January 2013

An Investigation Of Gender's Role In Three- And Four-Year-Old Children's Musical Play

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AN INVESTIGATION OF GENDER'S ROLE IN THREE- AND FOUR-YEAR-OLD CHILDREN'S MUSICAL PLAY

by

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A Dissertation

Submitted to the Graduate Faculty

in partial fulfillment of the requirements

for the degree of

Doctor of Philosophy

Grand Forks, North Dakota
December
2013

This dissertation, submitted by KariJo O'Keefe in partial fulfillment of the requirements for the Degree of Doctor of Philosophy from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done and is hereby approved.

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October 18, 2013
Date

Title An Investigation of Gender's Role in Three- and Four-Year-Old Children's Musical Play

Department Music

Degree Doctor of Philosophy

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KariJo O'Keefe
December 20, 2013

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ACKNOWLEDGEMENTS

I wish to express my sincere gratitude to the members of my advisory committee for their advice, guidance, and support during my time here at the University of North Dakota. You have all served as very important mentors for me, and I am very grateful for the time you have given me. I would also like to thank my family and friends for being my support – listening to my joys, consoling me during my sorrows, and celebrating my achievements. A big thank you goes to my husband, Jon, and my two dear sons for being my rock (and my mini-rocks) through every point of my graduate journey. Your love got me to where I am today. Lastly, I must thank my advisor, Dr. Katherine Norman Dearden, for all the guidance and counseling she has given me throughout my graduate degree. She asked the tough questions, she pushed me to be my best, and she never settled for less than perfection. I would never have learned so much from anyone else, and I am a finer researcher and scholar today because of you.

To My Boys

ABSTRACT

Young children engage in many activities, with play being the most prominent. Musical play occurs when children freely investigate sound through vocal, instrumental, or other means. Identifying the extent of musical play – and the role that gender plays in musical play – may provide important information about children's natural tendencies.

The purpose of this study was to investigate gender's role in three- and four-year-old children's musical play, and to investigate further the general nature of musical play. A grounded theory methodology was used, and data was gathered from field and individual child observations, and parent and preschool teacher surveys. A total of seven preschools in a Midwestern city participated, which included 111 children (48.05% response rate) and 40 preschool teachers (75.47% response rate).

Statistically significant differences were found between the children's musical play and children's age, sex, masculine and feminine play gender, and strong masculine and feminine play gender. No differences existed between the musical play of those having an androgynous play gender and the musical play of those having a strong masculine play gender, those having a strong feminine play gender, and those having strong play genders (combined).

The play environment provided by the teachers did not affect musical play frequency. Children who attended family music classes moved to music more during

play. No differences were found between musical play and exposure to music at home, parents' self-reported musicality in the home, and the parent's musical background.

The children engaged in musical play for almost a quarter of the total free play time. The children used their voices the most (87.39%), followed by playing instruments and found objects (6.91%), and moving to music (5.70%). Vocally, the children engaged in vocal exploration the most (60.61%) and sang familiar songs the least (4.24%).

The type of play materials, group and solitary play, and some forms of teacher interaction enhanced children's musical play. Teacher interaction, however, was the most prominent factor in extinguishing musical play. Intense concentration and some instances of group play also extinguished musical play.

PREFACE

Personal Perspective

I began my public school teaching experience in the fall of 2005, educating preschool through fourth grade students in general music. Just as I had learned in my university music education classes, I taught the children to sing and move to music. Every day, I introduced a new song or singing game that kept the children excited to participate. To add variety to my teaching plans, I included instruments as often as I could. When the instruments came out, a whole new level of excitement and interest entered the room. I noticed that the children could sit with an instrument for a long time, investigating new sounds. They also would play instruments together, urging each other to create new sounds. "Hey, listen to this sound! Isn't it cool?" I started to notice that, when given free time, my students were learning without me. My beautifully written, perfect lesson plans were made in vain. My thought-provoking questions went unheard. I thought, perhaps, there was more to teaching music than I was taught in my undergraduate classes. I decided to answer my questions by obtaining my Master's degree.

During my last year of my Master's degree, I took an elective class regarding children and play. The more I learned in that class, the more I realized that "musical play" was, indeed, something of interest. As a result, the topic of my independent study was children's musical play. I was very excited to discover that every child I observed

was musical at least once during free play. Children are naturally musical, I concluded. We must give them the time to discover music for themselves, making it a part of their lives.

I graduated with my Master's degree and took a new public school position, teaching music to preschool through eighth grade students. Immediately, I put my musical play knowledge to use, supplementing my teaching with periods of musical play. I experimented to see what would work the best for classroom play, giving them free time with the instruments at first. Slowly, I started adding other types of learning centers: a listening center with classical listening selections, singing and/or music games center, a composition center, and eventually a computer center complete with music software. As I observed my students, I realized that their discoveries and creations were much more complex than they would be with my guidance. They even enhanced their musical play with concepts we had been learning. My interest in musical play continued to grow, and curiosity overwhelmed me. I even noticed some subtle differences between the genders – although I grew up with the notion that girls are more musical than boys, I observed many of my male students partaking in musical play more often. Why is this? Are girls drawn naturally to quieter activities, and boys enjoy making sound? I knew that I needed to further my education and continue to learn about the nature of children's learning through play. This may be an important, untapped resource that we teachers should be using. I was always taught that the educative materials and books used in the classroom were very, very important. Perhaps the only materials children need are their imaginations and curiosity.

Still full of unanswered questions, I began my Ph.D. work. During the first semester, I took a gender in education class. I learned that issues of gender are factors in learning, passed down to children through societal constructs. For this class, I did a study on gendered band instrument choice and found two collegiate bands to be highly gendered – this concurred with previous research conducted in many areas of the country. I began to have more questions about gender, especially related to what I knew about musical play. Music is, indeed, a prominent part of our culture. Could it be that, through enculturation, we adults teach children these musical gender stereotypes? Is it inborn? Throughout the remainder of my Ph.D. classwork, I continued to explore gender's role in several avenues of music through quantitative and qualitative studies.

Lastly, during my Ph.D. work, I became a parent. Being the researcher that I am, I experimented musically with my son. I was delighted by his evolving musicality and his experimentations with sound. He sings accurately at two years old, performs actions with songs, and creates new lyrics to the tune of "Twinkle Little Star." (Most of the lyrics contain the word "no," of course.) How does he do this at such a young age? Is this normal? Is he musically advanced because of the musical atmosphere I have created? Did he inherit my musical "gene?" Do any of these factors play a role in other children's musicality? Does gender have anything to do with this?

All these unanswered questions have led to this dissertation. I wanted to know whether gender created a difference in children's musical play, and whether or not those differences – if any – were significant. Who is more musical, boys or girls? What kinds of musical activities do the genders naturally gravitate towards? Is this due to any other factors? I thus began my exploration of children's musical play culture.

CHAPTER I

INTRODUCTION

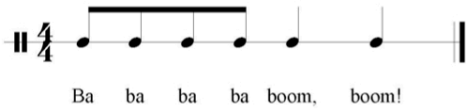
Vignette

The preschool room is full of play materials of all kinds, the walls decorated with the children's art projects. The teacher sits quietly at her desk, observing her three- and four-year-old students as they bustle about the room at play. The children are busy doing all sorts of different things: some are painting, some are building structures out of wooden blocks, and others are playing with sand in the sensory table. A boy and a girl are playing with dolls in the dramatic play area.

"You be the Daddy and I'll be the Mommy, okay?"

"Here, you dress the baby. I'll go get the high chair."

Suddenly, they begin bouncing the dolls on a table, and the girl begins to rhythmically chant: "Ba-ba ba-ba boom boom!" The boy joins in, and they chant this over and over again as they bounce the dolls to the steady beat.



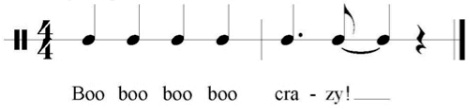
Abruptly, the boy stops bouncing his baby. He has an urgent question.

"What are we going to feed the baby?"

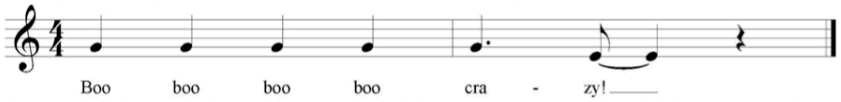
"What do babies eat?" asks the girl.

"Pizza?" the boy ventures. They giggle, and again bounce the babies.

The boy begins a new chant: "Boo boo boo boo, crazy!" They repeat this over and over again.



The boy now sings this chant on the Kodàly Call, using sol and mi.



The two children continue to bounce the babies while chanting and singing. Again, the boy is concerned about feeding the baby.

"We should really feed the baby."

"Okay, I'll go find something!" The girl wanders away and returns with a cup of pennies.

"Here, feed him this!"

"Num num num," they both say, as they pretend the baby is eating the pennies. A teacher comes over, insisting that this is an incorrect way to use the pennies.

"Pennies are used to count, not to feed babies," the teacher says sternly. "Now count with me. One, two, three…" The children reluctantly count the remainder of the pennies along with her. The teacher puts the pennies back in the cup.

"Good. Now, do it again and I'm going to watch you," she says.

"One, two, three…" the boy and girl quietly – and quite sadly – count the pennies. The teacher makes them count the pennies once more. She finally leaves to help another child.

As soon as the teacher leaves, the boy and girl immediately begin `joyfully` bouncing their dolls again, chanting and singing along to the background music. Uh-oh. The teacher is back again, complaining about the same penny situation. The boy and girl abandon their play.

Figure 1. A vignette.

This vignette, taken from my field notes, is a rich example of children's musical play. As the children created their dramatic play theme, they supplemented the play with music-making. This music-making occurred spontaneously, added by the children to enhance their play. It is a collective endeavor between a boy and a girl. The boy plays freely with the doll, apparently giving no thought that this might be a "girl's" activity. The teacher seems oblivious to the children's creation, and through her insistence on counting, she extinguishes their play. Only after she leaves do the children resume their song. When left alone, the children were able to freely discover the range of musical possibilities, providing a glimpse into the musical nature of young children.

Is this just an isolated incident? Are both boys and girls naturally this musical? Do children naturally engage in spontaneous musical play? Does the presence of teachers have anything to do with the amount of musical play that occurs?

Plato on the Importance of Learning Through Play

I am not the first researcher to be fascinated by children's play, nor the first to wonder about its impact on learning. Play is a complex human activity that encompasses a large part of a child's life. It is thought by many to be the vehicle in which children learn best. Researchers and scholars across several centuries have long sought to determine how children learn through play, and have developed numerous theories about its relationship to learning. Interest in play as a learning endeavor extends back much farther in time – as far back as the ancient Greeks. In fact, "the ancient Greek words for education/culture (*paideia*), play (*paidia*), and children (*paides*) all have the same root" (Mercogliano, 2003, p. 12). Plato reports this discussion between Socrates and Glaucon, Plato's older brother in his *Republic* (Mercogliano, 2003):

> "Well then, the study of calculation and geometry, and all the preparatory education required for dialectic must be put before them as children, and the instruction must not be given the aspect of a compulsion to learn."
>
> "Why not?"
>
> "Because," I said, "the free man ought not to learn any study slavishly. Forced labors performed by the body don't make the body any worse, but no forced study abides in the soul."
>
> "True," he said.
>
> "Therefore, you best of men," I said, "don't use force in training the children in the studies, but rather play. In that way you can also better discern what each is naturally directed toward." (Plato, 1991, 536).

Throughout this dialogue, Socrates maintains that deep learning will not happen through forced study. Because playful learning suits the nature of children, play can uncover a child's natural talents and predispositions. The type of play that is discussed is different than play for the purpose of leisure – the play that Socrates speaks of is a learning endeavor. This free play is much different than "learning by force," as education can sometimes be today (Krentz, 1998).

This discussion regarding play in education is not just an isolated incident. Throughout the *Republic*, Plato's linkage between education and play is pronounced. In fact, over 60 citations of variations of *paideia* and *paideuein* (verb form) in reference to education have been found (Krentz, 1998). Also, *paidia*, meaning to play or games, was found over 25 times (Krentz, 1998). Through repetition, Plato has reinforced play's importance in a child's education.

Educational Theorists of the 17th, 18th, and 19th Centuries on the Value of Play

Locke and Pestalozzi

The past has included a series of philosophers who believed children best learn through experience or play. In the 17th Century, John Locke introduced the idea of tabula rasa. This philosophy of learning was based on the idea that we are all born with an intellectual blank slate, learning through experience (Frost, Wortham, & Reifel, 2005). Locke also promoted the strong belief that each child is an individual, and early childhood education should accommodate for specific differences (Platz & Arellano, 2011). Therefore, if children learn best through play, this type of curriculum should be in place for this age level. Pestalozzi, a Swiss educator, also supported the individuality of children, as well as the idea that every child was capable of learning (Platz & Arellano, 2011). Furthermore, Pestalozzi felt that all children had the right to an education (Platz & Arellano, 2011) and that children should learn by doing (Henson, 2003). The Pestalozzian method supported the education of the whole child, including physical, mental, and emotional faculties (Henson, 2003).

Froebel

In 19th Century Germany, the focus of educating children shifted to educating *young* children. Froebel directed this shift in his *Mother Play*, or *Mutter Und Koselieder*, a collection of songs for mothers' use in the home. Froebel believed that play, games, and songs could enhance both children's learning and their interactions with one another (Platz & Arellano, 2011). From here, Froebel continued to promote the idea of learning through experience as he developed the kindergarten, schooling for young children. The

first kindergarten opened in the United States in 1860 in Boston, Massachusetts (Baader, 2004). Froebel supported not only the education of young children in the home, but also in a school setting.

Educational Theorists of the 20th Century on the Value of Play

Hall

In the early 20th Century, several philosophers felt that children experience stages of development, and that their play can reveal a current stage. G. Stanley Hall developed the recapitulation theory, in which children undergo stages that paralleled the evolution of our species. In this theory, children used play in order to "get the primitive past of the human species out of their system," allowing them to focus on "higher-level mental and social skills that were expected of civilized human beings" (Frost et al., 2005, pp. 14-15). In Hall's theory, children used play to move from primordial thinking to enlightened intelligence.

Groos

Similar to the Darwinian ideas of Hall, Karl Groos looked to the play of animals in order to explain a human child's play. Groos suggested that because young puppies play more than adult dogs, play may serve as practice to prepare for adult life (Frost et al., 2005). Human children use play in order to act out adult roles, taking on many responsibilities, such as caring for a doll like they would a baby (Groos, 1901). They also can take on the many roles of adult life, including gender roles. The children produce actions that they have observed in their environments, mainly from the adults in their lives.

Vygotsky

Although many theorists believed that children learn best by working independently, Vygotsky's zone of proximal development (ZPD) supports the idea of shared experience. The ZPD occurs when a child encounters a problem that is too difficult to solve alone; through the help of an adult or a peer at critical points, the child may work through the problem and succeed (Seifert, 1993). Bruner (1972) also supported the belief that a child's development is constructed through interactions among adults and peers. Some researchers (Smith, 2004) believe that adults can be made aware of a child approaching a ZPD by observing the child's play.

Piaget

Other theorists believed that children learn everyday skills through play. Piaget felt that play allowed for mastery of skill through assimilation and accommodation (Piaget, 1976). As a child plays, he/she assimilates the objects and actions to an existing schemata (cognitive structure). The child then uses these objects and actions in different situations, thus changing the cognitive structure to accommodate for the new information. Play can be used as a "happy display of known actions" as well, rather than a learning endeavor (Piaget, 1976, p. 171).

Dewey

John Dewey felt that learning should be acquired through free exploration (play) of the environment.

> "[The traditional method of teaching] imposes adult standards, subject-matter, and methods upon those who are only growing slowly toward maturity. The gap is so great that the required subject-matter, the methods of learning and of behaving are

foreign to the existing capacities of the young. They are beyond the reach of the experience the young learners already possess." (Dewey, 1938, pp. 18-19)

Young children already possess an interest in the environment. Parents, teachers, and caregivers can take that opportunity to allow children to learn in a way that is meaningful to them.

Maria Montessori and the Free Play Environment

Dewey's contemporary, Maria Montessori, shared his belief that children gain knowledge about the environment through play. More importantly, she was the first to identify the value of musical play in a child's development. Coming from a well-educated household, Montessori ranked among the highest in her class at the University of Rome when she became the first woman to graduate from the University's school of medicine in 1896 (Hainstock, 1978). After volunteering at a psychiatric clinic, selecting patients from the local insane asylums for treatment, she became the director of a practice demonstration school that was established by the National League for Retarded Children (Hainstock, 1978). She based her teaching materials on the research of Itard and Sequin. She was so successful with these methods that soon the children began showing the ability to care for themselves. "When these retarded children passed exams on a level with normal children, she began questioning the caliber of 'normal' education, as Seguin had before her" (Hainstock, 1978, p. 12).

Soon after taking a position at the University of Rome, Montessori organized the *Casa dei Bambini* (the children's house) where she was able to apply her methods to "normal children" (Britton, 1992). Fisher (1912) described this house as:

> a real home for children, where everything [was] arranged for their best interests, where the furniture [was] the right size for them, where there [were] no adult occupations going on to be interrupted and hindered by the mere presence of the children, where there [were] no rules made solely to facilitate life for grown-ups, where children, without incurring the reproach (expressed or tacit) of disturbing their elders, [could] freely and joyously, and if they please, noisily, develop themselves by action from morning to night" (Fisher, 1912, p. 31).

At this school, the students were provided with a prepared environment full of learning materials. Montessori allowed them to freely discover, manipulate, and learn about these materials, fostering their independence. The master principle of the Montessori method was "education by self-activity" in which the children learned and practiced real-life skills (Standing, 1962, p. 7). The Montessori method included materials for "sensory training, exercises in practical life, muscular education, and the teaching of basic academic skills" (Spodek & Brown, 1993, p. 93). As word spread about the successes of the Casa dei Bambini, Europe and the United States began establishing Montessori schools. Soon, one could find a Montessori school in many countries around the world, and still can at the present time. Teachers today support this method as they provide ideal conditions in which the students can explore and experiment (Bennett, Wood, & Rogers, 1997).

Montessori also created a theory called The Absorbent Mind. She believed that during the first six years of life, children, without knowing, soak up information at a rapid rate. During these first six years of life, "the impressions made on the child's mind actually shape and form it, and therefore have an impact on [the child's] future

development. Each and every early experience is of vital importance" (Britton, 1992, p. 12). The first six years of life (the absorbent mind) were split into two subgroups – the unconscious mind and the conscious mind.

Montessori felt that intelligence, as defined as "the ability to differentiate and to make judgments quickly," was formed during the first three years of life (Hainstock, 1986, p. 51). These first three years were called the unconscious mind. "They have an intelligence which is not conscious, though it often seems to be endowed with reason. The child has an intelligence of this unconscious type, and that is what brings about his marvelous progress" (Montessori, 1967, p. 24). Montessori felt that a child absorbed knowledge from the environment during this time (Montessori, 1967, p. 24).

The conscious mind was thought to emerge during ages three to six. Although the child is still in the absorbent period, consciousness begins to develop. "If you watch a child of three, you will see that he is always playing with something. This means that he is working out, and making conscious, something that his unconscious mind has earlier absorbed" (Montessori, 1967, p. 27). The type of learning process during this period is active, not passive like the unconscious mind (Britton, 1992, p. 13).

Maria Montessori and Musical Play

Montessori also supported music education through exploratory learning, or play – an active process similar to the conscious mind theory. She chose a musical collaborator, Anna Maria Maccheroni, to help unite the Montessori method and music education. "Montessori and Maccheroni devised a program that included music theory and ear training by having children participate in varied activities: playing instruments, 'auditioning' (listening to music), moving expressively, and singing" (Andress, 1980, p.

140). The women composed 35 booklets containing information about music education (Rubin, 1983).

The booklets were small, perhaps created with a child's size in mind; a child could hold the book in the lap and easily turn pages (Rubin, 1983, p. 218). Some sections were devoted to suggestions for the teacher, such as "presentation of activities, materials, representative student reactions, appropriate age levels, and average length of time for students' mastery" (Rubin, 1983, p. 218). Other sections, which were meant to pique the student's curiosity and to prompt student self-motivation, included didactic materials (Rubin, 1983, p. 218). The didactic materials contained foldout charts, graphs, and even dolls.

> The use of 21 dolls representing the seven letter names of music in their flat, sharp, and natural versions was another unique device. As means of identification, the dolls wore letter name tags and differently printed clothing for sharped and flatted functions. A rug of seven differently colored stripes (bordered with the first color) represented the seven different diatonic scale functions (plus repetition of the tonic) and was spread out so that selected dolls might be positioned appropriately. Each doll carried a flag (interchangeable) that denoted scale function by its color, coded to correspond with the colors of the rug. (Rubin, 1983, p. 219)

Other didactic materials used for music education included metal bells, tone bars, small bars of wood, strings (little harps), and a piano (Montessori, 1965). Six cardboard cylinders were also used as didactic materials, as each was filled with a different material, creating a different sound (timbre) and dynamic levels. The children could put the

cylinders in order of dynamic level, or even sort them according to timbre. Children, therefore, learned music through personal discovery at an individual pace.

Musical Play: An Exploration of Sound

Although play's value to children's learning has been studied and theorized upon for centuries, research regarding musical play is a relatively recent phenomenon. Researchers have defined musical play in a variety of ways, but the large majority has used some form of the "exploration of sound" definition (Berger & Cooper, 2003; Littleton, 1991; Moorhead & Pond, 1941; Toth & Miranda, 1997; Weeks, 2001). Vocally, children can explore the sound of their voices by speaking, whispering, yelling, singing, and even making sound effects. Instrumentally, children can play instruments in both conventional and unconventional ways in order to experiment with sound. Children can also look to the environment in order to discover new ways of making sound. For example, "drums" can be constructed from pots and pans, and struck with a wooden spoon. Even tapping a pencil on different objects in order to make different timbres allows a child to investigate sound.

Musical play has also been referred to as improvisation (Cusano, 1997) and creativity (Webster, 1987). Both of these musical behaviors, however, return to the idea of sound exploration. "The first stage in the creative process for all students is to explore and discover possibilities that exist for manipulating sounds…In the process of free exploration, children are building a repertoire of sound possibilities and techniques from which they can later draw to make musical/artistic decisions" (Campbell & Scott-Kassner, 1995, p. 249). The process of "playing with sound", then, may be considered a very important step in a child's musical development.

The National Association for Music Education (NA*f*ME), formerly known as the Music Educators National Conference (MENC), also supports play as a primary vehicle for young children's music learning. Founded in 1907 as the Music Supervisors National Conference (MSNC) by Phillip Hayden, NA*f*ME supports a variety of musical interest groups, and advocates research and continuing education for musicians of all kinds (Mark & Gary, 2007). Regarding the area of preschool children, NA*f*ME's vision states, "Play is the primary vehicle for young children's growth, and developmentally appropriate early music experiences should occur in child-initiated, child-directed, teacher-supported play environments" (MENC, 1994, p. 9). The association also acknowledges that this early learning will prepare children for musical learning and appreciation in the future. "An exploratory approach, using a wide range of appropriate materials, provides a rich base from which conceptual understanding can evolve in later years" (MENC, 1994, p. 11). Through musical play, children can develop curiosity and basic skills that serve as an important foundation for formal music learning during their school-age years.

Statement of the Problem

Research regarding musical play has identified and described the musical activities, along with the activities' functions, exhibited by children. These studies have not, however, recognized the frequency of musical play, the frequency of the types of musical play, nor the relationship – if any – of the type of musical play and the children's genders. Studies have only identified differences based upon children's sex (whether they were born male or female) and not their gender (whether they identify with being masculine, feminine, or androgynous). Corso (2003) found that musical play activities of older children assisted in the formation of gender-roles and identity. Zosuls et al. (2009),

however, found that gender play emerged as early as 17 months. It is important to identify the gender play of young children who are just beginning to exhibit gendered tendencies, because this age group may be free of the outside influences that older children are exposed to (i.e. media and peers).

Children use music in a variety of ways while at play. Campbell (1999) identified a variety of musical play activities in a school atmosphere. Children sang, clapped, patted, chanted to the beat of the swing, and jumped rope, among others. Children of all cultures incorporated music into their play in these similar ways. The play episodes revealed that children have a musical capacity we adults may underestimate. "No child is without the capacity for musical expression, and every child may find safe harbor in his or her preferred tones and personal music time," (Campbell, 1999, p. 13). Campbell (1999) eloquently portrayed the musical lives of those children, uncovering a culture all of their own. Other researchers have also described children's musical play, including their spontaneous singing (Bjørkvold, 1992; Kierstead, 2006; Moorhead & Pond, 1941; Smith, 2004; Young, 2002; Young, 2003, Young, 2004), playing instruments (Moorhead & Pond, 1941; Smith, 2004; Young, 2003), moving (Smith, 2004; Smithrim, 1997), and discovering timbre (Kierstead, 2006). These studies give empirical support to the prominence of musical play in children's lives.

Gender has been found to affect certain elements of children's musicality. Firstly, children have been found to portray gendered stereotypes during musical play, specifically during certain play activities (Merrill-Mirsky, 1988), play with instruments (Littleton, 1991), and instrument preferences (Sinsel, Dixon, & Blades-Zeller, 1997). Gendered stereotypes of instruments have even persisted throughout history. According

to Steblin (1995), Renaissance musical stereotypes included the assignment of stringed instruments to women and wind instruments to men. In the Renaissance era, a woman was not allowed to play the trumpet because of its association with the military, nor were women allowed to play instruments associated with high stature, such as a royal trumpeter and church organist (Steblin, 1995). Drums, especially, "were considered inappropriate for women because they required 'energetic and violent movements'; fifes, trumpets, and in general all wind instruments were disallowed because they distorted the face–thus disturbing the feminine ideal" (Steblin, 1995, p. 130). Today, children still associate specific genders with certain instruments (Abeles, 2009; Abeles & Porter, 1978; Delzell & Leppla, 1992). It is possible that children bring these beliefs of gender into their play.

Although research has shown that children exhibit musical gender stereotypes, the question remains whether or not children display gender behaviors during the musical play episodes. Is there a difference between the musical play of males versus the musical play of females? More importantly, factoring in whether or not the children display masculine or feminine characteristics during general play, are there differences between the musical play of masculine versus feminine children? Are those differences explained by societal gender stereotypes?

Purpose and Significance of the Study

The purpose of this study was to investigate gender's role in three- and four-year-old children's musical play. A secondary purpose was to investigate further the nature of musical play in general. The following research questions were posed:

1) Do the biological factors of sex and age affect the frequency or type of musical play?
2) Do the psychological factors of play gender and strong play gender affect the frequency or type of musical play?
3) Do other factors affect the frequency or type of musical play?
4) What types of musical play do children engage in the most? The least?
5) What kind of musical qualities (e.g. melodic and rhythmic) does children's musical play consist of?
6) What conditions enhance children's engagement in musical play?
7) What conditions extinguish children's engagement in musical play?
8) Does the presence or absence of background music affect the frequency or type of musical play?

Identifying musical play is important in providing both the music education and early childhood education fields with new and more detailed information regarding young children's play behaviors. An argument can be made that gender stereotypes and/or preferences may possibly restrict children's musical choices in later elementary, middle school, and high school. "When one considers the fact that every student has the capacity for musical learning and the impact music education can have on students, it is imperative that we as educators are attuned to the ramifications gender stereotypes can have on the experiences of our students" (Buttu, 2008, p. 32). For example, if young children learn that singing is an appropriate activity for girls and women, then a boy may not feel comfortable enrolling in middle school choir, even if he intrinsically enjoys singing. Only if he is bold enough to cross society's gender lines could that choice be

available to him. The results of this study may help to define the musical activities that the genders participate in regularly, allowing a public school music educator to tailor musical activities that expose children to all musical skills. If we begin to weaken gendered beliefs, then it is possible that children may be open to more experiences later in life.

The ability to weaken the strong societal influence of gender norms, however, may be unlikely. Gender roles have persisted in our society as far back as scholars can trace. It may be unrealistic to assume that we can abate societal constructs such as gender. "Gender stereotypes simplify our life and reduce the number of apprehension processes. In our childhood, we discover this and learn to follow them without thinking" (Aksu, 2005, p. 14). There are many cultural influences on children's musical play, including parent, siblings, peers, teachers, and others who perform a pronounced role in the child's life; media such as television and the Internet; and even school curricula (Marsh, 2011). By identifying gendered musical behaviors, a music educator will be more informed about the students and may be able to use that information to motivate interest. For example, if males are found to enjoy singing loudly while keeping the beat on a found object, then the music educator can plan learning activities around this type of behavior in order to develop musical interest in the boys.

The music education field should also be aware of what type of experiences young children have before entering the public school. Those educators can tailor musical activities to suit the needs of the children. For example, if the majority of the children were found to sing the most while at play, then a music educator may present more singing activities in order to plan for the children's interests. Campbell and Scott-

Kassner (1995) agreed with this idea by stating, "The key to successful music learning may be at least partly linked to the songs children know, invent, and transmit to each other while at play, and to the music they create on instruments during free-play time" (p. 22). On the other hand, if children are found to create songs the least, a music educator can plan improvisational and compositional activities in order to broaden the children's musical experiences. Preschool teachers can do the same to enhance the children's early experiences in music.

Study Limitations

First, this study can only be generalized to the Midwest city where the research was conducted, and communities like it. A second limitation includes the cultural differences that may influence children's play; a child who has lived in Southern United States may have a different musical background than another child who lives in the Midwest. Lastly, some children may be more musically inclined than others, whether or not they are surrounded by a musical environment at home or at preschool, or whether or not the adults in the environment are musical. These children may be more apt to engage in musical play or specific musical behaviors than others.

Definition of Terms

Adults:	an adult figure who plays a prominent part of a child's life, including both educating and attending to the child's basic needs (used interchangeably with caregiver and teacher)
Background music:	recorded music playing in the background during free play time
Building materials:	play materials used to build structures (e.g. Lego® blocks, wooden building blocks, magnet tiles)

Caregiver:	an adult figure who plays a prominent part of a child's life, including both educating and attending to the child's basic needs (used interchangeably with adult and teacher)
Carpet area:	an open space in the preschool room where most teacher-led instruction occurs
Dramatic play area:	a play area that housed dramatic play materials (e.g. play kitchen and accessories, dress-up items, dolls and accessories)
Deep learning:	accepting a concept into the cognitive after experiencing understanding in a personal way
Early childhood:	children aged three to four years (used interchangeably with preschool)
Free play time:	a time in which the child's activity choices are not restrained by or directed by an adult. It is possible, however, that the child may choose an activity that may involve adult interaction or adult intervention.
Gender:	the child's psychological sex type (i.e. masculine, feminine, or androgynous)
Musical play:	spontaneous musical behavior that explores sound in a variety of ways
Parent:	the guardian who is in charge of raising the child – this relationship may be biological, adoptive, or through fostering
Play:	a child-directed activity in which the child voluntarily explores, experiments, investigates, and interacts with the environment

Play gender:	the type of gender norms the child displays at play
Preschool:	in reference to a facility: an institution that provides both the education of young children and attention to their biological needs in reference to age: children aged three to four years (used interchangeably with early childhood)
Sensory table:	a table-sized plastic bin that houses sensory items (e.g. sand, water, snow, dry noodles)
Sex:	the child's biological sex type (e.g. boy or girl)
Teacher:	an adult figure who plays a prominent part of a child's life, including both educating and attending to the child's basic needs (used interchangeably with adult and caregiver)

Summary

This chapter has provided a brief historical narrative of play and musical play theories and philosophies. The sustained interest in play's contribution to learning demonstrates that past and present philosophers believe that play has many important aspects – many of which have yet to be identified. Although play theorists have supported musical play's contribution to musical learning, the absence of research regarding gender's effect on musical play is pronounced. I have provided a rationale for the need of identifying gender's influence on musical play, should it exist. The long-standing history of gendered instrumental stereotypes indicates that gender may impact more than just societal norms.

CHAPTER II

REVIEW OF SELECTED LITERATURE AND RESEARCH

Introduction

The literature regarding gender role behavior and musical play in early childhood includes several different areas of study. First, the impact of gender differences and the influences of children's play must be identified. It is important to understand the social context of play to fully describe how gender stereotypes are acquired and practiced by children. Secondly, the musicality and influences of the adults and peers in children's lives must be defined. Because young children spend a large amount of time with their parents, caregivers, and peers, identifying the musical activities and beliefs of these adults and peers is important in recognizing any relationships that may exist between adult and children's musical activities. Thirdly, the musical play and musical activity preferences of young children must be acknowledged in order to align the current study with past research. Lastly, background music's influence on young children's play and musical play is important because its presence may or may not support the findings of this study.

Gender Differences and Influences of Children's Play

Gender and its corresponding social constructs have been foci of research for many years. Before one can recognize the significance of gender stereotypes in children's play, one must identify how early these stereotypes may emerge. Zosuls et al.

(2009) examined gendered labels and gender-typed play of children less than two years of age. When children use gender labels, they assign masculine or feminine nouns to others, indicating an awareness of gender categories. Zosuls et al. (2009) maintained that prior research had not been able to accurately identify at what point gendered labels and gender-typed play emerge, or the methodologies were not suitable to obtain that specific information for very young children. Therefore, the mothers of the 82 participants recorded their children's language development in "language diaries" beginning when the children were infants. By the age of 21 months, the majority of the subjects had begun using at least one gender label, with the girls using these labels earlier than boys. The labels of "girl" and "boy" were used the most frequently. A small number of subjects were able to label themselves with a gender-specific noun.

The researchers also observed each child subject twice during play episodes – at 17 months and 21 months – in order to record gendered play behavior; the play environment was set up with gender stereotypical toys, such as trucks, and dolls, and gender-neutral toys, such as a telephone. The only significant difference between the children's gendered-play occurred with the most highly stereotyped toys, the truck and the doll, at 21 months of age. The gender-typed play significantly increased from 17 to 21 months. The emergence of gender labels was not related to gendered play; however, the ability to assign the words "boy" and "girl" and gender self-labeling were found to predict an increase in gender-typed play. Zosuls et al. (2009) also investigated whether or not the mother's presence had an effect on gender-typed play, finding no evidence that mothers enhance gendered play. The researchers felt that this set of mothers were "socializing gender-neutral play and that children are more gender typed in their solitary

play even at these young ages" (Zosuls et al., 2009, p. 696). It was concluded that as children learn about the social constructs in their environment, they shape their behavior to adhere to these stereotypes. These findings support previous research in the area (Caldera, Huston, & O'Brien, 1989; Cherney, Kelly-Vance, Glover, Ruane, & Ryalls, 2003).

