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THE MUSICAL RESPONSES OF A DEVELOPMENTALLY DELAYED CHILD AT HOME  
AND IN A MUSIC CLASS

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## ABSTRACT

The purpose of this study was to compare the musical responses of a developmentally delayed child in a group setting (surrounded by peers, parents, and music teachers) versus in a home/isolation setting (surrounded by parents/caregivers only). The questions explored were: 1.) How does the child respond to music? What is similar and/or different about these responses? 2). Does the child ever initiate musical responses? 3). With whom does the child musically interact? 4). Does the child's musical initiation occur more frequently in the group setting or the home setting? 5). Does the presence of peers influence the kind of musical responses given by the child? How does the child respond to a large group of peers? How does the child respond to a small group of peers? How does this differ from how the child responds to adults? 6). How does the child respond differently to peers younger than him versus peers older than him?

One child with developmental delays served as the case. "Will" and his mother were enrolled in an early childhood music class (Music Play) for the duration of this study. The researcher contacted the mother and music teacher of the child requesting their participation as well as that of the child. Data sources included field note observations, video recordings, parent and teacher journals, and parent and teacher interviews. Data collected during the spring semesters over the course of two years were transcribed and analyzed for patterns of musical behavior.

The findings of this study are similar to other research on childhood developmental delays and music. The Music Play class provided "Will", who had developmental delays and minimal peer interactions, an opportunity to engage with children his age while being exposed to music in an informal manner thus establishing a foundation for future musical experiences. The class allowed children with various learning behaviors to play together and be musically engaged with one another. Music education provides an adaptive and social environment for children of all developmental stages to interact with themselves and each other.

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#### **Mom, Dad, and Jess**

Thank you for always believing in me! I couldn't have asked for a better support system.

## **Chapter 1**

### **Background and Rationale**

#### **Background**

My first experience working with developmentally delayed children was my senior year of high school when I interned with a pediatric occupational therapist. I came across a full spectrum of children from those who were simply delayed in their handwriting skills to children with Autism, Asperger's, and uncharacterized developmental delays. I became familiar with certain techniques the occupational therapist utilized, such as tossing a ball or climbing in a hammock, and in every session, recorded music was playing in the background. I had always been curious about the purpose of each technique but had never questioned the purpose of the music.

I have taken a great interest in child development since I was a teenager when I came to the realization that my cousin was different than my sister and me. She was born with DiGeorge syndrome and was in and out of the hospital countless times a year. Being very close in age and living in different states, I had never noticed that she was developmentally behind until my sister and I started hitting important developmental milestones before her.

When I enrolled at The Pennsylvania State University, I got involved with Dr. Rutkowski's music education research because I had played piano for fifteen years and found music education and children's musical development fascinating. After taking numerous psychology and human development classes throughout high school and college and getting

involved with Dr. Rutkowski's music education research, I spoke with my cousin's mother about music's role in child development expecting this to be new information to her. To my surprise, she was already familiar with the role of music in child development because music had played a small role in her daughter's childhood. This fueled my interest in the subject and motivated me to conduct a case study on a child in one of Dr. Rutkowski's *Music Play* (Reynolds, et al., 1998) classes.

My first experience with Will (the subject's name has been changed for confidential purposes) was during my freshman year of college in the *Music Play* class. Will was the only child with developmental delays in the class, and his responses to music and to the other children caught my attention. He did not cling to his mother as often as the other children his age. He did not shy away from the other children either. He played with them and ran around with them just as any other little boy would. His behavior in the music class peaked my interest and inspired me to study his musical involvement not only in the class when surrounded by his peers, but also at home when he would only be surrounded by his caretakers.

## **Rationale**

### *Musical Development*

Music teachers and music education researchers have explored and advocated for the importance of early informal musical exposure for young children before formal instruction can take place. Musical development has often been compared to language development. Most parents speak to their children every day starting from the child's day of birth. They often repeat sounds and words their children say, which engages the children in an informal language



learning setting. Also, children often hear surrounding people and their parents speaking to one another. By the time children reach kindergarten, which is considered a formal learning environment, they have already had five years of informal language learning (Gordon, 2003). Music educators claim that if any child is to be proficient in learning music in a formal environment, that child should have the same kind of informal exposure to and experience with music as they would to language. Music learning and language learning seem to share parallel processes of learning in informal but rich environmental contexts (Gordon, 2003). Similar arguments have been advanced for parallel “dynamic convergences of learning conditions” not only for music and language, but also for art, literacy, and dance (Nelson et al., 2004; Nelson & Arkenberg, 2008).

Therefore, informal learning seems to be an important component in any child’s process of the music education experience. Informal learning consists of any guidance or exposure to music without formal instruction (Welch, 1998). Informal learning can also exist in the form of a *Music Play* classroom environment where children are allowed to participate freely in a musically focused environment (Reynolds et al., 1998).

### *Developmental Delays*

Peer awareness and social skills are among the first cognitive abilities to develop in young children (Sussman, 2009). As children with developmental delays or disorders grow older, they may face struggles in developing these basic skills. When developmental milestones are not met at the same time as a child’s peers, the child may receive different responses from those around him. In response, the child tends to respond differently to his or her environment, which causes the environment to respond differently to him or her, which results in a seemingly never-ending cycle (Jamison, Forston, & Stanton-Chapman, 2012).

Music has been used as a tool in early special education programs to promote non-musical physical and social interactions among children of varying developmental stages in order to combat a downward spiral of social interactions and to promote the acquisition of social skills (Darrow, 2010; Jamison, Forston, & Stanton-Chapman, 2012). Because music utilizes multiple modes of learning, a child can potentially learn as much as the other children when learning and utilizing music (Darrow, 2012). For example, a child who is an excellent auditory learner and would be able to successfully remember lyrics after just listening; much as a child who is a visual learner and can read the lyrics. A child who is a kinesthetic learner would be able to easily manipulate instruments as successfully as a child who is an auditory learner and can hear and identify the different instruments being played. This kind of multimodal learning invokes positive interactions between the children combating the downward social spiral many developmentally delayed children experience.

### **Purpose**

The purpose of this study was to investigate the musical responses of a developmentally delayed child in a group setting (surrounded by peers, parents, and music teachers) versus in a home/isolation setting (surrounded by parents/caregivers only). The results of this study could give further insight to music teachers and parents who deal with younger age groups. I would like to provide a basis for further exploration of child musical development as well as for further investigation comparing the rate of musical development between a developmentally delayed child and a “normal” child.

### Guiding Questions

1. How does the child respond to music? What is similar and/or different about these responses?
2. Does the child ever initiate musical responses?
3. With who does the child musically interact?
4. Does the child's musical initiation occur more frequently in the group setting or the home setting?
5. Does the presence of peers influence the kind of musical responses given by the child? How does the child respond to a large group of peers? How does the child respond to a small group of peers? How does this differ from how the child responds to adults?
6. How does the child respond differently to peers younger than him versus peers older than him?

## **Chapter 2**

### **Literature Review**

#### **Introduction**

The purpose of this study was to investigate and compare the musical responses of a developmentally delayed child in a group setting (surrounded by peers, parents, and music teachers) versus in a home/isolation setting (surrounded by parents/caregivers only). Researchers have investigated how music education for young children affects peer awareness, language learning, and early childhood development. In recent years, researchers have explored the impact music education has on children with developmental delays and how music can help foster different areas of development in these children, including musical development itself. Representative literature on these topics is reviewed in this chapter.

#### **The Importance of Music Education for Young Children**

The importance of early music education for enhancing musical development in young children is evident and strongly supported by research. Researchers and music educators have also claimed that music education at a young age is associated with more indirect effects, such as improving a child's academic performance, creativity, cognitive development, and social development. In the section that follows I examine the importance of music education in general to both normally developing and developmentally delayed children.

In *A Music Learning Theory for Newborn and Young Children*, Edwin E. Gordon (2003) discussed the importance of the critical period between birth and age five in regards to how children learn music and how the attainment of knowledge during this time period contributes to maximizing development and growth as the child ages. Gordon focused specifically on music development and compared this process to the language learning process. Many administrators and even some parents do not understand or believe in the benefits of music education. This notion holds a basis for rebuttal in all of the following literature for different reasons, but Gordon discussed the benefit of music education in regards to specifically fostering musical development.

