

ABSTRACT

AN INVESTIGATION OF THE EFFECT OF HARMONIC ACCOMPANIMENT
ON THE DEVELOPMENTAL TONAL APTITUDE, TONAL ACHIEVEMENT,
AND TONAL IMPROVISATIONS OF CHILDREN IN KINDERGARTEN

**AN INVESTIGATION OF THE EFFECT OF HARMONIC ACCOMPANIMENT
ON THE DEVELOPMENTAL TONAL APTITUDE, TONAL ACHIEVEMENT,
AND TONAL IMPROVISATIONS OF CHILDREN IN KINDERGARTEN
AND FIRST GRADE**

Denise Marie Guilbault

By

Denise Marie Guilbault

The purpose of this research was to examine the effect of harmonic accompaniment on the developmental tonal aptitude, tonal achievement, and tonal improvisations of young children. The specific problems of this study were the following: 1) Does the addition of a root melody accompaniment to song instruction affect the developmental tonal aptitudes of children in kindergarten and first grade? 2) Does the addition of a root melody accompaniment to song instruction affect the tonal achievement of children in kindergarten and first grade? 3) Does the addition of a root melody accompaniment to song instruction affect the tonal strength of children in kindergarten and first grade?

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

School of Music

2002

ABSTRACT

AN INVESTIGATION OF THE EFFECT OF HARMONIC ACCOMPANIMENT ON THE DEVELOPMENTAL TONAL APTITUDE, TONAL ACHIEVEMENT, AND TONAL IMPROVISATIONS OF CHILDREN IN KINDERGARTEN AND FIRST GRADE

By

Denise Marie Guilbault

The purpose of this research was to examine the effect of harmonic accompaniment on the developmental tonal aptitude, tonal achievement, and tonal improvisations of young children. The specific problems of this study were the following: 1) Does the addition of a root melody accompaniment to song instruction affect the developmental tonal aptitudes of children in kindergarten and first grade? 2) Does the addition of a root melody accompaniment to song instruction affect the tonal achievement of children in kindergarten and first grade? 3) Does the addition of a root melody accompaniment to song instruction affect the tonal strength of the improvisations of children in kindergarten and first grade?

Sixty-eight kindergarten students and 68 first grade students ($N = 136$) from eight intact classrooms participated in the study. All children took the *Tonal* subtest of *Intermediate Measures of Music Audiation* as a pre- and post-test. Instruction lasted for 25 weeks and consisted of rote song instruction with root melody accompaniment (experimental group) and without root melody accompaniment (control group). Other than the use of root melodies, all children received the same instructional content. At the end of the 25-week instructional

period, children performed a major criterion song, a minor criterion song, and improvised an ending to an unfamiliar song in major tonality. The song performances were audio-taped and rated by three independent judges for Tonality and Keyality. The improvisations were rated for Tonal Strength.

Results indicated that song instruction with a root melody accompaniment had no significant effect on the developmental tonal aptitude and tonal achievement of children in kindergarten and first grade. As would be expected, children in kindergarten received lower tonal aptitude mean scores and Tonality mean scores than children in the first grade. However, no significant difference was found between children in kindergarten and first grade for Keyality mean scores and Composite Tonal Achievement mean scores. Children who received song instruction with root melody accompaniment achieved significantly higher Tonal Strength scores when improvising than children who did not have such instruction. As would be expected, children in kindergarten scored significantly lower than the children in first grade.