Gender stereotypes tend to permeate children's play, as children utilize and build upon their understandings of gender. Freeman (2007) identified three- and five-year-old children's gender stereotypes as applied to toys in a Southeastern U. S. city. Although the sample size was small (n = 26), a large percentage (92%) of the three-year-olds responded with typical gender stereotypes when assigning separate toys to girls and boys. The three-year-old girls showed slightly more stereotypical behavior than the boys, stating that their mothers (same-sex parent) would approve with their playing with "girl toys". Both the boys and girls agreed that their opposite-sex parent would support their choosing of cross-gender toys. The five-year-olds displayed even greater stereotypical behavior, with the boys giving more stereotypical responses than girls. The boys indicated that neither parent would approve of cross-gender toy choices, although both the boys and the girls again agreed that the opposite-sex parent would be more apt to support cross-gender toy choices. When the parents of the children were interviewed, their responses did not indicate any gender stereotypes for children's activities, such as boys taking ballet and girls participating in competitive sports. There did seem, however, to be more stereotypical responses regarding children's behavior, with more concern for boys portraying feminine behavior. Freeman (2007) concluded that parents feel the need

to help children define their genders, and they may do this through approval or disapproval of toys.

Nelson (2011) studied gender differences when a small sample of four- and five-year-old Swedish children was presented the opportunity to play with male and female dolls. Not only did the boys play almost exclusively with the male dolls, they also created aggressive actions for the dolls. The boys faced the dolls away from their bodies, creating an extension of their identities and pretending they were the dolls. They used their own voices when speaking for the dolls. Contrary to the boys, the girls played mostly exclusively with female dolls, facing the dolls towards them. The girls interacted with the dolls, having the dolls take on social actions (e.g. having conversations with each other). The dolls were given "play voices," each having a different voice from the girl's own voice. Every play episode that was observed contained some sort of aspect to gender representation.

Cherney and Dempsey (2010) explored three- to five-year-old children's responses when presented with gender-neutral and ambiguous toys in a Midwestern town. The children were first asked to associate gender-neutral toys with gender; they then played with the toys for an average of 12 minutes. The boys were more likely to categorize neutral and ambiguous toys as masculine rather than feminine, playing with these masculine toys more frequently and for longer periods of time than feminine toys. Both sexes classified neutral toys as same-sex toys more often than the ambiguous toys. The children mentioned the color most frequently as their reasoning for the classification. A very small percentage of the children referred to sex roles and gender associations as their reasoning. The three-year-old children played with the neutral and ambiguous toys

more often, and the four- and five-year-olds spent more time playing with gendered toys. These results supported an increase of gender stereotypes by age.

Not only do children display gendered toy preferences, but they also demonstrate activity preferences as well. Gmitrova, Podhajecká, and Gmitrov (2009) researched 123 Slovakian kindergarteners' play preferences. Firstly, the researchers discovered that play was generated from the nearest social environment, dependent upon the gender makeup of the group, or group versus individual play. The girls most preferred pretend play associated with family life, maintained by group activity, and the boys preferred constructive play and play on male professions (e.g. builders and policemen), sustained through more individual play.

Goble, Martin, Hanish, and Fabes (2012) also found that play preference was shaped by the social make-up of the play group. First, the preschool children's play during solitary play sessions provided a baseline for gendered tendencies. The girls chose feminine and neutral activities more often, and the boys chose masculine activities. These results were weighted upon the findings for group play. When girls were playing together in a group, they most often chose feminine activities; the group chose neutral and masculine activities significantly less than when playing by themselves. When boys were playing with a group of girls, they engaged in masculine activities less often than when engaged in solitary play. When boys played together as a group, they engaged in masculine play just as often as during solitary play. Girls, however, participated in masculine play more often when playing with a group of boys than when engrossed in solitary play. When playing with a large mixed-gender grouping of children, both boys and girls chose neutral activities more often than during solitary play. When interacting

with the teacher, girls' involvement in both masculine and feminine activities decreased compared to their solitary play. Boys, on the other hand, engaged in feminine activities more and masculine activities less when interacting with a teacher. Therefore, Goble et al. (2012) concluded that children's play activity preferences were dependent upon the context of the social group.

Also regarding the social aspect of gender development, Hilliard and Liben (2010) researched the gender salience in preschool classrooms. In this study, the authors refer to gender salience as the way gender is made noticeable in the environment. Using interviews and observations to determine whether or not the three- through five-year-old children used gender stereotypes, the researchers conducted an intervention to try to dispel stereotypes. Children that were in classrooms in which gender differences were made salient expressed significantly more stereotypical attitudes and behavior. The children were less likely to play with other-sex peers, and portrayed gender stereotypical attitudes towards adult occupations. Hilliard and Liben (2010) concluded that by increasing the salience of gender in preschool classrooms, preschool children portray more biased attitudes.

The difference of having a male teacher versus a female teacher may also play a part in children's play. Sandberg and Pramling-Samuelsson (2005) interviewed male and female preschool teachers and found a difference in their willingness to play with the children. The females acknowledged that they were not willing to play with the children, and the males were more playful with the children. The females valued calm and quiet play, and felt that physical play should be diverted to calm play.

Other research has identified the effects of adult presence in the children's play environment. Wilansky-Traynor and Lobel (2008) studied the effect of an adult observers' presence on Israeli preschoolers' sex-typed play behavior. Using the Computerized Gender Schematicity Measure for Children (CGSC), the researchers identified each child as gender schematic and gender aschematic. Gender schematicity was defined as "the degree to which individuals process information along gender lines…and thus encode and arrange information on the basis of gender" (p. 548). The children were given free play time – either observed or unobserved – with a row of traditionally masculine or feminine toys, deemed either attractive (e.g. new and functional) or unattractive (e.g. old and broken). When observed, the aschematic boys (i.e. those who were seemingly unaffected by gender norm conventions) spent more time playing with unattractive masculine toys. The schematic boys also spent time playing with these same toys, but only when unobserved. The girls were not significantly affected by the presence of an observer. As a whole, the presence of an observer elicited more gender typical behavior.

Musicality and Influence of Adults and Peers

Musical Practices of Parents

Researchers have been interested in the musical practices of parents; much of the research, however, has been done regarding musical practices of parents with their infants. In general, singing was the most prominent musical activity of parents with their infants (Custodero, 2006; Custodero & Johnson-Green, 2003; Gibson, 2009; Ilari, 2005; Trehub et al., 1997b). Overall, mothers engaged in musical activities with infants more often than fathers (Trehub et al., 1997b), and, specifically, sang to their children more

often than the fathers (Trehub et al., 1997b). The mothers also sang more expressively than fathers (Trehub et al., 1997b), singing songs that were stereotyped as children's songs, such as "Itsy, Bitsy Spider" and "Baa, Baa Black Sheep" (Trehub, Hill, & Kamenetsky, 1997a; Trehub et al., 1997b). These results may be due to the fact that mothers are identified as the main caregivers in the family (Fuligni & Brooks-Gunn, 2002), and the "nature of childcare with young children, such as holding, rocking, and carrying, often [instigates] singing interactions with children" (Gibson, 2009, p. 183).

Custodero, Britto, and Brooks-Gunn (2003) identified the musical practices of parents with children under the age of three. The results of the 2,017 parent interviews revealed that 60% of the parents were singing or playing music daily with their children, and 90% did so weekly. The parents of younger children versus parents of older children were more apt to sing and play, with the mothers being twice as likely to do so with the younger children. "It appears that there is something intrinsically compelling about music making with infants" (p. 566). The mothers were more likely to sing or play music with their children than the fathers. Parents with more than a high school education were also more likely to make music with their children.

In a case study involving one family over the course of three years, Barrett (2009) revealed the role of music in parenting. Attendance of an early childhood family music program, Kindermusik, played a part in the mother's parenting education. The mother stated that this program gave her more skills and knowledge in which to draw on during parenting, and she hinted towards the fact that the music helped with her postpartum depression. The mother had worked music into a variety of daily routines for her children, including singing and playing as a group and as individuals. The researcher

found that group singing and playing regulated the children's behavior and mood, that group and individual music-making supported language development for one child, that individual music encouraged the children's self-making, and that music can foster family unity.

Berger and Cooper (2003) researched preschool children's musical free play with their parents. Three themes emerged: unfinished play, extinguishing play, and enhancing play. Unfinished play occurred when the child's musical play was interrupted or somehow inhibited, even though they indicated a desire to prolong the play. This took place most often when it was time for group activities. Extinguishing play occurred when adults or other children displayed behaviors that obstructed the child's musical play. The adults extinguished musical play by physical proximity and corrections or suggestions (i.e. how to play an instrument properly). Enhancing play referred to how adults boosted and reinforced the children's musical play. Adults enhanced musical play through willingness to participate, valuing children's musical behaviors, and encouraging musical play. It seemed that the adult's attitude towards the musical activity had an effect on whether or not the child continued or stopped the activity (Berger & Cooper, 2003).

Koops (2012) examined musical play-enhancing and musical play-inhibiting factors for young children. Six families videotaped their children during musical play episodes and loaded these videos on to a social networking site. They also attended 45-minute family music sessions with the researcher. Several factors appeared to be play-enhancing: the child was in control of the activity, the adult acknowledged and involved themselves with the play, movement, instruments and props, family

involvement (siblings), and performing for the video camera. Other factors were play-inhibiting: adult involvement, the child became fatigued or over stimulated, the activity was new or too difficult, environmental elements such as rushing, the sibling created a distraction, and the presence of the camera. It seemed that younger siblings were more involved when they had an older sibling (a model) doing the musical activity, but the older siblings seemed more distracted when a younger sibling was participating in the same activity. Adult interaction generally enhanced the play if the child was in control of the situation, such as inviting the parent to sing along with them, or conducting the parent's singing. Non-verbal acknowledgment from the adult also seemed to enhance the play, as did minimal verbal feedback affirming the play or reassuring the child that s/he could make the decisions. Adult prompts and adult corrections appeared to be the most inhibiting. Koops (2012) suggested that adults maintain an appropriate balance of involvement when trying to enhance a child's musical play.

Achilles (1992) studied the role that parents take in their musical interactions with preschool children. It was found that most parents take a more passive role, like listening to music, rather than an active role, like singing or playing an instrument. Listening to music occurred during the normal routine (i.e. at home, in the car, at bedtime) and few families sought out live music to listen to outside the home. Throughout the study, the children were found to already have formed musical preferences, asking their parents to play a certain musical selection. Also, when the parents and their toddlers participated in an interactive music program, some anxieties surfaced about a number of things. Some parents were concerned that perhaps their children would break something or hurt another child. Many parents were disappointed when their children did not perform to their

expectations, and some were anxious when their toddlers refused to participate in the group activities. The researcher observed a parent imposing adult musical norms on her child. The child had grabbed the "wrong" end of a xylophone mallet, so the mother fixed the mallets and then helped the child play the xylophone "correctly." Achilles (1992) concluded that the passive roles and other anxieties experienced by the parents had been fostered by their own childhood musical experiences, or dissatisfaction with those experiences.

Music's Presence in Parenting Magazines

Sims and Udtaisuk (2008) researched the appearance of articles pertaining to music in parenting magazines. Three popular U. S. parenting magazines were examined, and only five full-length articles regarding music were found. One hundred three articles mentioned music in regards to music for children (e.g. entertainment) and music for parents (e.g. mental health, stress reduction). Each issue of the magazines did contain music product reviews and recommendations for items such as musical recordings and musical toys. The issues also included paid advertisements promoting products with musical characteristics. The researchers concluded that these magazines a) contained very little music-specific content, b) lacked clear, high quality recommendations for parents, c) used a minimal amount of music research as a resource, and d) emphasized music for commercial or utilitarian purposes.

Bond (2012) conducted a literature review of music's representation in early childhood education journals. "As students are with their general classroom teacher for a majority of educational hours, possibly even more than parents, these educators may have the largest role in fostering musical development" (p. 34). Although previous studies

have indicated that preschool curricula include music, Bond (2012) felt that quantity and quality of these programs can vary greatly. Therefore, early childhood journals were examined for articles that discussed music. The majority of these types of articles discussed the extra-musical benefits of using music in the classroom to promote skill development, such as support for literacy and linguistic skills, motor skills, math skills, auditory perception, and mental imagery. Other articles discussed the topic of musical parenting, or how parents use music in their children's everyday lives, and other musical practices in the home. "Although the breadth of information shared affords a basis of music education knowledge, the ratio of music articles does not represent an efficient model of music instruction" (p. 41). The researcher stated that music educators should promote music instruction for the development of music skills by providing strategies that early childhood educators can use in the classroom.

Adults' Influence on Musical Play

Watts (2009) studied females' oral accounts of music engagement over a span of generations. First, the subjects revealed the part their parents played in their musical lives. Many recounted learning musical games such as "Patty Cake" from their parents, who provided a model for their children to engage with playfully. Also, many subjects agreed that the listening preferences they had as young children imitated the musical preferences of their parents. Family and peers were influential in the "form, function, and transmission of musical play" (Watts, 2009, p. 169). Watts (2009) concluded that the changes in play experiences reflected the changes in society. Better access to recorded music, musical toys, and formal music lessons, as well as an increase in media, created an evolution in children's musical play.

Research has also identified preschool teachers' use of music in a classroom setting. Lau and Grieshaber (2010) investigated the musical free play in one Hong Kong kindergarten class. The researchers found that the teacher encouraged the children's musical creativity by setting up a musical environment, modeling, and supporting and encouraging the children's experiments in sound. The teacher was able to scaffold her instruction through rich questions and discussions. The environment an adult provides and the type of involvement the adult takes are important, leading the researchers to conclude that the adult's actions play a large part in children's musical free play.

Reese (2011) examined how adults identify young children's meaningful and intentional musical behaviors. Some adults were parents, and others were either early childhood music teachers or musicians. The early childhood music teachers (ECMT) identified more musical behaviors than the other adults. The ECMT group also agreed on what was a musical behavior (consensus acts) more often than the others. The parents also identified more consensus acts than the nonparents. When agreeing on these consensus acts, the musical behaviors generally consisted of movements to a beat and vocalizations. Reese (2011) concluded that the ability of adults to identify music behaviors was dependent on musical training.

Veldhuis (1992) described both the spontaneous and the adult-elicited singing of preschool children. The songs that the children used in both contexts were analyzed, and the language in the elicited songs was found to be more mature. Also, the pitches used in elicited songs were lower. The children, therefore, possessed the ability to sing across a wide range of pitches and rhythmic forms, and used a variety of language spontaneously. Veldhuis (1992) was in agreement with Harwood (1998) in that children are able to be

spontaneously more creative on their own rather than hampered by adult rules and beliefs of children's musical behavior. Likewise, Smithrim (1997) found that, without adult-led activities, children were able to demonstrate musical abilities, explore sound, engage in long periods of absorbed activity, and teach peers.

Tarnowski and Leclerc (1994) also investigated the role of the adult in children's musical play, splitting up the four- and five-year-old children into four different groups. Each group had a different adult role: entertainer, director, observer, and responsive partner. The largest number of musical play occurrences took place in the observer group, followed by the students enrolled in the responsive partner group. The least amount of musical play was found in the director and entertainer groups. "The most frequently occurring specific musical play behavior was inflected speech (42%), followed by songs (26%), chant (17%), and rhythmic speech (16%)" (p. 13). The results of this study confirmed children's frequent use of vocal musical play.

The quality of adult-led music programs in preschools has also been examined. Tarnowki and Barrett (1997) surveyed Wisconsin preschool teachers and found that 96% of the classroom teachers provided the musical activities in the classroom, with only 2% of the teachers having degrees in music education. The teachers reported that the children mostly engaged in singing, moving, and listening to music. Creating music was used the least. When the teachers were asked to rank the purposes of music by importance, the common reasoning was non-musical curricular goals. "The lowest priority was given to the development of musical understandings or skills in young children" (p. 5). Some teachers considered the playing of background music as a music

program. The researchers suggested in-service or further education on the implementation of a preschool music program.

Peers' Influence on Musical Play

Peers may also influence children's musicality. Hall (2005) found that peer role models affect adolescent males' conceptions of gendered musical stereotypes. The subjects labeled the occupation of a singer as feminine, making it clear that singing was not an acceptable adult male activity. They also had other stereotyped beliefs in how a male should do certain things (e.g. homework, sports, what instruments to play). Hall (2005) then brought in a peer vocal model, and immediately the boys' thoughts positively changed about singing. It seemed an instant bond occurred between the subjects and the role model, and the levels of vocal participation increased. Hall (2005) concluded that it may be important to demonstrate for boys that there are many ways to be masculine.

In a qualitative study aimed at describing the teaching and learning processes of Gambian children, Koops (2010) observed that the children not only discovered skills on their own, but also the children taught each other these skills. The researcher illustrated a rich musical environment, full of singing, chanting, and dancing. The children were involved in structured musical games (i.e. rhythmic jumping and clapping games) that were accompanied by singing and chanting. Chanting also occurred during their reading lessons, creating an adult-led musical environment. Dancing was also a normal occurrence during play and games. Through interviewing adults, Koops (2010) found that most adults expected the children to be musical because music was an important part of life for them. It was also observed that musical play fostered a motivation to learn. "Because children typically got a turn to play when they were performing accurately,

there was a high motivation to learn the appropriate movements and words to maximize playing time" (Koops, 2010, p. 30). It was concluded that in order to foster musical growth, one must create a rich musical environment and promote an expectation to be musical. Koops (2010) evidenced the notion that in order to have musical play, adults and others must be involved.

Smith (2008) found that musical play is an excellent tool for revealing a child's zone of proximal development (ZPD) for musical growth and understanding. The researcher also observed both peer and teacher scaffolding through assisted performances and shared activities. Smith (2008) concluded that peer scaffolding may be significant in a child's musical growth and understanding. Also, a teacher's ability to recognize a child's musical ZPD was essential in that teacher making suitable scaffolding choices during musical play.

Children's Musical Play

Pillsbury Foundation Studies

The earliest known study regarding young children's musical play began in 1937 when the Pillsbury Foundation for Advancement of Music Education established the Pillsbury Foundation School (Kierstead, 1994), which provided an in-depth look of young children's musicality and spontaneous use of music over an eight-year period (Pond, 1992). The main researchers were Gladys Evelyn Moorhead, a public school teacher who served as the school director, and Donald Pond, an English composer who served as the school music director from 1937 to 1944 (Kierstead, 1994; Pond, 1992). Other adults in the school who also recorded notes on the children's play included "an actin [sic] director, three music directors, a dance teacher, and a student teacher"

(Kierstead, 1994, p. 198). The sample consisted of 12 to 27 (Kierstead, 1994), three- to six-year-old children; Wilson (1981) documented the sample to extend between ten and 20 students, ranging from one and a half to eight and a half years old.

Moorhead and Pond first carefully prepared the learning environment. Moorhead selected the general learning materials, which included a library corner, doll house, modeling clay, outdoor equipment, carpenter's bench, aquarium, art work prints, and other small toys (Kierstead, 1994). Pond selected the musical materials from a collection of Oriental instruments, loaned to the school by Henry Eichheim (Kierstead, 1994). "The instruments were selected for intrinsic beauty of sound, portability, and ease of manipulation by children" (Wilson, 1981, p. 17). He chose marimbas, metallophones, drums, gongs, and bells from this collection, and later added a guitar, ukulele, zither, flageolets, piano, and other small instruments (Kierstead, 1994). A phonograph and a carefully selected collection of records were also provided for the children's use (Kierstead, 1994).

Throughout the three-hour school day, the children were allowed to freely discover sound in the environment. The researchers took on different roles in the play environment: Moorhead took the approach of an active guide, and Pond, a receptive facilitator (Kierstead, 1994). Pond discovered a unique children's culture within the chants, rhythmic units, polyrhythms, intervals, and proto-polyphonic forms observed (Kierstead, 1994). Pond recognized that these instances incorporated "innate musicality and universal elements of formal music-making not generally associated with such spontaneous activities" (Kierstead, 1994, p. 186). He concluded that children were natural explorers and discoverers of sound (Kierstead, 1994), in that their first natural

impulse was to "set sounds in motion – not to invent rhythm patterns" (Pond, 1992, p. 40). The children created patterns by playing with timbre, intensity, duration, and pitch, and transformed these patterns through repetition, sequencing, and inversions (Kierstead, 1994). Instrumentally, the children first experimented with the sounds of the instruments, and later created rhythms with patterns of sounds (Pond, 1992). "While most adults think of songs as being vocal, a child in the school identified an instrumental improvisation as a song" (Kierstead, 1994, p. 200).

Melodically, the children created songs of different lengths, using phrases and/or nonsensical words (Kierstead, 1994). The children sang both high and low tones with much modal influence and microtones (Kierstead, 1994). Pond (1992) also discovered the children's melodies were not based on classical scales and moved within a narrow range of approximately a sixth, with the third dominating the children's singing (Pond, 1992). The researchers noticed the use of a two-note chant based on the descending minor third and a four-note chant using the descending minor third with an ascending fourth (Pond, 1992). These are commonly known as the Kodàly Call and Chant. Respectively, this name stems from the Hungarian composer and pedagogue, Zoltàn Kodàly, who created a music education philosophy based on his own teaching practices and beliefs. Kodàly observed that young children often used these consistent vocal patterns during their music-making (Rozmajzl & Boyer, 2006). Examples of the Kodàly Call and Chant can be found in Figure 2 (page 38).

Both researchers began to notice that the children's musical makings were intended for community participation, and Pond (1992) felt that, because music is social in function, the discovery of sound was not intended to remain a private activity.

"Factors that generated spontaneous learning within the community included more or less experience, differences in age, and incorporation into group improvisation" (Kierstead, 1994, p. 200). The children would often teach each other their inventions, passing on their skills, techniques, and creative ideas within the community (Kierstead, 1994). Moorhead found that the groups would establish a repertoire of music, and members of those groups would later apply their own skills to these pieces (Kierstead, 1994). The children served as both followers and leaders within the groups, and taught themselves or asked for help "when they needed it and were ready for it" (Kierstead, 1994, p. 201). Later, Pond began teaching the children to read music, beginning with rhythm patterns and later incorporating melodic notation (Kierstead, 1994).

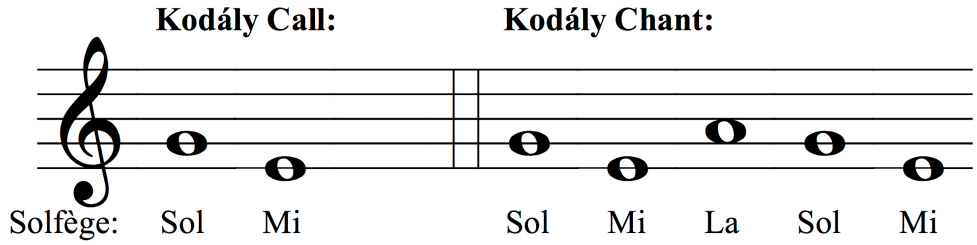


Figure 2. Examples of the Kodály call and chant.

Although the study continued after Pond resigned in 1944, many believed that the study ended after he left, since the Pillsbury Foundation did not find a replacement (Kierstead, 1994). Pond concluded, "What seems to me to be a major and destructive misconception is the notion that musical creativity in early childhood originates from a compulsion for self-expression. The compulsion that I observed was for being a maker, an inventor of sound shapes, and for creating linear movement and enjoying the patterns that simultaneously moving lines of sound could produce" (Pond, 1992, p. 41). The

children found great delight in their musical play occurrences, and used imagination to investigate and organize the sounds they made (Kierstead, 1994).

The researchers and other adults observed many different musical characteristics at the Pillsbury School, providing rich explanations of their musical play:

> The teachers saw music as an integral part of the activities of the children, a natural and inseparable part of their lives. They concluded that music was rooted in their being as children, indeed, that children had natural proclivities to explore the realm of sound, to build with sound (an activity pursued for its own sake), and to pursue their curiosity about music through increasingly complex and sophisticated activities. The teachers also observed recurrent patterns of musical behavior which led them to make specific observations on the relationship between motor activity and music, the nature of solo song, and children's inclination to form musical ensembles as well as their desire to manipulate sound and to develop technical proficiency. (Wilson, 1981, p. 18)

The Pillsbury Foundation studies certainly became the precursor in children's musical tendencies research, with numerous later studies revealing similar findings.

Young Children's Musical Play Behaviors

Other researchers have looked into the wide variety of activities children engage in during musical play. Using a musical play environment, Smith (2004) found that children engaged in singing, playing instruments, moving to music, reading music, and writing and creating music. The singing activities could be broken down further into previously known songs, newly composed songs, vocal explorations, and improvisations. Smith (2004) observed that make-believe or pretend play often accompanied the

children's musical play, as they acted out the roles of "musical conductors, teachers, dinosaurs, and performers" (p. 217). Movement seemed to be a preferred activity, as the children moved to recorded music, to the sounds of the instruments they played, and to the use of props (e.g. puppets and scarves). The children also played instruments the most often.

Using both general play and musical play settings, Littleton (1991) examined the singing behaviors (chanting; and singing that consisted of original, spontaneous songs or phrases, melodic fragments of learned songs, and complete songs or verses), instrumental behaviors (exploring the timbre of the instrument, creating rhythmic patterns, repeating sequences of varied musical elements), and movement of young children. The children exhibited musical behaviors more frequently when presented a musical play setting rather than a general play setting. Both the boys and the girls exhibited more instrumental play behaviors than vocal or movement behaviors. The genders also displayed a difference in instrument play preference: instruments associated with a high voice, such as the soprano xylophone, were most often favored by the girls and avoided by the boys, and the boys chose to play with instruments associated with low voices, such as the contra-bass xylophone.

Paulson (2008) studied the musical play of three- and four-year-old children. Each child was observed individually, and their musical play were recorded within six categories: (1) the child sings familiar songs, (2) the child makes up songs (singing), (3) the child chants rhythmically, (4) the child experiments with his/her voice, (5) the child plays a musical instrument, and (6) the child uses found objects to make music. Paulson (2008) found that the children most frequently used the voice (singing, chanting,

and experimenting) during play. A significant difference was found in the amount of musical play between the boys and girls, with the boys having more total musical play than the girls. No difference was found between the 3-year-olds and the 4-year-olds musical play. The girls made up songs the most, and the boys experimented with the voice the most.

After investigating the results of the observations of young children at musical play, Edwards (2012) uncovered the following categories: "(a) making up lyrics to familiar songs, (b) singing familiar songs or songs previously learned in class (or requesting to sing songs), (c) humming or other vocal sounds, (d) random tunes or made-up songs, (e) creating a makeshift instrument for sounds, (f) writing music, (g) cooperative music play" (Edwards, 2012, p. 31). The results, however, were limited to the views and previous musical experiences of the pre-service early childhood teachers who collected the data. Edwards (2012) concluded that "children are indeed inherently musical, and use whatever resources or catalysts are available" (p. 32).

Kierstead (2006) found that movement was an important catalyst in children's musical play. The preschool children spontaneously discovered sound through singing, chanting, listening, and instruments. The children were able to freely express themselves through their songs, chants, and other sound-scapes.

Tarnowski and Leclerc (1994) trained early-childhood music undergraduate students to observe spontaneous musical behaviors of four- and five-year-old children. The students observed children's vocal exploration, inflected speech, rhythmic speech, pitched songs and chants, rhythmic movement, and playing instruments. The majority of the 316 total musical behaviors observed were vocal in nature. Of those vocal behaviors,

pitched song and chants accounted for 48%. The children also rhythmically moved 20% of the time, and they played with instruments the least.

De Shon (2012) found that fourth grade children form a musical identity through musical play. Through singing, listening, playing instruments, and creating music both socially and individually, the children were able to explore and express their musical identities. It seemed these musical identities occur across three continuums: development, self-directed music participation and learning, and processes. "Singing behaviors fluctuated within musical playgroups, suggesting that both social comparisons and gender may influence musical identities in singing," as the girls seemed more inclined to sing than the boys (p. 171).

Children's Singing Behaviors

Researchers have also sought to describe children's singing during play. Whiteman (2001) researched the types of songs that preschool children used during play episodes. The children sang standard songs, some type of variation of a standard song, and improvised song during play. It seemed that the children used songs for specific purposes, such as communicating, transmitting knowledge to a peer, or establishing themselves as more knowledgeable than the peer. Bjørkvold (1992) also discovered that children used song for supplementing their play (background coloration), creating contact with others, communicating information, and marking identities during spontaneous singing.

Susan Young also investigated young children's spontaneous vocalizations in free play in two separate studies (2002; 2004). Both studies' findings aligned, as the children used language in different rhythmic and pitch contexts (chanting and singing), sang

phrases of known songs, reworked known songs by altering words to fit the current context, and used vocalizations to accompany movement and to animate play objects. In most situations, the vocalizations were supported in social contexts, such as an adult's interaction with the child.

Lum and Campbell (2007) described the musicking behaviors of American school-aged children. This ethnographic study revealed not only the vocalizations of children, but also the accompanied rhythmic movement. Some sort of rhythmic movement frequently accompanied both chanting and melodic musical utterances. The melodic utterances of the children occurred in numerous contexts, including alone and in groups, and generally were used to accompany or enhance the learning activity or free play. Although these utterances occurred in a variety of contexts, it still appeared as though most of the melodies, lyrics, and rhythms were melodically linked, creating a musical culture within the classroom. The researchers offered the example of how a boy used song, instead, to separate himself from the class. The children had ostracized the boy, and he began singing distinctly different melodic material in order to further divide himself from a nearby group. The children were also found to sing familiar tunes – some being traditional game songs learned from peers, and others being taught by adults or teachers – and created new lyrics for these tunes. The teachers used music for facilitating learning and for social signaling, such as using call-and-response songs to signal a transition, such as lining up. Lum and Campbell (2007) concluded that "the sonic environment of any school is a complex auditory ecosystem," with music being used by both students and teachers regularly (p. 45).

Gibson (2008) observed a small community of children living in a university family-housing apartment complex. The children's musicality emerged both spontaneously and intermittently, reflecting their cultural and societal values. "Children are enculturated to the music they hear, and through creative play, create their own music using the musical vocabulary to which they have been exposed" (p. 7). The children's singing was full of rich, melodic content and rhythm, and even aided in bonding at times.

Children's Instrumental Behaviors

Children's instrumental musical play has also been examined. Young (2003) sought to identify the instrumental music play episodes of preschool children. In observing occurrences in which a child was intent on producing sound on a xylophone, The musical play episodes ranged from about 30 seconds to several minutes and could be divided into different categories: instrumental music making, hybrid instrumental music making, and non-sounding play with the instrument. The last category was set aside because the child was not discovering sound during that time. Young (2003) also looked at the way children played the xylophone, revealing trace forms, pathways, and other ways in space the children could move the mallets. In identifying and describing the play structures in time, the researcher found that the children used repeating, clustering, and chaining. The time and space seemed to be connected, with "the sounding result [being] inseparable from bodily involvement" (Young, 2003, p. 56).

In a later study, Young (2008) provided three- and four-year-old children with xylophones, studying the children's collaboration with peers. It seemed the children's music making centered around key themes that were easily shareable. The children imitated each other through body movements, specific placement of themselves and the

instruments, and tempo and dynamics. Verbal exchange only occurred in short spurts, with the children communicating through "gestures, body posture, tone and movement, facial expression, and eye contact" (Young, 2008, p. 9). Young (2008) found that most of the children seemed to prefer to work in pairs to create music.

Children's Musical Culture

The social context, along with the influence of adults and peers, of children's musical play has been examined. First, children appear to have a musical culture of their own, passing this tradition along many times on the playground. Harwood (1998) researched children's playground music and their music in a variety of settings. She found that the context of the play either enhanced or detracted from the learning. Playground learning offers:

> "freedom of movement for learners and proximity to the models they are studying, expectation that onlookers will comment as musical performances are taking place, opportunity to learn from repeated performances of the same repertoire over a prolonged period of time, a shared understanding that physical movement is an integral part of all musical experiences, a shared understanding that less skilled players are responsible for increasing their level of participation through practice with near-skill peers, and a shared understanding that play rather than practice provides the necessary repetition to achieve mastery." (Harwood, 1998, p. 55)

Likewise, Ogawa and Murao (2007) discovered that children use demonstration and playing together when teaching another child a new game song. Harwood (1998) noted that the music learning in a formal school setting places restraints upon children, such as

behavior limitations. A child, for instance, may not be comfortable to perform during an improvisatory call and response game in the classroom, but that child may be able to participate in a similar activity with peers on the playground. Therefore, the context and setting of the play has implications for researchers who would like to observe children's musical activities, as well as music educators who want to enhance children's musical learning.

Also studying the social and cultural contexts of music on international playgrounds, Marsh (2005) found that there were a number of influences on the singing of children. Song material could be learned from peers, family members, adults and teachers at school, and the media. Although the material differed between cultures, the transmission of material appeared to be similar. "Children's abilities to negotiate these multiple worlds of musical experience to varying degrees indicate a level of sophistication and flexibility" (p. 35). Marsh (2005) concluded that children are not passive participants, but active musical beings that have a musical culture of their own. Lew and Campbell (2005) also believed musical play to be an integral part of children's culture. Through play, children are able to learn about themselves and others, bringing about a cultural context in learning. They are able to preserve their traditional singing and chanting games within their own childhood culture as well.

Sex and Gender in Musical Play Studies

Researchers have been interested in the effect of sex and gender on musicality and musical play. Most studies have looked at the effect of sex on musical play, although the researchers mistakenly used the term "gender" in reference to the biological sex type. This is a common misunderstanding that some researchers make, and all studies were

scrutinized accordingly as to whether or not sex or gender was studied.

Corso (2003) sought to identify the musical activities of African-American elementary school children, such as handclapping games, jump-rope games, drills, songs, and dances. The social transmission of handclapping and other children's rhymes, chants, and songs seemed to occur outside of an adult-guided context. The younger children participating in handclapping more often, and the older children engaged in drills, such as cheerleading, more often. "Handclaps, drills, and dances were performed regularly and showed some sort of developmental sequence" (Corso, 2003, p. 174), which possibly explains the different activities of the younger and older children. When interviewed, the children knew songs that were taught at schools and church. Media also had a hand in the musical transmission, such as popular dances from MTV, and rap and hip-hop songs from television and radio. Music also served a specific role as establishing the children's expertise, their identities, and their gender roles, and also helped the children communicate.

