making physical contact with his train by sharing the play space, and moving the train together with his peer.

Bob accomplished expressive language goals when he produced utterances by asking the boy to move his train. He also asked questions about the rainbow story that the OT was reading with him, and requested an eraser to fix the card he was working on. This led to contingent exchange with the OT about the story and the way he was reacting to putting the pictures on the book. When he was asked to put a sun on his card he began to sing the song "Mr. Sun" to himself. The ST later used the lyrics of this song as a learning tool to help read the book about the rainbow. This also led to more contingent exchange goals. She asked him about colors, such as what color is the sun, the tree, etc.

Music therapy session two.

Relationship goals Bob accomplished in this session include initiating play by making physical contact with the peer next to him and asking to be her partner in one of the songs. He also initiated play by getting in the middle of the group of peers and demonstrating how a crocodile moves. This action was prompted by the MT when she asked him to show the class how a crocodile would move. He maintained play with his

peers by matching his peers' egg shaker movements. Although the MT was leading the activity, she was taking suggestions from the students and he was matching his movements with the peer initiating the different movements. Bob also maintained play by imitating his peers' animal movements by roaring like a lion, stomping like an elephant and flying like a bird. He also maintained pretend play by "feeding the bird" that the MT passed around in the circle. He imitated the feeding movements of his peers.

Bob achieved expressive language goals such as producing utterances when he requested a peer to be his partner in one of the songs. Often this goal may overlap with initiating play if the utterance is a request to play with a peer. Bob also helped to collect the egg shakers and said "here" when reaching out the bucket to one of his peers while collecting the shakers. He also made a request to play the guitar as he approached it and lightly strummed its strings. Bob also achieved contingent exchange goals when the MT asked him what kind of animal he would like to be, answering "piano" when asked what instrument he would like to pretend to play, and "chips and hummus" when asked what food he was pretending to feed the alligator puppet during the goodbye song.

Classroom session two.

During this classroom session, no relationship goals with peers were found. Bob spent the entire time in the same station with me and the OT. Because of the structure of the free play time period, he was not forced into another station and no peers were required to join him in his station.

Bob did accomplish expressive language goals when he produced utterances while building a Lego train in his play station. He asked me to help him with it a few times and asked me where to put on a specific piece. Contingent exchange consisted of

saying hello to the OT, and answering questions about the train and a truck that he had built.

Music therapy session three.

Bob achieved relationship goals during this session by initiating play with his peers when he joined hands with them for the movement song. He was also prompted by his SETA to find a partner to dance with during the hello song. He grabbed another peer's hand during the hello song and brought his head down close to another, pretending to be a bird. Bob maintained play during the hello song by matching his peers' movements such as clapping hands, stretching up high, and hitting his knees. He also imitated his peers during the movement song by moving like different animals such as waddling like a penguin, stomping like an elephant, and hopping like a bunny. He also maintained play by matching his peers' egg shaker movements, and playing the chime bar across from a partner in tempo to the music.

Expressive language goals Bob achieved included producing utterances such as suggesting stretching their noses and requesting the "I'm a Little Teapot" song when the MT was singing "I'm a Little Birdie" with the same melody. He also requested the song, "I know a Chicken", and "Moon, Moon, Moon". Contingent exchange goals accomplished were his repeating "We're gonna do I Know a Chicken" after the MT reviewed the PEC schedule. "We can also stretch our nose" can be an overlap of a produced utterance since it is related to the lyrics of the song which is naming different parts of the body to move. Bob also answered "peanut butter and jelly" when the MT asked what food he would give the alligator.

Classroom session three.

During today's classroom session, Bob spent most of the class playing 1:1 with his ST. He didn't have adequate opportunities to engage in play with his peers and didn't accomplish any of the relationship goals being tracked for the study.

Expressive language goals accomplished were utterances Bob produced while building a train out of Legos. He told his ST he was going to "make this" and showed her the train he had so far. Towards the end of the session when the teacher was redirecting him back to the art table, Bob told her he wanted to walk back to the table. He engaged in contingent exchange with his ST when he answered the questions she asked him about the train he was building. She also gave him choices about leaving his train or taking it with him to the art table which he answered, as well as what color bird art project to construct.