Research Instrument	TABLE OF CONTENTS	104
Data Analysis		106
LIST OF TABLES		xi
RESULTS AND INTERPRETATIONS		
Reliabilities of Pre-Instruction and Post-Instruction Tonal subtest		109
Intermediate Measures of Music Audiation		109
Developmental Tonal Achievement Rating Scale		109
CHAPTER ONE		
RESEARCH BACKGROUND		1
Introduction		1
The Importance of Developmental Music Aptitude		3
Children's Music Improvisations		7
Need for Improvisation		7
Nature of Improvisation		9
Effect of Instruction on Improvisation		19
Summary		21
Harmonic Context		22
Summary		26
The Focus of This Research		27
Purpose and Problems of the Study		27
Definitions		28
Limitations		28
Interpretation of the Tonality Score		125
Means and Standard Deviations of Tonal Rating Scale -		
Tonality Dimension		126
CHAPTER TWO		
RELATED LITERATURE		30
Effect of Instruction on Developmental Tonal Aptitude		30
Summary		47
Effect of Instruction on Tonal Achievement		47
Characteristics of Singing Tasks		49
Text Verses No Text		53
Summary		59
Effect of Instruction on Improvisation		60
Summary		70
Effect of Harmonic Accompaniment on Tonal Achievement		71
Summary		90
Chapter Summary		92
The Effect of Rock Melody Accompaniment to Songs on the		
Tonal Improvisations of Children in Kindergarten		
Grade		141
Means and Standard Deviations for Improvisation Scores		
CHAPTER THREE		
DESIGN AND ANALYSIS		95
Sample		95
Design		97
Procedures		97

CHAPTER THREE	Research Instruments	104
SUMMARY	Data Analysis	106
	Summary of the Study	145
	Purpose and Problems	145
	Method and Procedures	146
CHAPTER FOUR		
RESULTS AND INTERPRETATIONS	109
	Reliabilities of Pre-Instruction and Post-Instruction <i>Tonal</i> subtest of <i>Intermediate Measures of Music Audiation</i>	109
	Reliabilities of Tonal Achievement Rating Scale	109
	Reliabilities of the Improvisation Rating Scale	112
APPENDIX A	The Effect of Root Melody Accompaniment to Songs on the Developmental Tonal Aptitude of Children in Kindergarten and First Grade	113
Appendix B	Unpaired <i>t</i> Test of IMMA Pre-Instruction Tonal Scores	113
Appendix C	Means and Standard Deviations of <i>Tonal</i> subtest of IMMA Post-Instruction Scores	114
Appendix D	ANOVA of Post-Instruction IMMA Tonal Scores	115
Appendix E	Interpretation of IMMA Tonal Aptitude Scores	116
APPENDIX F	The Effect of Root Melody Accompaniment to Songs on the Tonal Achievement of Children in Kindergarten and First Grade	119
Appendix G	Means and Standard Deviations of Tonal Rating Scale – Tonality Dimension	119
Appendix H	ANOVA of Tonality Scores	123
Appendix I	Interpretation of the Tonality Score	125
Appendix J	Means and Standard Deviations of Tonal Rating Scale – Keyality Dimension	126
Appendix K	ANOVA of Keyality Scores	129
APPENDIX L	Interpretation of the Keyality Scores	131
	Means and Standard Deviations for Major and Minor Criterion Song Composite Scores	133
	ANOVA of Major and Minor Criterion Song Composite Scores	135
	Interpretation of Major and Minor Criterion Song Composite Scores	136
	Means and Standard Deviations for Composite Tonal Achievement Scores	137
	ANOVA of Composite Tonal Achievement Score	138
	Interpretation of Tonal Achievement Composite Scores	139
	The Effect of Root Melody Accompaniment to Songs on the Tonal Improvisations of Children in Kindergarten and First Grade	141
	Means and Standard Deviations for Improvisation Scores	141
	ANOVA of Tonal Improvisation Scores	142
	Interpretation of Improvisation Scores	143

CHAPTER FIVE

SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS	145
Summary of the Study	145
Purpose and Problems	145
Design and Procedures	146
Results and Interpretations	147
Conclusions and Implications for Music Education	153
Recommendations for Future Research	154

APPENDICES

Appendix A: UCRIHS Permission	160
Appendix B: Letter to Parents	161
Appendix C: Parental Consent Form	163
Appendix D: Song Repertoire	164
Appendix E: Sample of Senior Kindergarten Lesson Plans	165
Appendix F: Sample of First-Grade Lesson Plans	168
Appendix G: Verbal Assent Script	171
Appendix H: Improvisation Antecedent Phrase	172
Appendix I: Criterion Songs	173
Appendix J: Preparatory Sequences	174
Appendix K: <i>Tonal</i> subtest of <i>Intermediate Measures of Music Audiation</i> Test Form	175
Appendix L: Tonal Achievement Rating Scale	176
Appendix M: Improvisation Rating Scale	177