Merrill-Mirsky (1988) also looked into the role of ethnicity and sex in six- through eight-year-old children's musical play. In describing the singing of children, she stated, "The 'natural' singing of children is not necessarily accurate according to the Western well-tempered scale. Children who do sing 'on pitch' do so because of training or enculturation" (p. 5). The researcher also found a difference in sex, as the boys expressed that only girls engaged in handclapping and other musical games. A difference emerged between cultures as well. The Afro-American girls participated in both competitive games with boys and singing games with girls. The Latino and Asian boys participated in active play, such as handball, and the girls choose less-active play such as

singing games and tetherball. As far as singing games went, the leaders would establish the tonal center of games by starting slightly earlier or singing more loudly. Merrill-Mirsky (1988) determined that children rely on a private, oral tradition in order to preserve their games and songs.

Sinsel, Dixon, and Blades-Zeller (1997) studied the relationship of psychological sex type (i.e. gender) and musical instrument preferences in older children. After identifying themselves as masculine, feminine, or androgynous using the Children's Sex Role Inventory (CSRI), the students chose an instrument they most preferred. The results demonstrated that the students with a strong sex type (masculine or feminine) preferred instruments that held a strong sex stereotype. Masculine students preferred masculine instruments 65.4% of the time, and feminine students preferred feminine instruments 60% of the time (Sinsel et al., 1997). The androgynous students chose instruments equally across the three categories: neutral, feminine, and masculine. Although this study was conducted with older children and identified musical instrument preferences, no other study has revealed a relationship between *gender* and musical preferences. Only the impact of sex (e.g. male and female) has been reported. This study is important in that its findings support a difference between genders and preferences.

Children's Musical Activity Preferences

Lastly, research has sought to identify children's musical activity preferences, with varying results. Temmerman (2000) studied the musical preferences of preschool children. The preschool teachers first identified the types of musical activities the children commonly experienced. The teachers revealed that listening was used as a form of relaxation, to move to music, and to specifically listen to instruments or the sounds in

the music; singing was used for singing games, echo singing, and singing as a group; moving was used as an expressive activity, to portray meaningful movements to the music, body awareness and motor skills, and to reinforce musical concepts; and playing was used to accompany song and for free experimentation of sound. Most of the children enjoyed all musical activities as a whole, but preferences still emerged. They most preferred moving and dancing and playing instruments, and least preferred singing and listening to music. The researcher suggested that most-preferred activities be used to introduce less-preferred activities in order to offer children a well-balanced music program.

Denac (2008) found that preschool teachers most enjoyed singing songs, playing instruments, and listening to music; these three types of activities were the most prevalent in the teachers' lesson plans as well. The children indicated that they enjoyed moving to music, singing songs, and playing instruments the most. Most of the children did reveal that they enjoyed engaging in all musical activities. At home, the parents reported that the children listened to music with them the most. Most of the children were interested in listening to music and moving to music at home, and least interested in playing instruments and creating music. Denac (2008) concluded that the educator plays an important role in providing positive musical experiences, which "can influence the acceptance of values relating to music and the formation of an attitude toward the general music culture" (Denac, 2008, p. 444).

Killian and Basinger (2004) revealed that young children exhibit preferences of classroom instruments. When presented with the opportunity to play six different instruments, the children most frequently chose the autoharp and the xylophone. They

compared the time spent playing an instrument and time off-task and found that the children spent the most time playing an instrument.

Yim and Ebbeck (2009) also investigated young children's musical activity preferences, finding that dancing/moving was the most preferred activity. The children also responded positively to singing, listening, and instrumental playing, but their reasoning behind these choices varied according to the cultural context.

The Influence of Background Music

Little research has been conducted on the influence of background music on young children's play. Only two major studies have looked into the effects of background music during children's play. First, Love (1992) studied the effects of fast, slow, and no background music on children's movement, dramatic play, and group play. When no background music was playing, the children had more occurrences of entering and exiting the block play area, implying that without background music, children are less able to engage in long periods of absorbed activity. The varying forms of background music had no effect on the children's use of movement, nor had an effect on children's active or quiet qualities of play. No significant difference was found between the varying forms of background music and group play.

In a later study, Love and Burns (2007) investigated the role of carefully selected background music (fast, slow, and no background music) on children's movement in and out of the block play area, group play, and dramatic play themes. It was found that the children entered and exited the block play area less often when music was playing in the background, again indicating that the children were engaged in sustained play. During episodes of slow background music, the children engaged in more social play. A related

study also found that background music supported group play (Godeli, Santana, Souza, & Marquetti, 1996). The varying levels of background music also had an effect on the children's dramatic play themes. When slow background music played, the children were engaged in "the enactment of quiet, caretaking routines," and fast background music elicited the enactment of "the frenzy of disasters (i.e., thunderstorm leading to a hurricane, fire)" (Love & Burns, 2007, p. 387).

Other studies have looked into the effect of background music on other aspects. Dartt (2009) found that children paid less attention to their play during background music. He found that children who came from musical homes exhibited more focused attention when background music was playing than peers coming from non-musical homes (Dartt, 2009). The influence of background music on children's verbal learning has also been researched, finding no correlation between the two (Jäncke & Sandmann, 2010).

Summary

The related literature has addressed several different aspects of gendered play and musical play. First, adults have an effect on how children play. That is, adults have helped to shape young children's conceptions of gender norms in our society as their actions and reactions communicate gender beliefs to young children. Both adults and peer role models have been found to either enhance or diminish children's play, musical play activities, and gendered musical stereotypes through different behaviors. The social context, therefore, has an effect on the child's play and behaviors. Also, musical gender norms exist within the family dynamic; mothers tend to sing more often and engage in musical activities more often than fathers. It is possible that children see these gender

norms and practice them during play. Furthermore, children have been found to display gendered toy preferences and same-sex peer play.

Most of the musical play of children has been researched and defined through qualitative methods. New research is needed to define the frequency of musical play types as associated with children's genders; this type of study will look at children's musical play through a different lens compared to previous research. Children's musical activity preferences have been established by surveying the children; however, the question remains whether or not the preferences they state align with the activities they most frequently pursue. Also, children with strong sex types have been found to prefer specific musical instruments, exposing the existence of gender norms within the music field. It is unknown whether or not children with strong play genders gravitate towards specific musical play activities.

CHAPTER III

METHODOLOGY

Introduction

This chapter outlines the theoretical underpinnings of the study. The design of the study, site and population selection process, instruments, and research procedure are discussed. The threats to the reliability and validity are examined, and how these threats were addressed are outlined.

Design of the Study

The purpose of this study was to investigate gender's role in three- and four-year-old children's musical play. A secondary purpose was to investigate further the nature of musical play in general. Because the overall goal of this study was to gather more information regarding young children's musical play, a grounded theory methodology was used. "In this methodology, theory may be *generated* initially from the data, or, if existing (grounded) theories seem appropriate to the area of investigation, then these may be *elaborated* and modified as incoming data are meticulously played against them" (Strauss & Corbin, 1994). Regarding this second school of thought, previous research has identified various forms of children's musical play, with the main musical activities being singing, playing instruments, and moving to music (Bowles, 1998; Denac, 2008; Smith, 2004; Tarnowski & Leclerc, 1994; Temmerman, 2000; Yim & Ebeck, 2009). The

observation form included all types of musical play previously identified, and those categories were split into additional sub-categories in order to further describe the data. Existing theories, therefore, were weighed in order to account for the predicted types of musical play.

Grounded theory can be applicable to both qualitative and quantitative data (Strauss & Corbin, 1994). During the observations, both quantitative (frequency counts) and qualitative information (field notes) were recorded. More quantitative information was collected via two different surveys given to the parents and the teachers. Grounded theory was the most flexible methodology to accommodate a mixed methods approach. It was important that both methods compliment each other in order to balance the strengths and weaknesses of each (DeCuir-Gunby, 2008). The qualitative data was able to describe the play episodes in a way that frequency counts (quantitative) could not; however, the quantitative data yielded important information regarding children's musical play that qualitative data would not normally be able to deliver. Therefore, a unique pairing of these two methods was used to fully describe the nature of children's musical play.

Field observation of children in a natural setting was the most desirable procedure for data collection, as the focus of the research was on the musical behaviors of young children (Skinner, Freeland, & Shapiro, 2003). Just as Moorhead and Pond did in the first musical play study in 1941, "researchers long have valued natural settings and normal conditions for their promise in ensuring that subject behaviors and responses are not affected adversely by unfamiliar or artificial conditions" (Casey, 1992, p. 120). Observation was essential for the collection of both quantitative and qualitative data. The

categories on the Child Form served as a way to measure the type of behaviors observed. The qualitative data backed up this information by allowing more freedom in the observations. "Qualitative observers are not bound…by predetermined categories of measurement or response, but are free to search for concepts or categories that appear meaningful" (Adler & Adler, 1994, p. 378). Surveys were also used in order to collect an adequate amount of information regarding the children, parents, teachers, and musical environment of the preschools. Surveys represent the population well and allow for the collection of rich data (Casey, 1992).

Process of Site and Population Selection

Twelve preschools in a Midwestern city were contacted via email and invited to participate in the study. The site and population selection was limited to one Midwestern city due to researcher availability. The preschools were chosen because of the presence of musical instruments in the play environment; they were also considered public preschool centers and were not private schools. Seven preschools accepted the invitation and were coded to assure confidentiality: blue, green, pink, purple, orange, red, and silver. The preschool directors at each site granted permission for general field notes and observations to take place, and the parents signed the Consent Form, granting permission for single child subject observations. The Consent Form can be found in Appendix A.

Participants

The participants involved in this study included 111 three- and four-year-old children, including 54 boys and 57 girls. The majority of the subjects were Caucasian. One parent of each child subject filled out the Parent Inventory, and 40 preschool teachers of the children filled out the Teacher Survey. The 40 preschool teachers

involved in the study consisted of three males, 36 females, and one who did not mark a gender on the survey. The majority were Caucasian. Detailed demographic information regarding all subjects can be found in Chapter Four.

Instruments

Child Form

The observational tool, Child Form, is included in Appendix B. The findings of the related research were used in order to create a valid observation tool. The singing category was split into four different sub-categories: singing known songs, creating (improvising) new songs, vocal exploration through improvisatory methods, and chanting rhythmically. The instrument category was split into two different sub-categories: playing musical instruments, and making found objects into instruments (i.e. taking a pencil and tapping it rhythmically on a box). Moving to music is its own category. Listening to music was also found to be a popular activity preference; this type of activity, however, is hard to measure, as it is difficult to interpret whether or not the child is, indeed, listening to background music – if any is provided. Therefore, a column was used in order to track whether or not background music was playing during the observation. An "Other" column was included in case a type of musical play occurred that was not accounted for. Lastly, a column for non-musical play was added.

In order to document the quality of the types of musical play, an event recording system was created. First, the pitch sensitivity of the children's singing was tracked in three ways: singing on pitch, emergent pitch sensitivity (EPS), and not singing on pitch. Children's instrumental playing (musical and non) was recorded as either rhythmic or non-rhythmic. All other types of musical play were noted with general tally marks.

The quality of the children's singing was first documented as on pitch, EPS, or not on pitch. After further review and more time in the field, I felt that if a child was not singing on pitch, the child should be considered chanting. Chanting does have vocal inflections that somewhat mimic singing. At times, it was hard to decipher whether or not the child was singing or chanting. As the children went between speaking and singing, however, I was able to tell the difference between singing and speech-inflected chanting as I got to know the children.

Although the event recording method can be very efficient and yield a large amount of data, "target behaviors that are continuous, that persist over long duration, or have a high rate of occurrence…are difficult to code using the event recording method" (Winsor, 2003, p. 251). Therefore, the duration of each musical play episode was taken into account. The length of each play episode might vary from one child to the next, or from one musical behavior to the next, so the Child Form included 20 rows to account for each minute of observation. Each play episode was documented within the time frame it was observed. For example, if a child began singing a song during minute four and the song continued through minute five, that play episode counted as two episodes.

The duality of the musical play behaviors was taken into consideration as well. If two behaviors occurred simultaneously, two tallies were marked – one for each category. For example, a child could sing a familiar song and dance at the same time. In that case, one tally was marked under category S1, and one was marked under M1. This empirical recording system allowed for data to be collected across a wide array of musical behaviors, in a time efficient and continuous manner (Skinner et al., 2003). The Musical Play Categories, Definitions, and Examples can be found in Appendix C.

In addition, musical behaviors such as sound effects seemed to occur at a high rate. In the early observations, before the formal observations began, I found that these sound effect episodes were always interrupted by discussion or narration of the play. Therefore, the sound effects that occurred between periods of talking counted as one musical play episode. It would have otherwise proven impossible to record every single sound emitted by a child. This procedure was followed throughout all the observations in order to control for the behaviors having a high rate of occurrence.

Parent Inventory

The Parent Inventory was based on the Pre-School Activities Inventory (PSAI) (Golombok & Rust, 1993). The PSAI is a valid and reliable standardized test that measures whether a child displays more masculine or feminine play behaviors. Stating that young children can be unreliable reporters, the creators of this inventory designed it to be completed by parents or another caretaker (Golombok & Rust, 1993). The PSAI includes a total of 24 items, 12 being masculine and 12 being feminine. The three sections of the inventory are comprised of seven toy items, 11 activity items, and six character items. A demographic section was added at the beginning of the inventory. The Parent Inventory can be found in Appendix D.

Preschool Teacher/Caregiver Survey

In order to describe the environment of the preschools involved, a survey was given to the preschool teachers. The survey included a demographic section, followed by 10 Likert-scale questions regarding how often the teachers used types of musical activities and three questions concerning how music is used during the day. The Preschool Teacher/Caregiver Survey can be found in Appendix E.

Research Procedure

A total of eleven preschools were contacted and invited to participate in the study, and seven accepted the invitation. A letter from each site, outlining the site's willingness to participate, was collected and included in the Institutional Review Board (IRB) application. IRB approval for the study was obtained from the University of North Dakota, and I followed all informed consent protocols as outlined by the IRB. A letter accompanied the Parent Inventory, explaining that all information would be kept confidential. The names of the children were used to be sure the information from the Parent Inventory matched the data taken from the individual child observations. After the observations were complete, the data was entered under a subject number, assuring complete confidentiality. The seven preschool sites were also assigned a color in order to ensure that no names of the preschools would be revealed.

Prior to the start of formal observations at each site, several days were set aside for parents to ask questions and to hand in the surveys. No parents seemed to have any questions or concerns about the research, but several struck up conversations with me. This was a good way to create connections and to build trust with the parents. Throughout the duration at each site, I had many conversations with and built connections with the teachers as well. Taking the time to build rapport with the adults may have boosted participation in the study.

Also, before the observational research began, voice prompts were recorded on an iPod. The observation form was sectioned off by minutes in order to control for the length of play behaviors. Thus, the voice prompts announced each minute until the 20 minutes had passed.

After the signed Consent Forms and completed Parent Inventories arrived, the single subject observations began. The first two full days at each site were set aside for general field notes. The types of musical play that occurred, as well as the context of that play, were documented. Several researchers have found that children's and adult's conceptions of what is music do not match (Dilkes, 1998; Matthews, 2000). Adults think of music as actual song; children, however, feel that any experiments of sound should be thought of as music. Accordingly, all sounds produced by the children were documented in both the field notes and on the Child Forms.

The recording system proved to be quite efficient, so key words describing the musical play – if any occurred – were jotted down in the margins of the Child Form or on a small post-it note so that they could be documented later. After a day of observations, descriptions of each observation, along with any thoughts or other pieces of insight, were recorded in a split journal. As subsequent observations were made, I went back and documented new insights and findings in the split journal. The qualitative anecdotes in Chapter Four were taken directly from my field notes, and my thoughts that I noted during the observations or added to the split journal afterwards are italicized.

I spent roughly two weeks at each of the seven participating sites. In total, the data was collected over a 4-month period. After all the observations were conducted at a site, the preschool director handed out the Preschool Teacher/Caregiver Surveys to the teachers. Stamped envelopes were included with each survey so that the teachers could be assured that their answers were anonymous.

Data Analysis

IBM SPSS Statistics, Version 20.0 (IBM Corporation, 2011) was used to analyze all quantitative data. Using the Kolmogorov-Smirnov test, it was found that the data were not normally distributed. The non-parametric Mann-Whitney *U* test, therefore, was used so not to violate the general assumptions of parametric statistics. A significance level of .05 was used for all statistical procedures.

The qualitative data were analyzed using standard coding procedures. First, a content analysis was conducted in order to identify any emerging themes or recurring settings of the musical play episodes. Saldaña (2009) suggested looking for patterns such as similarity, difference, frequency, sequence, correspondence, and causation. Each type of pattern was explored upon every subsequent examination of the data.

This initial coding procedure allowed an open-ended approach that provided a starting point. "Initial Coding is the first major stage of grounded theory approach to the data. The method is truly open-ended for a researcher's first review of the corpus" (Saldaña, 2009, p. 66). This procedure was conducted as a First Cycle coding method, as described by Saldaña (2009). A Second Cycle (Saldaña, 2009) procedure was conducted to code the emerging patterns. Each theme was color-coded as a way of indexing the qualitative passages in the codebook. The related literature was weighed while interpreting the themes.

Validity and Reliability

Observational research can lead to several threats of reliability and validity. Creswell and Miller (2000) and Cook and Campbell (1979) collectively identified possible qualitative and quantitative threats. These threats were addressed as follows:

1) Researcher reflexivity: A researcher can come into a study with preconceived notions. Creswell and Miller (2000) felt this can be controlled for by disclosing any assumptions, beliefs, and biases that exist. Exposing these possible biases may help a researcher to be a more objective observer. A section regarding my interest in and experiences with this topic appears in the Preface.
2) Triangulation: Creswell and Miller (2000) present this procedure, which uses multiple sources in order to form categories in a study. I have used this in forming my observational tool. The musical play categories on the Child Form offer a representative model of the types of musical play behaviors that may occur, as defined by previous research. The quantitative and qualitative information gathered were weighed against each other and against previous research before the findings of this study were interpreted.
3) Diffusion: There was a possibility that an adult in the child's life may have discussed the research with the child. Therefore, the child may have tried to display more musical behaviors, knowing that I was looking for them. This is also referred to as the "John Henry effect" (Cook & Campbell, 1979, p. 55). This effect could have come into play with the preschool teachers as well. Knowing that the study involved musical behaviors, the teachers may have tried to include more music during the day in order to "look good." I was bound by informed consent and permission when observing minors; however, I tried to reveal as little as possible to the parents and caregivers about the

exact types of behaviors that were being documented and my background as a music specialist.

4) Setting: The presence of a new adult in the room may have created a different play environment than usual. (i.e. The children acted differently if they felt they were being watched, which is known as the "Hawthorne effect") (Cook & Campbell, 1979, p. 124). I tried my best to maintain a non-participant status and spent some time around the children before the formal observations began, hoping that I became a mainstay in their environment.
5) Reactivity: Related to setting, Skinner, Freeland, and Shapiro (2003) discussed this concern and listed three major variables: 1) obtrusiveness of the observer, 2) perceived power or role of observer, and 3) what the child is told about the observer's presence. Although the presence of an observer may cause reactivity, it is "likely to subside over time as children and others in the environment return to their typical behavior…initial observation sessions may yield less naturalistic data than subsequent sessions" (Skinner et al., 2003, p. 37). In fact, Adler and Adler (1994) felt that observation produced the *least* potential for causing any observer effects. I spent extra time at each site prior to beginning the formal observations in hopes of decreasing possible reactivity. Winsor (2003) suggested that observations be conducted from inconspicuous locations and that the observer be present in the same setting multiple times in order to reduce reactivity. Also, Skinner et al. (2003) stated that any engagement with children may increase reactivity and that observers should not respond at all to the children. Although this was difficult for me, I

tried my best to avoid participating in the children's attempts to draw me into their action. It seemed, however, that if I ignored them, they tried even harder and longer to engage me. I found that simply stating, "I'm sorry, not now. I'm very busy," eased their need to be heard and confirmed that I was not able to play with them. I began to use this response immediately when a child would come up to me, and it was very effective.

Summary

This chapter has described the methodology of a mixed methods research study. Past research studies have influenced the design of both the study itself and the instruments used. Descriptive data were collected from observations in the field and analyzed using both quantitative and qualitative measures. The controls taken for the possible threats ensure that the results are valid and reliable.

CHAPTER IV

RESULTS

Introduction

This chapter includes the presentation and analyses of participant demographics and the results of this mixed methods, four-month-long study. Both qualitative and quantitative data are reviewed and organized by research question. Quantitative data are summarized by tables and qualitative data by figures containing anecdotes grouped by emergent themes. All results refer to the sample, not the population.

These anecdotes are taken directly from the field notes with some modifications such as using pseudonyms in place of the names of the children and giving approximations of the children's sounds rather than actual pitches. In many anecdotes, the Kodàly Call or Chant is referenced; see Figure 2 in Chapter Two (page 37) for notated examples of the Kodàly Call and Chant. Unless otherwise noted, the children's sung melodies occurred within the natural pitch range for the age group, which spans roughly from middle C to G or A directly above (Anderson & Lawrence, 2010; Greata, 2006; Young & Glover, 1998). Because there was no way to assess the exact pitches of their vocal productions, the children's melodies have been notated in the key of C Major.

Participant Demographics

The participants involved in this study included 111 three- and four-year-old children attending seven preschools, 40 of their teachers, and 111 parents (one per child).

Fifty-four of the children were boys, and 57 were girls. Forty-four of the children were three years old, and 67 were four years old. The majority (84.7%) of the children were Caucasian. One parent of each child filled out the surveys and permission forms. The majority of these parents were over the age of 30 (80.1%) and were female (89.2%). Most of them had some sort of musical experience in high school and/or college, and exposed their children to music in the home setting. The demographic information of the children and their parents can be found in Tables 1 and 2, respectively.

The 40 preschool teachers involved in the study consisted of three males, 36 females, and one teacher who neglected to indicate male or female on the survey. Nearly all were Caucasian (92.5%), and the majority had fewer than 10 years of teaching experience (70.0%). Most of the teachers had some sort of musical experience in high school and/or college and considered themselves musical (70.0%). The demographic information of the teachers can be found in Table 3.

The overall child response rate was 48.05%, with the individual site response rates ranging from 36.84% to 62.50%. The child response rate was conditional upon parental permission. The overall teacher response rate was 75.47%, with the individual site response rates ranging from 60.00% to 85.71%. The individual site response rates for both the children and the teachers can be found in Table 4.

Description of Classrooms and Play Materials

All seven sites had play materials available for the children's use, which were similar across all sites. The rooms included specific sections such as a carpet area, a dramatic play area, a sensory table, and an art area. Each teacher set up the room and

Table 1. Demographic Information of Children (n = 111).

	N	%
Gender		
Male	54	48.6
Female	57	51.4
Three-Year-Old Males	21	47.7
Three-Year-Old Females	23	52.3
Four-Year-Old Males	33	49.3
Four-Year-Old Females	34	50.7
Age		
Three-Year-Olds	44	39.6
Four-Year-Olds	67	60.4
Ethnicity		
Asian/Pacific Islander	4	3.6
Black/African American	4	3.6
Hispanic/Latino Islander	2	1.8
Native American Indian	4	3.6
White/Caucasian	94	84.7
Other Ethnicity	2	1.8
Have you always lived in the Red River Valley?		
Yes	39	35.1
No	71	64.0
(missing)	1	0.9
Attended family music classes		
Yes	22	19.8
No	88	79.3
(missing)	1	0.9
Exposed to music in the home		
Yes	103	92.8
No	8	7.2
Parent considers self musical		
Yes	62	55.9
No	48	43.2
(missing)	1	0.9

Table 2. Demographic Information of Parents.

	N	%
Age		
25 years old or younger	4	3.6
25-29 years old	18	16.2
30-34 years old	39	35.1
35 years old or older	50	45.0
Gender		
Male	12	10.8
Female	99	89.2
Expose children to music in the home		
Yes	103	92.8
No	8	7.2
Considers self musical		
Yes	62	55.9
No	48	43.2
(missing)	1	0.9
Musical experience (check all that apply)		
High school band	50	45.0
High school choir	46	41.4
High school orchestra	8	7.2
Private lessons	44	39.6
College band	7	6.3
College choir	8	7.2
College orchestra	1	0.9
Other	11	9.9
Total: Has musical experience		
Yes	85	76.6
No	26	23.4
Have you always lived in the Red River Valley?		
Yes	39	35.1
No	71	64.0
(missing)	1	0.9

Table 3. Demographic Information of Preschool Teachers/Caregivers.

	N	%
Age		
25 years old or younger	15	37.5
25-29 years old	2	5.0
30-34 years old	5	12.5
35 years old or older	18	45.0
Gender		
Male	3	7.5
Female	36	90.0
(missing)	1	2.5
Ethnicity		
Asian/Pacific Islander	1	2.5
Black/African American	0	0.0
Hispanic/Latino Islander	2	5.0
Native American Indian	0	0.0
White/Caucasian	37	92.5
Other Ethnicity	0	0.0
College degree in early childhood education (ECE)		
Yes	20	50.0
No	20	50.0
College degree in area other than ECE		
Yes	18	45.0
No	20	50.0
(missing)	2	5.0
Considers self musical		
Yes	28	70.0
No	10	25.0
(missing)	2	5.0
Musical experience (check all that apply)		
High school band	11	27.5
High school choir	25	62.5
High school orchestra	5	12.5
Private lessons	11	27.5
College band	2	5.0
College choir	4	10.0
College orchestra	1	2.5
Other	11	27.5

Table 3 (cont.)

	N	%
Total: Has musical experience		
Yes	35	87.5
No	5	12.5
Years as teacher/caregiver		
Less than 1 year	9	22.5
1 to 4 years	9	22.5
5 to 9 years	10	25.0
10 to 14 years	4	10.0
15 to 19 years	1	2.5
20+ years	6	15.0
(missing)	1	2.5

Table 4. Individual Site Response Rates for Children and Teachers.

	Population	Returned	Response Rate %
Children			
Blue	32	20	62.5
Green	34	16	47.1
Pink	32	20	62.5
Purple	19	7	36.8
Orange	77	31	40.3
Red	12	7	58.3
Silver	25	10	40.0
Total Children	231	111	48.1
Teachers			
Blue	5	3	60.0
Green	6	5	83.3
Pink	7	6	85.7
Purple	3	2	66.7
Orange	20	15	75.0
Red	6	4	66.7
Silver	6	5	83.3
Total Teachers	53	40	75.5

these areas slightly differently; an example of a preschool classroom's general set up can be found in Figure 3.

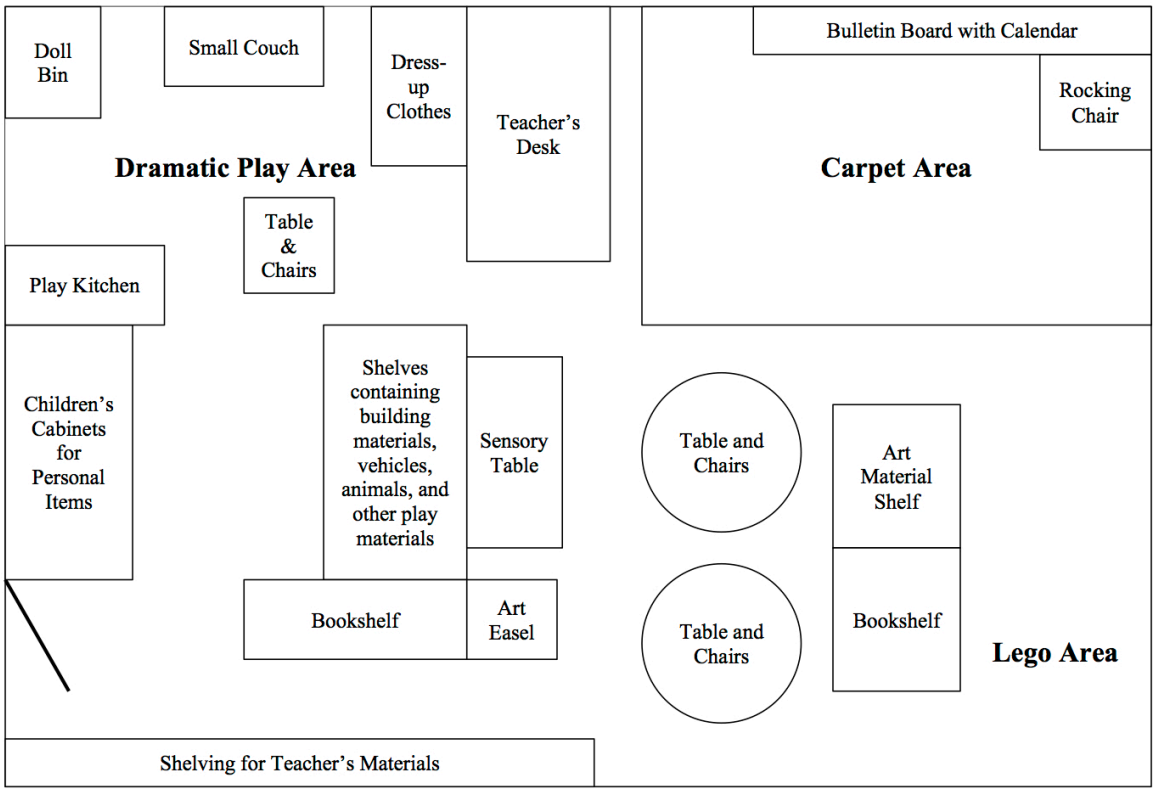


Figure 3. An example of a preschool room set-up.

The carpet area was a place where most teacher-led instruction occurred. Here, the teacher taught the children about the calendar, the weather, and anything else that the preschool curriculum dictated. During play time, the carpet area was an open space available for the children's use. The dramatic play area always included a play kitchen, complete with pots, pans, dishes, utensils, etc. Dress-up items such as dresses and purses were also available here. Most of the dolls and accessories were housed in the dramatic play area as well. An art area usually included an easel with paint supplies, smocks, crayons and markers, glue, scissors, and any other materials the teacher placed there. A moveable sensory table, a table-sized plastic bin that houses sensory items such as sand,

water, snow, and even dry noodles of all kinds, could also be found within the room. Building materials (e.g. Lego® blocks, wooden building blocks, and magnet tiles) were available to the students, as were all sorts of play vehicles and animals. Board games, books, and puzzles were housed generally within cabinets or other shelves, and all sites had musical instruments available for the children's use. The classrooms also contained teacher cabinets, the teacher's desk, child-sized tables and chairs, cabinets or hooks for the children's personal items.

Analysis of Research Question One: Do the Biological Factors of Sex and Age Affect the Frequency or Type of Musical Play?

Biological factors of the children's age and sex were examined and compared to the frequencies of musical play. Table 5 shows the comparison between the children's age and musical play. The Mann-Whitney *U* test found significant differences between the children's age and: singing familiar songs ($U = 1233.50$, $p = .02$), playing instruments and found objects ($U = 1224.50$, $p = .03$), and movement ($U = 1259.50$, $p = .04$). The three-year-olds sang familiar songs ($Mdn = 0.00$, $M = 0.55$), used musical instruments and found objects ($Mdn = 0.00$, $M = 0.82$), and moved to music ($Mdn = 0.00$, $M = 0.66$) more often than the four-year-olds ($Mdn = 0.00$, $M = 0.16$; $Mdn = 0.00$, $M = 0.31$; $Mdn = 0.00$, $M = 0.27$; respectively). The three-year-olds also had an overall larger total amount of musical play ($Mdn = 6.00$, $M = 7.89$) than the four-year-olds ($Mdn = 5.00$, $M = 7.13$), but no significant difference was found. No significant differences were found between the children's age and: creating new song, chanting, vocal exploration, and total vocal use. The means and standard deviation of biological factors can be found in Appendix G.

Table 6 shows the comparison between the children's sex and musical play. The Mann-Whitney *U* test found significant differences between the children's sex and: vocal exploration ($U = 889.50$, $p < .01$) and total vocal use ($U = 1077.50$, $p = .01$). The boys had more vocal exploration (*Mdn* = 4.50, *M* = 7.13) and total vocal use (*Mdn* = 6.00, *M* = 8.91) than the girls (*Mdn* = 1.00, *M* = 2.02 and *Mdn* = 4.00, *M* = 4.21, respectively). A significant difference was also found between the sexes and total amount of musical play ($U = 1135.50$, $p = .02$), with the boys (*Mdn* = 6.50, *M* = 9.81) having more total musical play than the girls (*Mdn* = 4.00, *M* = 5.18). The girls also had more creating new song (*Mdn* = 1.00, *M* = 1.18) and movement (Mdn = 0.00, *M* = 0.63) than the boys (*Mdn* = 0.00, *M* = 0.74 and Mdn = 0.00, *M* = 0.20, respectively), but no significant differences were found. No significant differences were found between the children's sex and: singing familiar songs, creating new song, chanting, playing instruments and found objects, and movement. The means and standard deviation of biological factors can be found in Appendix G.

Table 5. Comparison Between Children's Age and Musical Play.

	3-Years-Old N = 44 *Mdn*	4-Years-Old N = 67 *Mdn*	*U*	*p*
Singing Familiar Songs	0.0	0.0	1233.5	0.02*
Creating New Song	0.0	0.0	1367.5	0.48
Chanting	0.0	0.0	1328.0	0.25
Vocal Exploration	3.0	2.0	1451.0	0.89
Total Vocal Use	4.5	4.0	1368.5	0.53
Total Instrument Use	0.0	0.0	1224.5	0.03*
Movement	0.0	0.0	1259.5	0.04*

* Significant at $p < .05$

Table 6. Comparison Between Children's Sex and Musical Play.

	Boys N = 54 *Mdn*	Girls N = 57 *Mdn*	*U*	*p*
Singing Familiar Songs	0.0	0.0	1476.5	0.56
Creating New Song	0.0	1.0	1284.0	0.10
Chanting	0.0	0.0	1531.5	0.95
Vocal Exploration	4.5	1.0	889.5	<0.01*
Total Vocal Use	6.0	4.0	1077.5	0.01*
Total Instrument Use	0.0	0.0	1349.5	0.11
Movement	0.0	0.0	1473.5	0.55

* Significant at $p < .05$

Analysis of Research Question Two: Do the Psychological Factors of Play Gender and Strong Play Gender Affect the Frequency or Type of Musical Play?

The psychological factors of play gender and strong play gender were taken into account and compared to the musical play frequency counts. The play gender data were collected through the Pre-School Activities Inventory (PSAI) (Golombok & Rust, 1993) on the Parent Inventory. Because this study viewed sex and play gender as independent phenomena, the age-unadjusted format was used. To allow for the direct comparison across both sex and age, the mean of all the PSAI scores was calculated. Those who scored lower than the mean ($M = 49.12$) were assigned a feminine play gender, and those that scored higher than the mean were assigned a masculine play gender.