Music therapy session four.

Relationship goals Bob achieved during this session include initiating play by calling a peer's name, looking at her to say hello, and playing the drum with her. He also tapped his egg shaker with a peer, and handed a peer a mallet when choosing her to play during the drumming song. He maintained play throughout the session by matching the movements of his peers during the hello song when they tapped their knees and hands, during the instrumental song when they shook their egg shakers fast, slow, high, and, low, and during the movement song when they hopped like birds.

Bob achieved expressive language goals during this session by producing utterances such as his suggestion of stretching noses (which he said twice) as well as his suggestion of "I'm a Little Teapot" when he heard the "I'm a Little Birdie" song. He also

made requests throughout the schedule when he saw what was coming next, asking for the upcoming songs. During the instrumental song he was vocalizing requests to shake the egg shakers fast and up and down. Bob also accomplished contingent exchange goals when he was asked to pick partners and he responded with saying the names of peers. He also said his mostly usual response of “chips and hummus” when he was asked to feed the puppet alligator in the goodbye song.

Classroom session four.

Bob accomplished relationship goals during this classroom session by initiating play with a peer when he asked him for a train that he wanted to play with. Although this request was prompted by his ST, Bob began to play in the same space as the peer and made an unprompted request for the peer to move a stop sign off the track. The ST continued to provide support for Bob to initiate play with the peer by telling him to hand the peer a train. One of the times Bob walked over to join the peer he was singing softly to himself, “I’m a Little Teapot”. He maintained play during this classroom session by receiving the train from his peer and playing with his train next to his peer and peer’s train next to him on the track. He also began to imitate the way in which the peer was playing by following him to the other side of the track, and crashing the train when the peer would crash it. Towards the end of the playtime he was also copying the peer’s actions of tearing up the tracks and making a mess.

Expressive language goals achieved in this session include utterances produced such as requesting certain parts of the train. He also asked about parts of the train such as the tunnel, and exclaimed, “What happened?” after making them crash. Contingent

exchange goals he accomplished include answering questions the ST asked about where certain parts of the train should go and what actions the train was doing.

Music therapy session five.

Bob initiated play by passing the frog guiro instrument to his peer during the hello song. He maintained play by matching his peer's combination movements (2-step moves) during the hello song. He also pretended to be different kinds of dinosaurs and stomped and flew around in a circle, following the actions of his peers.

Bob produced utterances to get others to respond. He requested to stomp feet during the hello song, asked to turn on the lights after the goodbye song, and asked the class if they could "sit without screaming". Contingent exchange goals he achieved include his request for stretching noses, and repeating "I want a drum" after the others when the MT was setting up the drums.

Classroom session five.

Today's classroom session was held outside and offered a different environment to the students that included a swing set, jungle gym, and art board. The students still had the choice to change stations, however it was a little harder to hear and at times I was unable to film because members of other classrooms came out on the playground. Bob was able to maintain play with two of his peers by playing with a water spray bottle and bucket. He also imitated a peer spraying a water bottle on a tree.

He responded to the environment when he produced the utterance, "Where's the train?" when the train went by near the campus. He also asked his SETA if she could count to 100 because that's how many times he wanted to be pushed on the swing. His

contingent exchange goals included his answering how many times he wanted to be pushed on the swing.

Music therapy session six.

Bob initiated play with a peer by passing a rainstick to her. He could predict when it was his turn to pass it around the circle during the hello song. Turn taking is an inherent action during this activity in which this goal may be achieved. He also initiated play with a peer when he lay down next to her pretending to be a dinosaur, and got up and grabbed her hand to be partners during marching. He maintained play with his peers by matching their movements during the hello and dinosaur/movement songs. He also imitated the different ways in which they drummed during the instrumental song.

In this music therapy session Bob produced utterances by making his usual request to stretch noses in the hello song. He also requested the movement song be extended when they were flying like dinosaurs. His SETA also prompted him to ask a peer to be his partner for the movement song. Bob made a few contingent exchanges in the music therapy session such as when he answered “chips and hummus” when asked what he would feed the alligator in the goodbye song.

Classroom session six.