REFERENCES	179
-------------------------	-----

Table 9 – Means Table of Tonality Scores	121
Table 10 – Means Table of Composite Tonality Scores	122
Table 11 – ANOVA Table of Tonal Rating Scale: Tonality Dimension	124
Table 12 – ANOVA Table of Tonality Composite Score	124
Table 13 – Means Table of Tonal Rating Scale: Keyality Dimension	127
Table 14 – Means Table of Keyality Composite Scores	128
Table 15 – ANOVA Table of Tonal Rating Scale: Keyality Dimension	130
Table 16 – ANOVA Table of Keyality Composite Score	130

CHAPTER ONE

INTRODUCTION

Singing has long been regarded as central to the elementary school music curriculum (Apfelstadt, 1984; Atterbury, 1984a, 1984b; Atterbury & Silcox, 1993; Cassidy, 1993; Clegg, 1966; Cooper, 1995; Flowers & Dunne-Sousa, 1990; Froehlich, 1977; Green, 1987; Hale, 1977; Kimble, 1984; Klinger, Campbell, & Goolsby, 1998; Levinowitz, Barnes, Guerrini, Clement, D'April, & Morey, 1998; Mizener, 1993; Rutkowski, 1986; Smale, 1988). In fact, the National Standards for Arts Education (1994) lists singing alone and with others as something all students (K-12) should know and be able to do. Many believe that singing has maintained this role in the curriculum because of its effect on (1) the development of musical understanding (Bertaux, 1989; Regelski, 1981; Smale, 1988; Waddell, 1989); (2) music aptitude (Gordon, 1997a); and (3) children's ability to audiate (Gordon, 1997a). In addition, musical understanding can be measured and assessed through children's singing (Barnes, Flowers & Dunne-Sousa, 1990; Froehlich, 1977; Hale, 1977; Levinowitz, Guerrini, Clement, D'April, & Morey, 1998; Rutkowski, 1996). When children sing, their performance is a reflection of their understanding of music.

In light of this, the development of children's vocal skills has been an important focal point of music research (Clegg, 1966; Cooper, 1995; Flowers & Dunne-Sousa, 1990; Green, 1987, 1990, 1994; Grutzmacher, 1987; Froelich, 1976; Hale, 1977; Kelly, 1998; Kimble, 1984; Levinowitz, Barnes, Guerrini,

Clement, D'April, & Morey, 1998; Moore, 1994; Rutkowski, 1986; Rutkowski, 1996; Stauffer, 1986; Welch, Sergeant, & White, 1995/96). The implications of these studies have helped general music teachers understand matters such as the processes required for accurate singing, the relationship between age and singing ability, the relationship between pitch discrimination ability and singing accuracy, and the effect of vocal range, melodic direction, intervals, vocal model, text, and unison/solo singing on children's vocal accuracy.

The typical child has the potential to learn to sing in tune, in meter, and in tempo (Atterbury, 1984b; Gordon, 1997c; Phillips, 1996); yet not all children mature into adults who are able to do so. Researchers have uncovered knowledge about some elements of singing that helps teachers understand how to facilitate children's vocal accuracy. Some of these elements are pitch discrimination, pitch production, pitch monitoring, and the motivation to sing (Atterbury, 1984; Goetze, Cooper, & Brown, 1990). One factor that has not received much attention from the research community is the effect of harmonic accompaniment on children's developmental tonal aptitude, singing achievement and improvisation. Perhaps this is because most music programs for primary children place more of an emphasis on pitch, melody, and rhythm and give minimal attention to harmony (Bridges, 1966) and because such programs rarely teach children to sing or improvise within the context of an underlying harmonic structure (Gordon, 1998b).