Table 7 shows the comparison between the children's play gender and musical play. The Mann-Whitney *U* test found significant differences between the children's play gender and: vocal exploration ($U = 888.00$, $p < .01$) and total vocal use ($U = 1055.50$, $p < .01$). Children with a masculine play gender had more vocal exploration

(*Mdn* = 4.50, *M* = 7.11) and total vocal use (*Mdn* = 6.00, *M* = 8.94) than children with a feminine play gender (*Mdn* = 1.00, *M* = 2.04 and *Mdn* = 4.00, *M* = 4.18, respectively). In addition, a significant difference was also found between the sexes and total amount of musical play (*U* = 1124.50, *p* = .01), with the males (*Mdn* = 6.50, *M* = 9.83) having more total musical play than the females (*Mdn* = 4.00, *M* = 5.16). No significant differences were found between children's play gender and: singing familiar songs, creating new song, chanting, playing instruments and found objects, and movement. The means and standard deviation of play gender factors can be found in Appendix G.

Table 7. Comparison Between Children's Play Gender and Musical Play.

	Masculine N = 54 *Mdn*	Feminine N = 57 *Mdn*	*U*	*p*
Singing Familiar Songs	0.0	0.0	1476.5	0.56
Creating New Song	0.0	1.0	1356.0	0.23
Chanting	0.0	0.0	1531.5	0.95
Vocal Exploration	4.5	1.0	888.0	< 0.01*
Total Vocal Use	6.0	4.0	1055.5	< 0.01*
Total Instrument Use	0.0	0.0	1349.5	0.11
Movement	0.0	0.0	1423.0	0.29

* Significant at $p < .05$

In order to uncover if there was a difference between the children's biological sex and their play gender, a crosstabs was performed. Table 8 includes the children's biological sexes versus their play genders. Out of those children who were born male, 96.3% also displayed masculine play genders. Out of those children who were born female, 96.5% displayed feminine play genders. Two children born female displayed

masculine play genders. Consequently, there was not a large amount of observed difference between the children's biological sexes and play genders.

Table 8. Comparison Between Children's Biological Sex and Play Gender.

	Play Gender		Total
	Masculine	Feminine	
Biological Sex:			
Male	52 (96.3%)	2 (3.5%)	54 (48.6%)
Female	2 (3.7%)	55 (96.5%)	57 (51.4%)
Total	54	57	111

Children having a strong play gender were also compared as to their instances of musical play. As stated above, the mean was found to be 49.12. The standard deviation among all PSAI scores was 20.76. Therefore, children with a strong masculine play gender scored a 69.88 or above on the PSAI, and children with a strong feminine play gender scored a 28.36 or below. Twenty-four children had a strong masculine play gender, 20 children had a strong feminine play gender, and 67 had a neutral play gender. The means of those children having a strong play gender were compared.

Table 9 shows the comparison between the strong masculine and feminine play genders and musical play. The Mann-Whitney *U* test found significant differences between the strong play genders and vocal exploration ($U = 152.50$, $p = .04$). Children with a strong masculine play gender had more instances of vocal exploration ($Mdn = 5.00$, $M = 6.92$) than children with a strong feminine play gender ($Mdn = 1.50$, $M = 2.15$). Children with a strong feminine play gender did have more creating new song ($Mdn =$

0.50, *M* = 1.40) and movement (*Mdn* = 0.00, *M* = 0.80) than those with a strong masculine play gender (*Mdn* = 0.00, *M* = 0.71 and *Mdn* = 0.00, *M* = 0.17, respectively), and those with a strong masculine play gender had more total vocal use (*Mdn* = 5.50, *M* = 8.96) and total instrument use (*Mdn* = 0.00, *M* = 1.04) than those with a feminine play gender (*Mdn* = 4.50, *M* = 4.85 and *Mdn* = 0.00, *M* = 0.25, respectively), but no significant differences were found. No significant differences were found between children's play gender and: total amount of musical play, singing familiar songs, creating new song, chanting, total vocal use, playing instruments and found objects, and movement. The means and standard deviation of play gender factors can be found in Appendix G.

Table 9. Comparison Between Strong Play Genders and Musical Play.

	Strongly Masculine N = 24	Strongly Feminine N = 20		
	Mdn	*Mdn*	*U*	*p*
Singing Familiar Songs	0.0	0.0	232.5	0.79
Creating New Song	0.0	0.5	205.5	0.36
Chanting	0.0	0.0	229.0	0.76
Vocal Exploration	5.0	1.5	152.5	0.04*
Total Vocal Use	5.5	4.5	189.0	0.23
Total Instrument Use	0.0	0.0	202.5	0.23
Movement	0.0	0.0	210.0	0.24

* Significant at $p < .05$

Table 10 shows the comparison between the androgynous and strong masculine play genders and musical play. The Mann-Whitney *U* test found no significant differences between the androgynous and strong masculine play genders and: singing familiar songs, creating new song, chanting, vocal exploration, total vocal use, playing

instruments and found objects, and movement. Those children having a strong masculine play gender, however, had more chanting (*Mdn* = 0.00, *M* = 0.88), vocal exploration (*Mdn* = 5.00, *M* = 6.92), and total vocal use (*Mdn* = 5.50, *M* = 8.96) than those with an androgynous play gender (*Mdn* = 0.00, *M* = 0.63; *Mdn* = 3.00, *M* = 4.34; *Mdn* = 4.00, *M* = 6.10; respectively). The means and standard deviation of play gender factors can be found in Appendix G.

Table 10. Comparison Between Androgynous and Strong Masculine Play Genders and Musical Play.

	Strongly Masculine N = 24	Androgynous N = 67		
	Mdn	*Mdn*	*U*	*p*
Singing Familiar Songs	0.0	0.0	769.0	0.60
Creating New Song	0.0	0.0	706.0	0.32
Chanting	0.0	0.0	659.5	0.09
Vocal Exploration	5.0	3.0	646.0	0.15
Total Vocal Use	5.5	4.0	670.5	0.23
Total Instrument Use	0.0	0.0	702.0	0.20
Movement	0.0	0.0	730.0	0.29

Table 11 shows the comparison between the androgynous and strong feminine play genders and musical play. The Mann-Whitney *U* test found no significant differences between the androgynous and strong feminine play genders and: singing familiar songs, creating new song, chanting, vocal exploration, total vocal use, playing instruments and found objects, and movement. Those children having a strong feminine play gender, however, had more singing familiar songs (*Mdn* = 0.00, *M* = 0.50), creating new songs (*Mdn* = 0.50, *M* = 1.40), chanting (*Mdn* = 0.00, *M* = 0.80), and movement (*Mdn* = 0.00, *M* = 0.80) than those having an androgynous play gender (*Mdn* = 0.00, *M*

= 0.21; *Mdn* = 0.00, *M* = 0.93; *Mdn* = 0.00, *M* = 0.63; *Mdn* = 0.00, *M* = 0.40; respectively). Those having an androgynous play gender had more vocal exploration (*Mdn* = 3.00, *M* = 4.34) than those with a feminine play gender (*Mdn* = 1.50, *M* = 2.15). The means and standard deviation of play gender factors can be found in Appendix G.

Table 11. Comparison Between Androgynous and Strong Feminine Play Genders and Musical Play.

	Strongly Feminine N = 20 *Mdn*	Androgynous N = 67 *Mdn*	*U*	*p*
Singing Familiar Songs	0.0	0.0	617.5	0.39
Creating New Song	0.5	0.0	669.0	0.99
Chanting	0.0	0.0	592.5	0.29
Vocal Exploration	1.5	3.0	553.5	0.23
Total Vocal Use	4.5	4.0	650.0	0.84
Total Instrument Use	0.0	0.0	648.0	0.74
Movement	0.0	0.0	644.5	0.70

Lastly, the children having strong play genders (masculine and feminine) were compared to the children having an androgynous play gender. Table 12 shows the comparison between the androgynous and strong play genders and musical play. The Mann-Whitney *U* test found no significant differences between the androgynous and strong play genders and: singing familiar songs, creating new song, chanting, vocal exploration, total vocal use, playing instruments and found objects, and movement. Those children having a strong play gender, however, had more of all types of musical play than children having an androgynous play gender. The means and standard deviation of play gender factors can be found in Appendix G.

Table 12. Comparison Between Androgynous and Strong Masculine and Feminine Play Genders and Musical Play.

	Strong Play Gender N = 20 *Mdn*	Androgynous N = 67 *Mdn*	*U*	*p*
Singing Familiar Songs	0.0	0.0	1386.5	0.40
Creating New Song	0.0	0.0	1375.0	0.51
Chanting	0.0	0.0	1252.0	0.08
Vocal Exploration	2.5	3.0	1432.5	0.80
Total Vocal Use	5.0	4.0	1360.5	0.49
Total Instrument Use	0.0	0.0	1394.0	0.49
Movement	0.0	0.0	1425.5	0.65

Analysis of Research Question Three: Do Other Factors Affect the Frequency or Type of Musical Play?

Quantitative data were used in order to answer Research Question Three. First, the play environment provided by the teachers was identified according to data collected from the Preschool Teacher/Caregiver Survey. Next, the Home Environment provided by the parents on the Parent Inventory was identified.

Play Environment

The quantitative data collected from the Preschool Teacher/Caregiver Survey give an overview of the provided play environment for the children. The survey contained questions about what the adult did musically in the environment, with the answers based on a Likert scale. The Likert scale included 1 = Never, 2 = Hardly Ever, 3 = Sometimes, 4 = Often, 5 = Very Often, and 6 = Always.

In grouping answers four through six as agreement to using music often, Table 13 shows the total teachers' percentages of agreement to using music often. In total, the

teachers most often agreed with question 9A, I sing familiar songs to/with the children while they play (55.0%), followed by questions 9H, There is background music playing while the children play (47.5%), and 9J, I feel I provide a musical environment for the children while they play (47.5%). Some teachers also provided comments for "Other," to explain that they used transitioning from one activity to another, during video and story time, and in carpet/circle time routines.

Table 13. Number of Teachers Agreeing to Using Music Often.

	Blue N (n=3)	Green N (n=5)	Orange N (n=15)	Pink N (n=6)	Purple N (n=2)	Red N (n=4)	Silver N (n=5)	Total N (n=40)	Total %
9A. Sing familiar songs	2	3	8	4	0	3	2	22	55.0
9B. Sing new words to familiar songs	2	1	3	1	0	3	1	11	27.5
9C. Make up songs	2	1	3	1	0	3	3	13	32.5
9D. Chant rhythmically	0	1	4	3	0	3	1	12	30.0
9E. Explore the range of my voice	1	2	5	2	0	2	2	14	35.0
9F. Play musical instruments	1	1	3	0	0	0	1	6	15.0
9G. Create instruments out of non-musical materials	2	0	3	3	0	0	0	8	20.0
9H. Background music plays during play time	3	2	7	3	0	3	1	19	47.5
9I. Dance to background music	2	3	4	2	0	3	2	16	40.0
9J. I provide a musical environment	3	2	6	3	0	3	2	19	47.5

Individually, the Red site and the Blue site were deemed as having the most musical teachers, since the majority agreed with eight and seven (respectively) of the ten questions. The teachers at the Pink site seemed to also be quite musical, agreeing with

five out of the ten questions. The Purple site had no agreement with any of the questions. The rest of the sites agreed with one to two questions.

Questions 9A through 9E asked teachers to rate how often they used their voices musically throughout the day. Table 14 shows that the children's musical play consisted of using their voices more than instruments. This occurred at all sites. Table 13, however, shows that the teachers' agreement to how often they used their voices musically varied greatly, ranging from no agreement to a majority of agreement. Several qualitative examples under the first research question did support a relationship between the teacher's singing and children's singing. There were, however, so few instances, that statistically, there did not seem to be a relationship between the type of musical activity reported by the teacher and the musical play activity displayed by the students.

Table 14 shows the children's musical play frequencies according to each individual site. Looking at frequencies alone, the Orange site had the most musical play occurrences (N = 305), followed by the Green site (N = 193) and the Blue site (N = 143). This, however, does not allow for the number of children observed at each site. In order to account for this, a ratio was created by dividing the number of children at the site by the total musical play frequency count at the site. The musical play ratios were sorted from high to low: Red (46.67), Silver (29.41), Purple (26.92), Pink (18.35), Blue (13.99), Orange (10.16), and Green (8.29). Although the Red site had a low frequency count, when taking into account only seven children were observed, it had the highest musical play ratio. This means that the children at the Red site played more musically overall compared to the other sites. In comparing this result with the teacher survey results, the

Table 14. Children's' Musical Play Frequencies at Each Individual Site.

Musical Play Type	Blue		Green		Orange		Pink		Purple		Red		Silver	
	N	*%	N	*%	N	*%	N	*%	N	*%	N	*%	N	*%
Singing Familiar Songs	14	9.8	1	0.5	12	3.9	2	1.8	2	7.7	0	0.0	4	11.8
On Pitch	1	0.7	1	0.5	1	0.3	2	1.8	0	0.0	0	0.0	3	8.8
Tonally	13	9.1	0	0.0	11	3.6	0	0.0	2	7.7	0	0.0	1	2.9
Creating New Song	17	11.9	14	7.3	45	14.8	12	11.0	10	38.5	4	26.7	5	14.7
On Pitch	1	0.7	3	1.6	4	1.3	1	0.9	1	3.9	1	6.7	1	2.9
Tonally	16	11.2	11	5.7	41	13.4	11	10.1	9	34.6	3	20.0	4	11.8
Subtotal Singing	31	21.7	15	7.8	57	18.7	14	12.8	12	46.2	4	26.7	9	26.5
Chanting	8	5.6	21	10.9	36	11.8	5	4.6	0	0.0	4	26.7	5	14.7
Vocal Exploration	70	49.0	136	70.5	171	56.1	84	77.1	14	53.9	7	46.7	18	52.9
Vocal Exploration	56	39.2	87	45.1	113	37.1	62	56.9	8	30.8	3	20.0	10	29.4
Mouth Sounds	14	9.8	49	25.4	58	19.0	22	20.2	6	23.1	4	26.7	8	23.5
Total Vocal Use	109	76.2	172	89.1	264	86.6	103	94.5	26	100.0	15	100.0	32	94.1
Musical Instrument Use	7	4.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Non-Instrument Use	11	7.7	3	1.6	29	9.5	6	5.5	0	0.0	0	0.0	1	2.9
Total Instrumental Use	18	12.6	3	1.6	29	9.5	6	5.5	0	0.0	0	0.0	1	2.9
Body Movement	16	11.2	18	9.3	12	3.9	0	0.0	0	0.0	0	0.0	1	2.9
Total Musical Play (Site)	143	100.0	193	100.0	305	100.0	109	100.0	26	100.0	15	100.0	34	100.0
** % Overall Total		17.3		23.4		37.0		13.2		3.2		1.8		4.1

* Percentage of total amount of musical play at individual site

** Percentage of total amount of musical play overall (N = 825)

Red site teachers were deemed the most musical, and according to the ratio, the Red site children were the most musical. The Silver site and the Purple site also had high musical play ratios, but the teacher answers did not agree with a large majority of the questions. It is difficult to confirm whether or not the musicality of the teachers had an effect on the frequency of musical play produced by children; there does, however, seem to be some sort of small correlation.

Lastly, the teachers were asked how music was used throughout the day in their classrooms. First, they were asked to choose all music uses that applied. Next, they were asked to choose their top two uses for music. Table 15 shows the teacher's use of music. When asked to choose all that applied, U1, using music as a fun activity (82.5%), and U2, using music to help children fall asleep (82.5%), were chosen the most. Using music to redirect inappropriate behavior (30.0%) was chosen the least. When asked to choose the top two usages of music, U1 and U2 again were chosen the most frequently (42.5% and 37.5%, respectively). Helping the children awaken from nap time was chosen the least (2.5%).

The survey also provided a final response question for the teachers to indicate any other musical activities or usages for music that they provided throughout the day. Some discussed the musical play materials available to students in the classroom, and others discussed the use of music during transition times. Two teachers commented, "We often sing songs for transitions, especially in the hallway on the way to wash hands," and "I have certain songs I sing to help teach the children to wash their hands and to move safely through the halls and on the stairs. I sing familiar songs to them while waiting (lining up, waiting for others to be done eating, etc.) and to regain control of the group

during hectic moments." Another teacher discussed the use of music during Circle time: "Circle time is usually filled with three to four songs, twice daily – most are movement/active songs, and we also do one book twice daily with musical CD." These comments indicate that some of the teachers used musical activities in many ways throughout the day.

Table 15. Teachers' Use of Music.

	Overall		Top Used	
	N	%	N	%
U1. Fun activity (enjoyment)	33	82.5	17	42.5
U2. Helping the children fall asleep for nap time	33	82.5	15	37.5
U3. Helping the children awaken from nap time	15	37.5	1	2.5
U4. Redirecting inappropriate behavior (classroom management)	12	30.0	2	5.0
U5. Education	18	45.0	6	15.0
U6. Other	28	70.0	11	27.5

Home Environment

Home environment factors were also compared to the musical play of young children. Four factors were identified and assessed for any relationship to amount or type of musical play: family music class attendance, exposure to music at home, the parents' self-reported musicality in the home, and the musical background of the parent.

The comparison between family music class attendance and musical play can be found in Table 16. The Mann-Whitney *U* test found a significant difference between family music class attendance and Movement ($U = 720.00$, $p < .01$). Those children who attend(ed) family music classes moved to music more often (Mdn = 0.00, $M = .82$) than

those who had not attended family music classes (Mdn = 0.00, *M* = .32). Although no significant difference was found, children who attend(ed) family music classes had more total amount of musical play (Mdn = 7.00, *M* = 8.77) than those who did not attend (Mdn = 5.00, *M* = 7.17). No significant differences were found between family music class attendance and: singing familiar songs, creating new songs, chanting, vocal exploration, total vocal use, playing instruments and found objects, and movement. The means and standard deviation of home environment factors can be found in Appendix G.

Table 16. Comparison Between Family Music Class Attendance and Musical Play.

	Attend(ed) N = 22 *Mdn*	Not Attended N = 88 *Mdn*	*U*	*p*
Singing Familiar Songs	0.0	0.0	951.0	0.84
Creating New Song	0.0	0.0	866.0	0.40
Chanting	0.0	0.0	901.5	0.52
Vocal Exploration	3.0	2.0	801.5	0.21
Total Vocal Use	5.5	4.0	895.0	0.58
Total Instrument Use	0.0	0.0	932.5	0.70
Movement	0.0	0.0	720.0	< 0.01*

* Significant at $p < .05$

The comparison between exposure to music at home and musical play can be found in Table 17. The Mann-Whitney *U* test found no significant differences between exposure to music at home and: total amount of musical play, singing familiar songs, creating new song, chanting, vocal exploration, total vocal use, playing instruments and found objects, and movement. Although no significant differences were found, those children who were exposed to music in the home had more chanting (*Mdn* = 0.00, *M* = 0.75) and vocal exploration (*Mdn* = 3.00, *M* = 4.61) than those who were not

exposed to music in the home (*Mdn* = 0.00, *M* = 0.25; *Mdn* = 0.50, *M* = 3.13, respectively). Those children who were not exposed to music had more singing familiar song (*Mdn* = 0.00, *M* = 0.75) and creating song (*Mdn* = 1.00, *M* = 1.25) than those who were exposed to music at home (*Mdn* = 0.00, *M* = 0.28; *Mdn* = 0.00, *M* = 0.94; respectively), but no significant differences were found. The means and standard deviation of home environment factors can be found in Appendix G.

Table 17. Comparison Between Exposure to Music at Home and Musical Play.

	Exposed N = 103	Not Exposed N = 8		
	Mdn	*Mdn*	*U*	*p*
Singing Familiar Songs	0.0	0.0	361.0	0.35
Creating New Song	0.0	1.0	353.0	0.46
Chanting	0.0	0.0	352.0	0.38
Vocal Exploration	3.0	0.5	354.0	0.50
Total Vocal Use	4.0	5.5	403.5	0.92
Total Instrument Use	0.0	0.0	374.0	0.53
Movement	0.0	0.0	390.5	0.70

The comparison between the parents' self-reported musicality in the home and musical play can be found in Table 18. The Mann-Whitney *U* test found no significant differences between the parents' self-reported musicality in the home and: total amount of musical play, singing familiar songs, creating new song, chanting, vocal exploration, total vocal use, playing instruments and found objects, and movement. Those children whose parents reported being musical in the home, however, had more chanting (*Mdn* = 0.00, *M* = 0.85), vocal exploration (*Mdn* = 3.00, *M* = 5.06), total vocal use (*Mdn* = 5.00, *M* = 7.05), total instrument use (*Mdn* = 0.00, *M* = 0.60), and overall total musical play (*Mdn* = 6.00, *M* = 8.16) than those whose parents did not (*Mdn* = 0.00, *M* = 0.54; *Mdn* =

1.00, *M* = 3.83; *Mdn* = 4.00, *M* = 5.88; *Mdn* = 0.00, *M* = 0.40; *Mdn* = 5.00, *M* = 6.58; respectively). The means and standard deviation of home environment factors can be found in Appendix G.

Table 18. Comparison Between the Parents' Self-Reported Musicality in the Home and Musical Play.

	Musical N = 62 M	Not Musical N = 48 M	*U*	*p*
Singing Familiar Songs	0.0	0.0	1418.5	0.51
Creating New Song	0.0	0.5	1366.0	0.42
Chanting	0.0	0.0	1404.0	0.51
Vocal Exploration	3.0	1.0	1228.5	0.11
Total Vocal Use	5.0	4.0	1347.5	0.40
Total Instrument Use	0.0	0.0	1412.5	0.51
Movement	0.0	0.0	1339.0	0.16

Table 19. Comparison Between Musical Background of Parent and Musical Play.

	Musical Background N = 26 M	No Musical Background N = 85 M	*U*	*p*
Singing Familiar Songs	0.0	0.0	986.0	0.19
Creating New Song	0.0	0.0	1091.5	0.92
Chanting	0.0	0.0	1051.0	0.63
Vocal Exploration	1.5	3.0	969.0	0.34
Total Vocal Use	4.0	5.0	939.5	0.25
Total Instrument Use	0.0	0.0	1076.5	0.78
Movement	0.0	0.0	1101.5	0.97

The comparison between the parents' musical background and musical play can be found in Table 19. The Mann-Whitney *U* test found no significant differences

between the parents' musical background and: total amount of musical play, singing familiar songs, creating new song, chanting, vocal exploration, total vocal use, playing instruments and found objects, and movement. Those children whose parents had no musical background, however, had more vocal exploration (*Mdn* = 3.00, *M* = 5.01) and total vocal use (*Mdn* = 5.00, *M* = 7.04) than those children whose parents did have a musical background (*Mdn* = 1.50, *M* = 2.85; *Mdn* = 4.00, *M* = 4.73; respectively). The means and standard deviation of home environment factors can be found in Appendix G.

Analysis of Research Question Four: What Type of Musical Play Do Children Engage in the Most? The Least?

Quantitative data taken from the individual child observations were used to answer Research Question Four. Altogether, the 111 observed children engaged in musical play for 515 minutes, equaling 23.20% of the total 2,220 observation minutes. Thirteen of the children did not engage in musical play during the 20-minute observation. There were a total of 825 occurrences of musical play.

The musical play frequency counts can be found in Table 20. The type of musical play that occurred the most often was Vocal Exploration (60.61%), followed by Creating New Song (12.97%) and Playing Found Objects (6.06%). Vocal use (87.39%) far out-weighed any other major type of musical play. Looking at the individual musical play types under these larger categories, Vocal Exploration (41.09%) and Mouth Sounds (19.52%) were used the most, followed by Creating New Song with emergent pitch sensitivity (EPS) (11.52%) and Body Movement (5.70%). The individual musical play types that occurred the least were Musical Instrument Use: Rhythmic (0%) and Musical Instrument Use: Non-rhythmic (.85%).

Table 20. Musical Play Frequency Counts.

	Frequency	*M*	*SD*	% of Total Musical Play
Total Vocal Use	721	6.5	7.3	87.4
Singing Familiar Songs	35	0.3	0.9	4.2
On Pitch	8	0.1	0.4	1.0
Emergent Pitch Sensitivity	27	0.2	0.8	3.3
Creating New Song	107	1.0	1.6	13.0
On Pitch	12	0.1	0.4	1.5
Emergent Pitch Sensitivity	95	0.9	1.6	11.5
Chanting	79	0.7	1.8	9.6
Vocal Exploration	500	4.5	6.8	60.6
Vocal Exploration	339	3.1	4.8	41.1
Mouth Sounds	161	1.5	3.1	19.5
Total Instrument Use	57	0.5	1.5	6.9
Musical Instrument Use	7	0.1	0.5	0.9
Rhythmic	0	0.0	0.0	0.0
Non-rhythmic	7	0.1	0.5	0.9
Found Object Use	50	0.5	1.3	6.1
Rhythmic	25	0.2	0.8	3.0
Non-rhythmic	25	0.2	0.9	3.0
Body Movement	47	0.4	1.2	5.7
Total Musical Play	825	7.4	8.0	100.0

The means and standard deviations of the types of musical play are also included in Table 20. In ranking the means, the findings match the percentages reported above. On average, musical play occurred roughly eight times during an observation ($M = 8.03$). However, the high standard deviation values indicate that the children engaged in a

varied amount of musical play. Some children used musical rarely, while others engaged in musical play many times.

Analysis of Research Question Five: What Kind of Musical Qualities Does Children's Musical Play Consist of?

The Research Question Five was analyzed using the Child Form and its accompanying recording method, incorporating a quantitative overview of the musical qualities, melody and rhythm. These qualities were also documented in the field notes, allowing for a rich description of the children's use of melody and rhythm.

Qualities of Vocal Use

The children had many instances of vocal play. If the instance was deemed as singing, there were two ways a child could sing: on pitch or emergent pitch sensitivity (EPS). If the child was using the voice rhythmically – occasionally with vocal inflection, but no actual pitch – it was considered chanting. The anecdotes in Figure 4 (page 92) show instances of several children's vocal play.

In looking at the overall frequencies of the three vocal characteristics (chanting, EPS, and singing on pitch), it was found that the children most often created new song with EPS (42.99%), followed by chanting (35.75%). Creating new song on pitch (5.43%) and singing a familiar song on pitch (3.62%) were used the least. In totaling the amount of singing on pitch and singing with EPS, singing with EPS was used the most often (55.20%). The frequency counts of singing and chanting characteristics can be found in Table 21.

Table 21. Frequency Counts of Singing and Chanting Characteristics.

	Frequency	%*
Singing a Familiar Song on Pitch	8	3.6
Singing a Familiar Song with EPS	27	12.2
Creating a New Song on Pitch	12	5.4
Creating a New Song with EPS	95	43.0
Total Singing on Pitch	20	9.1
Total Singing with EPS	122	55.2
Chanting	79	35.8

* % of Total Amount of Singing and Chanting (N = 221)

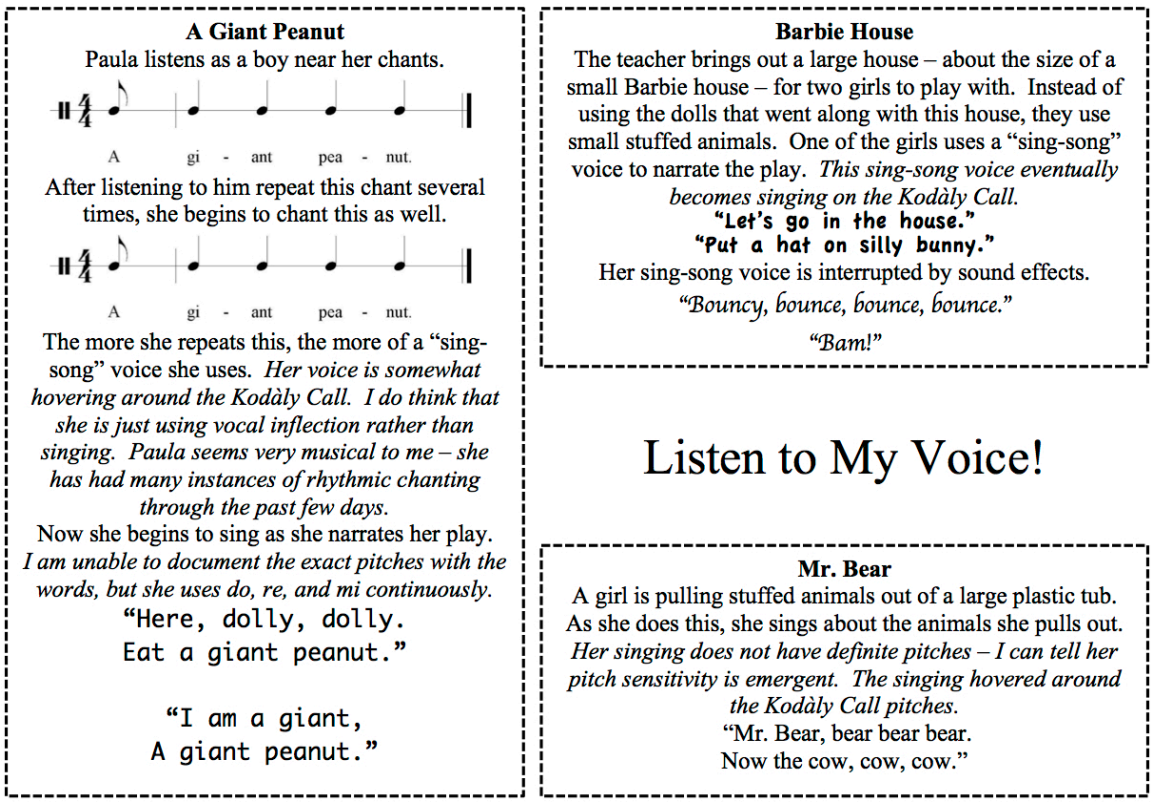


Figure 4. Vocal qualities in children's musical play.

Qualities of Instrument Use

The instrumental and found object playing was also identified in two separate ways: rhythmic and non-rhythmic. Instruments were available to the children during their free play, but they were only used 12.28% of the total instrumental playing time. The children played only non-rhythmically with the instruments, which points to the instruments being used for sound exploration instead of a musical endeavor. Playing a found object both rhythmically and non-rhythmically occurred equally the most (43.86% and 43.86%, respectively). In totaling the rhythmic and non-rhythmic playing, the children playing non-rhythmically the most often (56.14%), which again points to the fact that the children most often explored the sound of an instrument or object. The frequency counts of instrumental and found object characteristics can be found in Table 22.

Table 22. Frequency Counts of Instrumental and Found Object Characteristics.

	Frequency	*%
Instrument: Rhythmic Playing	0	0.0
Instrument: Non-rhythmic Playing	7	12.3
Found Object: Rhythmic Playing	25	43.9
Found Object: Non-rhythmic Playing	25	43.9
Total Rhythmic Playing	25	43.9
Total Non-rhythmic Playing	32	56.1

*% of Total Amount of Instrumental Playing (N = 57)

Each child used different found objects to create sound. Sometimes the type of play and objects used predicted the sound exploration, and occasionally the children sought out specific materials to create sound. Anecdotes in Figure 5 (page 94) display these occurrences.

Both the quantitative information from the Child Form and the field notes have provided information regarding the qualities of children's musical play. In summary, a child's singing can either be on pitch or with EPS. The children's chanting was rhythmic with possible vocal inflection, reflecting what sometimes may be considered singing not on pitch. The children also used musical instruments and found objects to explore sound, sometimes using a steady beat.

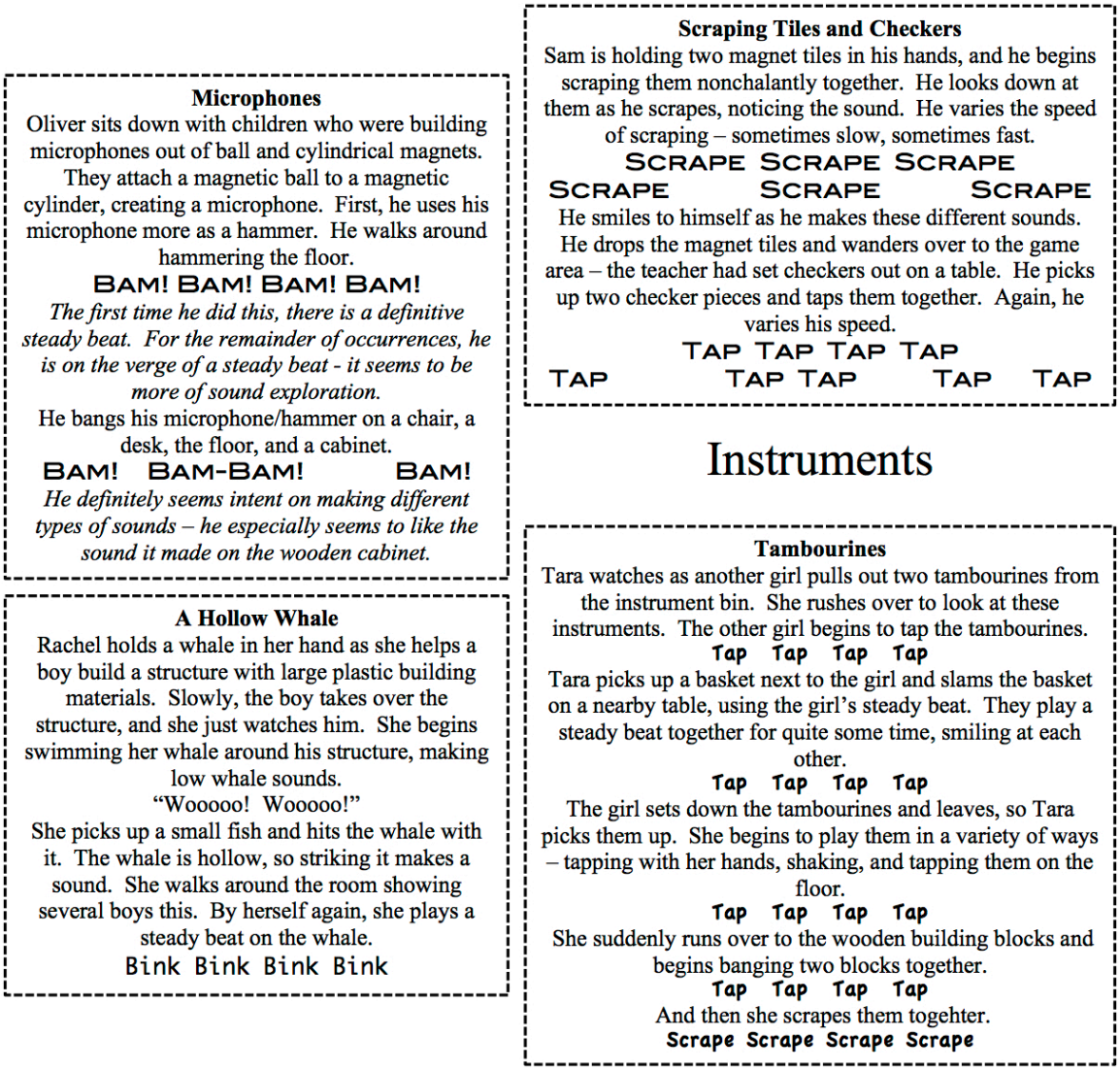


Figure 5. Instrumental qualities in children's musical play.