Bob initiated play with two other peers in today’s classroom session by approaching a play station and entering their space with dinosaurs. With a prompt from his SETA, he also asked two new peers to join his play space when the peers playing with him went to a new station. Bob maintained play with his peers by sharing the play space and imitating their actions within the dinosaur play.

Bob produced utterances such as asking about what it said on the card he was going to make, asking another peer to come and play with him, and asking for instructions for a certain game he was looking at. He achieved contingent exchange goals by answering questions asked by the SETA about the card he was making and how she should play with the dinosaur.

Classroom session seven.

The Music Therapist suggested a reverse in the order of the classes for a couple of weeks to provide variety and change to the student, to perhaps see if there was any difference in his behavior having music therapy later in the day. Sessions seven and eight have Bob attending music therapy sessions after the classroom sessions.

I only observed Bob initiating play with a peer once when he was prompted by his SETA to show the peers at his table the toy he was playing with. He was also prompted by his SETA to maintain play with his peers at the table by staying in that play space with them and playing with the toys together.

The SETA also prompted him to ask his peers about the play cat he was holding which helped him to achieve a goal of producing an utterance. I noticed as the session went on that the SETA provided fewer prompts to Bob as he accomplished contingent exchange goals such as answering some of his peers' questions about the play cat. When the SETA was helping him make the caterpillar art project and asked him what it was, he replied "it's a train".

Music therapy session seven.

I observed Bob initiating play with his peers during the drumming song when he suggested putting the drum on his head and placing his own drum on top of others' and

starting a “drum tower”. He also requested a peer to stand up and join him in the marching circle in the movement song. During the instrumental song he handed a mallet to a peer to join him in his playing. Bob maintained play with his peers during the movement song when he marched around in a circle, pretended to eat leaves, and pretended to sleep on the carpet. He also played the chime bar and matched the tempo with a peer.

Bob produced utterances during the drumming song when he made the suggestion to put the drum on his head. He also called out a peer’s name and asked her to get out of her seat to join the marching circle during the movement song. He also asked the MT if she was going to sing “Moon, Moon, Moon” when she was getting out the chime bars. He asked twice at the end of the session if he could turn on the lights. Bob provided contingent exchange when he answered his usual “chips and hummus” to the question of what to feed the alligator today.

Classroom session eight.

Bob was prompted by his SETA to initiate play with one of his peers at the table he was at by asking him for a turn with the toy screwdriver. He maintained play with his peer when he accepted the tool offered by the peer. The peer asked for a turn with the tool Bob was holding and the SETA supported them through a trade of tools. They maintained play by sharing the same space and playing with the tools.

The SETA offered support to Bob to verbalize utterances of requests to his peer of the tools which enabled the turn taking. She also offered him choices when he was at the art table which helped him ask for a certain tool to use for the clay art project. Bob accomplished contingent exchange goals during the tool play. The SETA provided

questions in which Bob answered about the type of tools he thought they were as well as encouraging him to say thank you when he received the tool from his peer.

Music therapy session eight.

The Music Therapist offered support to Bob so that he was able to initiate play with a peer when he traded instruments during the instrumental song. He maintained play with peers during this session when he received a mallet and then played with two peers on the xylophone during the hello song. He was able to match their tempos as well as the MT. He also maintained play with his peers when he matched their movements pretending to be fish.

Bob produced many unprompted utterances by inquiring about what was happening next in the music schedule. When the MT took out the xylophone he asked if she would be singing “Hickory Dickory Dock” because she had sung that song before with the xylophone. He also requested the bongo drums during the instrumental song and a certain color rubber mat before beginning the movement song. Contingent exchange occurred during the fingerplay song when he added to the lyrics of the song with suggestions of different movements. The MT also offered him an instrument choice in which he verbalized which one he wanted. Bob also completed lyrics in the movement song and answered “chips and hummus” when the MT asked what he would feed the alligator.

Music therapy session nine.

During the movement song, Bob initiated play by approaching a peer and throwing a scarf for her to catch it. He maintained play by receiving the ocean drum from his peer during the hello song and imitating his peers’ movements. During the

movement song he matched his peers' movements with the scarf which included throwing and catching up in the air and to each other. He also copied his peers' fish-like movements.