Gordon (2003) compared developing a music foundation to developing a language vocabulary foundation. Most children enter kindergarten around the age of five with a vast informal exposure to sounds associated with words and speech. They have experience with using words to form understandable sentences and phrases. They then enter a formal learning environment in school after maximizing informal exposure to the basic components of their native languages at home. Gordon stated that the same language development concept is crucial for musical development. Young children must establish a strong informal musical foundation at home or elsewhere by the age of five or six to ensure proper musical development. He stated that the time in a child's life with the greatest potential to learn is at birth. Neural synapses are formed and pruned depending on which synaptic connections are maintained. The child's potential then decreases unless the area of learning is utilized. Just as when parents speak to their newborns and young children, informal exposure to music can include a mother singing to her child and mimicking the responses her child gives back to her. Other examples can include

playing music on a recording or introducing instruments such as the drums or the tambourine to the child thus allowing the child to touch, hold, and use the instruments.

Gordon discussed the music babble stage, which can be compared to the language babble stage young children enter when experimenting with their voices. The more familiar the child becomes with changing inflections of the voice when singing and chanting, the sooner the child will exit the music babble stage and increase their musical aptitude. Children must be able to “sing tonal patterns” and “chant rhythm patterns” before they can sing songs properly. Music education at a young age allows the child to develop audition, audiation, and verbal skills essential for the understanding music.

Eason and Johnson (2013) conducted a variety of experiments to investigate the nature of the relationship between music education and student engagement/achievement. They believed that the more musically engaged child is, the greater the performances and achievements that child will have in future nonmusical aspects of his or her life. Students from three categories participated: those who had never taken music classes, those who had taken music classes for one year or less, and those who had taken music classes for more than one year. The students also completed questionnaires to measure their habits and self-esteem levels, which added a qualitative component to the quantitative study. In alignment with their hypothesis and beliefs, Eason and Johnson (2013) found that a “comprehensive arts curriculum” correlated with higher standardized test scores, higher attendance rates, fewer discipline referrals, more positive habits, and higher GPAs. All quantitative findings were statistically significant. According to this study, music participation showed an overall indirect correlation with academic achievement and it had a very strong direct correlation with overall school engagement, which had a strong direct correlation with academic achievement. Eason and Johnson (2013) also noted the qualitative

affects musical engagement had on the students' self-esteem, motivation, and even mood.

Students who took music classes the longest reported feeling happier, more confident, and more inspired than students who either had not taken music classes or only took them for a short period of time.

Hallam (2010) asserted a similar position on the benefits of music education for young people in her review of previously existing studies. She believed that the skills learned while engaging in music at a young age could be passively and actively transferred to other musical and nonmusical situations. Similar to Eason and Johnson's (2013) work, Hallam believed that music education could help assist multiple domains of a child's development, including proficiency in language skills, literacy skills, mathematics, intellect, creativity, social skills, health, and personal well-being. She explored the cognitive process of learning music on a more neural basis and focused on how the auditory, rhythmic, and spatiotemporal skills that are acquired when learning music are translated to the auditory, rhythmic, and spatiotemporal skills used in other aspects of a person's life. Music activates the same parts of the brain that are activated during speech, audition, fine motor skills, emotions, and memorization. In her article review, Hallam highlighted the parallels between learning music and learning to read and write literature and mathematics.

Robyn Trinick (2011) explored some of the reasons behind the lack of support for music education in *Sound and Sight: The Use of Song to Promote Language Learning*. Trinick discussed the different domains that music education at a young age can positively impact, including the affective domain, the sociocultural domain, the cognitive domain, and the linguistic domain. She supported the notion that music education improves a child's memory and academic performance. However, she dedicated much of her article to discussing why music education is

not a common practice. Upon reviewing related literature, she concluded that most of the concern comes from parents and teachers who lack expertise. For example, Trinick (2011) pointed out the crucial “distinction between the *teaching of* singing and *using* song” (p. 8) that many teachers misunderstand, which leads to a lack of confidence among teachers. Parents are more concerned with straying away from what they believe is an important academic foundation for their children’s futures. Trinick offered solutions to all of these concerns, and made a final assertion that music should be integrated into everyday life and education.

Niland (2009) also explored the idea of integrating music into a child’s everyday life. She focused on the notion that “children learn through play” in early music education. For example, songs such as “Wheels on the Bus” or “Apples and Bananas” teach children the different sounds associated with a school bus and different vowel sounds, respectively. However, more subtle learning takes place as the children learn the musical aspects of the songs, such as singing thirds, fourths, fifths and becoming more familiar with their singing voices and auditory skills. Niland believed that the more familiar a child is with a song, the more evident the child’s musical responses are. For example, after singing “Wheels on the Bus” everyday in school, a child would start to move to the beat of the song and more accurately sing the correct pitches and rhythms. Also, the child would pay more attention to the content of the song, which could enhance academic learning if the song is helping the child learn a foreign language or the alphabet (Niland, 2009). Niland believed in the process of learning through the use of music rather than the end product of being a proficient musician. Musical play keeps a child engaged and excited, which induces an intrinsic type of learning.

It appears that music education for young children is related to their eventual academic success and achievement (Eason & Johnson, 2013). A possible explanation for this relationship



between music and achievements in non-musical areas is an underlying neural process in the brain (Hallam, 2010). Regardless, parents and teachers seem to lack this understanding, which becomes the most pressing reason as to why music education is not typically integrated into the school curriculum (Trinick, 2011). Still, researchers continue to give explanations as to how beneficial musical integration into a child's learning process is for the children (Niland, 2009).

### **Childhood Special Education**

The focus of my study is on musical responses in a developmentally delayed child. The importance of music education for all children, whether they are developmentally delayed or not, has been explored. Literature concerning music and children with developmental delays is discussed in this chapter; however, special education and how children with developmental delays learn is explored first.

Jamison, Forston, and Stanton-Chapman (2012) talked about the social skills in young children with disabilities or developmental delays. Interactions with peers are a positive experience for children as these help establish foundational social skills that will assist the children through their years of social growth. However, children with developmental delays typically have trouble with acquiring and maintaining social skills, which starts a downward spiral. The delayed child may inappropriately respond to another child's attempt at play causing him or her to negatively respond to the delayed child. This negative response hinders any positive interactions between the delayed child and other children or even the delayed child and adults. Jamison et al. (2012) proposed that systematic interventions needed to be applied, such as having early special education programs. Children with disabilities may refrain from attempting

more complex levels of play, which becomes even more difficult with minimal peer interaction. For example, social proximity, important for developing more cooperative play opportunities between peers, requires certain gross motor skills, which prove difficult for some children with disabilities. After reviewing supporting literature, Jamison et al. discussed different strategies to combat certain social deficits, which include structuring the day, practicing joint attention with another child, increasing novel play activities, and following the child's lead.

Whaley and Bennett (2013) similarly discussed ways to maximize social engagement when working with developmentally delayed children in special education. They claim that the three biggest influences on a developmentally delayed child's engagement level are "the physical environment, the social environment, and the instructional practices" (p. 51). In regards to the physical environment, Whaley and Bennett suggested that open rooms with minimal barriers are ideal. Materials the children will be using should be easily accessible and sufficient in supply. In regards to the social environment, a consistent schedule and smooth transitions are recommended. Minimizing waiting time between different activities is more likely to hold the children's attention. Whaley and Bennett also provided several suggestions for how to carry out instructional practices. Similar to normally developing children, developmentally delayed children learn best "through play and exploration with peers, materials, and adults" (p. 53). Modeling proper behavior, responding to the children, reinforcing desired behaviors, and interacting with the children is the best way to engage the children, according to Whaley and Bennett. In addition, instructors should allow the children to play immediately.

Recent research has shown that similar to how normally developing children learn, developmentally delayed children learn from feedback and interaction with peers and adults

(Jamison et al., 2012; Whaley & Bennett, 2013). This maximizes social skill development, which appears to assist in the learning process as the delayed children age.

### **Childhood Developmental Delays and Music**

Music education is important to young children and benefits not only their musical development but their future academic achievement as well. Researchers have also investigated the benefits music education and participation in music activities could have on the development of developmentally delayed children.

Darrow (2010) explored the purpose of early intervention for young children with developmental delays pointing out that early intervention “lessen[s] the effects of the disability” (p. 28). She specifically discussed Part C of Individuals with Disabilities Education Act (IDEA), which focused on early intervention programs aimed at fostering communication, physical development, cognitive development, social/emotional development, and adaptive development in delayed children. Darrow (2010) tied music education into her assertion by making the claim that “music can be a carrier of information” (p. 28). Music has been shown in previous research (Eason & Johnson, 2013; Gordon, 2003; Hallam, 2010; Niland, 2009; Trinick, 2011) to reinforce learned material, promote psychomotor skills, and increase fine and gross motor skills. Darrow stated that music has also induced positive mood changes and promote social skills.