Analysis of Research Question Six: What Conditions Enhance Children's Engagement in Musical Play?

In order to answer Research Question Six, qualitative data gathered from field observations were analyzed. Several factors that seemed to enhance musical play emerged: type of play materials (toys) used, solitary play, group play, play fighting, calling and/or teasing, general playfulness, and some forms of teacher-child interaction. The most prominent factor was the type of play materials used.

Type of Play Materials

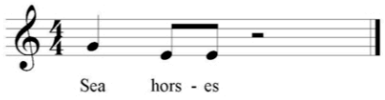
Throughout the observations, it became apparent that certain types of toys (play materials) enhanced musical play. The children played with puzzles, books, dramatic play materials, art activities and play dough, musical instruments, sand and sensory materials, and building materials. The quiet activities of puzzles and books (Figure 6, page 96) and art and sensory activities (Figure 7, page 97) generally elicited soft singing or humming. Most anecdotes in these two figures show children engaged in soft singing or humming. In Figure 6, "Row Your Boat" shows an instance in which the synchronization of movement may have led to the musical play episode; the use of movement energized the boys, who sang at the top of their lungs. The boys in "I'm Singing" (Figure 7) also sang loudly as their singing and chanting encouraged one another.

Dramatic play created the opportunity for singing, chanting, and sound effects that accompanied the children's play themes. Figure 8 (page 98) provides several anecdotes of musical play that occurred in this way. "Food in the Skillet" shows how a boy accompanies his kitchen play with sound effects of cooking food and microwave

beeps. The girl in "Who Wants Ice Cream" also uses sound effects as she "ate" and "drank" her food. She also created song as she narrated the play for herself. Chanting and singing a known tune was revealed in "Woah." The diverse range of dramatic play activities certainly opened up a breadth of musical play activities.

Sea Horses

Nick is looking at a book and suddenly begins to sing softly. *The singing is so soft that I cannot make out words or pitches – I can see his mouth is moving and can hear sustained tones only.* He makes noises up in his head voice that sound almost like sing-songy sound effects. *Again, these are sustained tones, and it is hard to differentiate whether or not these are sung pitches or exploration of the head voice.*



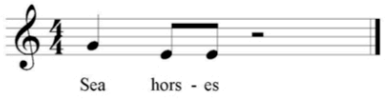
He repeats this phrase over and over again, only interrupting this to make sound effects.

"Boppy, pshhhh, pshhhh."

As Nick turns the page, he continues to sing, as if he is "singing" the story instead of reading it.

"This is a fish,
and these are sea horses."

Another boy walks up, and Nick continues "singing" the story to the new boy. The boy begins singing the "sea horses" song after Nick sings it for him again.



My Favorite Song

A boy is working on a puzzle, singing and humming quietly to himself. *It seems to be a made-up song – I could make out the words "my favorite song" many times.*

"My favorite song.
My favorite song."

He creates sound effects when putting puzzle pieces down.

"BING."
"PKKKK."

Books and Puzzles

Row Your Boat

Two boys sit on a small couch, looking at a book together. One begins to making "rowing motions," and the other follows. As soon as their rows are in sync, the first boy begins to sing "Row Your Boat," and the other quickly joins in. *Their gestures are perfectly in sync with the steady beat of their song. They sing at the top of their lungs – the song is tonal, but the boys are not accurate with their pitches.*

"ROW, ROW, ROW YOUR BOAT,
GENTLY DOWN THE STREAM.
MERRILY, MERRILY, MERRILY, MERRILY,
LIFE IS BUT A DREAM!"

After they complete the song, they both giggle and return to looking at the book.

Figure 6. Play materials of books and puzzles enhancing musical play.

Vehicles and small plastic animals were also used, which seemed to elicit the most musical play. The children incorporated sound effects to accompany their play with these items. Vehicle play can be found in the anecdotes in Figure 9 (page 99). In most cases, the children explored the head voice when making accompanying vehicular sound effects. The children in "We Will Attack" also created chants and song to accompany their play.

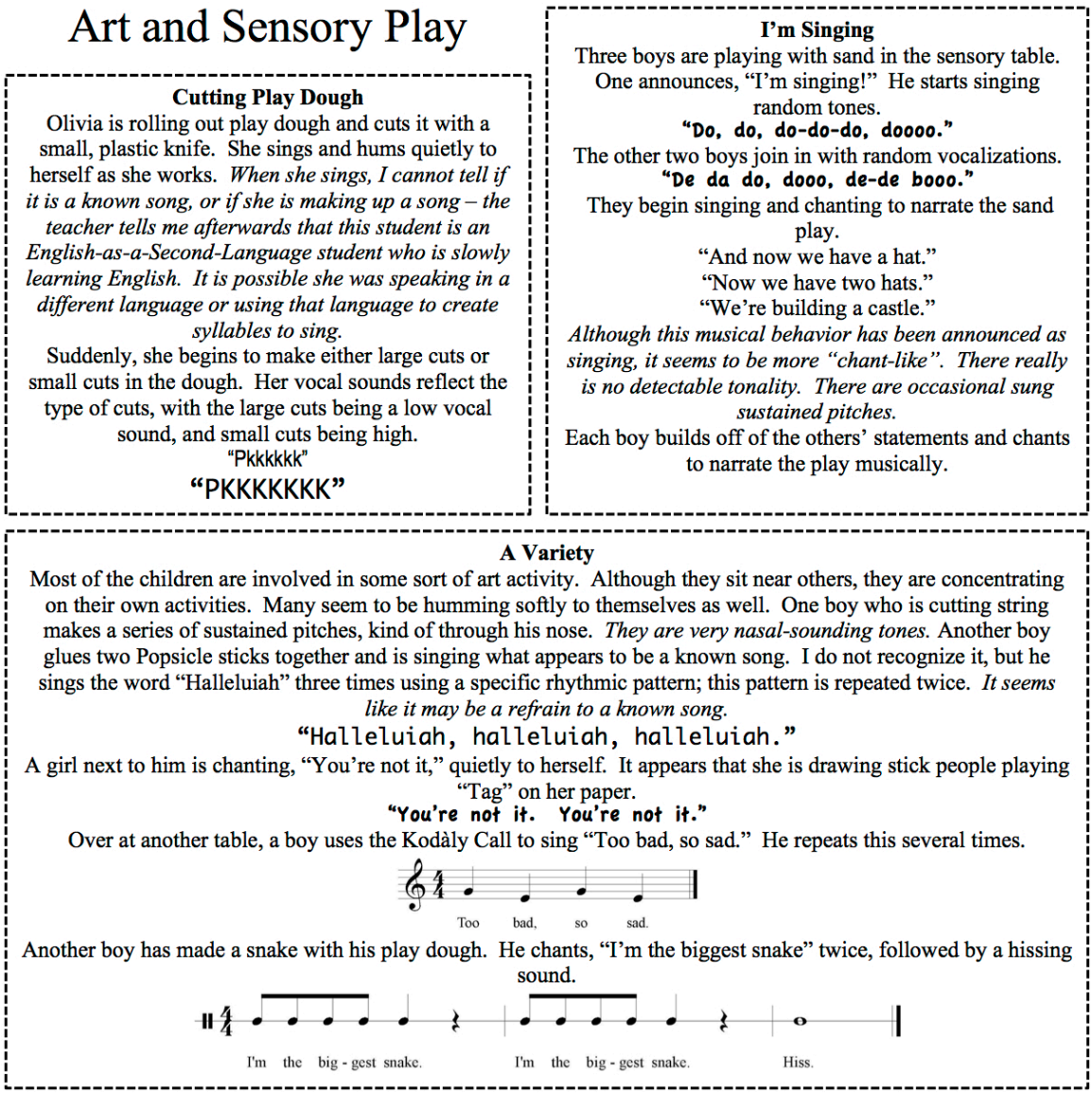


Figure 7. Play materials of art and sensory activities enhancing musical play.

Animal play anecdotes appear in Figure 10 (page 100). Similarly, the children explored the range of their voices when making animal sounds. The children in "We're Gonna Win" also created a chant, and the children in "Horsing Around" created a song. "We Will Attack" (Figure 9) and "Cars and Dinosaurs" (Figure 10) show examples of play with both animals and vehicles.

Parallel Play with Dolls

A boy and a girl are playing with baby dolls. *Although they are playing in a similar way, they have no interaction between the two of them - they are both engaged in solitary (parallel) play.* The boy lays a blanket on the floor, and then puts the doll on the blanket. He wraps up the baby while singing softly to it. *It is interesting watching a boy play with a doll in this way.* He walks over to a rocking chair and rocks the doll, still singing softly.

"Baby, baby, baby."

After the girl wraps up her doll in the same way, they begin walking around the room. The boy chants the word "blue," but as he said it, he used an ascending glissando. *He used the same relative pitches and glissando each time.*

"bLUUUUE."

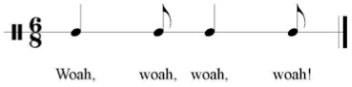
Dramatic Play

Woah

Two boys sit in front of the small playhouse and are playing with the small dolls and furniture. Paul picks up a small man and says, "I'm falling, ahhh!!!" His voice descends from the head voice to the chest voice, following the path of the man.

"Aaahhhh!"

The second boy, Quinn, begins to chant.



Paul listens to Quinn's chant, and then makes up his own chant.

"Da, da, da, da"

This slowly morphs into the tune of "Twinkle, Twinkle Little Star" on pitch.

"Da, da, da, da, da, da, daaaa."

Quinn joins, and they both sing together until the tune is completed.

"Da, da, da, da, da, da, daaaa."
"Da, da, da, da, da, da, daaaa."
"Da, da, da, da, da, da, daaaa."
"Da, da, da, da, da, da, daaaa."
"Da, da, da, da, da, da, daaaa."

Food in the Skillet

Over at the play kitchen, two boys are cooking. One boy has some play food in a skillet, and he shakes the skillet.

"Listen to this!"

He shakes the skillet for the other boy. He begins to shake the skillet faster and slower, intent on the new sounds that are being made. *He is engaged in this for a solid minute.* He suddenly returns to the stove and makes sounds that remind me of the crackling and bubbling food makes in a hot skillet.

"Crack. Pop, pop. Pshhhhh."

The other boy is lying near the kitchen.

"I'm sleeping! It's night out!"

The boy in the kitchen says, "I'm making breakfast while you sleep." He pushes the buttons on the microwave and makes beeping sounds.

"Beep. Beep. Beep-beep."

The microwave beeps "wake up" the other boy.

Who Wants Ice Cream

Olivia is playing in the kitchen with play food. She picks up some spaghetti and "sips" it, pretending to eat it.

"Sssssss!"

She picks up a glass that was filled with "orange juice" and mades a similar sound.

"Sssssss!"

As she plays, she narrates the play.

"I'm making spaghetti sauce."

"I better pour some more orange juice."

I note that her voice reminds me of a "sing song voice". I realized later that she was, indeed, using her singing voice at times.

She begins to sing about the ice cream she is "scooping" into a bowl. Later, she plays with some cheese.

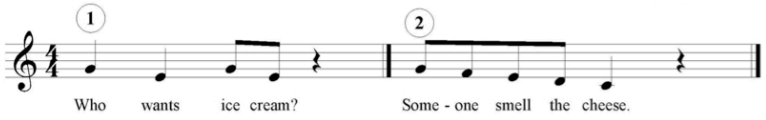


Figure 8. Dramatic play activities enhancing musical play.

Lego Ships

Three boys are building ships out of Legos.
"Your ship looks like mine!"
"Hey, look at this. Mine has a gun."
"Wow, yours has a pirate!"
They began moving their ships around the room – as the ships go up, their voices go up.

"W$_{ooo}$OOOO!"

Their vocal directions follow the path of the ships/boats.

One boy imitates the sound of a gun fight.
"Pee-oo, pee-oo."
The other boys follow, and a gunfight ensues. They make crashing sounds as two ships collided several times.
"Pshhh, pshhh!"
They repeat this sequence three times, until they all crash their ships together and the ships fall apart.

Lego Vehicles

A group of boys are playing with Legos, building Lego vehicles.

"Vvvvrrrooom!"

They make car sounds as they work. A vehicle flies into the air, and their voices ascend into the head voice, following the flight path.

"W$_{ooo}$OOOO!"

One boy moves his vehicle up and down in a steady beat to the background music. Another boy declares that his vehicle is an airplane and begins flying it around the room.
"Woooo! Woooo!!"
He says this on a sustained pitch.

Vehicle Play

Mouth Sounds

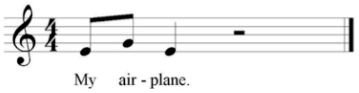
Three boys grab a Lego vehicle. Immediately, they make a lot of sounds in their head voices as they drive and fly the vehicles around the room.

"Vvvvrrrooom!"
"Beep! BEEEEEP!"
"Pshhh"

They also make ascending noise with a sudden shift to low tones. *This sounds like the changing gears of a vehicle.*

My Airplane

A girl walks by me singing.



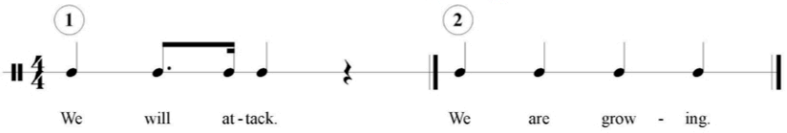
She repeats this many times as she walks aimlessly around the Matchbox car track. A boy hands her a car, and the two begin moving the cars on the track.

"Vvvvrrrooom!"

It is interesting that this instance begins as a solitary musical play event for the girl, and the boy pulls her into more of a group activity involving sounds.

We Will Attack

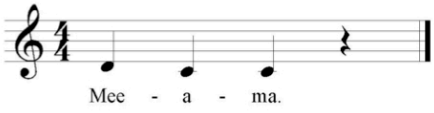
Mitchell starts chanting, "We will attack!" He picks up a Lego "bug" (*a small structure that children can connect Legos on to build a bug*), and changed the chant to "We are growing."



He repeats these chants for a long period of time, softly to himself.
Another boy sitting next to Mitchell uses a Lego car to tap the steady beat of the background music. He moves his vehicle across the table, then leaps it into the air.

"VVVVVVVVV – Wooooo!"

Mitchell begins to sing again – loudly at first. As he builds on the Lego bug, he slowly begins singing more softly. Eventually, he sings very softly to himself.



Matchbox Cars

Several boys are playing with Matchbox cars and a ramp. They use sound effects from their mouths, and they also make "car sounds."
"Pppssshhhhh."
"Vrrrooooom!"

The cars fly into the air off of the ramp.

"W$_{ooo}$OOOO!"

This is an ascending sound into his head voice that follows the trajectory of the car.

Figure 9. Vehicle play enhancing musical play.

We're Gonna Win

Three boys are using wooden building blocks to create a large structure for plastic dinosaurs. They talk together as they work.

"What should we make this look like?"

"How tall does it need to be, do you think?"

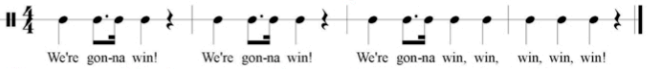
The structure is completed, and they put the dinosaurs inside it, making growling sounds.

"ROAR. RAAAWWWRR!!"

Abruptly, a dinosaur fight ensues.

"ROAR!! CRASH! NUMNUMNUM!"

One boy begins to chant. The chant starts out simply, and then he forms a full-length chant.



He repeats this chant many times. The other two boys listen, and occasionally tap a block or a dinosaur to the beat of this chant.

A Dinosaur Fight

One boy is playing with the dinosaurs by himself, making soft roaring sounds to accompany his play.

"Roar. Rooaaarrrr."

Another boy joins him, picking up a dinosaur and sitting down next to him. Their dinosaurs get involved in a fight.

"Psshhh! Crash! Numnumnum!"

Much of the sound is occurring both high and low in their head voices.

One boy makes a high, sustained tone as his dinosaur "bites" the other; then, he makes a low roaring sound.

"Nuuuuuuuumph!"

"RRRRRAAAWWWWRRR!"

Animal Play

Horsing Around

A boy and a girl sit down to play with Mr. Potato Heads. After a short period of silence, the girl begins to sing, "Ba ba ba-ba, baa, baa."

She is singing sustained pitches. I can tell there is a slight sense of major tonality, but I can't detect exact pitches she intended on using.

They move over to the horses, and the boy begins to chant while banging his horse on the table.

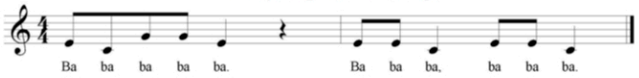
"Ba, ba, ba, ba."

The girl copies this beat with her horse, too. The boy lifts up his horse, flying it above him. "WEEEEE!!!"

The horses begin to fight. "Piew, piew-piew!"

The girl says, "Beep, beep, beep," and then sings again.

The boy copies her song.



Humming and Dinosaurs

Two boys are playing with dinosaurs. They go from parallel play, to sudden fights with their dinosaurs.

"RAAAWWWRR!!" "Crash!"

When they play alone, they hum quietly to themselves. The humming is interrupted only when one of the boys initiates a dinosaur fight.

"RAAAWWWRR!!" "Crash!"

At one point, one of the boys is actually singing instead of humming – it seems he is narrating the play, but I cannot tell exact pitches. It seems to be centered around one to two pitches.

Cars and Dinosaurs

A group of boys begin using wooden building blocks to build racecar tracks. They make noises as they work.

"Vvvvrrrooom!"

"Beep! BEEEEEP!"

One of the boys brings over a plastic dinosaur and begins growling and roaring at the other boys and cars.

"RAAAWWWRR!!"

He taps the dinosaur to a steady beat as the dinosaur walks on the track. The other boys grab more dinosaurs, and a fight between the dinosaurs ensues.

"CRASH! "ROAR! NUMNUMNUM!"

One boy sings "boom" on one tone several times, and the other boys copy him. They all match pitch with the first boy. They stop singing and bang the dinosaurs on the track using a steady beat. After they stop, one boy continues to bang his dinosaur on a repeated rhythm.

Roaring Sounds

Two boys are playing with dinosaurs at a table, separated from the rest of the children. One begins to make roaring sounds, and the other follows.

"RROOOOAAAARR!"

They make fighting noises as their dinosaurs fight.

"Psh, psh, psh."

For the entire time I spent in this section, I sat near these boys at a different table. Other boys came and went, but the two original boys stayed for over 25 minutes, making these noises the entire time.

Figure 10. Animal play enhancing musical play.

Two anecdotes reveal play with musical instruments. "Shakers" in Figure 16 (page 108) shows that the children were excited to explore homemade shakers until the teacher felt the noise level was too high. "A Boy and His Drum" in Figure 22 (page 115) illustrates an example of solitary sound exploration. Building materials also supported musical play, and can be found in number anecdotes throughout this chapter. Building material anecdotes can be found in Appendix F, which displays the various anecdote characteristics in this study.

In summary, certain types of play materials generated more musical play than others. Vehicle and animal play generated the most musical play. Quiet activities of books, puzzles, art, and sensory play elicited quiet humming and singing. The nature of the dramatic play themes prompted various forms of musical play. Figure 11 displays a summary of the types of play materials that most often enhanced musical play.

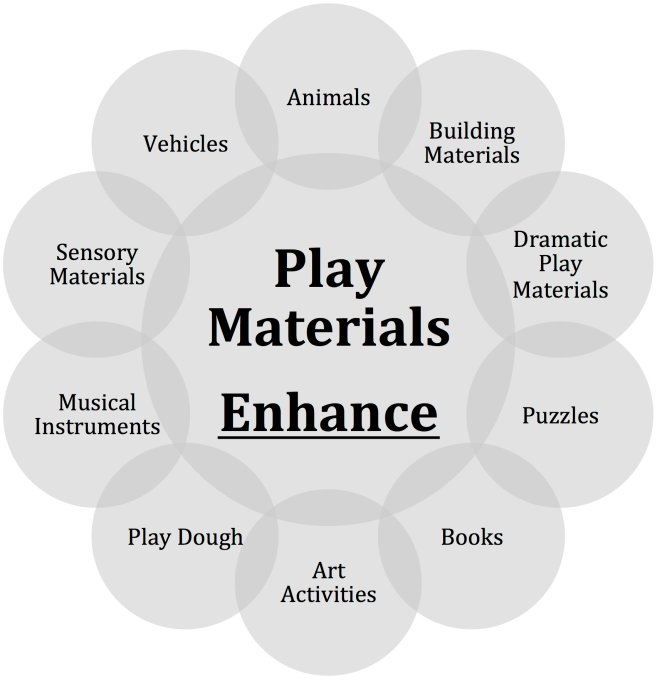


Figure 11. Play materials enhancing musical play.

Solitary and Group Play: Enhancement of Musical Play

The type of general play that the children engaged in seemed to have an effect on both the amount and the type of musical play. Solitary activities, like putting puzzles together or looking at books, appeared to be related to quiet humming or singing. "Cutting Play Dough" and "A Variety" (Figure 7, page 97) are examples of humming and soft singing during solitary play. "The Pony's Escape" (Figure 18, page 110) shows creation of new song being sung quietly. The humming and soft singing may indicate that the children intend on the music-making to be a private activity. More solitary play anecdotes can be found in Appendix F, which displays the various anecdote characteristics in this study.

Group play generated opportunities to express and narrate play through the use of sound effects and other vocal explorations. Also, it seemed that if a member of the group established the musical play, musical play was accepted by the rest of the group. For example, "I'm Singing" (Figure 7, page 97) shows how a statement of, "I'm Singing," established the possibility for musical play at the beginning of a play episode. "Sea Horses" (Figure 6, page 96) illustrates a similar instance, but the musical play had already been established by the first child. Anecdotes throughout this chapter reveal many different episodes of both solitary and group play enhancing musical play. More group play anecdotes can be found in Appendix F, which displays the various anecdote characteristics in this study.

Play Fighting: Enhancement of Musical Play

Play fighting, or rough-and-tumble play, also promoted the children's use of sound effects. These sound effects included not only vocalizations in the head and chest

voice, but also what I deemed as "mouth sounds." These types of sounds included buzzing, popping, clucking, and other non-vocal sounds. Animal play also seemed to elicit play fighting sounds, as in Figure 10 (page 100). Anecdotes revealing play fighting's enhancement of musical play can be found in Figure 12.

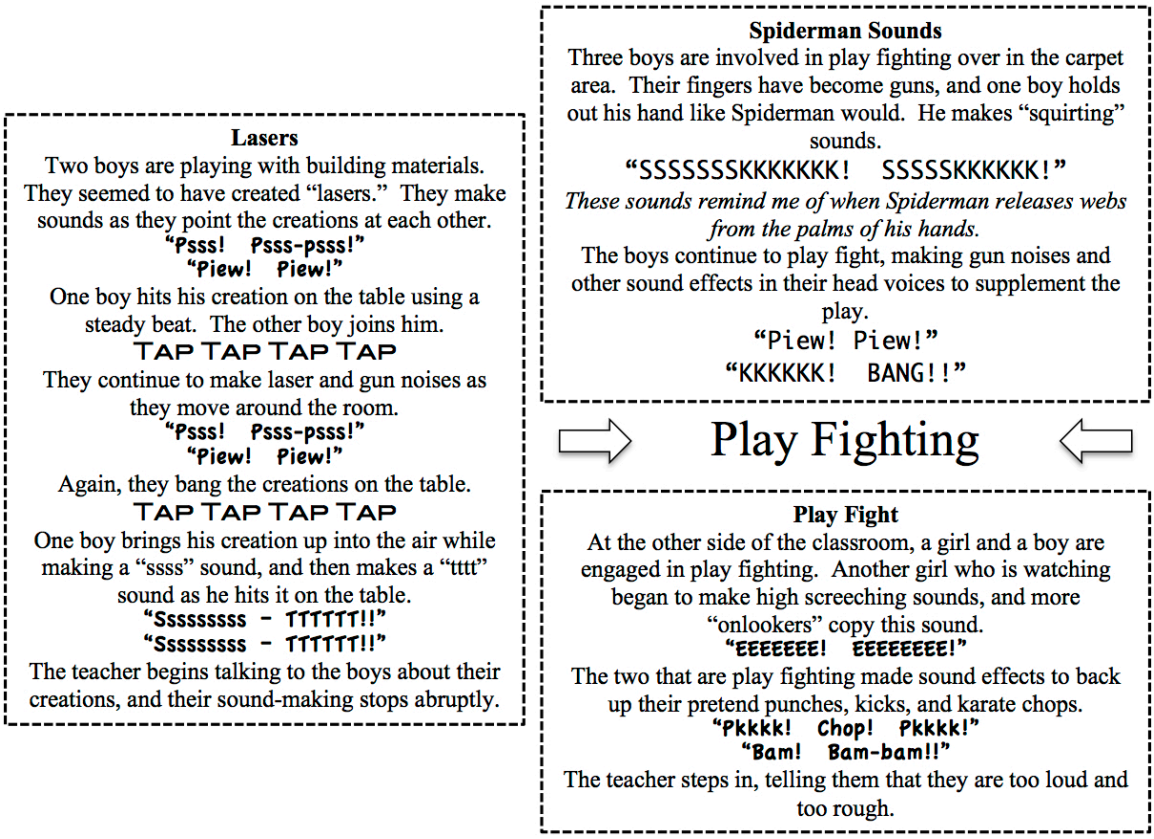


Figure 12. Play fighting enhancing musical play.

Calling and Teasing: Enhancement of Musical Play

On many occasions, the children used the Kodàly Call or Chant to call or tease each other. These occurrences were very quick, and often were used to invite a friend or call someone back to group play. The Kodàly Call was prominent in the children's singing, but was used significantly the most during times of calling or teasing. Anecdotes in Figure 13 (page 104) illustrate this idea.

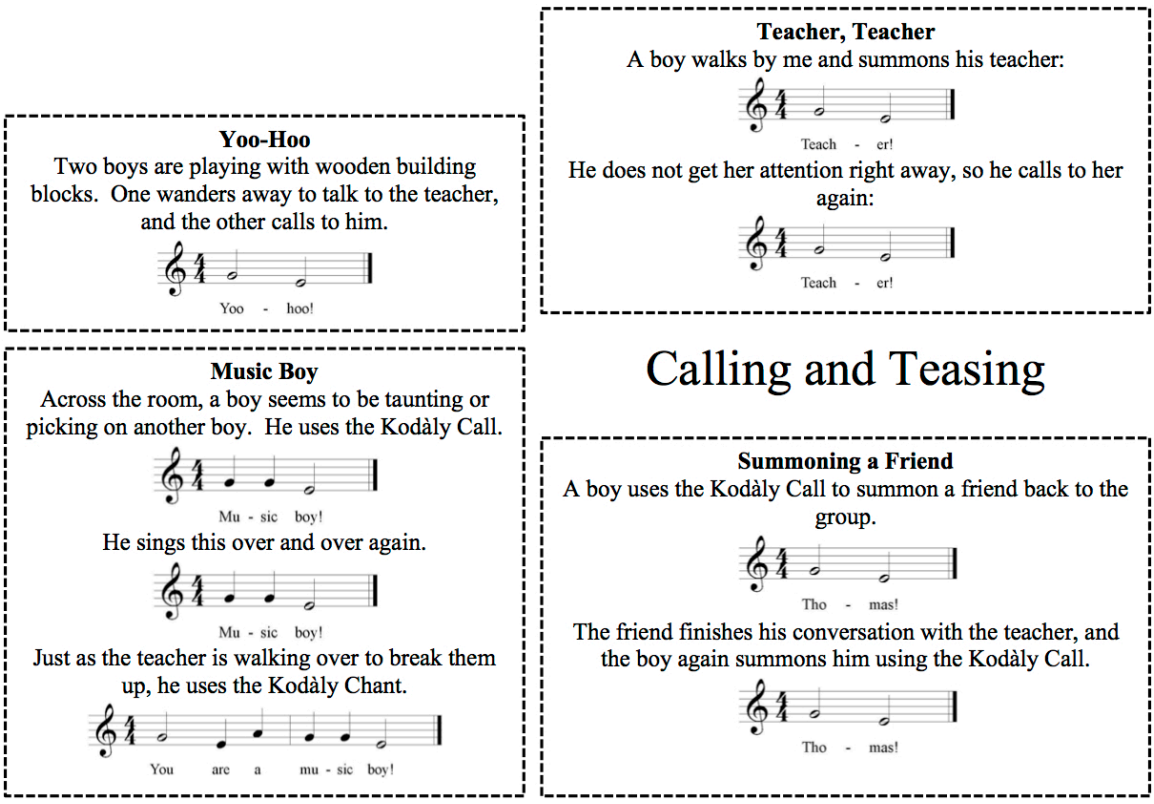


Figure 13. Calling and teasing enhancing musical play.

Playfulness: Enhancement of Musical Play

Figure 14 (page 105) displays anecdotes revealing the enhancement of musical play through children's playfulness. I saw several occasions of children being "goofy" or "playful," which would set off a musical play episode. "Bonny Variations" and "Smell His Feet" show children using music in this manner. The playfulness of bodily motion sometimes set off a musical behavior also, as in "Ba Ba." "You're a Good Dancer" and "Teacher Singing" in Figure 15 (page 106) and "Row Your Boat" (Figure 6, page 96) also show how playful movement could set off a musical episode.

Teacher-Child Interaction: Compliments and Leading Children in Known Song

Some adult compliments were found to enhance musical play. The first anecdote in Figure 15 (page 106), "You're a Good Dancer," shows how a simple compliment from

an adult caused a child to engage even more with the music. The adult saw how her first compliment encouraged more participation from the first child, so she used the same compliment for the rest of the children. This resulted in the same outcome, with the children participating more fully in movement to music.

Adults seemed to also enhance musical play through leading the children in known song. Generally, it seemed that if the adult began a musical episode, then the children would follow. The remaining three anecdotes in Figure 15 are examples of teacher-led singing. "The Itsy Bitsy Spider" shows how the teacher used the music to

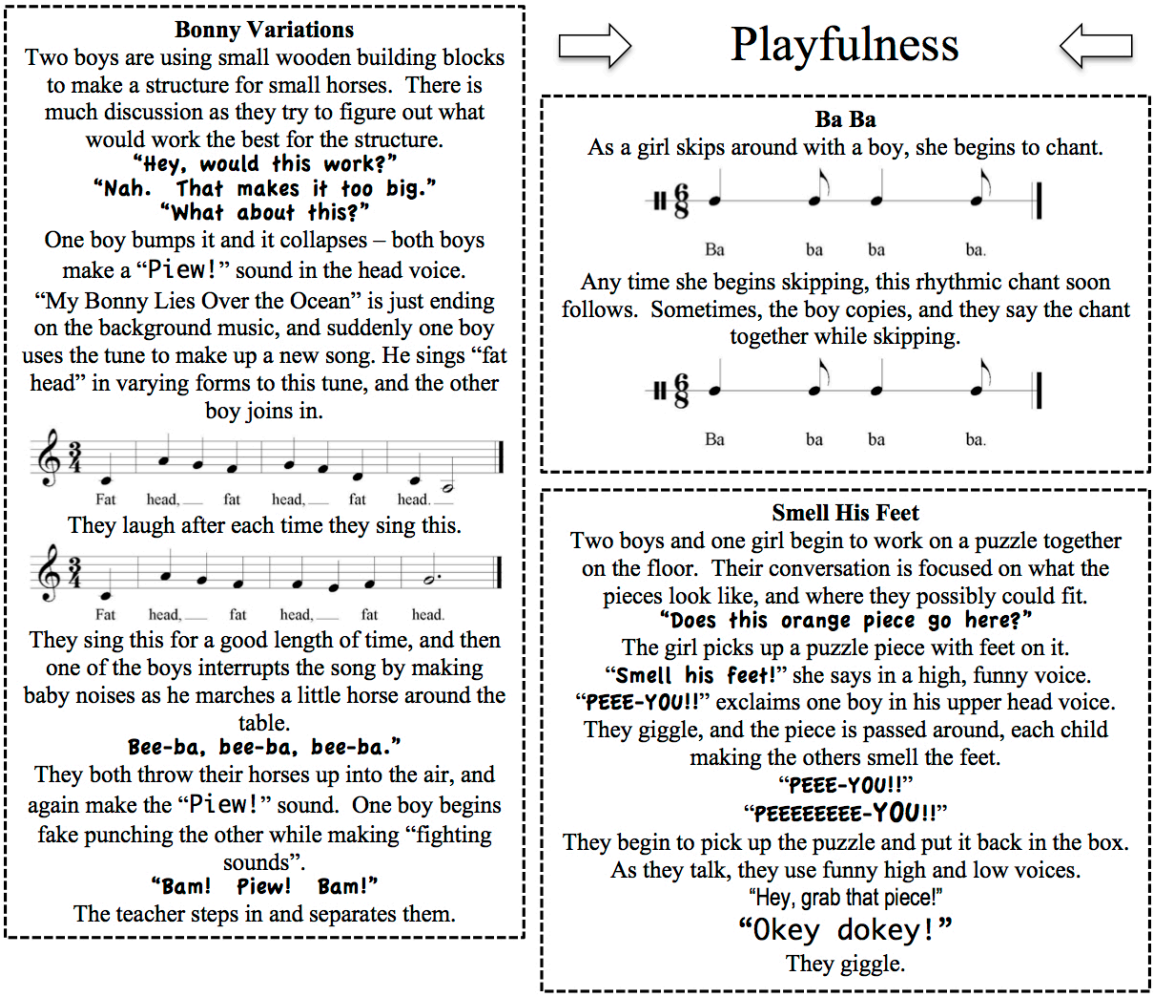


Figure 14. Playfulness enhancing musical play.