Bob produced utterances during the hello song when he asked to have a turn on the ocean drum and asked what it said on the schedule. He also requested particular colors of mats to use for the movement song and a particular instrument to play (the bongos) during the drumming song. Bob also requested to turn on the lights at the end of the session. He produced contingent exchange when the class was discussing the animals inside the ocean drum and he said, "That's a sea horse". He also answered the MT's questions about animals that live in the sea during the drumming song.

Classroom session nine.

This classroom session was observed outside and it was difficult to observe many relationship and expressive language goals being achieved in this session. One reason was because of Bob's choice of independent play combined with the presence of students from other classes on the playground. He spent much of the time by himself swinging on the swing. When he moved to the center of the playground, he initiated play by bringing a ball up the steps of the jungle gym and dropping the ball to a peer. This action was prompted by a SETA. He maintained play with a peer by engaging in a game of catch with the peer and the SETA. This play was also prompted by the SETA.

Bob produced utterances to get another person to respond by asking the SETA if he could have the ball. Bob also asked him if he was ready when he was getting ready to throw it. These utterances, I observed, were unprompted and occurred after he had been prompted to maintain play.

Music therapy session ten.

Bob initiated play in today's final observed music therapy session when he chose a peer to go under the parachute with him. The MT had prompted him by asking him to choose someone but he chose the peer independently and then showed her a fish-like movement he initiated on his own. He maintained play with his peers when he followed their movements during the hello song, received the rainstick and played it with a partner, and shared holding and moving the parachute as his peers were doing. He also played a new instrument, the castanets, new and different ways that were introduced by his friends. These were all unprompted movements that he imitated by watching his peers play a new instrument he had never played before.

The utterances that Bob produced today all appeared to be related to requests he was making to have a turn with the different instruments that were being presented. No prompts were required, and he was asking to have a turn with the rainstick, the castanets, and requesting the bongo drums before the drumming song started. His contingent exchange occurred when he began to verbalize the names of the sea animals as he was beating their names on the drum which I hadn't noticed before. He also participated in the fingerplay song by doing the movements but also by completing the lyrics and sound effects.

Classroom session ten.

Bob achieved initiating play with peer goals in this final observed class session when he gave a peer a magnetic piece of the construction toy he was playing with. He also expressed interest in playing the game of another peer and reaching for the toy as he joined in her game asking if he could play with her and entering her play space.

Bob produced utterances to get others to respond when he asked the ST he was working with to go to another station. He also responded to an upset student in the class by asking, "Who's crying?" He offered contingent exchange when the ST joined him in conversation about the magnetic toys they were playing with. She encouraged him to participate in the conversation by asking what color they should use next in the building of their magnet and Bob said, "How about a yellow one?"

*Appendix B***Letter of Agreement**

Dear review board at Montclair State University,

February 11, 2011

I am writing to you to express my agreement for Rachel Crawford, MT-BC and music therapy graduate student to conduct a ten week observational study at the Ben Samuel Children's Center this spring 2011 academic term. She will be observing preschool students and their teachers for her study, "The Effect of Music Therapy on the Social Skills of a Preschooler on the Autism Spectrum in an Inclusive Setting: A Case Study Comparing Music Therapy and Classroom Groups". This study will run from approximately April to June 2011.

Thank you for your time.

Sincerely,

Tara Evenson, Director

*Appendix C***Letter of Interest****Montclair State University: Ben Samuels Children's Center****LETTER OF INTEREST FOR PARTICIPANT IN CASE STUDY**

Dear Parent(s),

February 11, 2011

I am a music therapist and graduate music therapy student attending Montclair State University. I am going to be working on my master's thesis this semester of studying the effect of music therapy on the social skills of your preschooler in music and non-music groups. This is a minimal risk study which consists of observation only through my presence in the classrooms and videotaping the sessions. Nothing will change in the daily routine of your child. This study will begin in April and last until the beginning of June. Two sessions a day, once a week for ten weeks is the approximate duration of the study.

Thank you for considering this request. I hope to meet with you sometime soon to review other details and the consent/assent forms.

Please indicate below your interest and return to the Director, Mrs. Tara Evenson, or the Music Therapist Mrs. Amy Clarkson.