Incorporating music instruction into the special education system benefits both the developmentally delayed children and the teachers. Darrow (2012) pointed out that music incorporates a multimodal approach to learning in that it involves auditory, visual, and kinesthetic learning. A child who is developmentally delayed in only one or two of these modes

may excel in music because not any one learning mode is required in isolation. Music education allows children to express themselves, as they would not normally be able to do and to engage in the social skills incorporated into Hello or Goodbye songs.

Ockelford, Welch, and Zimmermann (2002) investigated the effect of music on promoting learning and development beyond the classroom for developmentally delayed children. After gathering data from several hundred children in 52 different schools, Ockelford et al. (2002) concluded that music was an effective way to enhance delayed children's sensory information and promote their body and spatial awareness. Music becomes a "catalyst for other activity" (p. 180) with the developmentally delayed children in that the psychomotor, cognitive, and social skills the children acquired during music classes carried over to the children's listening skills and social skills outside of the classroom.

Sussman (2009) investigated the effect of music on peer awareness, since peer awareness is one of the first cognitive abilities to develop in children, and had similar results. She discovered that music helped develop attention patterns that are transferred to other nonmusical areas, such as speaking and audition. Sussman's ultimate conclusion was that musical objects presented in a play-based context yielded the highest attention spans among children with developmental delays. Sussman suggested that if music could act as a stimulus to foster attention and social interactions between normally developing and delayed children, the developmental gap between the two groups could potentially be lessened with musical intervention. With a musical stimulus, the attention of children in nonmusical contexts increases.

Early intervention and the use of music as a carrier of information regarding musical and nonmusical learning foster learning in a developmentally delayed child (Darrow, 2010). Because music offers a multimodal style of learning, children delayed in a certain type of learning may

excel in music education (Darrow, 2012). Music helps delayed children become more spatially aware of their bodies (Ockelford et al., 2002). Music may also be used as a learning tool in that when the music matches the type of play the children are engaged in, the children's attention increases (Sussman, 2009).

### **Chapter Summary**

Music education is the learning and teaching of music. Although teachers and parents question the importance of integrating music into the primary school curriculum (Gordon, 2003; Trinick, 2011), recent research has shown many of the benefits music education has to offer. Early music education lays a foundation for any child's future growth and development in music itself (Gordon, 2003). Music education has also been correlated with achievements and progress in nonmusical environments, such as academic, spatial, and social environments (Eason & Johnson, 2013; Darrow, 2010; Darrow, 2012; Whaley & Bennett, 2013; Sussman, 2009). An explanation for this is that auditory skills, spatial awareness, attention development, and social engagement can be transferred to other aspects of a child's life (Hallam, 2010).

This study focuses on music education for developmentally delayed children. Music enhances the child's sensory information and promotes spatial awareness and peer awareness (Ockelford et al., 2002; Sussman, 2009). Also, the multimodal nature of music helps with the delayed children's social skills and learning progress, which can sometimes be at a deficit due to the children's delays (Niland, 2009; Jamison et al., 2012). Music education is valuable for enhancing multiple areas of a developmentally delayed child's growth and development in musical and nonmusical environments. This study seeks to determine the musical nature and

musical responses of a developmentally delayed child in relation to normally developing children when the child is in different social environments.

## **Chapter 3**

### **Methodology**

#### **Introduction**

The purpose of this study was to investigate and compare the musical responses of a developmentally delayed child in a group setting (surrounded by peers, parents, and music teachers) versus in a home/isolation setting (surrounded by parents/caregivers only) in order to give further insight to music teachers and parents who deal with younger age groups.

#### **Guiding Questions**

1. How does the child respond to music? What is similar and/or different about these responses?
2. Does the child ever initiate musical responses?
3. With whom does the child musically interact?
4. Does the child's musical initiation occur more frequently in the group setting or the home setting?
5. Does the presence of peers influence the kind of musical responses given by the child? How does the child respond to a large group of peers? How does the child respond to a small group of peers? How does this differ from how the child responds to adults?

6. How does the child respond differently to peers younger than him versus peers older than him?

### **Overview**

This project was a case study of a child with developmental delays who had previously been enrolled in a parent-child music class. The mother, her developmentally delayed toddler, and an early childhood music teacher were the participants in this study. Data were collected via observation, video recording, and interviews with the mother and teacher. I participated in these music classes for infant/preschool children and their parents for a full year with this child before conducting this case study.

The study occurred during the spring semester of 2013 and the spring semester of 2014. During each of these semesters, the participants and I attended at least seven weekly, one-hour music classes. Video recordings were made every class and were reviewed and coded by me. My research advisor coded a randomly selected video to confirm reliability and validity in my coding. I kept a journal of observations I made during class if a video recording could not be taken for any reason. The mother was asked to keep a journal of observations she made at home and to share that journal as data for the study. The journal could take the form of videotaping or note taking. The teacher was asked to pay specific attention to the child during class and take note if the child made any noticeable progress or setbacks. These observations would be addressed during the interview with the teacher. I conducted two private interviews each with the teacher and the mother: one near the beginning of the study period and one after all of the music classes were completed.



### Site and Description of the Class

The case study was conducted at a private music school in central Pennsylvania. The music classes were already offered through this school; therefore, it was chosen as the site for the study. The classes took place in a dance room, which required the removal of shoes to protect the dance floor and to indirectly provide a more comfortable setting for the children. The procedures used in this class were based on the principles and theories described in the book *Music Play* (Reynolds et al., 1998).

Each class began with music instruments on the floor for the children and parents to play with as they waited for the rest of the children and parents to arrive. Instruments used were typical classroom instruments, mostly percussion, and included maracas, tambourines, drums, sticks, wood blocks, guiro, triangles, and finger cymbals. Some pitched instruments, such as xylophones and tone bells, were also available. This allowed the children to become familiar with different instruments and their sounds via physical touch. It also provided an opportunity for the children to interact with other children and their parents and to reacquaint the children with the setting, each other, and the teachers. A “Hello” song followed using the names of the children in the song to engage them and welcome them to the class. During the “Hello” song, I would place a bin in the center of the room for the children to put their instruments away. The teacher would sing a certain pattern of sounds and wait for a child to imitate it. Parents were encouraged to sing back in order to facilitate their children’s participation. The teacher would then lead different songs or chants, some with words and some without, some in a major tonality and some in a minor tonality as well as other tonalities. Each song was accompanied by a hand or body motion, which children and parents were encouraged to do. Depending on whether or not the children were attentive and the age group of the class participants, different songs and/or

use of neutral syllables and text would be utilized at the teacher's discretion. The teacher would sometimes utilize objects such as scarves and hula-hoops for the children to dance with to a selection of recorded symphony music. The class ended with a "Goodbye" song similar to the "Hello" song using the names of the children in the class.

While children were welcomed and encouraged to participate, they were never forced to participate. Often children would sit with their parents and observe during class. Sometimes children would explore the room while the teacher, parents, and sometimes other children were singing, chanting, and moving. When children did participate, their responses were acknowledged with a response from the teacher, but children's responses were never corrected. However, the teacher's model was always musically accurate.

### **Selection of Participants**

The mother and child pair participated in this class the year previous to the start of this study. I was a student intern at the time and knew the mother, child, and teacher. I spoke to the mother about the nature of the study and requested participation for her and her child (see Appendix A). The mother's participation would include interviewing, journaling, and observation. I also spoke to the teacher about the nature of the study and requested her participation (see Appendix A), which would include interviewing and observation. At the beginning of the study, the child was two years of age, and by the end of the study, he was three.

## Sources of Data

Several different data sources were used for this qualitative case study. I participated in the music classes while also video recording the class. The parent was asked to keep a journal of observations made at home and during the class. Interviews were conducted with the parent and teacher.

*Field Note Observations.* I participated in the music classes as an assistant teacher. After the classes, I wrote down some of the behaviors and sounds Will made in response to different stimuli such as the music, his mother, or movement. Video recordings were also made with the expectation that the field observations would capture my direct experience while the video recording would capture the actual event and anything the teacher or I may have missed. Occasionally, a video recording would not be successful, and I would only use my field notes.

*Video Recording.* Only two video recordings were usable from the first spring semester because of technological issues and accidental deletions of videos. Eight video recordings were obtained from the second spring semester. At the end of the study's duration, I reviewed and transcribed all of the videos. My advisor, who has a Ph.D. in Music Education, reviewed and analyzed a few transcriptions to ensure our analyses were similar. This process provided some sense of validity to my coding and justified my analyses of the other videos.