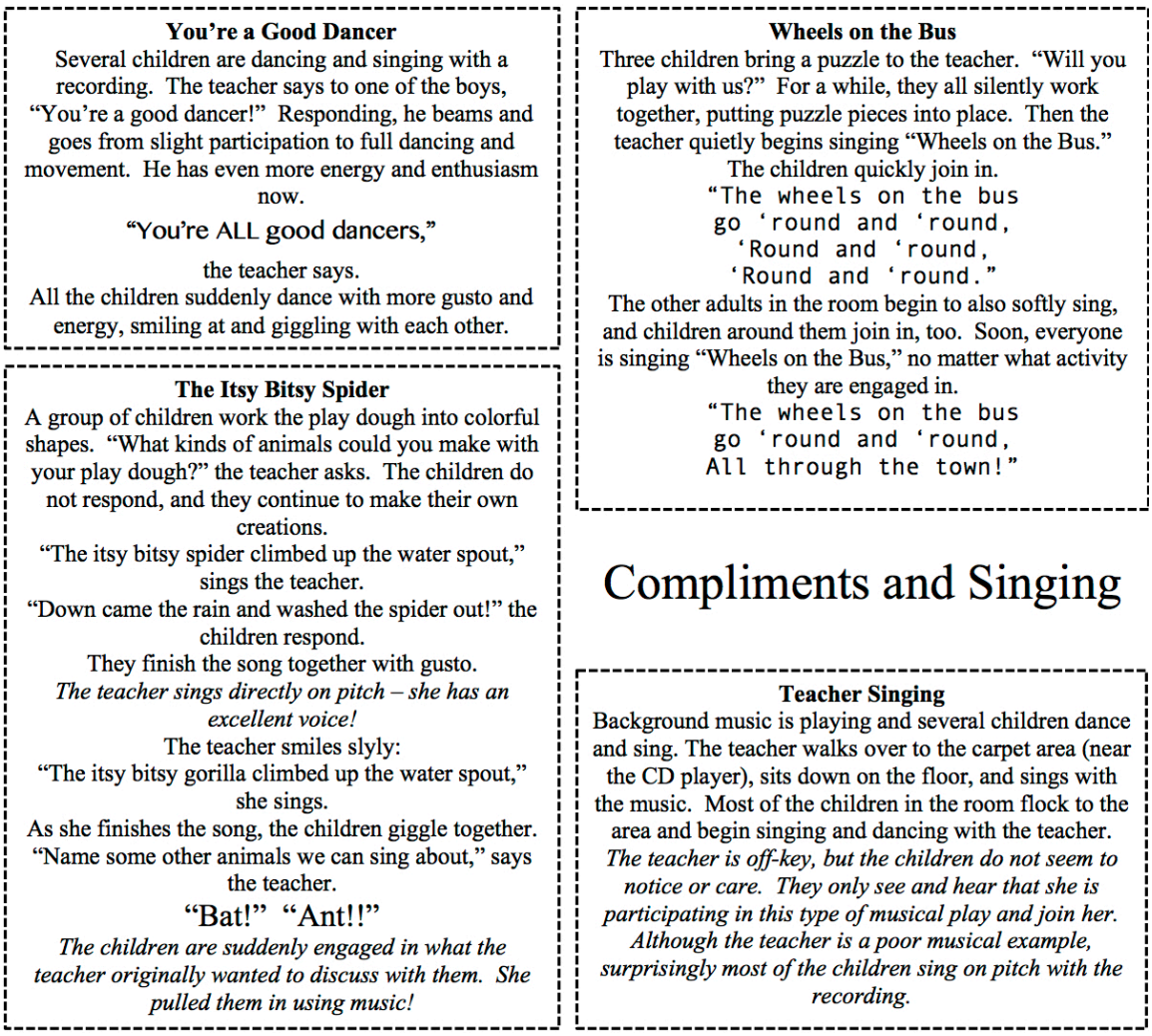


Figure 15. Adults' enhancement of spontaneous musical play.

draw more participation out of the children. "Teacher Singing" and "Wheels on the Bus" demonstrate how teachers used music or their own participation in a musical event to make an activity more enjoyable.

Conclusion to Research Question Six

In conclusion, several factors enhanced children's engagement in musical play, the most prominent being the type of play materials used. Quiet activities during solitary play seemed to elicit humming and quiet singing. Group play and play fighting also

enhanced musical play, allowing for rich exploration of vocal sounds and sound effects. The Kodàly Call or Chant was used regularly when the children would musical call or tease each other; other forms of playfulness or "being goofy" also created an open atmosphere for musical play. Lastly, compliments given to children by the teachers, as well as the teachers leading the children in known song, enhanced musical play.

Analysis of Research Question Seven: What Conditions Extinguish Children's Engagement in Musical Play?

Through the analysis of the qualitative data, several factors caused children's musical play to be extinguished. The most prominent of these factors was teacher-child interaction. Overall, most forms of interaction between a child and a teacher seemed to extinguish the child's established musical play. With the total frequency of musical play being N = 825, a large percentage of play occurred without any teacher presence (N = 731, 88.61%). This could even include teacher presence without any actual interaction.

Teacher-Child Interaction: Too Loud

There were many occurrences of an adult extinguishing the musical play because they deemed it as "too loud." Figure 16 (page 108) includes anecdotes that illustrate this finding. These anecdotes reveal that many adults did not care for the "noise" that musical play produced. "Mr. Potato Head," "Fire Trucks," "Mmm Chant," and "Shakers" are all examples of how an adult extinguished children's established musical play. "Ta-Da" reveals an instance in which the teacher tried to step in, and the children abandoned the play area for a moment. They later came back and continued their musical play. "Play Fight" (Figure 12, page 103) also shows an instance of a teacher viewing the play too

Mr. Potato Head

Adam makes sounds high in his head voice as he adds goofy eyes, a mustache, and ears to a Mr. Potato Head.
"BEEEP! Bop, boppy, BEEEEP!"

The teacher asks, "Adam, what kind of noise is that?" Another boy replies, "SCREECHING!"
The teacher responds, "Yes, I agree. Let's stop that, please."

Fire Trucks

Three boys who had been in Time Out are allowed to go back and play. They joyfully race to the vehicle area and grab fire trucks.
"Weee-oo, weee-oo, weee-oo!"
"VRROOOOM!!"
The boys continue to create sound effects for their play.
"Beep, beep, beep, wee-oo!"
The teacher reprimands them for being TOO LOUD. She splits them up into different areas. Their fire truck play continues individually, but the rich sound-making stops.

You're Too LOUD!

Shakers

A group of children bring out homemade shakers. These shakers are large pop bottles containing a variety of different mateirals: rice, small jingle bells, buttons, beans, crayons, cereal, sand, and small sticks. The children shake them, gleefully looking inside at the moving material. At one point, they all start shaking to a steady beat together. The teacher walks over and makes them sit in a circle, organizing the play.
"Betsy, you play yours. Everyone else, QUIET."
Betsy reluctantly shakes her shaker, looking timidly at the teacher.
"Okay, enough. Carl, your turn."
The rest of the children obviously do not want their play to be structured. Two girls face each other and hit their shakers together while giggling. The teacher, obviously annoyed at the noise level, announces, "ENOUGH!
Put them all away.
YOU'RE TOO LOUD!"

Figure 16. Spontaneous musical play extinguished by teacher-child interaction.

loud. Although the children spontaneously explored sound and used those sounds to accompany their play, they were quickly stopped by an adult. There were numerous occurrences of this type of interaction at each site, except for the Purple site. There, the adults did not seem to mind the extra sounds and higher noise level that the children's play and musical play produced.

Teacher-Child Interaction: Discipline

There were several cases in which the teacher reprimanded the children. This became a factor that generally extinguished both play and musical play. Occasionally the teachers would reprimand the children for being too loud, as in the first three anecdotes; more often than not, however, the children got in trouble for not following directions or

the normal routine. The anecdotes in Figure 17 illustrate these factors. "Bonny Variations" (Figure 14, page 105) shows another instance of discipline extinguishing musical play.

Let's Go to the Moon

Two girls begin to make new things out of magnet tiles – small things – they can hold them in their little hands. *Are they airplanes? Spaceships?*

The girls begin to walk around the room, moving their creations around in the air. "Whoosh! Vrrrrr….whoosh!"

One begins to sing, "Do see, do see, do see, do." *I can tell she's using a compound meter, but I can't make out specific pitches. Is she making up a song?*

The teacher calls to all the children, "Boys and girls, it's time to clean up."

The girls act as if they did not hear the announcement.

"Let's go to the moon!"

"Whoosh! Vrrrrrrrooooooom!"

Suddenly, they crash the structures to the ground – magnet tiles fly all over the place. "Psshhhhh! CRASH!!" They giggle.

The teacher says, "Girls! I already told you to clean up, and you are

not following directions.

Clean up your mess."

Immediately, they abandon their play.

⇨ You're In Trouble! ⇦

Bounce the Baby

Carl grabs a doll out of the fridge. *First of all, what is the doll doing in the fridge?* He begins to "feed" it play donuts while walking over to the sensory table. Holding his hands under the doll's armpits like a real baby, he bounces the baby on the table. *This is interesting – boys don't generally like to play with dolls. Does he have a new baby at home? Has he seen Daddy do this?*

"wEEEE! wEEEEEE!"

He bounces the baby up and down.

This was spoken very high in the head voice. It is natural for adults to use higher pitches when speaking to a baby.

He stops bouncing to feed the doll a toy banana. He talks "baby talk" to the doll.

"Here, little baby. Have some banana!"

Again, he's speaking in his high head voice.

The teacher tells him to move back to the dramatic play area near the kitchen. *Apparently there is a rule that all dramatic play toys must stay in that one area.* He drops the doll and moves away.

Figure 17. Spontaneous musical play extinguished by teacher discipline.

Teacher-Child Interaction: Conversation and Compliments

Generally, the adults in the room were not musical in front of the children. When they would sit down next to a child, they would engage the child in conversation, which greatly reduced the amount of musical play observed. More often than not, the child would abandon his/her play – whether it be musical or non-musical play – to speak to the teacher.

Figure 18 (page 110) contains two anecdotes that show conversation in two ways. First, "Conversing over a Puzzle" shows how a conversational environment prevented musical play from occurring. Second, "Humming Interrupted" reveals that, when

musical play had already been established by the child, the teacher-child conversation interrupted and halted musical play. Here, although the teacher was not meaning to, the conversation she led caused the child to abandon quality solitary play time. "Lasers" (Figure 12, page 103) also shows how an adult's conversation can extinguish the musical play.

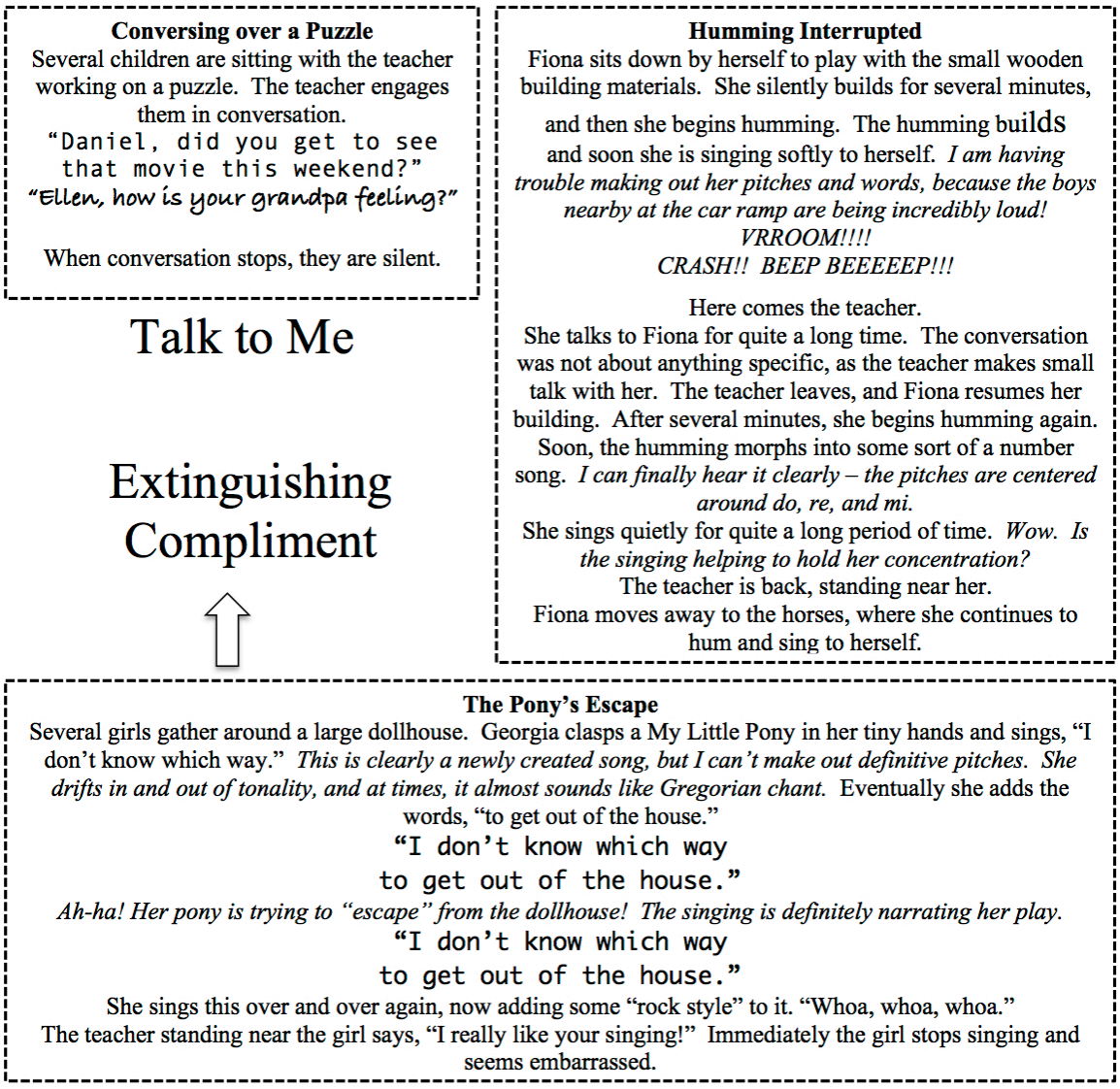


Figure 18. Spontaneous musical play extinguished by teacher-child conversation and teacher compliment.

Although most adult compliments seemed to enhance the musical play, some adult compliments actually extinguished musical play. One anecdote in Figure 18, "The Pony's Escape," illustrates an instance when an adult's compliment did not turn out as the adult intended. Here, the adult clearly wanted the girl to continue singing. The girl, however, stopped singing after she realized someone else was listening to her song.

Teacher-Child Interaction: Conclusion

In conclusion, teacher-child interaction extinguished musical play in almost every instance. Many adults viewed the musical play as being too loud and reprimanded the children. General discipline for not following directions or classroom rules would also extinguish musical play. Even the positive interactions of compliments and conversation halted musical play. A teacher's mere presence also caused children to end their spontaneous musical activities. Figure 19 displays the teacher interaction factors that enhanced and extinguished musical play.

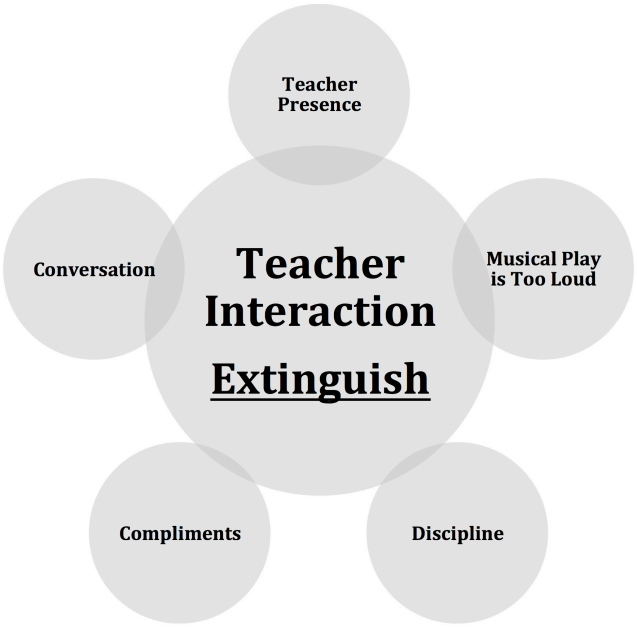


Figure 19. Teacher interaction factors enhancing and extinguishing musical play.

Child-Child Interaction: Conversation Extinguishing Musical Play

There were several circumstances in which group play extinguished musical play. First, in many cases, the group environment required more talking, which decreased the possibility for musical play. Figure 20 (page 113) illustrates occurrences of children's conversations extinguishing musical play. "Chattanooga Choo-Choo" and "Little People" both reveal instances in which a child was fully involved in a musical moment, but another child abruptly shattered the focus. In all anecdotes in Figure 20, a child is participating in musical play, which seems to be supporting their sustained concentration. Other children interrupt this flow of concentration with conversation. "Woah" (Figure 8, page 98) also illustrates another anecdote of this.

Child-Child Interaction: Other Group Factors Extinguishing Musical Play

Several other miscellaneous child-child interaction factors extinguished musical play. If a child was absorbed in an activity, another child's sudden presence generally extinguished their play and musical play. "Baby" in Figure 21 (page 114) shows an instance of this. "Here We Come" (Figure 21) also reveals how children can interrupt each other's play. In this case, a girl was absorbed in solitary play while humming. Two girls ran up to her and invited her to play with them. Either their presence was enough to shift her interests, or the new activity was more appealing than what she was currently doing.

When playing in a large group or trying to join a group, the children had to situate themselves in the play. They narrated, discussed who would take what role, and who had what job. When a new child joined a group a children, I watched as the group went

Time to Chat!

On Top of Spaghetti

In the back room, a boy sits by himself, looking at the "On Top of Spaghetti" book. He starts "singing" the book to the tune of "On Top of Old Smokey".

"On top of spaghetti,
All covered with cheese.
I lost my poor meatball,
When somebody sneezed."

He sings the song well and is very accurate with the pitches.

He drops the book and picks up a new one. He slightly looks through the second book for a short period of time. Suddenly, he softly sings the spaghetti song again.

"On top of spaghetti,
All covered with cheese.
I lost my poor meatball,
When somebody sneezed."

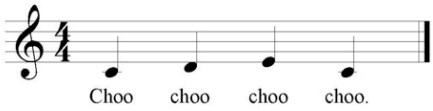
Two boys walk up to him.
"Hey George! Can we read books with you?"
"What's this book about, George?"
They begin a discussion about the books, and the boy stops singing.

Chattanooga Choo-Choo

The teacher has set up small trains on a table. These trains are magnetic and can be formed into large lines. Several children sitting at this table make chugging and whistle sounds as they build their trains.

"Chugga chugga chugga chugga, CHOO CHOO!!"

Eventually, all but one girl leaves the table.
She begins to sing "Chattanooga Choo-Choo," repeating the one phrase of the song.
"Pardon me boys, is that a Chattanooga Choo-Choo?"
"Pardon me boys, is that a Chattanooga Choo-Choo?"
Her singing is on-pitch, and I can tell exactly what song she was singing.
After a short period of silence, she sings bits and pieces of the tune "Are You Sleeping." Instead of the original words, she uses different words or syllables that accompany her train play.



Just then, a boy walks up next to her and strikes up a conversation.
"Hi Hillary, what are you doing? Are these trains?"
She stops her musical behaviors.

Little People

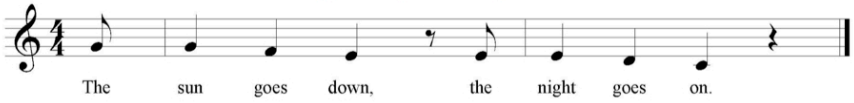
A boy and girl use the magnet tiles to build a structure for Little People. Together, they discuss the structure and how they can fit the small people in it. "Maybe we can add a little box here. Would that guy fit?"
"I don't know. We better make it big."
"Okay, take this big piece. I'm going to put this one here."

The boy picks up a Little Person and hits it on the small cupboard behind him. He taps the Little Person on a steady beat. Then, he taps it on a drawer of the cupboard, and then on the frame. *It seems he realizes that these make two different sounds, and continues to go back and forth between hitting the frame and hitting the drawer.*

The girl asks, "Hey, bring that guy back here. Does he fit now?" The boy stops tapping and is drawn back into building the structure with his friend.

The Sun Goes Down

A boy plays with a helicopter made out of Legos. He flies it around the dramatic play area.
"Vvvvvvvvvv…woosh!"
Suddenly, he begins to sing to himself.



He sings this several times as he flies the helicopter around the room. As he flies next to a group of other children, he stops suddenly. The boy begins talking with the group of children, and the singing stops.

Figure 20. Child conversation extinguishing musical play.

Inter---

Baby

Isabelle carries a doll with her and sits down on a small couch in the dramatic play area. She rocks the doll while singing softly to it.

"Baby, baby. Baby, baby."

I believe she is making up a song, she seems to have emerging pitch sensitivity, as she seems to be singing random tones.

She continues singing softly to the doll for a long time. Suddenly, a rowdy boy loudly enters the dramatic play area. She quickly drops the doll and joins a group of girls who were playing away from the dramatic play center.

Animal Sounds

Jessica plays with magnet tiles and small plastic jungle animals. As she picks up each animal, she makes its sound.

"ROAR! HISS! GRRRRRRR!"

After she had established the sounds of each animal, she begins playing around with the animal sounds by moving the pitch higher and lower. She raises the animal into the air as she raises the pitch, and lowers the animal as she drops the pitch. She does this for quite some time. After she seemed satisfied with her animal sounds, she begins to hum. *It is so soft that I am unable to make out whether or not it is a known song.*

Two girls run up to her and invite her to have a picnic with them, and she runs off with them.

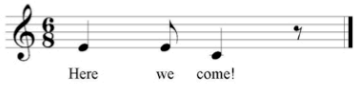
Here We Come

Two boys play with large plastic dinosaurs. They "walk" them around the room and growl at the other children as they walk by.

"RAAWRRR!"

"GGRRRRRAAAWRRR!"

One boy starts to sing.



Two girls walk up to the boys and try to join the play. The boy stops singing. As the girls try to negotiate their entrance into the play, there is much discussion about what role they would play with the dinosaurs. Even when the girls are granted permission to join, most of the play involves negotiation and other conversation.

The musical play has ceased.

---ruptions

Figure 21. Interruptions extinguishing musical play.

through an "establishment period" in which much discussion occurred. Once all group members were comfortable with their characters, jobs, or roles, it was only then that they seemed comfortable enough to bring music into the play. This establishment period could last a long time. "Here We Come" in Figure 21 shows an instance of this establishment period.

At times, it also appeared that a child would abandon musical play when interest in the activity was lost. Although I noticed that humming and other forms of musical play actually seemed to extend a child's concentration in an endeavor, there were times

when the activity had run its course. The anecdotes in Figure 22 reveal examples of rich musical play being extinguished by a loss of interest.

Concentration: Extinguishing Musical Play

Lastly, the factor of intense concentration seemed to extinguish or prevent musical play from happening. I began to notice this during both solitary and group play. When in this state, they did not make any sound – musical or non. Occasionally the children would appear to be in a group, but they would be engaged in parallel play. Basically, they would be concentrating on their own endeavors, unaware of anyone else's presence. The anecdotes in Figure 23 (page 116) illustrate this factor.

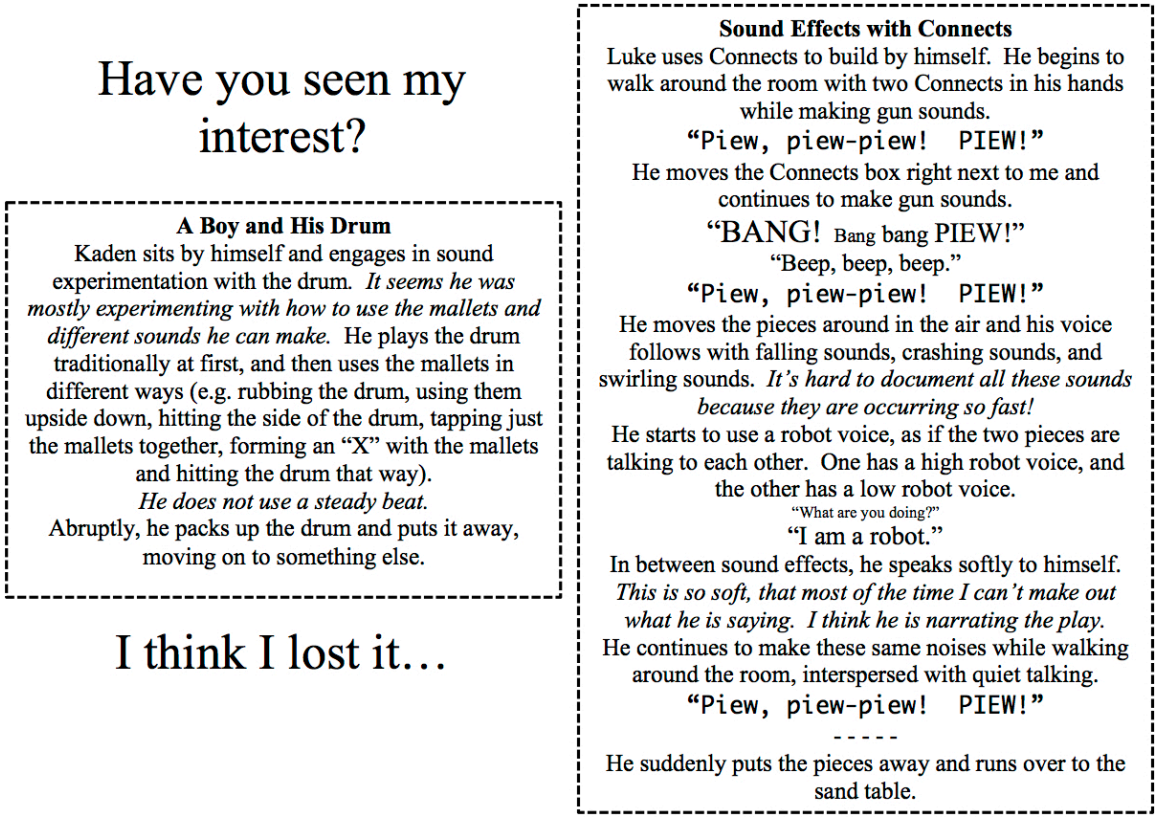


Figure 22. A loss in interest extinguishing musical play.

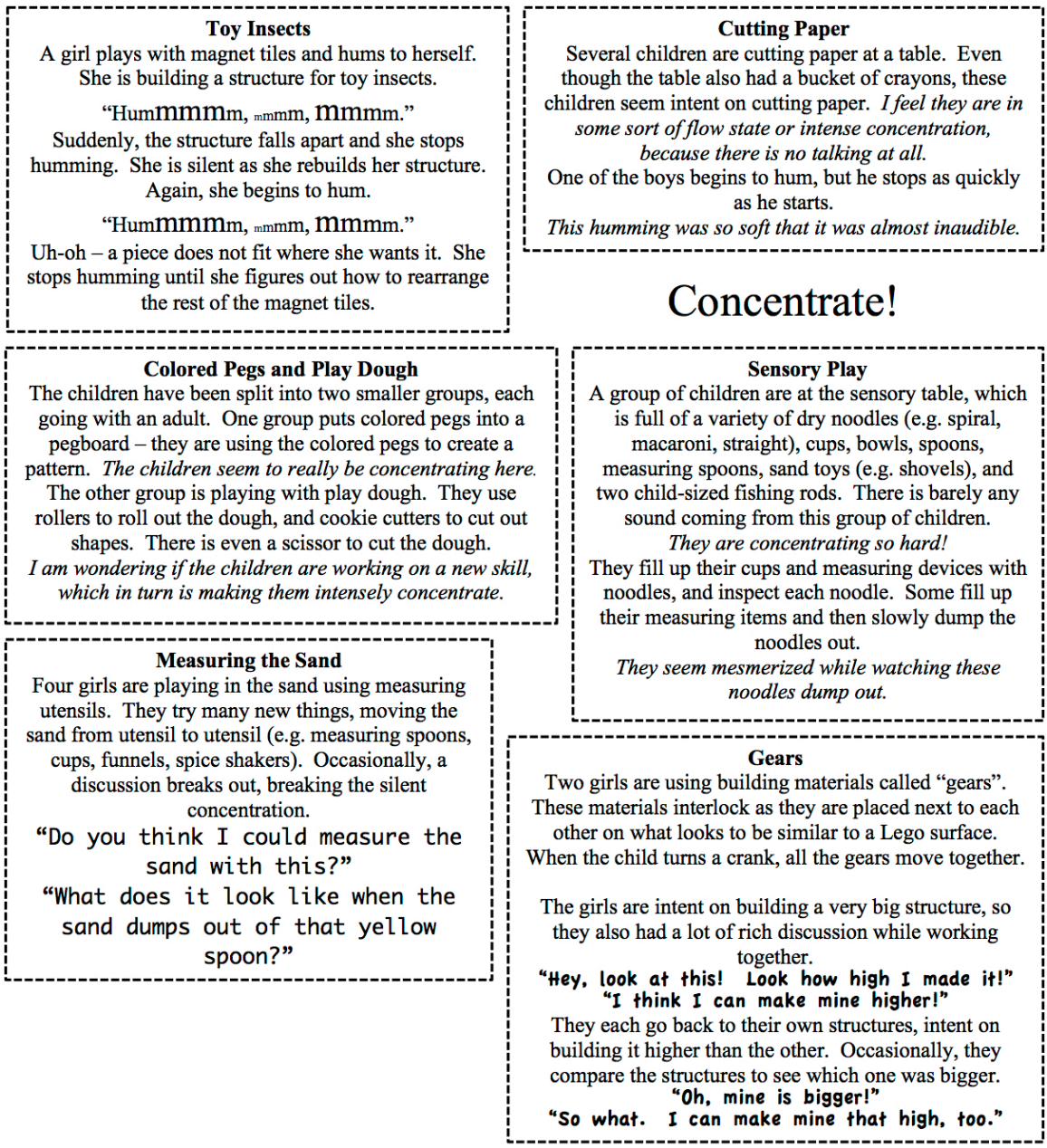


Figure 23. Concentration extinguishing musical play.

Conclusion to Research Question Seven

In conclusion, many factors inhibited or extinguished musical play, with adult-child interaction being the most prominent. Child-child interaction also was found to extinguish musical play, with conversation, the sudden presence of another individual,

and a loss of interest interrupting the play. Lastly, intense concentration did not allow for possibilities of musical play. Figure 24 summarizes the factors that have been found to extinguish musical play.

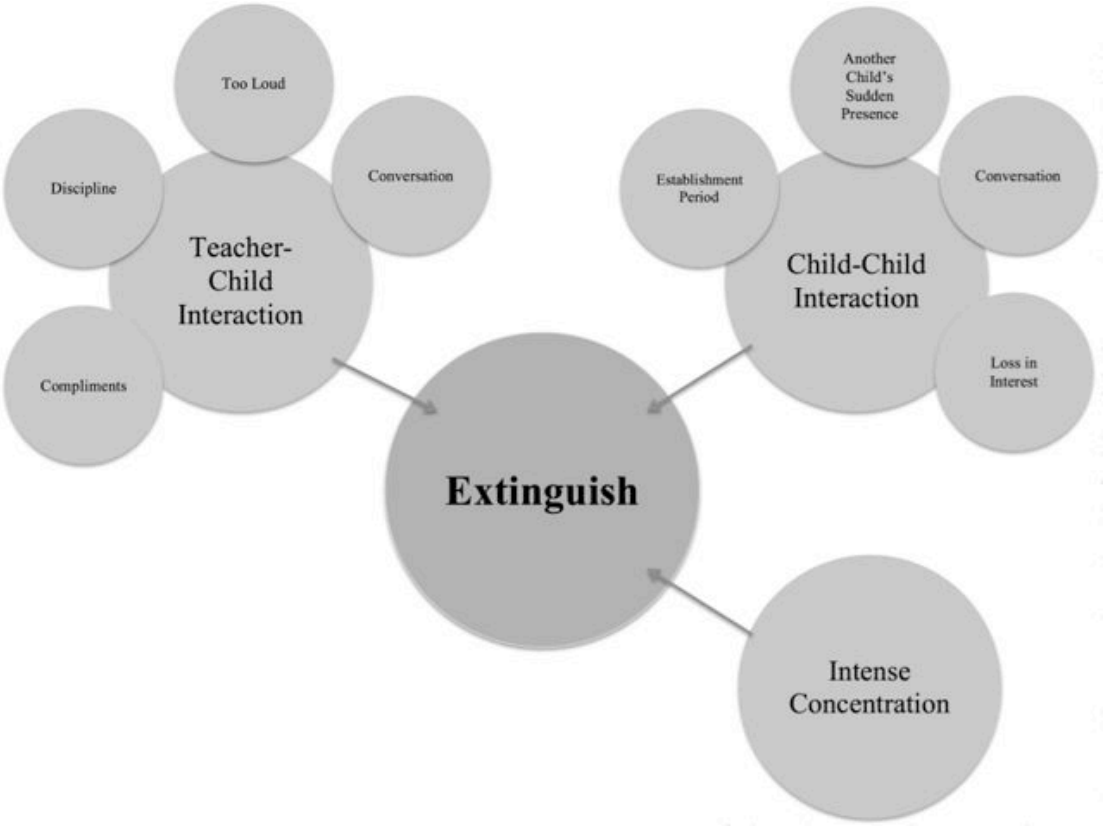


Figure 24. Factors extinguishing musical play.

Analysis of Research Question Eight: Does the Presence or Absence of Background Music Affect the Frequency or Type of Musical Play?

Research Question Eight sought to identify any relationship that may exist between background music and children's musical play. "We Will Attack," "Bonny Variations," and "Lego Vehicles" (Figure 9, page 99) also touch on this subject, showing that background music enhanced musical play in some instances. The Child Form included a column to quantitatively keep track of background music.

Table 23 (page 119) includes the musical play frequency counts with and without background music. In almost every category, more musical play occurred without background music than with background music. The major categories of Total Vocal Use, Total Instrument Use, and Body Movement give an overall view of the three main types of musical play in which the children could take part. There were much larger percentages of musical play without background music for both Total Vocal Use (72.00%) and Total Instrument Use (4.36%) than when these types occurred with background music (15.39% and 2.55%, respectively). Body Movement, however, occurred a larger percentage of the time with background music (3.15%) than without (2.55%). In total, musical play occurred more frequently without background music (78.91%) than with background music (21.09%).