The Importance of Developmental Music Aptitude

Music aptitude is the measure of children's potential to learn music (Gordon, 1980b, 1986, 1989a, 1997a, 1997c, 1999). Aptitude is sometimes mistaken for achievement. Music aptitude represents a student's potential to learn, whereas music achievement represents what a student has learned. There are two classifications of music aptitude – developmental and stabilized. Children's music aptitude is developmental during the first nine years of life. During this time, the quality of the music environment can positively or negatively influence children's potential to achieve in music (Gordon, 1980b, 1986, 1989a, 1997a, 1997c, 1999). The environment ceases to have an effect on aptitude at about the time children are nine years old. At this point, aptitude becomes stabilized (unaffected by the environment) and will remain so throughout the child's life.

Differing perspectives on the origins of music aptitude have fueled many debates throughout the years. There are some who insist that music aptitude is innate and unaffected by environmental factors, while others hold the view that music aptitude is entirely environmental (Gordon, 1998a). Current findings in psychomusicology suggest that music aptitude is a product of both innate potential and musical environment (Gordon, 1998a). The proportion that nature and environment contribute to music aptitude is still unknown. What is known is that, regardless of aptitude level, children's potential to achieve in music will not be adequately developed unless they are exposed to a quality music

environment. In addition, the younger a child is, the greater the environmental influence will be (Flohr, 1981; Gordon, 1980a, 1980b; Taggart, 1997).

Numerous biologists, medical researchers, neurobiologists, neurologists, pediatricians, psychologists, and scientists have suggested that there are critical periods associated with the wiring of neurological connections and synapses that take place prenatally and throughout early childhood (Begley, 1996; Kotulak, 1993; Nash, 1997). Before birth and at critical periods after birth, a baby's brain produces an abundance of cells that are used to make connections, or synapses, between neurons (cells that carry electrical messages through the nervous system and the brain). While the brain contains nearly all the nerve cells it will ever need at birth, the pattern of wiring between them has yet to stabilize.

Sensory experiences create the circuits for abilities such as vision, sight, hearing, smell, and language. A child's brain development suffers if deprived of a stimulating environment, because the brain eliminates those synapses that are seldom or never used.

The discovery that the outside world is indeed the brain's real food is truly intriguing. The brain gobbles up its external environment in bits and chunks through its sensory system: vision, hearing, smell, touch and taste.

Then the digested world is reassembled in the form of trillions of connections between brain cells that are constantly growing or dying or becoming stronger or weaker, depending on the richness of the banquet (Kotulak, 1993, p. A8).

This applies to the development of the parts of the brain that processes music as well.

Thus, if a very young child has no opportunity to develop a music-listening vocabulary, the cells that would have been used to establish the hearing sense will be directed to another sense, perhaps the visual, and so the visual sense will be strengthened at the expense of the aural sense.

Regardless of one's innate potential, no amount of compensatory education at a later time will be completely able to offset the handicap (Gordon, 1998a, p. 9).

The music environment of young children ought to be approached with great care in light of its significant effects on children's developing music aptitudes and future achievement.

The younger a child is when the child receives appropriate music instruction, the more a child will be able to achieve in music (Gordon, 1997a, 1997c, 1998a). Gordon developed three valid measures of tonal and rhythm developmental music aptitude that can be used to determine the strengths and weaknesses of individual children. The scores from these tests can also be used as a guideline when adapting instruction to the individual musical differences of children. *Audie* (Gordon, 1989b) is a developmental music aptitude test for three- and four-year-old children. A parent at home or a teacher in school individually administers the test. The *Primary Measures of Music Audiation* (Gordon, 1979) is a developmental music aptitude test for children in kindergarten through third grade. It is called a test of audiation and not a test of

aptitude, because aptitude is still developmental for children in this age group. The *Intermediate Measures of Music Audiation* (Gordon, 1982) was designed for groups in which half or more of the students score above the 80th percentile on the *Tonal and Rhythm* subtests of *Primary Measures of Music Audiation*.