_____ YES I am interested in finding out more about my child's participation in this study (review consent/assent)

_____ NO I am not interested in having my child participate in this study, and wish to learn nothing further of the consent/assent forms

Sincerely,

Rachel A. Crawford, MT-BC

*Appendix D***Participant Consent****PARENT/GUARDIAN CONSENT FORM (Participant)**

Please read below with care. You can ask questions at any time, now or later. You can talk to other people before you fill in this form.

Study's Title: The Effect of Music Therapy on the Social Skills of a Preschooler on the Autism Spectrum in an Inclusive Setting: A Case Study Comparing Music Therapy and Classroom Groups

Researcher's Background: The Principal Investigator, Rachel Crawford, is a licensed music therapist and music teacher. She is a graduate student at Montclair State University, majoring in music therapy.

Purpose of the Study: The purpose of this case study will be to examine the effects of music therapy on the development of the social skills of a preschooler. The purpose of this study is to compare the progress of social skills between music and non-music groups.

Study's Procedures: During the study your child will be observed by a music therapist during his music therapy sessions and classroom sessions once a week for ten weeks. Data will be taken based on how he is achieving certain social and communication goals based on his learning plan. Your child will not be doing anything differently than his usual daily school routine. Video will be taken of sessions in order to study your child's interactions during the sessions and the video will be confidentially stored at the Children's Center and not distributed to anyone else after the study is over. His learning plan will need to be available to the Principle Investigator in order to view his goals. His diagnosis will need to be known to the Principle Investigator to help with the research.

Time: This study will take about 10 hours, over a period of 10 days. Each session will last ½ hour. (1 session music/1 session non-music)

Risks: Your child is being asked to participate in a minimal risk study since it is research through observation. Therefore, the risks are no greater than those in ordinary life. He may feel a change in dynamics due to the extra person and video machine but nothing in his schedule or interactions with the therapist or teacher will be changed.

Benefits: Your child or dependent may benefit from this study through the results made by the music therapist/Principal Investigator doing the research. She may find in what goal areas music may help to increase social communication skills for your child. It may also show positive interactions your child has with others in each class.

Confidentiality: Your child or dependent will not be linked to any presentations. We will keep who your child or dependent is confidential according to the law. Only the music therapist doing the research, running the sessions, and his teacher at the Children's Center will know that your child is involved in the study. His real name will never be used in the final thesis. All information about this study will be kept secure in a locked filing cabinet unless it is being utilized by the research team. It will be kept for 5 years and then all data will be shredded. You should know that New Jersey requires that any person having reasonable cause to believe that a child has been subjected to child abuse or acts of child abuse shall report the same immediately to the Division of Youth and Family Services.

Your child or dependent does not have to be in this study. He is a volunteer! It is okay if he wants to stop at any time and not be in the study. His treatment at The Children's Center will not be affected.

Do you have any questions about this study? Phone or email Rachel Crawford, MT-BC, 77 Berkeley Ave., Westwood, NJ, 07675, 201-562-6894, or crawfordr1@mail.montclair.edu

Do you have any questions about your rights? Phone or email the IRB Chair, Debra Zellner (reviewboard@mail.montclair.edu or 973-655-4327).

It is okay to use his data for educational purposes related to the study:

Please initial: Yes No

I would like to get a summary of this study:

Please initial: Yes No

It is okay to (audiotape, videotape, or photograph) him/her while in this study:

Please initial: Yes No

It is okay to use her/his (audiotaped, videotaped or photographed) data in the research.

Please initial: Yes No

It is okay to use his learning plan while he is in this study

Please initial: Yes No

It is okay for Principal Investigator to know his diagnosis.

Pleas initial: Yes No

The copy of this consent form is for you to keep.

If you choose to have your child or dependent in this study, please fill in the lines below.

 Name of Parent/Guardian

 Signature

 Date

 Name of Parent/Guardian

 Signature

 Date

If you choose to be in this study, please fill in your lines below.

 Print your name here

 Sign your name here

 Date

 Name of Principal Investigator

 Signature

 Date

 (if applicable) Name of Faculty Sponsor

 Signature

 Date

*Appendix E***Class Consent****PARENT/GUARDIAN CONSENT FORM (Class)**

Please read below with care. You can ask questions at any time, now or later. You can talk to other people before you fill in this form.