Summary

This chapter has revealed the findings of the research study. The children's age, sex, play gender, and strong play gender did have an effect on some types of musical play exhibited. The play environment and home environment did not seem to affect the children's musical play. The children were found to engage in a variety of types of musical play, but specifically used their voices the most. The children's vocal and instrumental musical play consisted of rhythmic and melodic characteristics. Several factors enhanced their musical play: type of play materials, solitary and group play, play fighting, calling and teasing, playfulness, teacher compliments, teachers leading children in known song. Other factors, such as teacher discipline and conversation, children's conversations, another child's sudden presence, and intense concentration, extinguish

musical play. Lastly, it was unclear whether background music enhanced or detracted from children's musical play.

Table 23. Musical Play Frequency Counts With and Without Background Music

	With Background Music		Without Background Music	
	N	%*	N	%*
Total Vocal Use	127	15.4	594	72.0
Total Singing	42	5.1	100	12.1
Singing Familiar Songs	14	1.7	21	2.6
On Pitch	4	0.5	4	0.5
Emergent Pitch Sensitivity	10	1.2	17	2.1
Creating New Song	28	3.4	79	9.6
On Pitch	2	0.2	10	1.2
Emergent Pitch Sensitivity	26	3.2	69	8.4
Chanting	12	1.5	67	8.1
Vocal Exploration	73	8.9	427	51.8
Vocal Exploration	44	5.3	295	35.8
Mouth Sounds	29	3.5	132	16.0
Total Instrument Use	21	2.6	36	4.4
Musical Instrument Use	7	0.9	0	0.0
Found Object Use	14	1.7	36	4.4
Body Movement	26	3.2	21	2.6
Total Musical Play	174	21.1	651	78.9

CHAPTER V

DISCUSSION

Introduction

The purpose of this study was to investigate gender's role in three- and four-year-old children's musical play. A secondary purpose was to investigate further the nature of musical play in general. The study was completed through observations at seven preschools, and the data were analyzed using qualitative and quantitative means. In this chapter, the findings are summarized, and the details and implications of these findings are discussed. Recommendations for future research are also offered.

Summary of Findings

Musical Play and the Biological Factors of Age and Sex

The factors of the children's age and sex were taken into consideration. There were significant differences found between the children's age and singing familiar songs, instrument use, and movement. The three-year-olds sang familiar songs, used instruments, and moved to music more often than the four-year-olds. The three-year-olds also had more total musical play, but no significant differences were found between the total musical play of the two age groups.

The children's sex also had an effect on musical play, with significant differences being found between sex and total musical play, vocal exploration, and total vocal use. The boys had more vocal exploration, total vocal use, and total musical play than the

girls. The girls did have more creation of new song and movement than the boys, but this did not reach the level of significant difference**.**

Musical Play and the Psychological Factor of Play Gender

Using the results of the Parent Inventory, each child was assigned a masculine or feminine play gender. Significant differences were found between masculine and feminine play gender and total musical play, vocal exploration, and total vocal use. The children having a masculine play gender had more vocal exploration, total vocal use, and total musical play than those having a feminine play gender. These results were similar for those of the children's sex, indicating that some three- and four-year-olds have acquired gendered play constructs that align with their sex. Those children identifying as having a masculine play gender had similar musical play responses as boys, and those identifying as having a feminine play gender had similar musical play responses as girls.

The results of the Parent Inventory were also used to identify children having strong masculine and feminine play genders. Those children who did not have a strong masculine and feminine play gender were assigned an androgynous play gender. The musical play of the children with strong play genders was also compared. A difference was found between the strong masculine and feminine play genders and vocal exploration. Those children having a strong masculine play gender had more vocal exploration than those with a strong feminine play gender. Although no significant differences were found, children with a strong feminine play gender did have more creation of new song and movement than those with a strong masculine play gender. Those with a strong masculine play gender had more total vocal use and total instrument use than those with a feminine play gender, but no significant differences were found.

Not all children had strongly developed play genders. Of the children in this study, a little over half were identified as having androgynous play genders. These children were compared to those having strong masculine and strong feminine play genders, together and separately. No differences existed between the musical play of those having an androgynous play gender and the musical play of those having a strong masculine play gender, those having a strong feminine play gender, and those having strong play genders (combined). However, the children with strong play genders generally engaged in more musical play throughout most types than those having an androgynous play gender.

Musical Play and Play Environment Factors

The musical background of the teachers did not seem to affect the frequency of musical play. The majority (55.0%) of the teachers agreed to singing familiar songs to/with the children while they played, but this rarely happened during the observations. Even the sites deemed as having the most musically experienced teachers did not have significantly more musical play occurrences than other sites. The survey results did reveal that the teachers used music to support other activities throughout the day in a variety of ways.

Musical Play and Home Environment Factors

The four home environment factors that were examined included family music class attendance, exposure to music at home, the self-reported musicality of the parent in the home, and the musical background of the parent. Statistical testing found a relationship between family music class attendance and movement, with the children who attended family music classes moving to music more often. No differences were found

between musical play and exposure to music at home, the self-reported musicality of the parents in the home, and the parent's musical background. Therefore, the home environment did not greatly affect the children's musical play.

Musical Play Frequency

In total, the children engaged in musical play 23.20% of the free play time. There was a total of 825 occurrences of musical play, and thirteen children had no instances of musical play. The children used their voices the most (87.39%), followed by playing instruments and found objects (6.91%) and moving to music (5.70%). Vocally, the children engaged in vocal exploration the most (60.61%) and sang familiar songs the least (4.24%). The means and standard deviations indicated that the frequencies of musical play varied greatly among the children.

Qualities of the Children's Musical Play

The melodic qualities of the children's vocal use consisted of singing on pitch, emerging pitch sensitivity (EPS) activity, and chanting. Many instances of singing included the use of the Kodàly Call or Chant. Singing with EPS was used the most (55.20%), followed by chanting (35.75%) and singing on pitch (9.05%).

The children's sound explorations on instruments or found objects were either rhythmic or non-rhythmic. Instruments were used the least (12.28%) and were only played non-rhythmically. Found objects were equally played rhythmically (43.86%) and non-rhythmically (43.86%). Overall, the children played non-rhythmically with the instruments and found objects the most (56.14%), alluding to the possibility that the objects were used for sound exploration rather than music-making.

Conditions That Enhance Musical Play

Many factors enhanced the children's musical play. The type of play materials that the children used assisted their musical play, especially play with animals and vehicles. These toys created the opportunity for sound effects, mouth sounds, and other vocal explorations. In many cases, these toys were used in a group setting, which also seemed to enhance musical play. In most cases of solitary play, musical play was enhanced as well. An enhancement also occurred when children were engaged in play fighting, calling and/or teasing friends, and being playful. Some forms of teacher interaction enriched musical play. When a teacher would lead the children in song, most of the children would join in the singing. In some cases, a teacher's compliment occasionally further engaged a child's musical play.

Conditions That Extinguish Musical Play

Just as "A Vignette" (Figure 1, page 1) revealed, when left alone to play, the children spontaneously engaged in musical play. The children were, indeed, naturally musical. Out of 111 children, 98 (88%) had at least one occurrence of musical play in a 20-minute period. Some musical play activities seemed to be more popular than others, since vocal exploration and creating new song were utilized the most. Taking into account the number of extinguishing factors, the children's musical play was extremely fragile in many circumstances.

Several factors were found to abruptly end a musical play occurrence, the most prominent being teacher-child interaction. In nearly all cases, a teacher's mere presence reduced the chance for musical play; the teachers would engage the children in conversation, thus providing no opportunity for sound exploration. Also, if musical play

was taking place, the teachers would step in and end it, stating it was too loud or disciplining the children for other things. In one anecdote, a girl was engaged in musical play, and the adult complimented her singing. Although the teacher attempted to enhance the musical play using a compliment, the girl quickly stopped singing.

Children's interactions with each other extinguished the musical play as well. In a group setting, children would engage in conversation about the play, greatly reducing the possibility for creating sound. When a child was engaged in solitary music-making, the sudden presence of another child would abruptly end the musical play. Even if a group was already formed, the presence of a new individual created the need for an establishment period in which the children would discuss the play and situate their roles.

Lastly, intense concentration seemed to extinguish musical play. When the need for problem-solving occurred, the children would make no sound; if they were in a group setting during the problem-solving, some conversation would occur. Also, it seemed that if a child was working on a new skill, like cutting paper or measuring sand, no musical play would take place.

Background Music

Although the qualitative data gave examples of background music's enhancement of musical play, quantitatively, there did not seem to be a relationship. In fact, a greater amount of musical play occurred without background music (78.91%) rather than with background music (21.09%). The exception to this was body movement, which occurred slightly more often with (3.15%) than without background music (2.55%).

Discussion

Age, Sex, and Gender as Factors in Children's Musical Play

The biological factors of children's age and sex were compared to the amount of musical play. Differences were found between the age of the children and their musical play, with the three-year-olds singing familiar songs, playing instruments, and moving to music more often than the four-year-olds. This is in disagreement with Paulson (2008), who did not find any evidence of difference between age and musical play. Non-musically, Cherney and Dempsey (2010) found that older children played more frequently with gendered toys. It is possible that the younger children in this study engaged in musical activities more often because, in their minds, music is not yet gendered. The older children, who perhaps had defined music as a gendered activity, avoided musical play and choose activities that would clearly mark their genders. The older children were also nearing kindergarten. As this level, the teachers provide more pre-kindergarten lessons and learning activities to get these children ready for the transition; therefore, the four-year-olds may have been more preoccupied with the new academic skills they were learning.

The question remains whether or not adults somehow remove children's desires for musical play as they get older. With the focus being on both preparation for kindergarten and academic skills, it may be that teachers do not leave enough time for exploration of sound – or even music in general. In over 100 hours of observation, not once did I witness the teachers leading the children through a music class or teaching them any musical skills. They merely used music to supplement learning during calendar time, such as chanting a weather chant or moving to recorded music for enhancement of

gross motor skills. As the results revealed, the desire to use music to supplement play is lessened between the ages of three and four.

Differences between musical play and the children's sex were also found. The boys had more total musical play, vocal exploration, and total vocal use than the girls. This is in agreement with prior research of studies involving both preschool and elementary school-aged children. Paulson (2008) found that boys had more occurrences of musical play than girls, the boys experimented with the voice the most, and the girls made up songs the most. Likewise, De Shon (2012) found that the girls seemed more inclined to sing than the boys. Littleton (1991) found that girls preferred and boys avoided instruments associated with a high voice. The boys preferred instruments associated with a low voice. Similarly, Merrill-Mirsky (1988) found that the boys avoided certain musical activities with which girls were associated. It is possible that the children in the current study have learned that it is acceptable for boys to engage in certain musical play activities more than girls. Therefore, in an effort to define their sex and/or gender, the boys avoided activities associated with girls.

Although the boys had more occurrences of musical play than the girls, the question remains, "Who was the most *musical*?" Some may feel that singing behaviors are more musical than using sound effects (vocal exploration). In that case, the girls were more musical than the boys, since they had more singing of familiar songs and creating new songs. On the other hand, rhythmic chanting and playing instruments are also very musical. These activities were engaged in more by the boys, who had more instances of chanting and playing instruments than the girls, although no statistically significant differences were found.

The difference in the musicality of the sexes could also be accounted for by the documentation method used in the study. As stated in chapter three, vocal exploration and sound effects – sounds that occurred at a high rate – are hard to document accurately. Instead of counting each sound effect individually, I combined those sound effects that occurred quickly together. Therefore, within a minute, a child could have a large number of marks under the vocal exploration category. In contrast, a singing episode persisted over a longer period of time. Therefore, a child singing may only have one mark under the singing category. Consequently, the child with the numerous counts of vocal exploration is more vocal *on paper* than the child with the one account of singing. This may be a false impression. The singing, on the other hand, was maintained for much longer, indicating a prolonged engagement in musical play. This question remains unanswered, though one may deduce from the results that boys and girls are naturally drawn to different musical play activities. Perhaps both are musical, just in different ways.

The comparison between the children's masculine and feminine play gender and musical play revealed similar findings as those for the children's sex. Freeman (2007) concluded that parents feel a need to help their young children define their genders. Could it be that the parents filled out the form, choosing answers that would support what they felt are characteristics of their child's gender? Or, perhaps, at this young age, some children already engage in gendered play, as previous research has found (Cherney & Dempsey, 2010; Nelson, 2011; Zolsuls et al, 2009). Wilansky-Traynor and Lobel (2008) found that children portrayed more gendered behavior with an observer present, which may account for the differences between musical play and sex and gender in the current

study. Also, the observer's presence did not affect the girls (Wilansky-Traynor & Lobel, 2008), so perhaps boys feel more of a need to choose activities that define their masculinity. In that case, those musical activities chosen by boys can clarify what types of musical play are viewed as more masculine.

Freeman (2007) found that, in general children agree that the opposite-sex parent would support their choosing of cross-gender toys. Older boys, however, indicated that neither parent would approve of cross-gender toys. The parents' responses did not indicate any gender stereotypes for children's activities. In the current study, although the parents may not portray any gender stereotypes for musical activities in the home, some children may feel that certain activities are not appropriate for their sex or gender. The boys especially could avoid musical activities thought to be appropriate for girls.

Non-musically, researchers have found that the social environment generated the play in a group setting (Gmitrova et al., 2009; Goble et al., 2012). Thus, the gender makeup of the group signified what type of activities the group would engage in. Although the current study did not attempt to measure this quantitatively, the general play of groups of boys and groups of girls seemed to differ. This perhaps had an effect on the amount and types of musical play elicited. It is possible that groups of boys chose musical play activities thought to be masculine, and groups of girls chose feminine musical play activities. If the group was mixed, they may choose neutral musical play activities.

Hilliard and Liben (2010) found that preschool teachers sometimes made gender and stereotypes apparent in their classrooms (gender salience). The gender salience of a classroom made a difference in the children's attitude and behavior. The seven sites did

not seem to make gender differences known to the children, which may have affected the amount and types of musical play used by the children. This lack of gender salience, therefore, could have elicited more neutral musical play activities.

Children having a strong play gender were also taken into consideration. Those having a strong masculine play gender had more vocal exploration than those who had a strong feminine play gender. Sinsel et al. (1997) found that children with strong gender types preferred musical instruments having strong sex stereotypes. The young children in the current study may view vocal exploration as a masculine activity, accounting for the difference. However, no differences were found when comparing androgynous children to the strong play genders. Sinsel et al. (1997) found that androgynous children chose instruments across a much larger variety compared to those with strong genders. This was similar to the current study, as the androgynous children displayed comparable musical play characteristics as their strongly-gendered counterparts.

The area of gendered instrument preferences and selection is a widely-researched area that has been studied for quite some time. It has been well-established that children not only associate certain instruments with specific genders, but they also choose instruments correspond with their same genders. This study has provided new data on the nature of young children that may shed light on why they choose specific gendered instruments. It is apparent that at an early age, children develop specific preferences that concur with societal beliefs. Gendered musical activities may be the start of a life-long association of gender and music.

Home Environment as a Factor in Musical Play

No significant differences were found between the children's musical play and home environment factors. One significant difference was found between moving and family music class attendance, with those children who attend(ed) family music classes moving to music more often. Those who attend(ed) family music classes also had higher means of musical play in most cases, although no significant differences were found. This trend also occurred with the factors of exposure to music in the home and the self-reported musicality of the parent. In general, those children who were exposed to music in the home and whose parents deemed themselves as musical had higher means of musical play than their counterparts. Those children whose parents had no musical background, however, generally had higher means of musical play than those whose parents had musical backgrounds. Nevertheless, it cannot be assumed that parents deeming themselves as musical and/or having a musical background also had a high skill level in music. Barrett (2009) found an increase in musical interactions within a family unit when attending family music classes. It is puzzling, then, that the children who had attended family music classes in the current study did not have substantially more musical play than those who had not attended similar classes. One would assume these children would be exposed to more music in the home, and, thus, have more instances of musical play at preschool.

Musically, parents have been found to sing more often than any other musical behaviors in the home (Custodero, Britto, & Brooks-Gunn, 2003; Custodero, 2006; Custodero & Johnson-Green, 2003; Gibson, 2009; Ilari, 2005; Trehub et al., 1997b). Mothers also sang stereotypical children's songs more often (Trehub et al., 1997a;

Trehub et al., 1997b), and engaged in musical activities more often than fathers (Trehub et al., 1997b). Watts (2009) found that parents took part in children's musical lives by teaching them childhood songs. In disagreement, Achilles (1992) found that parents take more of a passive role (i.e. listening to music) with their children rather than an active role like singing. This study did not attempt to measure the relationship between the parents' musical activities and the children's musical play; however, because parents tend to be musically vocal, and the children in the study were also vocal the most, a connection may exist. It is possible that children are exposed to singing the most in the home, and subsequently are musically vocal in the classroom.

On the other hand, using the voice is easily accessible. Perhaps the children used their voices the most because the voice is readily available. Instruments – especially high-quality instruments – are expensive and are generally not made available in the preschool room due to the nature of young children. The instruments contained in the classrooms were inexpensive plastic replicas of real instruments. It is possible that the "imitation" instruments were not as attractive to the children, causing them to prefer vocal use.

Sims and Udtaisuk (2008) found parenting magazines contained very few quality music articles, with mentions of music only being for commercial purposes. Those parents who read parenting magazines may not be aware of the possibilities of musical activities for home use. If articles cited quality research sources and offered recommendations for music's use, the parents who read these articles would be more aware of the musical tendencies of young children. Thus, they may support more musical play in the home.

Musical Play Qualities and Frequencies

The children in the current study engaged in musical play for almost a quarter of the total free play time. That musical play consisted mostly of vocal use. Several studies also found that children used their voices the most during play (Paulson, 2008; Tarnowski & Leclerc, 1994). Tarnowski and Leclerc's (1994) findings were similar, with the majority of the play being vocal, followed by movement and instrumental use. Others found that children played with instruments the most (Littleton, 1991; Smith, 2004). Smith (2004) found movement to be a highly-utilized activity.

Tarnowski and Leclerc (1994) analyzed children's vocal occurrences, including inflected speech. Inflected speech (i.e. vocal exploration in the current study) accounted for 42% of the musical play. Songs made up 26%, and chant (i.e. using the Kodàly Call or Chant) accounted for 17% of the vocal occurrences. Lastly, rhythmic speech (i.e. chanting in the current study) made up 16% of the musical play. These findings are similar in that the voice was used the most often; however, Tarnowski and Leclerc (1994) did not attempt to measure the qualities of the vocal productions.

The singing of young children may be hard to judge, since previous studies have found that the singing does not accurately depict the Western well-tempered scale (Merrill-Mirsky, 1988). The Pillsbury Studies found that children used both high and low tones with modal or microtonal influences. Thus, their singing was not based on the classical scales. Merrill-Mirsky (1988) felt that children who sing on pitch do so because of training or enculturation. Therefore, in alignment with this belief, the children who sang on pitch perhaps had more of a musical background than children who sang with EPS.

Generally, the children played non-rhythmically with the instruments and found objects the most, engaging in sound exploration rather than music-making. This is in agreement with the Pillsbury Studies in that the children experimented with the sound first, and the creation of rhythms followed considerably later. Although, this result may have occurred due to the large age range of the children involved in the Pillsbury Studies; older school-aged children may have portrayed more advanced music-making than the younger preschool-aged children. The children in the current study seemed to enjoy making new sounds with objects and instruments. In reflection of G. Stanley Hall's belief that children use play in order to evolve, the children's musical play can progress from primitive sound exploration to sophisticated musical skills.

Overall, the Pillsbury Studies found that the children were able to produce musically complex characteristics, both vocally and instrumentally. This is in disagreement with the current study, as no complex musical happenings were recorded. Gibson (2008) concluded that children use musical characteristics in which they have been exposed to in the home or in the classroom. It is feasible that children have not been exposed to enough music in the home and in the classroom in order to use complex characteristics in their music-making.

Other research has defined children's preferences for certain musical activities. Temmerman (2000) found that moving, dancing, and playing instruments were children's most-preferred activities in preschool. They least preferred singing and listening to music. Believing that children's preferences for activities should match the types of musical play in which they engage, these findings disagree with those of the current study. Denac (2008) found that children most enjoyed moving, singing, and playing

instruments, resembling the findings of the current study. Killian and Basinger (2004) found preferences when it came to selecting different instruments to play, but I did not see any particular preferences emerge in the current study. When using the musical instruments, the children were mostly absorbed in discovery of sound.

Most of the related literature sought to describe the children's musical play rather than record frequency counts. Many defined specific musical play categories (De Shon, 2012; Edwards, 2012; Kierstead, 2006; Paulson, 2008; Smith, 2004), which were helpful in creating a valid observation tool. Watts (2009) concluded that better access to recorded music and an increase in media has created an evolution in children's musical play today. This may account for variations in findings, as different cultures and regions of the country have diverse preferences in media.

As the National Association for Music Education (NA*f*ME) believes, musical play may be the primary vehicle for young children's music learning. Instilling an appreciation and basic understanding of music early on is important to both the early childhood education and music education fields. Music can enhance subject matter in early childhood general studies, and it can also be used as a tool to clarify confusing or difficult concepts. For example, the early childhood education field frequently utilizes the "ABC" song to teach children the alphabet. To take this concept one step further, the preschool teachers could find a song that helps children learn how to spell basic words, instilling the concept that the ABC's can be used in different combinations.

Musical play is important to the music education field because it can reveal the child's current level of musical ability. In knowing where the children's skills lie, it may be easier to plan lessons to further their musical capacities. This study has shed light on

what type of musical activities children naturally gravitate towards. The most frequently occurring musical play types were vocal exploration and creating new song, and overall, the use of the voice. Music educators can either plan those types of activities in order to generate interest, or they can plan activities that children do not use as often (i.e. playing instruments and moving to music). Utilizing these less-popular activities may broaden children's musical knowledge, allowing for a greater variety of skills to be available during play.

Maria Montessori's play environment contained all sorts of didactic materials (manipulatives) for the children's learning, including musical manipulatives. The play environments in the current study, however, did not contain many types of manipulatives, and it certainly did not include musical manipulatives. Plato's *Republic* advanced the idea of play directed towards learning. In keeping with these past philosophies, young children's play environments should include music manipulatives in order to foster music learning. It could be assumed that young children are not learning as much as they could be with the lack of learning materials present in the environment.

Plato's *Republic* discussed this type of directed play, emphasizing that deep learning can be fostered through young children's directed play. Forced study cannot nurture this type of learning, nor does it harmonize with the nature of young children. As Socrates pointed out, play can reveal a child's natural dispositions and talents. In the current study, the children's natural musical dispositions were vocal in nature, and a variety of musical talent was observed. Musical play can certainly assist a music educator's assessments of young children.

Teacher-Child Interaction and the Play Environment as Factors in Musical Play

Teacher interaction was found to be the most prominent factor that extinguished musical play. Teachers inhibited musical play through physical proximity, conversation, disciplining, and portraying the attitude that the play was too loud. Berger and Cooper (2003) also found that adults' physical proximity extinguished musical play. After observing this first hand, I began to wonder why my presence did not have the same effect. Not only was I an adult, but I also was basically a stranger to the children. Why would they let me view as much musical play as they did? Perhaps the children did not think of me as an authority figure as they did the teachers. For whatever reason, they felt comfortable enough to share their musical lives with me. In agreement with this finding, Tarnowski and Leclerc (1994) found that the largest amount of children's musical play took place when an adult took on an observer role. It may be that the teachers in the current study are too interactive with the children when–in contrast–the children should be allowed to freely choose their own activities. When left alone to play, the children freely engaged in spontaneous musical play.

Sandberg and Pramling-Samuelsson (2005) found that female teachers were not as willing to play with the children, valued quiet and calm play, and felt that physical play should be redirected to calm play. Since the majority of the teachers in the current study were female, this could very well be a reason why teacher-child interaction extinguished musical play so often. Because the female teachers were not as tolerant of the extra noise the musical play produced, they told the children to quiet down or reprimanded them. Physical play was also found to generate musical play in the current study. Sandberg and Pramling-Samuelsson (2005) found that females do not tolerate a

large amount of physical play; therefore, the teachers in the current study may have interrupted and diverted physical play (e.g. play fighting) before any musical play episodes occurred. Similarly, Berger and Cooper (2003) found that adults extinguished musical play through corrections, suggestions, and the adult's attitude towards the play.

Smithrim (1997) found that, without adult-led activities, children were able to demonstrate musical abilities, explore sound, engage in long periods of absorbed activity, and teach peers. Free play might be the perfect time for children to engage in musical play. In many cases, however, the teachers in the current study interrupted or halted the musical behaviors in some way. Koops (2012) also found that general adult involvement extinguished musical play.

There were several instances of teacher-child interaction enhancing play, specifically during teacher-led musical play and through teacher compliments. These findings are in agreement with past research (Berger & Cooper, 2003; Koops, 2010; Koops, 2012; Lau & Grieshaber, 2010). Teacher-led musical play could be considered a willingness to participate and encouragement of musical play, as in Berger and Cooper's (2003) study. Similarly, adult involvement in musical play was supported in Koops' (2012) findings. "You're a Good Dancer" in Figure 15 (page 107) showed an instance in which an adult compliment enhanced musical play. The adult's valuing of the child's musical behaviors (Berger & Cooper, 2003) and acknowledgement of the musical play (Koops, 2012) supported the musical endeavor.

"The Itsy Bitsy Spider" in Figure 15 (page 107) showed an instance in which a teacher used song in order to teach the children. Veldhuis (1992) found that adult-elicited songs generally contained more mature vocabulary and lower pitches. This

expresses two ideas: 1) teachers use songs in order to teach the children life-long skills, such as new vocabulary, and 2) preschool teachers are generally untrained in children's musicality, thus pitching songs too low for a child's natural singing range. In fact, Tarnowski and Barrett (1997) found that, although 96% of the classroom teachers provided musical activities in the classroom, only 2% had degrees in music education. Also, Bond (2012) found that early childhood journals did not present methods and implications of preschool music instruction. Therefore, even if a preschool teacher wanted to provide developmentally appropriate musical activities, they simply may not have the support and knowledge needed. It is a reasonable belief that without proper training, a preschool teacher uses musical activities that are inappropriate for young children's development.

Koops (2010) found adult-led chanting during reading lessons in the Gambian culture. In the United States, Lum and Campbell (2007) found that teachers used music to facilitate learning and for social signaling (e.g. transitions). Music, therefore, can be used as an educative device in many cultures. However, the adults in Koops (2010) study expected the children to be musical, providing and allowing for a rich musical environment in the classroom. Several studies done in the United States have found that children can be hampered by adults' beliefs of children's musical behaviors (Harwood, 1998), and teachers provide music to support non-musical curricular goals (Tarnowski & Barrett, 1997). Some teachers even agreed that they considered the playing of background music as an acceptable substitute for a music program (Tarnowski & Barrett, 1997). Perhaps, the formal school setting has placed restraints upon American children

during music learning, and the educational culture has become too uniform to allow for complete freedom during play time.

In the current study, the teachers themselves were not very musical in the play environment. Reese (2011) found that adults' identification of children's musical behaviors was dependent on musical training. If the teachers had more experience in and knowledge of music, perhaps they would recognize a musical play occurrence and allow it to continue. Also, Denac (2008) found that preschool teachers most enjoyed singing songs, playing instruments, and listening to music; these three types of activities were the most prevalent in the teachers' lesson plans as well. However, I did not witness any teachers engaging in any musical activities, except for the few qualitative cases of teacher-led singing. It is likely that the lack of music in the play environment correlates with the frequencies of musical play.

Many types of play materials present in the play environment were used during musical play episodes. No previous research has identified any relationship between the use of certain toys and musical play. Although the current study did not attempt to measure a relationship, there did seem to be a connection between certain types of play materials and the enhancement of musical play. In fact, out of the 61 field note examples, 53 examples contained these play materials: puzzles, books, dramatic play materials, art activities, play dough, musical instruments, sand and/or sensory materials, building materials, vehicles, and animals. Vehicle and animal play seemed to elicit the most musical play, as the children incorporated sound effects, mouth sounds, and other vocal explorations to accompany their play. Similarly, Young (2002, 2004) found that children used vocalizations to animate play objects.

Littleton (1991) found that more musical play occurred in a musical play setting rather than a general play setting. Because the children were in a general play setting in the current study, there may have been less occurrences of musical play overall. Although the children had musical instruments in the play environment, perhaps there were not enough instruments to support additional possibilities for musical play.

A key finding of this study was that children engaged in spontaneous musical play when left alone. In some cases, the teacher was able to foster the children's musical play and enhance it through their own participation or through compliments. On the other hand, there were times when compliments extinguished musical play. The early childhood education teacher must be aware of the many different personality types that are in the classroom. Some children may be easily engaged in music, and others may long for their music-making to remain a private endeavor. Either way, it is the adult's job to know when it is appropriate to intervene or keep out of musical play.

Montessori's concept of learning without adult interruption or control was substantiated by the boy and the girl in "A Vignette" (Figure 1, page 1). These children were practicing how to care for a baby using a doll. They dressed the baby, played with the baby, sang to the baby, and even tried to figure out what to feed the baby. Their musical play only enhanced their enthusiasm and enjoyment for the play. If left alone to the whims of their own imaginations, there may have been even more singing and chanting added to the play. We adults need to understand that, to children, those pennies in a cup were much more than change. They were applesauce, or baby food, or pizza. Those pennies were imagination in a cup. Instead of putting an adult lid on the cup, the

cup should be left open so to spill out all the creativity the children can uncover, for that inventiveness may be a cascade of musical play.

Group and Solitary Play as Factors in Musical Play

Group play enhanced musical play in several situations. This is in agreement with past research of children having a musical culture of their own (Harwood, 1998; Koops, 2010; Lew & Campbell, 2005; Marsh, 2005; Ogawa & Murao, 2007). The children in these studies passed on their musical culture and traditions during play, teaching each other new song material. In fact, Corso (2003) found that social transmission of music occurred outside of an adult-guided context. In a way, the children can become peer role models for music learning, such as in Hall's (2005) study. Smith (2008) found that peers also helped a child through Zones of Proximal Development (ZPD) of musical learning. As children demonstrate musicality and play musically together, they form a bond through music, establishing music as an acceptable play behavior. "Row Your Boat" (Figure 6, page 96) showed that joining together in motion to a steady beat produced an opportunity for group singing. Also, "Bonny Variations" (Figure 14, page 105) revealed an instance in which one boy started singing and the other boy joined him in song. These anecdotes reveal a clearly evident children's musical culture.

Group play enhanced musical play when children were engaged in play fighting, calling and/or teasing friends, and being playful. In previous research, groups of children used music in a variety of ways. Songs have been used to communicate (Bjørkvold, 1992; Corso, 2003; Whiteman, 2001), to transmit knowledge to a peer (Whiteman, 2001), to establish a child as the more knowledgeable peer (Corso, 2003; Whiteman, 2001), and to establish the child's identity (Corso, 2003). Anecdotes in Figure 15 (page 107)

showed how children used the Kodàly Call or Chant to communicate to other children or to tease. The use of the Kodàly Call or Chant was also supported by the findings of the Pillsbury Studies.

Koops (2012) found that when a child was in control of a musical activity, the musical play was enhanced. Although the current study did not identify leaders within the group structure, elaborating on Koops finding, those children who are in control of the group play episode – the leaders – could be influential in whether or not musical play is used or is allowed.

The Pillsbury studies also found a large amount of group musical play. The children's music-making seemed to be intended for community participation, with the children often teaching their creations to others. I did see a few instances of humming or song being passed on from child to child. However, I did not witness what I would consider *intentional* teaching of song. It is possible that the play environment or the age of the children was not conducive to community music-making.

Some instances of group play extinguished musical play. In a group setting, children would engage in conversation about the play, greatly reducing the possibility for creating sound. If a group was already established, the presence of a new individual created the need for an establishment period in which the children would discuss the play and situate their roles. When a child was engaged in solitary music-making, the sudden presence of another child would abruptly end the musical play. Likewise, Berger and Cooper (2003) found that a child's musical play was extinguished when adults or other children somehow interrupted them. Koops (2012) found that siblings sometimes created

distractions, extinguishing musical play. This finding may be extended to the distractions that peers can create, reducing the amount of musical play in group settings.

Musical play was enhanced when children were engaged in solitary play. Harwood (1998) found that children were able to be spontaneously more creative on their own, with freedom increasing the musical play behaviors. By themselves, the children were able to freely discover and experiment with sound, coloring their play with music in a personal way. Corso (2003) found that musical play helped to establish a child's identity. Perhaps children use music during solitary play to first realize and become comfortable with their own musical identity before using it in a group setting.

Intense concentration, in both group and solitary settings, seemed to extinguish musical play. When the need for problem solving occurred, the children would make no sound; if they were in a group setting during the problem solving, some conversation would occur. Also, it seemed that if a child was working on a new skill, like cutting paper or measuring sand, no musical play would take place. Koops (2012) found that when an activity was new or too difficult, music play was extinguished. It could be that the amount of concentration needed for learning a new skill or concept does not leave any room for musical creativity. Disinterest – or lack of attention span – also seemed to be a factor that extinguished musical play. Those children who were not able to prolong their attention in the musical activity abruptly ended the play and moved on to something else.

Background Music and Musical Play

No prior research has studied the relationship of background music on children's musical play. However, some research has been done regarding background music's influence on general play. In observing children's block play, the lack of background

music resulted in more occurrences of entering and exiting the block play area (Love, 1992; Love & Burns, 2007). This indicates that background music may elicit more sustained and absorbed activity. Findings have differed on whether or not variations of background music have an effect on children's play. Love (1992) found no significant differences between background music and group play, but Love and Burns (2007) and Godeli, Santana, Souza, & Marquetti (1996) found background music prompts more social play. Godeli et al. (1996), however, discovered that slow background music elicited quiet dramatic play themes, and fast background music stimulated the enactment of disasters (i.e. hurricane) and other hectic situations. However, no relationship between background music and types of musical play seemed to exist in the current study. It may be noteworthy to take children's song preferences into consideration. It is possible that if the background music contained a song that the child enjoys, the child is more apt to incorporate the song into the musical play somehow.

Implications

A prominent finding of this study was that the teachers in the play environment directly affected the children's musical play. Also, between the ages of three and four, there was a decrease in musical play occurrences. Given the fact that these two findings may be related, it is alarming that the early childhood teacher may be the reason for the loss of children's interest in musical play. This indicates that a) the teachers are not viewing musical play as anything substantial to the child's development, b) the teachers have not been trained to identify children's musical play, and/or c) even if the teacher acknowledges a child's musical play, he or she has not been trained to enhance or foster a child's musical play. Instead of supporting a child's musical creativity, the teachers are

stifling the musical play. Suppressed musical interest becomes problematic when the children enter Kindergarten, and the music teacher must struggle to restore the children's musical creativity.