*Parent Journal.* The mother was asked to keep a journal at home in which she noted any musical initiation, behaviors, or responses that the child made at home or anywhere out of a classroom. She was encouraged to document any musical engagements with a video camera. Guidelines for journal writing were provided to specify the types of behaviors relevant to the study (See Appendix B). The mother only submitted video recordings, which were reviewed in the same manner as the class videos.

*Parent and Teacher Interviews.* Over the course of the entire study, two interviews were conducted with the parent: one before the study began and one at the conclusion of the study. Two interviews were conducted with the teacher as well: one during the study and one after the study. Each interview took about 20 minutes. The purpose of the interviews was to get the perspectives of a teacher and of a mother in regards to what they considered to be musical responses. Interview guides were used during the interviews (See Appendix C).

### **Procedure**

Before the study took place, I had already been assisting my advisor with these music classes as well as with other related work in early childhood music education. I read several books, articles, and journals on *Music Play*, childhood development, and music education. I contacted the three potential participants, informed them of the nature of the study, and requested their participation (see Appendix A). I completed the appropriate paperwork and submitted my proposal to the Penn State Office of Research Protections to obtain permission to conduct this study. After I gained approval from the Office of Research Protections and obtained consent from the participants (see Appendix D), I created permission forms for the rest of the class participants for their potential appearance on a video used for data collection during the music classes and for their presence in the study (see Appendix E). The consent forms for the participants further explained the study.

After all paperwork was submitted and consent was obtained, I interviewed the mother to determine her perspective of the child's current level of musical response and development. I then gave her guidelines for journal keeping and asked that she write instances of the child

exhibiting musical behaviors both in and out of the classroom. In addition, I encouraged the mother to video record instances of the child engaging musically out of the classroom and to submit those videos to me for analysis.

The data collection for the first phase of the study began at the end of March and continued to the beginning of May; data collection for the second phase began the following January and continued until May. During the first spring semester, data were only collected for four classes. Classes were held for eight weeks during the second spring semester with one hour per session. The first spring semester had minimal data collection due to class cancellations, the child and mother's attendance, and weather conditions. However, the mother and child attended every lesson during the second spring semester. The computer used to video record the class was discovered by the child during the first spring semester, and the child deleted some of the video recordings, yielding only two videos for analysis. The computer was placed in a more inconspicuous location during the second spring semester allowing for eight videos to be made. I transcribed each video and collaborated with my research advisor on how we would analyze the data. We compared our notes discussing the child's behavior and response to surrounding musical and non-musical stimuli, such as peers.

Interviews were conducted with the parent and teacher separately at times most convenient for the parent and teacher at the beginning and end of the study. At the end of the study, the journals from parent were collected for data analysis.

## Data Analysis

As indicated above, data were collected from several different sources including the field notes from the researcher, coding of the video recordings by the advisor and the researcher, journal notes from the parent and teacher, and interviews from the parent and teacher. These data sources were compared to provide a holistic perspective on the child's participation in class, behaviors in and out of class, and responses to musical and non-musical stimuli. Data were organized based on the guiding questions and analyzed for emergent themes.

My primary sources of data were the music class videos and the home videos given to me by Will's mother. I organized the videos by date and whether they were class videos or home videos. Then I transcribed every video with occasional minute markers in case I needed to return to the video for clarification. Before collaborating with my research advisor, I read through each transcription briefly, and four general themes emerged: musical response, mimicking a child, awareness of self, and no interaction. I highlighted these themes the second time I read through the transcriptions: anything I considered to be a musical response in pink, any instance in which Will mimicked another child in orange, any situation in which Will became aware of himself in blue, and any situation in which Will had no interactions with other children or adults and was by himself in yellow. I read through the transcriptions a third time and took notes and underlined potentially significant situations that did not fit into the four themes. I noted the number of children in attendance at the class that day at the top of each transcription and how many of those children were older or younger than Will. I brought my initial analysis to my research mentor for discussion.

As I described my initial analysis to my research mentor, more specific categories and situations emerged. Two main categories were Interaction and Musical Response. The

Interaction category described with whom Will was interacting and whether or not his reaction was a musical or a nonmusical response. I looked for interactions between Will and another child, the teacher, the parent/caregiver, another adult, or himself. When reading through the transcriptions again, I highlighted interactions with a child in pink, interactions with a teacher in yellow, interactions with the parent/caregiver in green, interactions with another adult in red, and interactions with himself in blue. If I considered the response to be musical, I would italicize the text. The Musical Response category described the nature of the response. There were three kinds of responses, which included whether Will mimicked a musical response after an individual performed a musical act (Mimic in Response), whether he mimicked a musical response in the same manner as another individual at the same time (Mimic With), or whether he initiated his own musical response (Self-initiate). The types of musical responses included singing, chanting, speaking, moving, listening, and using an instrument. At the end of a sentence in the transcriptions describing a musical interaction, I would make a note stating the initiation and the type of musical response. I selected one of the transcriptions at random and asked my research advisor to code the transcription using the above guidelines. She read and coded the transcription, and we compared our analyses as a validation for my analyses on all other transcriptions.

I performed the same analysis on the home videos, which were much shorter in length. I placed the transcriptions with all of the notes side-by-side and looked for trends. I counted the number of times each musical interaction took place and what the nature of that musical interaction was. I entered this information into tables for analysis. The mother only submitted video recordings and did not submit a written journal entry as originally planned because of her

other time commitments. I used the interviews with the mother and the teacher to supplement my findings.



## **Chapter 4**

### **Results**

#### **Purpose**

The purpose of this study was to investigate and compare the musical responses of a developmentally delayed child in a group setting (surrounded by peers, parents, and music teachers) and in a home/isolation setting (surrounded by parents/caregivers only) in order to give further insight to music teachers and parents who work with younger age groups. The following questions were explored throughout this study:

1. How does the child respond to music? What is similar and/or different about these responses?
2. Does the child ever initiate musical responses?
3. With whom does the child musically interact?
4. Does the child's musical initiation occur more frequently in the group setting or the home setting?
5. Does the presence of peers influence the kind of musical responses given by the child?  
How does the child respond to a large group of peers? How does the child respond to a small group of peers? How does this differ from how the child responds to adults?
6. How does the child respond differently to peers younger than him versus peers older than him?

## **The Subject**

Will, a two-year-old boy at the start of the data collection, is about six months developmentally delayed. According to an interview with his mother, Will is delayed in his fine motor skills due to complications during pregnancy. He is not steady when walking and has a slight gait. However, he is about ten months advanced in his cognitive skills and is almost twice the average intelligence for his age, according to his mother. He sees specialists often because of his severe immaturity and is therefore surrounded by adults more often than most children his age. However, his parents engage him in social activities, such as the music class, which allow him to socialize with his peers.

In the remainder of the chapter, I present my analysis of the four different components of the data resources. First, I looked at the class video analysis and made note of some of the emerging trends. I did the same with the home video analysis. Then, I analyzed the initial and final interviews with both the parent and the teacher and made analyses on those as well as the journal entries submitted by the teacher.

### **Class Video Analysis**

When looking at the total number of interactions between Will and another child, a teacher, a parent or guardian, another adult, or himself, 55% of those interactions were considered musical (see Table 1). An interaction is considered to be any purposeful acknowledgement of another individual. A musical interaction is considered to be any purposeful acknowledgement of another individual in the context of singing, listening, speaking while music is playing, moving, chanting, or using an instrument. Of Will's musical interactions, the highest

percentage took place between the child and the teacher (88%); the second highest percentage between the child and himself (69%); the fewest number of musical interactions take place between the child and his peers (22%).

**Table 1. Persons with whom Will Interacted During Music Class**

<b>Who?</b>	<b>Number of Musical Interactions/ Total Number of Reactions</b>
<b>Child</b>	18 / 81 = 22%
<b>Teacher</b>	56 / 64 = 88%
<b>Parent/Nurse</b>	19 / 44 = 43%
<b>Other Adult</b>	16 / 30 = 53%
<b>Self</b>	50 / 72 = 69%
<b>Total</b>	<b>159 / 291 = 55%</b>

It was also of interest what activities comprised Will's musical interactions. "Movement" was the most common type of musical response followed by "Instrument." "Movement" involved any kind of purposeful motion, such as walking, running, arm swinging, stomping, following, or clapping. "Instrument" involves any involvement with the instruments provided at the beginning of the class. In addition to using the instrument in a traditional sense, Will could have carried the instrument around the room or taken it apart as well. The least common type of musical response in the classroom setting was "Sing" (see Table 2).