Study's Title: The Effect of Music Therapy on the Social Skills of a Preschooler on the Autism Spectrum in an Inclusive Setting: A Case Study Comparing Music Therapy and Classroom Groups

Researcher's Background: The Principal Investigator, Rachel Crawford, is a licensed music therapist and music teacher. She is a graduate student at Montclair State University, majoring in music therapy.

Purpose of the Study: The purpose of this case study will be to examine the effects of music therapy on the development of the social skills of a preschooler. The purpose of this study is to compare the progress of social skills between music and non-music groups.

Study's Procedures: During the study your child will be observed by a music therapist during his music therapy sessions and classroom sessions once a week for ten weeks. Your child will not be doing anything differently than his usual daily school routine. Video will be taken of sessions in order to study your child's interactions during the sessions and the video will be confidentially stored at the Children's Center and not distributed to anyone else after the study is over.

Time: This study will take about 10 hours, over a period of 10 days. Each session will last ½ hour. (1 session music/1 session non-music)

Risks: Your child is being asked to participate in a minimal risk study since it is research through observation. Therefore, the risks are no greater than those in ordinary life. He/she may feel a change in dynamics due to the extra person and video machine but nothing in his schedule or interactions with the therapist or teacher will be changed.

Benefits: Your child or dependent may benefit from this study through the results made by the music therapist/Principal Investigator doing the research. She may find in what goal areas music may help to increase social communication skills for your child. It may also show positive interactions your child has with others in each class.

Name of Parent/Guardian

Signature

Date

If you choose to be in this study, please fill in your lines below.

Print your name here

Sign your name here

Date

Name of Principal Investigator

Signature

Date

*Appendix F***Participant Assent****ASSENT FORM (Participant)**

I am going to read this paper to you. You or your parent can ask questions at any time. You can talk to other people before you or your parent answer some questions on this paper.

Who am I? I am Rachel Crawford. I am a student at the Montclair State University in the music therapy department.

Why is this study being done? I would like to see how you talk, play and get along with other classmates in music class with music and your teacher's class without music. I would like to see if when your teachers use music with you, you do more talking and playing.

What will happen while you are in the study? If you would like to be in this study, we will not do anything different with you than you do every day. I will be watching the class from the corner of the room. One day a week, I will be taping one music class and one of your teacher's classes. After the study is over, the video will be in a locked in an office at the school.

Time: This study will take about 10 hours. It will happen on 10 different school days.

Risks: You may feel no different than you usually do on any other day of school because I will only be watching the class.

Benefits: It may be a good thing for you to do this study because we may be able to tell what music you like and get you to play and talk more with your friends. Because of the way you are with music in the classrooms, we may be able to guess that other children may like music too.

Who will know that you might be in this study? You and your parent will know that you are in this study. I will know that you are here, and your teachers will know but we won't tell anyone else.

Do you have to be in this study? You do not have to be in this study. We won't get mad with you if you say no. It is okay if you change your mind at any time and leave the study. You will still get the things that you usually get every day in school. Your treatment at the Ben Samuels Children's Center will not change.

Do you have any questions about this study? Phone or email (Rachel Crawford, MT-BC, 77 Berkeley Ave. Westwood, NJ 07675, 201-562-6894, and crawfordr1@mail.montclair.edu).

Do you have any questions about your rights? Phone or email the IRB Chair, Debra Zellner (reviewboard@mail.montclair.edu or 973-655-4327).

It is okay to use my data for educational purposes related to the study:

Please initial: _____ Yes _____ No

I would like to get a summary of this study:

Please initial: _____ Yes _____ No

It is okay to (audiotape, videotape, or photograph) me while I am in this study.

Please initial: _____ Yes _____ No

It is okay to use my (audiotaped, videotaped or photographed) data in the research.

Please initial: _____ Yes _____ No

It is okay to use my learning plan while I am in this study.

Please initial: _____ Yes _____ No

It is okay to know my diagnosis.