Out of the seven public colleges and universities in the state in which this research was conducted, an individual can receive a Bachelor's degree in early childhood education from only three. It is concerning that not one of the seven public institutions offers a class devoted to early childhood music development, education, and/or practice. Consequently, not only are the early childhood education teachers undereducated in early childhood music, but the music education teachers are untrained as well. The only types of classes offered to future teacher prospects are elementary music methods and elementary music integration courses. One university, however, offers a class devoted to art, music, and play in early childhood education. It is unknown whether or not this class highlights the fact that music can regularly occur in children's play. It is possible that in some of the early childhood development and methods courses, music is discussed. Nevertheless, it cannot be assumed that these classes are taught by music specialists or even by individuals trained in early childhood music practices. Therefore, even at this university, it is likely that music is not being discussed in depth.

The scarcity of music materials and manipulatives in the play environments of the current study raises an issue as well. Even if the classroom contained an abundance of musical materials, their presence was not prominent in the play environment. Montessori readily supplied her students with music manipulatives and allowed them to learn on their own. This is also something that could be missing from early childhood teacher preparation. Teachers should not only provide the children with developmentally

appropriate music materials, but they should also know how to use them. In turn, they may recognize how to supplement a musical play episode.

The major finding of this study is that sex and gender did affect several types of children's musical play. No matter what causes children to develop gendered musical behaviors at such a young age, it may be triggering a cascade of consequences throughout each level of music education. Beginning in elementary music, children continue to define "appropriate" musical activities for their genders. When choosing a band instrument in later elementary, again the children weigh societal gender constructs instead of freely choosing an instrument. Middle school and high school choir directors struggle with persuading boys to sing, after the boys have had a lifetime of teachers and other adults telling them that their musical creations are "too loud".

Although teachers cannot control what societal gender constructs are taught to children outside of school, they can certainly control the amount of gender salience in their classrooms. First, early childhood and music educators should be informed of the effects of gender salience. These teachers should also be aware of the types of musical play activities with which boys and girls naturally gravitate. The ability to recognize and diminish gender stereotypes in the classroom may facilitate a weakening of gender's effects on musical play activities.

Recommendations for Future Research

The related research in the area of musical play has exposed a neglected piece of the mosaic. Although studies have discussed and defined the different activities of children's musical play, there remains a lack of knowledge regarding the *amount* of children's engagement in musical play. More studies of a quantitative nature may reveal

similarities and differences in children's musical play across the country and across the globe. This study can serve as a model for future researchers who wish to investigate similar research questions in different settings and populations. Additional studies may generate a broader picture of children's musical play.

One suggestion for a replication study would be to include the additional types of musical play found in the current study: humming and mouth sounds. Also, teacher interaction should be documented, just as background music was in the study. Because there were differences found between solitary play and group play, noting whether or not a child is playing alone is significant. It can be assumed that a child will be engaged in non-musical play during free play, since the observations should be conducted during free play. The Non-Musical Play column could be taken off the Child Form. Therefore, the new form could include these sections:

1. Background Music
2. Teacher Interaction
3. Solitary or Group Play
4. Singing
    a. Singing Known Song
    b. Creating New Song
    c. Humming
5. Rhythmic Chant
6. Vocal Exploration
    a. Vocal Exploration
    b. Mouth Sounds

7. Instruments
    a. Musical
    b. Non-Musical
8. Moving to Music
9. Other

Including all types of musical play will provide a larger scope of possibilities of play as researchers continue to study children's natural musical propensities.

The fact that gender plays a role in children's musical play provides a small glimpse into the lives of children. A study that investigates *why* males and females engage in musical play differently would reveal even more information about children's cultures. As gender stereotypes persist in our society, gender will continue to have a role in most aspects of children's lives. The function of gendered beliefs is a curious mechanism, and the future has yet to uncover more information about its meaning in children's musical lives.

This study has investigated the gender role behavior in three- and four-year-old children's musical play and the nature of musical play in general. The differences and similarities of children's musical play have been uncovered, and the possibilities for future study abound. Past play philosophers have proposed that children learn more, or internalize more, by participating in child-directed activities. In allowing for more freedom to explore sound, children may learn about music in a more personalized way. It is likely that the future of music education will continue to advance, making room for new philosophies and technology. One fact, however, will remain a constant: young children learn through play. In keeping play and musical play stable components of early

childhood education, children will reap the benefits of learning freely in a deeper and more meaningful way.

APPENDICES

Appendix A
Consent Form

[Date]

Dear Parents,
Hello! I am a Ph.D. student at the University of North Dakota, and a fellow parent, working on my dissertation. The topic of my dissertation is on the types of activities young children use during play. In order to complete this study, I am observing three- and four-year-old children, as well as having the parents of those children complete a "play inventory" for me. I would like to invite you to participate in my study.

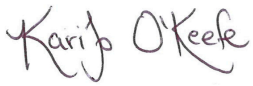
The director of your preschool, [Name], has agreed to allow me to conduct some of my research here. I will be observing the children individually for 20 minutes while they play. I will also have you parents tell me what types of toys and other general activities your children normally use during play through a Parent Inventory (see attached). You will notice that I ask for your child's first name – this is to be sure I match the right child to the right Parent Inventory answers. Once I match the information, your child will be assigned a Subject ID number. I can assure you that your inventory answers and information gathered from your child's observation will be kept confidential. No names will be used in my dissertation, recorded in my results, or shared in any other way – the preschool's name will also remain confidential.

I would like for all parents to fill out the form below so that I know which children I can and cannot observe. If you would like to participate, please also fill out the attached Parent Inventory. You can mail both this form and the Parent Inventory to me using the self-addressed, stamp envelope, or you can put it in the envelope and give it to the director of your preschool. If you would not like to participate, please indicate that on the form and either mail it to me, or give it to the director of your preschool. Either way, I need this form and the survey returned by [Date]. ☺ My schedule for your preschool is as follows:

[Date]: Available during drop-off and pick-up times (parent discussions/questions)
[Date]: Observations

If you have any questions regarding this study, you can call or email me personally (see below), or you can contact the UND Institutional Review Board (IRB) at 701-777-4279. The UND IRB approves all university research and makes sure the researchers follow ethical guidelines. Being a parent myself, I completely understand any concerns you may have about my observing your children. We welcome all questions!

Sincerely,



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PARENT CONSENT FORM FOR O'KEEFE DISSERTATION

Parent First Name _____ Child First Name _____

Please mark one with an "X":
_____ We would like to participate in your study. I have included the completed Parent Inventory along with this Consent Form.
_____ We do not wish to participate in your study.

_____
Parent/Guardian Signature

Researcher Use Only
Site: _____

Appendix B
Child Form

CHILD FORM

Child's First Name: _____ Child's Age: 3 / 4 Child's Sex: M / F Preschool: _____

Back Mus	Min	Singing: Known Song	Singing: Creating New Song	Rhythmic Chant	Vocal Exp.	Insts: Mus & Non		Moving to Mus.	Min	Other	NON-MUS PLAY
	1								1		
	2								2		
	3								3		
	4								4		
	5								5		
	6								6		
	7								7		
	8								8		
	9								9		
	10								10		
	11								11		
	12								12		
	13								13		
	14								14		
	15								15		
	16								16		
	17								17		
	18								18		
	19								19		
	20								20		

Appendix C
Musical Play Categories, Definitions, and Examples

Musical Play Category	Definition	Example(s)
S1. Singing: Familiar songs[1]	The child sings familiar songs (i.e. nursery songs). This is marked by the use of an actual melody. This can include melodic fragments, phrases, or complete versions of familiar songs.	The child sings "Twinkle, Twinkle" during play. The child repeats the melodic fragment, "Twinkle, twinkle, little star" many times.
S2. Singing: Creating song[1]	The child creates or improvises new songs. This can include creating new words to accompany a familiar song, or creating a completely new melody. This can also include melodic fragments, phrases, or complete versions of newly created song.	The child uses the melody of "Twinkle, Twinkle" with these new words: I am playing with my train, It is chugging on the tracks. Using the 3rd and 5th scale degrees, the child sings, "Train, train, on the tracks".
S3. Singing: Chanting[3]	The child chants rhythmically. This can include chanting familiar nursery rhymes, or creating new chants to accompany the play. This also includes fragments or phrases of chants. Chanting is marked by an underlying beat.	While playing with a train, the child repeatedly chants, "choo, choo train!" to the beat. (ti-ti ta)
S4. Singing: Vocal exploration[1]	The child explores the range of both the chest and head voices through a variety of sound productions.	While playing with a train, the child begins saying "choo, choo" higher and higher into the head voice.
I1. Instruments: Musical[4]	The child plays a musical instrument while at play. This can include exploring the timbre of the instrument in traditional and non-traditional ways, creating songs or rhythmic patterns, and repeating fragments or phrases of known or newly created song.	As another child plays with a train, the child brings over a drum and begins playing it to accompany the train play.

Musical Play Category	Definition	Example(s)
I2. Instruments: Found Objects[4]	The child plays a found object instrumentally while at play. This can include exploring the timbre of the objects in traditional and non-traditional ways, creating rhythmic patterns, and repeating fragments or phrases of known or newly created songs or rhythms.	The child takes a pencil and taps it rhythmically on a box.
M1. Moving to music[3]	The child moves to music. This can include moving to background music; to others' singing, chanting, or instrumental music; or to the child's own singing, chanting, or instrumental music. This is marked by physical movement in response to the settings noted above.	As another child begins to sing "Twinkle, Twinkle", the child begins to sway back and forth.
O1. Other[5]	The child performs a musical behavior that was not predicted to occur.	
NM. Non-Musical Play Behaviors[3]	The child plays in a non-musical way.	The child dresses up a Barbie (does not make sound)

[1] Singing Checks:
+ = the child sings on pitch
✓ = the child has an emergent pitch sensitivity
- = the child does not sing on pitch

[2] Rhythm Checks:
+ = the child's sound has a distinctive rhythm and beat to it
- = the child's sound does not have a distinctive rhythm and beat to it

[3] General Tallies:
| = one occurrence of the noted behavior

[4] Descriptive:
The researcher will note the behavior in a descriptive way

Appendix D
Parent Inventory

Researcher Use Only

Site: _____

PARENT INVENTORY

Child's First Name: _____ (please use last initial also if same name as another child)

Demographic Questions

1. What is your child's age?
   - ☐ Three (3)
   - ☐ Four (4)

2. Is your child male or female?
   - ☐ Male
   - ☐ Female

3. Which category below includes your age?
   - ☐ 25 or younger
   - ☐ 25-29
   - ☐ 30-34
   - ☐ 35 or older

4. Are you male or female?
   - ☐ Male
   - ☐ Female

5. What ethnicity best describes your child?
   - ☐ Asian/Pacific Islander
   - ☐ Black/African American
   - ☐ Hispanic/Latino
   - ☐ Native American Indian
   - ☐ White/Caucasian
   - ☐ Other

6. Have you always lived in the Red River Valley region?
   - ☐ Yes
   - ☐ No

Other Questions

1. Has your child ever attended family music classes, such as Kindermusik?
   - ☐ Yes ☐ No

2. Is your child exposed to music at home?
   - ☐ Yes ☐ No

3. Do you feel you are musical in the home?
   - ☐ Yes ☐ No

4. What musical performance experience have you had? (check all that apply)
   - ☐ High School Band
   - ☐ High School Choir
   - ☐ High School Orchestra
   - ☐ Private Lessons - 4 years or more (piano, voice, band, etc.)
   - ☐ College Band
   - ☐ College Choir
   - ☐ College Orchestra
   - ☐ Other (please specify): _____

Play Questions

This section is about the everyday activities of your child. Each question asks how often your child plays with certain toys, engages in specific activities, or shows particular characteristics. Please answer all of the questions. If you are unsure about which response best describes your child for any of the questions, then please answer according to the response that seems most appropriate. Answer each question by circling the response which best describes your child.

KEY: N = Never HE = Hardly Ever S = Sometimes O = Often VO = Very Often

TOY	Never	Hardly Ever	Sometimes	Often	Very Often
Jewelry	N	HE	S	O	VO
Tool set	N	HE	S	O	VO
Dolls, doll's clothes or doll's stroller	N	HE	S	O	VO
Trains, cars or airplanes	N	HE	S	O	VO
Swords (or used objects as swords)	N	HE	S	O	VO
Tea set	N	HE	S	O	VO
Guns (or used objects as guns)	N	HE	S	O	VO

CONTINUE →

KEY: N = Never HE = Hardly Ever S = Sometimes O = Often VO = Very Often

PART 2: ACTIVITIES: Please answer these questions according to how often your child engaged in the following activities during the past month.

ACTIVITY	**Never**	**Hardly Ever**	**Sometimes**	**Often**	**Very Often**
Playing house (i.e. cleaning, cooking)	N	HE	S	O	VO
Playing with girls	N	HE	S	O	VO
Pretending to be a female character (i.e. princess)	N	HE	S	O	VO
Pretending to be a male character (i.e. soldier)	N	HE	S	O	VO
Fighting	N	HE	S	O	VO
Pretending to be a family character (i.e. parent)	N	HE	S	O	VO
Sports and ball games	N	HE	S	O	VO
Climbing (i.e. fences, trees, gym equipment)	N	HE	S	O	VO
Pretending to take care of babies	N	HE	S	O	VO
Showing interest in real cars, trains and airplanes	N	HE	S	O	VO
Dressing up in girlish clothes	N	HE	S	O	VO

PART 3: CHARACTERISTICS: Please answer these questions according to how often your child shows the following characteristics.

ACTIVITY	**Never**	**Hardly Ever**	**Sometimes**	**Often**	**Very Often**
Likes to explore new surroundings	N	HE	S	O	VO
Enjoys rough and tumble play	N	HE	S	O	VO
Shows interest in snakes, spiders or insects	N	HE	S	O	VO
Avoids getting dirty	N	HE	S	O	VO
Likes pretty things	N	HE	S	O	VO
Avoids taking risks	N	HE	S	O	VO

THANK YOU FOR TAKING THE TIME TO FILL OUT THIS INVENTORY! ☺

Appendix E
Preschool Teacher/Caregiver Survey

PRESCHOOL TEACHER/CAREGIVER SURVEY

1. What category below includes your age?
   - ☐ 25 or younger
   - ☐ 30-34
   - ☐ 25-29
   - ☐ 35 or older

2. What is your gender?
   - ☐ Male
   - ☐ Female

3. What category below best describes your ethnicity?
   - ☐ Asian/Pacific Islander
   - ☐ Black/African American
   - ☐ Hispanic/Latino
   - ☐ Native American Indian
   - ☐ White/Caucasian
   - ☐ Other

4. Do you feel you are musical?
   - ☐ Yes
   - ☐ No

5. Do you have a college degree – or are you working on your degree – in early childhood education?
   - ☐ Yes
   - ☐ No

6. Do you have a college degree – or are you working on your degree – in a different area other than early childhood education?
   - ☐ Yes
   - ☐ No

7. What musical performance experience have you had? (check all that apply)
   - ☐ High School Band
   - ☐ High School Choir
   - ☐ High School Orchestra
   - ☐ Private Lessons - 4 years or more (piano, voice, band, etc.)
   - ☐ College Band
   - ☐ College Choir
   - ☐ College Orchestra
   - ☐ Other (please specify): _____

8. How long have you worked as a preschool teacher/caregiver?
   - ☐ Less than 1 year
   - ☐ 1 to 4 years
   - ☐ 5 to 9 years
   - ☐ 10 to 14 years
   - ☐ 15 to 19 years
   - ☐ 20+ years

9. Indicate by circling the answer that best describes how often each event occurs in the play setting of your classroom.

	Never	Hardly Ever	Sometimes	Often	Very Often	Always
A. I sing familiar songs to/with the children while they play.	N	HE	S	O	VO	A
B. I sing new words to familiar songs to/with the children while they play.	N	HE	S	O	VO	A
C. I make up songs and sing them to/with the children while they play.	N	HE	S	O	VO	A
D. I chant rhythmically to/with the children while they play.	N	HE	S	O	VO	A
E. I explore the range of my voice (i.e. through sound effects) while the children play.	N	HE	S	O	VO	A
F. I play musical instruments for/with the children while they play.	N	HE	S	O	VO	A
G. I create instruments out of non-musical materials for/with the children while they play. (i.e. tapping a stick on an empty container)	N	HE	S	O	VO	A
H. There is background music playing while the children play.	N	HE	S	O	VO	A
I. I dance to background music for/with the children while they play.	N	HE	S	O	VO	A
J. I feel I provide a musical environment for the children while they play.	N	HE	S	O	VO	A

10. If you use music throughout the day in your classroom, in what way(s) do you use it? (choose **all** that apply)
- ☐ Fun activity (enjoyment)
- ☐ Helping the children fall asleep for nap time
- ☐ Helping the children awaken from nap time
- ☐ Comforting the children
- ☐ Redirecting inappropriate behavior (classroom management)
- ☐ Education
- ☐ Other: (please specify)

11. If you use music throughout the day in your classroom, in what way do you use it the most? (choose **one**)
- ☐ Fun activity (enjoyment)
- ☐ Helping the children fall asleep for nap time
- ☐ Helping the children awaken from nap time
- ☐ Comforting the children
- ☐ Redirecting inappropriate behavior (classroom management)
- ☐ Education
- ☐ Other: (please specify)

12. Do you do anything else musically throughout the day? If yes, please specify:

THANK YOU FOR TAKING THE TIME TO FILL OUT THIS SURVEY! ☺

Appendix F
Anecdote Characteristics

Title	Figure #	Solitary or Group	Play Materials
A Boy and His Drum	22	Solitary	Instruments
A Dinosaur Fight	10	Group	Animal, Fighting
A Variety	7	Solitary	Dramatic
Animal Sounds	21	Group	Animal
Ba Ba	14	Group	Movement
Baby	21	Solitary	Dramatic
Bonny Variations	14	Group	Animal, Building, Fighting
Bounce the Baby	17	Solitary	Dramatic
Car Chants	16	Group	Building, Vehicle
Cars and Dinosaurs	10	Group	Animal, Building, Fighting, Vehicle
Chattanooga Choo-Choo	20	Solitary	Vehicle
Colored Pegs and Play Dough	23	Group	Art, Building
Conversing Over a Puzzle	18	Group	Puzzle
Cutting Paper	23	Group	Art
Cutting Play Dough	7	Solitary	Art
Fire Trucks	16	Group	Vehicle
Food in the Skillet	8	Group	Dramatic
Gears	23	Group	Building
Here We Come	21	Group	Animal
Horsing Around	10	Group	Animal, Fighting
Humming and Dinosaurs	10	Solitary/Group	Animal, Fighting
Humming Interrupted	18	Solitary	Animal, Building
I'm Singing	7	Group	Sensory
Lasers	12	Group	Building, Fighting
Lego Ships	9	Group	Building, Fighting, Vehicle
Lego Vehicles	9	Group	Building, Vehicle
Let's Go to the Moon	17	Group	Building, Vehicle
Little People	20	Group	Building
Matchbox Cars	9	Group	Vehicle
Measuring the Sand	23	Group	Sensory
Mouth Sounds	9	Group	Vehicle
Mr. Potato Head	16	Solitary	Dramatic

Title	Figure #	Solitary or Group	Play Materials
Music Boy	13	Group	
My Airplane	9	Solitary/Group	Vehicle
My Favorite Song	6	Solitary	Puzzle
On Top of Spaghetti	20	Solitary	Books
Parallel Play with Dolls	8	Solitary	Dramatic
Play Fight	12	Group	Fighting
Roaring Sounds	10	Group	Animal, Fighting
Row Your Boat	6	Group	Books, Movement
Sea Horses	6	Solitary/Group	Books
Sensory Play	23	Group	Sensory
Shakers	16	Group	Instruments
Smell His Feet	14	Group	Puzzle
Sound Effects With Connects	22	Solitary	Building
Spiderman Sounds	12	Group	Fighting
Summoning a Friend	13	Group	
Ta-Da	16	Group	Building, Vehicle
Teacher Singing	15	Group	Movement
Teacher, Teacher	13	Group	
The Itsy Bitsy Spider	15	Group	Art
The Pony's Escape	18	Solitary	Animal, Dramatic
The Sun Goes Down	20	Solitary	Vehicle
Toy Insects	23	Solitary	Animal
We Will Attack	9	Solitary	Animal, Vehicle
We’re Gonna Win	10	Group	Animal, Building, Fighting
Wheels on the Bus	15	Group	Puzzle
Who Wants Ice Cream	8	Solitary	Dramatic
Woah	8	Group	Dramatic
Yoo-Hoo	13	Group	
You're a Good Dancer	15	Group	Movement

Appendix G
Means and Standard Deviations of Musical Play Factors

Table 24. Means and Standard Deviations of Biological Factors.

	3-Year-Olds		4-Year-Olds		Male		Female	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Singing Familiar Songs	0.55	1.17	0.16	0.62	0.30	0.90	0.33	0.89
Creating New Song	1.16	2.11	0.84	1.21	0.74	1.22	1.18	1.93
Chanting	1.07	2.57	0.48	1.05	0.74	2.02	0.68	1.64
Vocal Exploration	3.64	4.11	5.07	8.11	7.13	8.79	2.02	2.32
Total Vocal Use	6.41	5.82	6.55	8.17	8.91	9.19	4.21	3.72
Total Instrument Use	0.82	1.82	0.31	1.16	0.70	1.77	0.33	1.11
Movement	0.66	1.49	0.27	1.01	0.20	0.53	0.63	1.62
Total Musical Play	7.89	6.62	7.13	8.88	9.81	10.04	5.18	4.55

Table 25. Means and Standard Deviations of Play Gender Factors.

	Masculine		Feminine		Androgynous		Strong Masculine		Strong Feminine		All Strong	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Singing Familiar Songs	0.30	0.90	0.33	0.89	0.21	0.64	0.46	1.22	0.50	1.15	0.48	1.17
Creating New Song	0.80	1.25	1.12	1.92	0.93	1.16	0.71	1.20	1.40	2.95	1.02	2.17
Chanting	0.74	2.02	0.68	1.64	0.63	2.08	0.88	1.42	0.80	1.32	0.84	1.36
Vocal Exploration	7.11	8.79	2.04	2.35	4.34	6.21	6.92	9.79	2.15	2.46	4.75	7.73
Total Vocal Use	8.94	9.16	4.18	3.75	6.10	6.71	8.96	10.16	4.85	4.03	7.09	8.16
Total Instrument Use	0.70	1.77	0.33	1.11	0.40	1.14	1.04	2.40	0.25	0.72	0.68	1.87
Movement	0.19	0.52	0.65	1.62	0.40	1.17	0.17	0.57	0.80	1.85	0.45	1.34
Total Musical Play	9.83	10.03	5.16	4.56	6.91	7.23	10.17	11.35	5.90	4.82	8.23	9.16

Table 26. Means and Standard Deviations of Family Music Class Attendance and Exposure to Music in the Home.

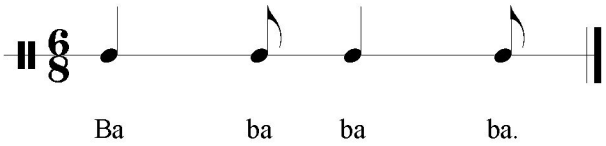
	Fam. Mus. Class Attended		Fam. Mus. Class Not Attended		Exposed to Mus.		Not Exposed to Mus.	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Singing Familiar Songs	0.36	1.14	0.31	0.84	0.28	0.83	0.75	1.49
Creating New Song	0.68	1.00	1.05	1.76	0.94	1.63	1.25	1.67
Chanting	1.00	2.33	0.65	1.70	0.75	1.88	0.25	0.71
Vocal Exploration	5.09	5.77	4.41	7.11	4.61	6.98	3.13	4.29
Total Vocal Use	7.14	6.86	6.41	7.45	6.58	7.49	5.38	4.21
Total Instrument Use	0.82	2.24	0.44	1.22	0.54	1.52	0.13	0.35
Movement	0.82	1.33	0.32	1.20	0.45	1.27	0.13	0.35
Total Musical Play	8.77	7.86	7.17	8.11	7.57	8.25	5.63	4.27

Table 27. Means and Standard Deviations of Self-Reported Parent Musicality and Parent Musical Background.

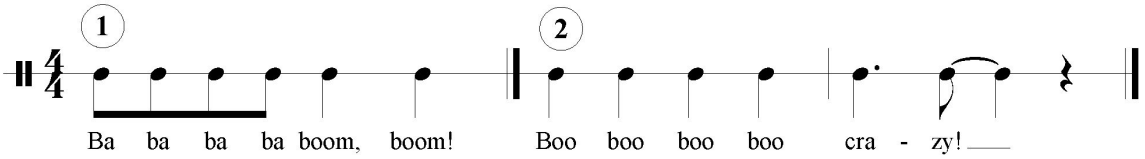
	Parent is Musical		Parent is Not Musical		Parent Has Mus. Background		Parent Has No Mus. Background	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Singing Familiar Songs	0.32	0.83	0.08	0.27	0.39	1.00	0.31	0.99
Creating New Song	0.81	1.11	0.88	1.18	0.99	1.75	1.19	2.12
Chanting	0.85	2.21	0.92	2.59	0.65	1.53	0.54	1.18
Vocal Exploration	5.06	7.37	2.85	3.37	5.01	7.51	3.83	6.12
Total Vocal Use	7.05	7.90	4.73	4.85	7.04	7.85	5.88	6.53
Total Instrument Use	0.60	1.54	0.23	0.51	0.60	1.65	0.40	1.40
Movement	0.52	1.34	0.50	1.30	0.40	1.22	0.31	1.10
Total Musical Play	8.16	8.56	5.46	5.24	8.04	8.65	6.58	7.35

Appendix H
An Index of the Children's Vocal Creations

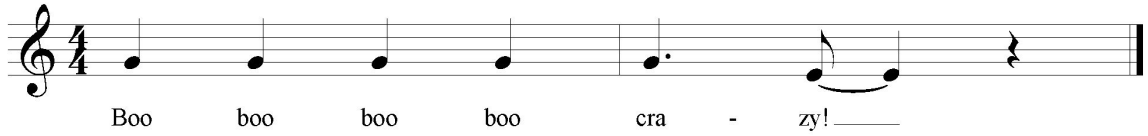
1. Ba Ba Chant



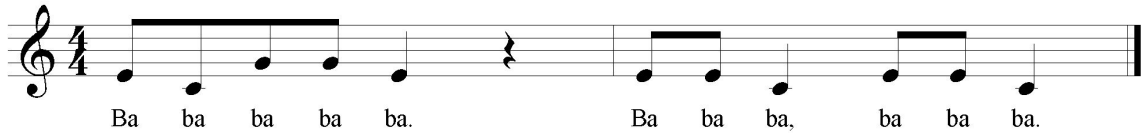
2. Ba Ba Boom Boom Chant



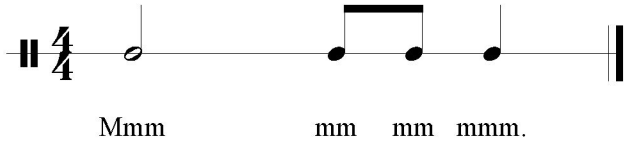
3. Boo Boo Crazy Song



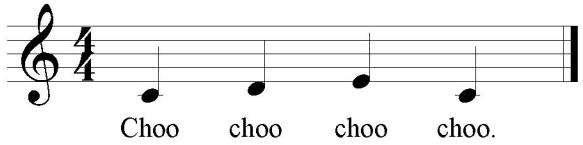
4. Ba Ba Song



5. Chant without Words

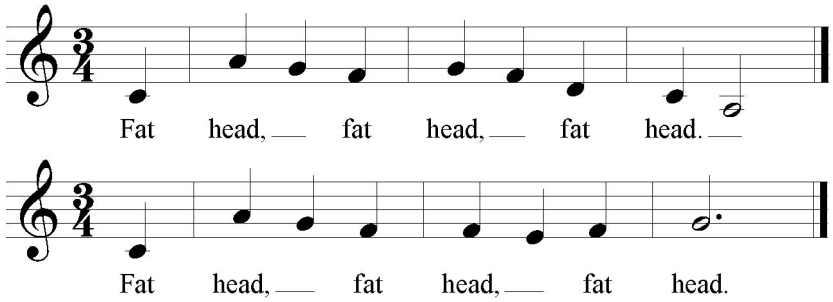


6. Choo Choo Song

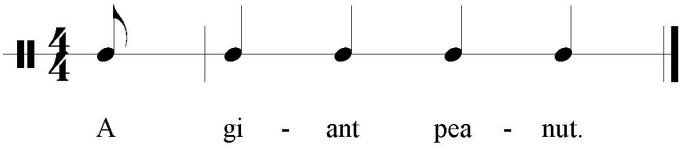


7. Dinosaur Rhythm

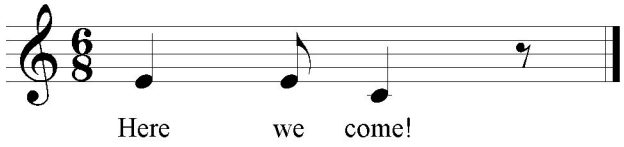
8. Fat Head Song



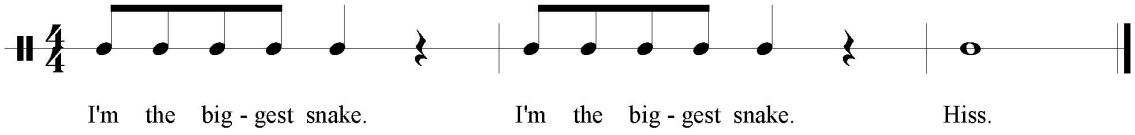
9. A Giant Peanut Chant



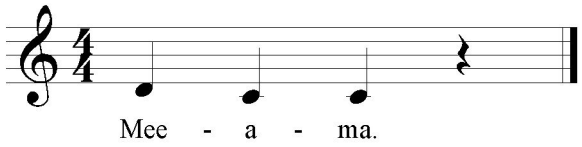
10. Here We Come Song



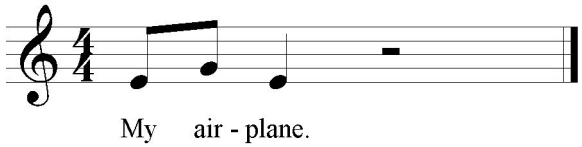
11. I'm the Biggest Snake Chant



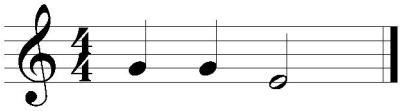
12. Mee a Ma Song



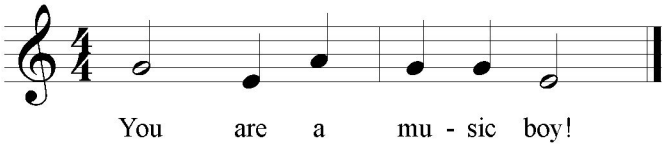
13. My Airplane Song



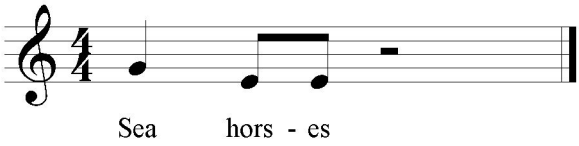
14. Music Boy Kodály Call



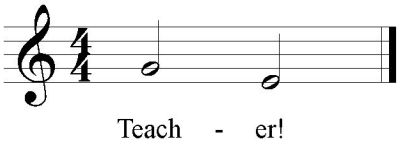
15. Music Boy Kodály Chant



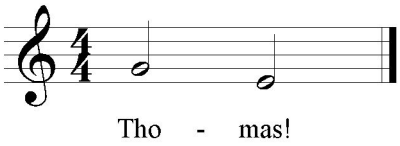
16. Sea Horses Song



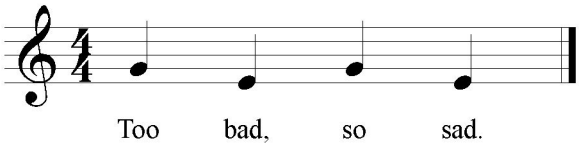
17. Teacher Kodály Call



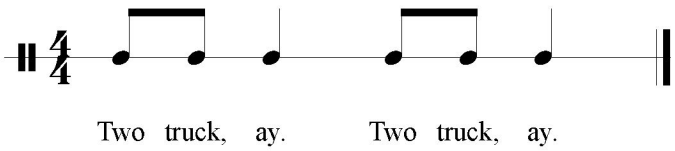
18. Thomas Kodály Call



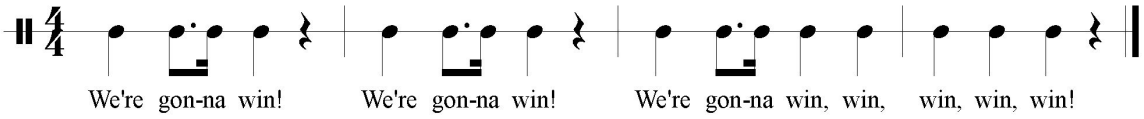
19. Too Bad So Sad Song



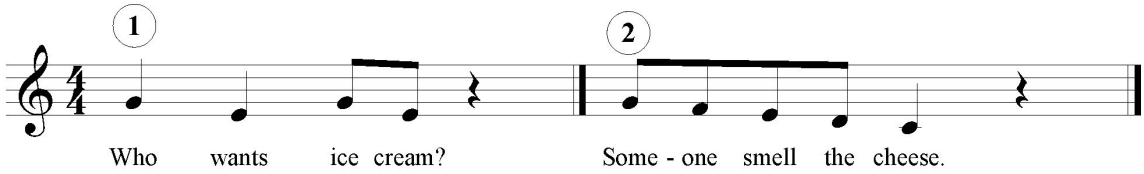
20. Two Truck Ay Chant



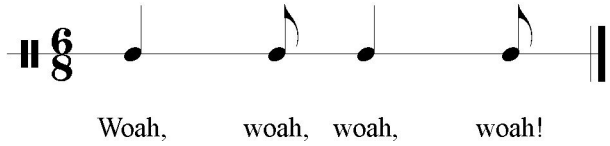
21. We're Gonna Win Chant



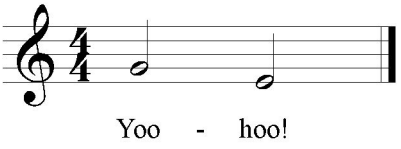
22. Who Wants Ice Cream/Someone Smell the Cheese Songs



23. Woah Chant



24. Yoo Hoo Kodály Call



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