**Table 2. Types of Will's Musical Interactions During Music Class**

Date	Sing	Listen	Speak	Movement	Chant	Instrument	Total
4/23/13	2	3	1	3	1	2	12
5/7/13*	0	0	3	4	3	1	11
2/4/14**	0	0	0	0	1	1	2
2/11/14	0	2	3	17	0	9	31
2/25/14*	0	0	2	4	0	x	6
3/4/14	1	1	4	10	2	7	25
3/18/14	0	2	1	13	1	8	25
4/1/14	0	7	3	4	1	11	26
4/15/14	0	8	1	6	3	5	23
4/22/14	0	5	0	20	4	13	42
<b>Total</b>	<b>3</b>	<b>28</b>	<b>18</b>	<b>81</b>	<b>16</b>	<b>57</b>	

\* Half video was deleted

\*\* No Video Recording

In addition to analyzing the types of musical responses seen during the class, an analysis of the type of musical initiation was conducted as well. The three categories of musical initiation were “Self-Initiate”, “Mimic in Response”, and “Mimic With”. The most common type of musical initiation was “Self-Initiate”, and the least common type was “Mimic With” (see Table 3).

**Table 3. Type of Musical Initiation in the Music Class**

Date	Self-Initiate	Mimic In Response	Mimic With
<b>4/23/13</b>	3	3	1
<b>5/7/13*</b>	2	2	2
<b>2/4/14**</b>	1	1	0
<b>2/11/14</b>	11	6	3
<b>2/25/14*</b>	1	5	0
<b>3/4/14</b>	13	7	3
<b>3/18/14</b>	10	7	1
<b>4/1/14</b>	10	6	0
<b>4/15/14</b>	3	2	3
<b>4/22/14</b>	13	4	4
<b>Total</b>	<b>67 (53%)</b>	<b>43 (34%)</b>	<b>17 (13%)</b>

Certain general trends were observed when looking at the data over the course of the study on a week-by-week basis. Will's use of instruments drastically increased from 2013 to 2014, whereas chanting and speaking only slightly increased throughout the 2014 classes. Listening greatly increased toward the end of the study, and singing is relatively nonexistent throughout the course of the study. Also, in general, the number of musical responses increases throughout the entire year. It should be noted that on two occasions (May 7, 2013 and February 25, 2014) the subject deleted half of the video recordings because of curiosity and interest in the recording device. It should also be noted that no video recording was made on February 4, 2014. Therefore, the data recorded on those dates are not considered to be an accurate representation of the musical interactions the child displayed for those weeks.

### Home Video Analysis

Will's mother submitted home videos in replacement of written journal entries. There are only videos from the year 2013. The home videos were analyzed in a similar manner to the class videos. However, because of the short duration of the home videos, which were anywhere from fifteen seconds to one minute in length, a musical response was documented if it occurred at all rather than how many times a specific musical response occurred during each video. Also, each video was not recorded in the same environment or for the same length of time, which should be taken into consideration during analysis. In the home setting where only Will and the person recording the video (assumed to be the parent), "Sing" was the most common type of musical response (Table 4).

**Table 4. Types of Will's Musical Responses at Home**

Date	Sing	Listen	Speak	Move	Chant	Instrument	Total
<b>Summer 2013</b>		x		x			2
<b>Summer 2013</b>		x				x	2
<b>August 2013</b>	x				x		2
<b>August 2013</b>	x				x		2
<b>Fall 2013</b>	x					x	2
<b>Fall 2013</b>	x			x			2
<b>Fall 2013</b>	x				x	x	3
<b>Total</b>	<b>5</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>3</b>	

### Interview Analysis

Two interviews were given to both the parent and the teacher – one at the beginning of the study and one at the end of the study. Both the parent and the teacher were asked what they considered to be a musical response and how they related that to Will. The parent responded saying almost any type of response could be considered a musical response, and she related her statement to her son's behavior in class that morning. She pointed out that when the teacher sang, "Hello!" to him, he repeated it back in the same exact rhythm and tone. The teacher's response from her interview was more in-depth. She broke down a musical response into verbal responses, such as singing, speaking or chanting, and physical responses, including bodily or rhythmic movements. She also related her answer to Will's behaviors in class. She specifically highlighted Will's physical involvement. She noticed he would roll around and jump or run during certain songs and stop when the song was over.

During the first interview when the teacher was asked how she sees him musically developing relative to other children his age, she could not give a confident answer as to what Will or the other children were musically capable of. She noted that Will was not musically responding to the same extent as another child around his age, but that could be because the other child was considered to be musically advanced. Therefore, this would not be a good indication of Will's musical level. He seemed to be more on par with the younger children. Similarly, during the first interview, the parent was asked if she noticed a difference in Will's musical development versus that of the other children his age in the Music Play class. She commented that she was extremely happy with what she saw him doing, but in relation to the other children in the class, she sees Will to be more on the same level as the younger children than the children his age. However, he is slightly more active and curious than those younger children. She gave

an example of when Will threw a cymbal and then stared at the cymbal seemingly processing the sound it made when it hit the ground.

The parent's initial interview was more extensive than the teacher's initial interview. When asked if Will was as verbal and interactive at home as in class, she informed the interviewer that Will never sits still. However, she also made note that because of all the specialists and therapists that Will encounters on a regular basis, he is exposed to many more adults at his age than most children are. She informed the interviewer that he often initiates music on his own using chanting words as opposed to actual lyrics to songs. He knows that when the mother sings a lullaby song that it is associated with being tired or going to bed. The mother says that Will sings well and has been surrounded by music and singing since he was in the NICU as an infant.

The initial round of interviews gave a distinct impression of Will. He is always active but is more physically responsive in class and more verbally responsive at home. He interacts mostly with adults at home but equal numbers of children and adults in class.

In the later interview, the teacher was asked how much of a difference she noticed in Will's musical performances. She said there was a significant verbal change in that Will was contributing a lot more verbally. She also said he showed an increase in his musical contributions from the year prior, but he is still not very consistent. He seems to have a better understanding of the music, and when he makes a musical contribution, it is more mature. She noted that his interactions with the other children do not tend to be musical. He seems to have more spatial awareness, which in the context of the class, the teacher attributed to being a musical response. His interest has seemed to shift from the adults to his peers. When the parent was asked the same



question, she had similar observations. Will was participating more verbally in class and was even singing the songs from class at home on occasion, which he had not done before.

During her last interview, the mother said Will remembers words and music from Disney movies very well after only hearing the song a couple of times. He would sing the songs on pitch and make up movements to the songs. He would ask her on occasion to dance with him during certain songs also. He even sings the instrumental introductions or interludes and attempts to imitate the sounds of the instruments. She stated that she recognized that Will had beat and rhythm from an early age. He would sing all the time in perfect rhythm and would successfully move his body to the beat. When she would sing hello to him in a high voice, he would imitate it in a high voice. When she would sing hello to him in a low voice, he would respond in a low voice.

When asked for additional commentary during the last interview, the teacher made several statements. She stated that Will's verbal contributions were much more imaginative than the other children's. He was very attuned to what was happening in the room even if it seemed he was not paying attention. He also took great interest in the spatial characteristics of the instruments he played with. The parent's response to the same question was much more personal. She stated that music helped him survive. They would play music for him in his crib and in the NICU for hours at a time. When she sings to him, it catches his attention more than when she speaks to him. Music kept his oxygen regulated and kept him calm when he was in the hospital. He is drawn into music.

## **Journal Analysis**

As mentioned previously, a written journal entry was submitted from the teacher only. The parent's journal submission was in the form of home videos. In her journal, the teacher had similar observations as those reflected in her interviews. She noted that Will is less vocal than physical and easily approaches the other adults and children. He may come across as destructive but is actually spatially exploring his surroundings. His talking has developed, and he has even made verbal observations about the instruments on occasion.

## **Summary**

Conclusions about Will's musical progress were based on four data sources: class video recordings, home video recordings, interviews with the parent and teacher, field notes and journal entries from the teacher. Each of these sources was analyzed individually, and trends were noted as they were observed. The answers to the guiding questions will be answered in the next chapter using integrated information from the sources relevant to the question at hand.

## **Chapter 5**

### **Discussion and Conclusion**

#### **Summary**

The benefit of music education in the school curriculum for young children has been under scrutiny perhaps because many parents do not understand its importance not only for their child's musical development but also for the greater applications of the skills the child may acquire when being informally and formally exposed to music (Gordon, 2003). This misunderstanding in combination with my interest in music and child development inspired me to investigate the musical responses and interactions of a developmentally delayed toddler and how those change over time.