Please initial: _____ Yes _____ No

_____	_____	_____
Name of Research Participant	Signature	Date

_____	_____	_____
Name of Witness	Signature	Date

_____	_____	_____
-------	-------	-------

Name of Principal Investigator	Signature	Date
_____	_____	_____
<i>(if applicable)</i> Name of Faculty Sponsor	Signature	Date

*Appendix G***Class Assent****ASSENT FORM (Class)**

I am going to read this paper to you. You or your parent can ask questions at any time. You can talk to other people before you or your parent answer some questions on this paper.

Who am I? I am Rachel Crawford. I am a student at the Montclair State University in the music therapy department.

Why is this study being done? I would like to see how you talk, play and get along with other classmates in music class and your teacher's class. I would like to see if when your teachers use music with you, you do more talking and playing.

What will happen while you are in the study? If you would like to be in this study, we will not do anything different with you than you do every day. I will be watching the class from the corner of the room. One day a week, I will be taping one music class and one of your teacher's classes. After the study is over, the video will be in a locked in an office at the school.

Time: This study will take about 10 hours. It will happen on 10 different school days.

Risks: You may feel no different than you usually do on any other day of school because I will only be watching the class.

Benefits: It may be a good thing for you to do this study because we may be able to tell what music you like and get you to play and talk more with your friends. Because of the way you are with music in the classrooms, we may be able to guess that other children may like music too.

Who will know that you might be in this study? You and your parent will know that you are in this study. I will know that you are here, and your teachers will know but we won't tell anyone else.

Do you have to be in this study? You do not have to be in this study. We won't get mad with you if you say no. It is okay if you change your mind at any time and leave the study. You will still get the things that you usually get every day in school. Your treatment at the Ben Samuels Children's Center will not change.

Do you have any questions about this study? Phone or email (Rachel Crawford, MT-BC, 77 Berkeley Ave. Westwood, NJ 07675, 201-562-6894, and crawfordr1@mail.montclair.edu).

Appendix H

Goal Sheet

Montclair State University
Evidence of Progress Toward Goals

Name: _____

Date: _____

Activity: _____

(Relationship Goals)

(Expressive Language Goals)

Goal	Initiate play with peer (associative play)	Maintain play with peer	Produce utterances to get another person to respond	Contingent exchange/ Related utterances following utterances
Description	Use words/actions with another child/Get close to child to play	Copy/match actions/ Verbalize/Physical interaction		Imitation/Adding words or Phrases
Support Provided	Yes/No	Yes/No	Yes/No	Yes/No
Quantitative Summary				

*Appendix I***IRB Approval**

MONTCLAIR STATE
UNIVERSITY

Institutional Review Board
College Hall, Room 248

VOICE: 973-655-7583
FAX: 973-655-3022

March 9, 2011

Ms. Rachel Crawford
77 Berkeley Avenue
Westwood, NJ 07675

Re: IRB Number # 001007

Project Title: **The Effect of Music Therapy on the Social Skills of a Preschooler on the Autism Spectrum in an Inclusive Setting: A Case Study Comparing Music Therapy and Classroom Groups**

Dear Ms. Crawford:

After a full 2 & 3 review, Montclair State University's Institutional Review Board (IRB) approved this protocol on **February 23, 2011**. The study is valid for one year and will expire on **February 23, 2012**.

Before requesting amendments, extensions, or project closure, please reference MSU's IRB website and download the current forms.

Should you wish to make changes to the IRB-approved procedures, prior to the expiration of your approval, submit your requests using the Amendment form.

For Continuing Review, it is advised that you submit your form 60 days before the month of the expiration date above. If you have not received MSU's IRB approval by your study's expiration date, ALL research activities must STOP, including data analysis. If your research continues without MSU's IRB approval, you will be in violation of Federal and other regulations.

After your study is completed, submit your Project Completion form.

If you have any questions regarding the IRB requirements, please contact me at 973-655-4327, reviewboard@mail.montclair.edu, or the Institutional Review Board.

Sincerely yours,

Dr. Debra Zellner
IRB Chair

cc: Dr. Karen Goodman, Faculty Sponsor
Ms. Amy Aiello, Graduate School

montclair.edu

1 Normal Avenue • Montclair, NJ 07043 • An Equal Opportunity/Affirmative Action Institution

1