I assisted in the teaching of a music class for infants/toddlers and their parents and took interest in the musical progression of a boy, "Will", who is about six months developmentally delayed. I decided to take a closer look at his interactions with the other children and adults in the class to see if those interactions were musical or not. I took videos in class, held interviews with the parent and the teacher, and asked the parent and teacher to keep journals documenting noteworthy instances involving Will and music. In the remainder of this chapter I discuss the findings of the study and answer the guiding questions posed at the beginning of the study. I also draw conclusions based on these findings and make recommendations for future research and practice.

## Answering the Questions and Discussion

1.) How does the child respond to music? What is similar and/or different about these responses? After reviewing the transcriptions several times, six different kinds of musical responses were identified: singing, listening, speaking, moving, chanting, or playing with an instrument. Singing, speaking, and chanting are examples of verbal musical responses. Moving and playing with an instrument are considered to be physical or rhythmic bodily responses. Listening is a special kind of response that does not necessarily fall into either category but is significant and noteworthy.

Overall, Will was mostly a physical or rhythmic bodily responder in the classroom. “Movement” had the highest frequency of overall musical responses followed by “Instrument” (see Table 2). The verbal musical responses were the lowest frequencies of musical responses, and “Listen” was in the middle. Interestingly, Will was a dominantly verbal responder at home, particularly in “Singing” (see Table 4). There are several potential explanations for these patterns and the differences between them at home and in the classroom.

When looking at “Movement” in the classroom during 2013 versus 2014, Will was much more mobile in 2014. This could simply be due to the fact that he is a year older, as the teacher pointed out in her interview. His mother also stated that he is a curious boy with a very outgoing personality and that at home he never sits still, which could translate to the classroom environment. Most of his “Movement” behaviors in class included running around the room with the other children or moving his arms and body around in exaggerated motions as opposed to sitting quietly on the ground. The teacher stated that the latter stationary bodily motion is an indication of Will exploring his spatial awareness with the instruments and the people around him, which unbeknownst to many parents is considered to be a musical response.

Spatial awareness was explored using the classroom instruments as well. The teacher mentioned an instance when Will threw the cymbals on the ground and stared at them. She stated that it seemed as though he was processing not only the sound the cymbals made, but also the distance they traveled and how far they moved after striking the ground. In another instance, Will wore a drum as a purse over his shoulder and swung it around his body as he walked around the room. The teacher explained he could have been feeling the weight of the instrument and exploring its different uses. He used prior knowledge of seeing his mother's purse, which consisted of a strap attached to an object, and integrated that function to the drum, which had a string attached to it much like the handle of the purse. However, he swung his body around so that the drum would hit the front and back of his legs making a slight pounding noise. He would swing back and forth rhythmically.

Spatial awareness is a key component of the development of fine and gross motor skills, which children use in their play (Jamison et al., 2012), and music has been shown to increase both fine and gross motor skills (Eason & Johnson, 2013; Gordon, 2003; Hallam, 2010; Niland, 2009; Trinick, 2011). Will's mother stated in her interview that Will is delayed in these areas. The Music Play classroom provided Will with a focused opportunity to exercise these elements of development with the integration of music, peers, and instruments. When Will is at home, he is interacting either with himself or other adults and does not have the opportunity to play with children his age. Will would often sing to himself or along with a recording of a song. On some occasions he would play on the piano, but the opportunities for motion, child interaction, and exposure to multiple instruments were more abundant in the classroom setting, possibly explaining the high frequency of "Movement" and "Instruments" in the classroom and the high frequency of "Singing" at home.

Will used the classroom instruments in a traditional manner as well. When he was handed a maraca, he knew to shake it. When he was handed a mallet, he knew to hit it against something, whether it was the floor or the xylophone or a wooden block. When he was handed the triangle, he knew to hit it and say, "Triangle." These examples illustrated his familiarity with the instruments from past experience and modeled behavior.

2.) Does the child ever initiate musical responses? Yes. Three types of musical initiation patterns were observed: Self-Initiate, Mimic in Response, and Mimic With (see Table 3). Will initiated about half of all of the musical responses. When looking down the table, a trend can be seen regarding his progression of self-initiation. During the first spring semester, Will had very few musical interactions in any of the three categories. During the second spring semester, however, his self-initiated musical responses were significantly more frequent than the mimicking responses on any other given day.

There could be several different explanations for the increase in self-initiated musical responses. Will was a year older during the second spring semester. Therefore, the increase in self-initiation could be due to increased confidence and a more outgoing personality. Also, he had already been in the Music Play environment the year before and could be more familiar and comfortable with his surroundings and with the music itself allowing for more autonomy in his behaviors and actions. Additionally, Will's outgoing personality could account for the self-initiation.

3.) With whom does the child musically interact? In the classroom, Will responded musically in six different ways, as mentioned previously. He had the opportunity to interact with his peers, the teachers, his parent or nurse, another adult, or himself. The highest percentage of musical interactions was between Will and the teacher, which is understandable and expected

considering the teacher's focus on providing musical interactions with the children (see Table 1).

The second highest percentage of musical interactions was with himself. This could attest to an exploratory and learning phase. Will is also an only child and does not have much interaction with children his age outside of the Music Play classes, according to the interview with his mother. Therefore, when Will plays at home, he usually plays with himself or his parents and caretakers, which could lead to the comfort and familiarity of playing by himself in the classroom.

When looking at the total frequency of interactions between Will and another person, Will interacted the most with his peers. Interestingly, he had the lowest percentage of musical interactions with his peers (See Table 1). This can once again be explained by Will's lack of regular interaction with children his age. Because interacting with his peers is a somewhat novel experience, his initial reactions and interaction toward the children will be more playful than musical. He interacted the least with other adults, but when he did interact with them, half of the time it was a musical interaction.

4.) Does the child's musical initiation occur more frequently in the group setting or the home setting? Because Will is not in a musically focused learning environment at home and is not surrounded by his peers, there are fewer opportunities for anyone other than himself to initiate a musical response, to mimic others in response, or to mimic a musical response with another individual besides his parents. Therefore, his musical initiation occurs more frequently in the home setting. However, musical interactions with himself were the second highest frequency of musical interactions in the classroom other than with the teacher (see Table 1).

5.) Does the presence of peers influence the kind of musical responses given by the child?  
How does the child respond to a large group of peers? How does the child respond to a small

group of peers? How does this differ from how the child responds to adults? The presence of peers could have potentially influenced the kind of musical responses given by Will. As explained previously, Will musically responded more physically in the classroom in the presence of peers and more verbally at home in the absence of peers. However, in no classes was Will the only child present and there were not any documented home scenarios when peers were present. Therefore, a conclusion that the presence of peers directly influenced the kind of musical responses given by Will cannot be made. Other factors, such as the presence or absence of adults, the environment, or the familiarity of the home setting could have made the influence on the difference in musical responses in the two different settings.

In the two classes where Will was only one of two or three participants, which can be considered a small group of peers, he was more vocal. A small group of peers could resemble more his home setting where no other children are typically present. According to the mother's video submissions, Will is more vocal at home. When in a large group of peers, there is less attention on Will and less opportunity for Will to be vocal and uninterrupted by the other children. There are also more distractions and opportunities for Will to play with the other children, which could account for the decrease in verbal responses in a large group of peers.

6.) How does the child respond differently to peers younger than him versus peers older than him? As stated in her interview, the teacher believed Will to be more musically on par with the younger children. Children in the Music Play class included infants who could not stand or walk on their own, toddlers younger than Will, and two children who were one or two years older than Will. Will would minimally interact with the infants who could not move around on their own, which corresponds with his mobile nature. He would interact with the children older than him when he was in the group of people actively participating in the movements and songs,



but he would mostly interact with the toddlers younger than him who were running around the room or playing on the bars attached to the walls. This could be because of an understanding and an expectation of the older children to pay attention to the teacher and the songs being sung. Although Will's intelligence level and awareness of his surroundings are on par if not ahead of his peers, according to his mother, Will would be distracted by the younger children running around and not actively engaged in the musical activities.

### **Limitations and Recommendations for Future Research**

This project was a case study of a male toddler with developmental delays. Therefore, results cannot be generalized to all toddlers with developmental delays, and further research would need to be conducted on a female toddler of similar characteristics. Will had an outgoing personality. Further research on both children with outgoing personalities and children with shy personalities to see if there is a significant difference in responses between the two would be of interest. Will was also an only child, which could have influenced the way he interacted with other children and his comfort being in the presence of other children. Family size and structure would be an interesting aspect for future research as well.

Because of Will's age and the ambiguity of his symptoms, a label could not be placed on his condition. Further research on children with specific developmental disabilities, such as Autism is recommended. Several videos were accidentally deleted or not recorded due to technical difficulties and Will's curiosity. The study could have yielded more data and insights if it had taken place over a longer period of time.

## Recommendations for Practice

Often when parents discover their child has developmental delays in any certain area, they get discouraged about what limitations the child might face in the future. Early exposure to any developmentally fostering experiences, such as music or playgroups, can be very helpful. Based on findings in previous literature and the some of the findings in this study, there are several recommendations for both parents and teachers of developmentally delayed toddlers that could be useful.

Developmental delays can occur cognitively, physically, or in a combination of the two. In this study, Will showed signs of physical developmental delay. During his first semester in class, he was more reserved in his musical responses, but during his second semester of the class, he was very mobile and interested in the instruments and the children around him as he became more familiar with both the children and the setup of the classroom.

Exposing developmentally delayed children to a small, controlled social environment allows them to interact with children their age who are both normally developing and developmentally delayed. This fosters social skill development, which is a key development in young children. The unique feature of the Music Play-based class is that it incorporates an intimate social setting with a musical setting. Early music exposure has already been shown to lay the foundation for not only a solid bases for musical development (Gordon, 2003), but also for nonmusical areas of growth, including body awareness and auditory skills (Eason & Johnson, 2013; Hallam, 2010; Trinick, 2011).

Social skill development and musical development can very well be interdependent. A parent can enrich his or her child's critical years by involving the child in a Music Play-style

class for several years. As seen in this study, Will became more musically involved after already having been involved in the class for an initial spring semester.

Teachers involved with children with developmental delays should pay attention to the type of developmental delays the child has (physical, cognitive, or both), the personality of the child, and what the child tends to take interest in. Will was delayed in his motor skills, had an outgoing personality, and enjoyed the presence of the other children and using the instruments. The environment of the classroom allowed him to freely move around and engage with the other children while also being able to play by himself or with the instruments. This kind of informal exposure seemed to be very beneficial to Will's experience in the class. Then, the teacher and parents can motivate and encourage the type of learning the child has displayed in order to reap the full benefits of the informal environment, which could lead to easier or quicker transitions to formal learning environments.

### **Conclusions**

Although not been much previous research has been conducted on the specific topic of this study, the findings of this study are similar to other research on childhood developmental delays and music (Gordon, 2003; Darrow, 2010; Darrow, 2012; Ockelford et al., 2002; Sussman, 2009). The findings support the notion that music education provides an adaptive and social environment for children of all developmental stages to interact with themselves and each other. The Music Play class provided a child with developmental delays and minimal peer interactions an opportunity to engage with children his own age while being exposed to music in an informal

manner thus establishing the foundation for future musical experiences. It allowed children with a variety of learning behaviors to play together and be musically engaged with one another.

My previous experiences with music and child development sparked my motivation for this study. My experiences fueled my beliefs in the importance of music education and the benefits it provides to growing children, but other research backed my beliefs in showing that informal exposure to music is vital for successful musical development later in life among other nonmusical aspects of social and cognitive development. This study reinforced both areas of thought and will hopefully inspire parents and teachers of both normally developing and developmentally delayed children to incorporate music into their children's lives as early as possible. It will also hopefully give insight to parents and teachers of developmentally delayed children as to how their children learn, develop, and interact with others in both musical and nonmusical settings.

## **Appendix A**

### **Recruitment Materials**

#### **Parent Recruitment**

I hope to do a case study on the musical responses of a developmentally delayed toddler in the home and group setting, and I am requesting the participation of you and your child in my study. I am a student at Penn State and an intern for this music class. I work closely with my advisor, who is a member of Penn State's faculty. Participation by both you and your child is required if you choose to participate in this study. It is also requested that you keep a journal of your observations of your child at home. A form is attached with guidelines for your journal. You may be asked for interviews to be interviewed on your observations. Your consent is necessary for the participation of your child as well. If you have any questions or concerns, contact Lauren Markowski at (850)-865-2629.

#### **Teacher Recruitment**

I hope to do a case study on the musical responses of a developmentally delayed toddler in the home and group setting, and I am requesting your participation in my study. I am a student at Penn State and an intern for this music class. I work closely with my advisor, who is a member of Penn State's faculty. Experience as a child music educator is necessary. It is also requested that you make observations of the child in the class. You may be asked for interviews on your

observations. If you have any questions or concerns, contact Lauren Markowski at (850)-865-2629.

## **Appendix B**

### **Journal Guidelines**

#### **Parent Guidelines**

- Are there any special instances from the summer or last fall that you can recall where your child had a significant musical encounter?
- Does he remember songs from the radio or from movies?
- Does he know the tunes or the words?
- Has your child initiated what you consider to be musical sounds or phrases at home?
- If so, in what way?
- Do you have examples of such behavior?
- Do you sing to your child at home?
- If so, how does he respond?
- During a Music Play day, how does he behave and respond musically in class, and does this differ from home?
- If there is a difference, is he better behaved in music classes or at home?
- In your opinion, does music have any impact on his life?
- Does your child respond more often when you sing or when you speak?
- Did he behave in any unusual way today?
- If so, did it have any connection to music?

#### **Teacher Guidelines**

- What do you notice as a major difference between the child's performances in class this year versus last year?
- Does the child initiate what you consider to be musical sounds or phrases during class?
- How did he respond musically in class today if at all?
- Does he seem to interact with the other children and parents?
- How so?
- Is the child responding appropriately for his age and developmental stage?
- How is he performing in relation to the other kids in the class?
- What are some other relevant observations you have made?
- Were any impressive improvements made?

## Appendix C

### Interview Guidelines

#### Initial Teacher Interview Questions

1. How is Will developing musically relative to other children his age?
2. Is he musically behind for his age group?
3. What do you consider to be a musical response?
4. Have you noticed progress by Will since you started teaching the class?
5. What other additional comments might you have?

#### Initial Parent Interview Questions

1. What do you consider to be a musical response?
2. Is he as active at home as he is in class?
3. Does he always mimic?
4. How old is he?
5. Is he as verbal and interactive at home as he is in class?
6. Does he initiate music on his own?
7. Does he sing well?
8. Do you sing to him at home?
9. Is Will good at remembering lyrics?
10. Does he ever make up his own songs or tunes?
11. How delayed is he in development?
12. Have you noticed his musical development in comparison to other children his age?
13. Is there anything else you would like to comment on?

#### Final Parent Interview Questions

1. Are there any special instances from the summer or last fall that you can recall where Will had a significant musical encounter?
2. Does Will remember songs from the radio or from movies? Does he know the tunes or the words?
3. Is there a difference between your child's behaviors in the presence of his peers and at home when no children are around?
4. Does he initiate musical responses at home? What are some examples?
5. When you initiate musical sounds, does he respond?



6. If there is a difference, is he better behaved in music classes or at home?
7. In your opinion, does music have any impact on his life?
8. Did will behavior in any unusual way today?

### **Final Teacher Interview Questions**

1. In general, how much difference do you see from last year?
2. Do you think Will interacts with the other children in a musical manner?
3. How do you think Will responds to his peers in comparison to adults?
4. When he runs in circles, would you consider this to be a musical response or is he simply mimicking the other children?
5. Do you notice his yelling or screaming to be on pitch with what is being sung?
6. Are there any other comments you would like to make?

## Appendix D

### Letters of Consent

#### Parent Letter

#### Implied Informed Consent Form for Social Science Research

The Pennsylvania State University

**Title of Project:** A Case Study of a Special Needs Toddler's Musical Development

**Principal Investigator:** Lauren Markowski

laurenmarkowski123@gmail.com

850-865-2629

304 Cooper Hall, University Park, PA, 16802

**Advisor:** Joanne Rutkowski

rvi@psu.edu

206 Music Building 1, University Park, PA, 16802

814-863-0419

**1. Purpose of the Study:** This purpose of this case study is to compare the musical responses of a developmentally delayed child both in the home setting (isolated) and in the group setting (surrounded by peers, parents, and music teachers). Specifically, does music instigate more of a response in a developmentally delayed child than regular speech? Does the child ever initiate musical sounds? Does this initiation occur more often in the group setting or the home setting? Does the presence of peers affect the kind of musical responses given by the child?

**2. Procedures to be followed:** You, your child, and the teacher are participants in this study. As participants you will be asked to attend the weekly, 1-hour music classes. Video recordings will be made of seven classes. My advisor and I will view these videos to document the nature of your child's musical interactions in class. In addition, I will ask you to keep a journal of observations you make of your child's musical interactions at home. I will provide a guideline for this journal. At the conclusion of the study, I will ask for a copy of the journal. Finally, I will interview you twice: one near the beginning of the study period and at the end of the study period. We will determine a mutually acceptable time and meet for the interviews (in person, telephone, Skype, etc.) I will audio record the interviews to be transcribed later.

**3. Discomforts and Risks:** There are no risks in participating in this research beyond those experienced in everyday life. Some of the questions are personal and might cause discomfort.

**4. Benefits:** This study may inform the teacher how to encourage the musical development of a developmentally delayed child in the future. The results may also inform you about ways to more effectively musically interact with your child. You and the teacher may be able to guide the child's musical development more effectively. The results of this study may provide insight and guidance for music teachers and parents of developmentally delayed children.

**5. Duration/Time:** You will be involved in this study for seven music classes. Each class is approximately one hour. These seven music sessions will be once a week through the second week of May. I will interview you twice: once near the beginning and once near the end. Each of these interviews will last about 30-45 minutes.

**6. Statement of Confidentiality:** Your participation in this research is confidential. The Pennsylvania State University's Office for Research Protections, the Institutional Review Board and the Office for Human Research Protections in the Department of Health and Human Services may review records related to this research study. In the event of any publication or presentation resulting from the research, no personally identifiable information will be shared because your name is in no way linked to your responses.

**7. Right to Ask Questions:** Please contact Lauren Markowski at 850-865-2629 with questions, complaints or concerns about this research. You can also call this number if you feel this study has harmed you. If you have any questions, concerns, or problems about your rights as a research participant or would like to offer input, please contact The Pennsylvania State University's Office for Research Protections (ORP) at (814) 865-1775. The ORP cannot answer questions about research procedures. Question about research procedures can be answered by the research team.

**8. Payment for participation:**

You and your child will attend the music classes for Spring 2013 for free.

**9. Cost of participating:**

There will be no additional costs for participating.

**10. Voluntary Participation:** Your decision to be in this research is voluntary. You can stop at any time. You do not have to answer any questions you do not want to answer. Refusal to take part in or withdrawing from this study will involve no penalty or loss of benefits you would receive otherwise.

You must be 18 years of age or older to consent to take part in this research study. If you agree to take part in this research study and the information outlined above, and you agree that your child may participate, please sign your name and indicate the date below.

You will be given a copy of this consent form for your records.

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 Participant Signature

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 Date

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 Person Obtaining Consent

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 Date

**Video Recordings:** Video recordings are necessary as part of data collection. I would like to archive these for use in disseminating my research. Please indicate your willingness for me to use the recordings by checking the appropriate statement below.

\_\_\_\_\_ I agree that segments of the recordings made of my and my child's participation in this research may be used as part of data collection.

\_\_\_\_\_ I do not want segments of the recordings made of my and my child's participation in this research to be used as part of data collection.

### Teacher Letter

#### **Implied Informed Consent Form for Social Science Research** The Pennsylvania State University

**Title of Project:** A Case Study of a Special Needs Toddler's Musical Development

**Principal Investigator:** Lauren Markowski  
laurenmarkowski123@gmail.com  
850-865-2629  
304 Cooper Hall, University Park, PA, 16802

**Advisor:** Joanne Rutkowski  
rvi@psu.edu  
206 Music Building 1, University Park, PA, 16802  
814-863-0419

**1. Purpose of the Study:** This purpose of this case study is to compare the musical responses of a developmentally delayed child both in the home setting (isolated) and in the group setting (surrounded by peers, parents, and music teachers). Specifically, does music instigate more of a response in a developmentally delayed child than regular speech? Does the child ever initiate musical sounds? Does this initiation occur more often in the group setting or the home setting? Does the presence of peers affect the kind of musical responses given by the child?

**2. Procedures to be followed:** A mother, her developmentally delayed toddler, and you are the participants in this study. I will ask you to keep a journal of observations you make of this child's musical interactions during class. I will provide a guideline for this journal. At the conclusion of the study, I will ask for a copy of the journal. Finally, I will interview you twice: one near the beginning of the study period and at the end of the study period. We will determine a mutually acceptable time and meet for the interviews (in person, telephone, Skype, etc.) I will audio record the interviews to be transcribed later.

**3. Discomforts and Risks:** There are no risks in participating in this research beyond those experienced in everyday life.

**4. Benefits:** This study may inform you how to encourage the musical development of a developmentally delayed child in the future. The results may also inform the parent about ways to more effectively musically interact with her child. The mother and you may be able to guide the child's musical development more effectively. The results of this study may provide insight and guidance for music teachers and parents of developmentally delayed children.

**5. Duration/Time:** You will be involved in this study as a teacher for seven music classes. Each class is approximately one hour. These seven music sessions will be once a week through the second week of May. I will interview you twice: once near the beginning and once near the end. Each of these interviews will last about 30-45 minutes.

**6. Statement of Confidentiality:** Your participation in this research is confidential. The Pennsylvania State University's Office for Research Protections, the Institutional Review Board and the Office for Human Research Protections in the Department of Health and Human Services may review records related to this research study. In the event of any publication or presentation resulting from the research, no personally identifiable information will be shared because your name is in no way linked to your responses.

**7. Right to Ask Questions:** Please contact Lauren Markowski at 850-865-2629 with questions, complaints or concerns about this research. You can also call this number if you feel this study has harmed you. If you have any questions, concerns, or problems about your rights as a research participant or would like to offer input, please contact The Pennsylvania State University's Office for Research Protections (ORP) at (814) 865-1775. The ORP cannot answer questions about research procedures. Question about research procedures can be answered by the research team.

**8. Payment for participation:**

You will receive no additional compensation for participation in the study.

**9. Cost of participating:**

There will be no additional costs for participating.

**10. Voluntary Participation:** Your decision to be in this research is voluntary. You can stop at any time. You do not have to answer any questions you do not want to answer. Refusal to take part in or withdrawing from this study will involve no penalty or loss of benefits you would receive otherwise.

You must be 18 years of age or older to consent to take part in this research study. If you agree to take part in this research study and the information outlined above, please sign your name and indicate the date below.

You will be given a copy of this consent form for your records.

\_\_\_\_\_  
Participant Signature

Date

\_\_\_\_\_  
Person Obtaining Consent

Date

**Appendix E**  
**Permission Forms**

**Study Involvement Permission Form**

I grant permission for the *Music Play* classes, in which my child and I participate, to be recorded with still photographs or video-recordings. These recordings and/or pictures may be used during conferences and workshops for teachers or in college classes. They will not be used for research purposes. Other than names that may be included during class, and would consequently be included on the video recordings, no persons will be identified in any other way.

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Parent's Signature

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Date

**Video Recording Permission Form**

A research study is being conducted on one child in the Music Play class. As part of data collection, video recordings will be made of seven classes. However, no data are being collected on these persons. I intend to use video clips to illustrate results of my study when presenting it at conferences. Due to the nature of these classes, it is likely that the teacher, you and/or your child may appear in the video. May I use these videos when sharing the results of my study?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

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Signature

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Date

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## **ACADEMIC VITA**

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### ***Education***

**The Pennsylvania State University, University Park, PA**  
*Eberly College of Science*  
Bachelor of Science in Biology with an Option in Neuroscience  
Minor in Psychology  
Honors in Music Education  
Class of 2015

### ***Honors and Awards***

*Schreyer Honors College*  
*Dean's List*, Spring 2013, Fall 2013, Spring 2014, Fall 2014  
*Delta Zeta Outstanding Senior Award*

### ***Association Memberships/Activities***

*Delta Zeta Sorority:*  
Bid Day Chair, Recruitment Committee, Music Chair, Slating Committee,  
Homecoming Committee, Judicial Board, Selections Committee  
*Panhellenic Community:*  
Pi Chi Recruitment Counselor  
*Homecoming:*  
Royalty Committee Voting Captain  
*IFC/Panhellenic Dance Marathon (THON):*  
Rules and Regulations Committee, Hospitality Committee, Entertainment Committee  
*Schreyer Honors College:*  
SHO Time Mentor  
*Adult ESL Tutor*

### ***Professional Experience***

Music Education Research  
Sacred Heart Hospital Emergency Room Shadowing  
Pediatric Occupational Therapy Shadowing  
Orthopedic Surgery Shadowing