Developmental music aptitude tests are extremely important, because, without them, teachers can only guess the potential of children based on their achievement (Gordon, 1998a; Taggart, 1989). The problem with this is that children sometimes underachieve. Music teachers cannot effectively evaluate a child based solely on what is observed. Some children will have high developmental music aptitudes and their musical behaviors will be commensurate, and sometimes they will not (Gordon, 1998; Taggart, 1989). It is through the use of music aptitude tests in conjunction with observation that music teachers can objectively identify the potential of the children that they teach. Only after objective measurement has been made of a child's aptitude and achievement in music can a teacher expect to make a dependable subjective evaluation (Gordon, 1997a).

Because all children have the potential to achieve in music, and because children's potential for future achievement is influenced by the quality of the music environment, it is important that children receive the best possible instruction. It is imperative that teachers understand the significance of developmental aptitude to facilitate the development of their students potential to the highest levels.

Children's Music Improvisations

Need for Improvisation

The quality and extent of one's early musical environment, which affects one's overall music aptitude, is perhaps the most powerful factor in determining the extent to which one can become musically creative (Gordon, 1989a). When a teacher provides students with the readiness and skills to create and improvise their own music, music becomes the property of the students themselves, and this should represent the ultimate goal of all music teachers (Azzara, 1992 & 1999; Gordon, 1997a). Improvisation means that an individual has internalized (can audiate) a music vocabulary and is able to understand and express intended musical ideas spontaneously.

Improvisation is to music what speaking is to language. Individuals can improvise daily with language when engaged in conversation. Like an individual's contribution to conversation, improvisation in music is generated from an internal source. To understand music, one must think musically. Improvisation skills allow students to express musical thought and ideas from that internal source, with meaning (Azzara, 1992, pp. 6-7).

Although improvisation has been a vital part of music making throughout history, it is inexplicably missing from most school music curricula today (Azzara, 1992). The importance of improvisation as a valuable music skill is noted in the National Standards for Arts Education (1994), yet this is one of the standards that is least-successfully implemented (Adderly, 1999; Kirkland, 1996). The third content standard for children in kindergarten through fourth grade lists

improvising (1) musical "answers," (2) simple rhythmic and melodic ostinato accompaniments, (3) simple rhythmic variations and melodic embellishments, and (4) short songs as a music skill children should know and be able to do.

Gordon (1997a) states that, as a spontaneous expression of musical ideas, improvisation is a creative activity, but important differences exist between "creativity" and "improvisation." Creativity involves fewer restrictions than improvisation. Improvisation involves specific guidelines that provide structure for the improviser – for example, the tonality, the harmonic progression, the meter, and the form of the music. In addition, improvisation requires more complex audiation than creativity (Gordon, 2001).

Tonal improvisation may take several forms. Tonal improvisation may include a performance of a variation of a melody. This requires that the student can memorize and imitate. Awareness of tonic, resting tone, or harmony is helpful but not essential. Tonal improvisation may be the performance of a melody over a given harmonic progression, or it may be the improvisation of harmonic progressions to a melody. Both of these approaches require audiation skills. Tonal improvisation is most meaningfully accomplished when the improviser is audiating a harmonic context (Gordon, 1997b & 1998b).

Experiences with improvisation have been shown to have a positive effect on student's other musical skills. The purpose of Azzara's study (1992) was to enhance the music achievement of elementary instrumental music students through a researcher-designed improvisation curriculum. The specific problems of his investigation were to examine (1) the effect of improvisation on music

achievement and (2) the effect of levels of aptitude on music achievement. Significant differences existed between students who received instruction that involved the use of the improvisation curriculum and those who did not. The treatment group received higher ratings on their performances of three criterion etudes than students in the control group. As expected, significant differences were also found between aptitude levels. The group of students who were classified as having high music aptitude demonstrated higher achievement than those students with low music aptitude.

Nature of Improvisation

Research has shown that improvisational and compositional processes and products can be used to evaluate musical understanding (Briggs, 1987; Brophy, 1999; Cohen, 1981; DeLorenzo, 1989; Doig, 1941, 1942a,b; Flohr, 1980, 1981,1985; Fruendlich, 1978; Joseph, 1983; Kratus, 1985, 1986, 1989, 1991a, 1991b, 1991c, 1994, 1995, 1996; Laczó, 1981; Montano, 1983; Moorhead & Pond, 1978; Martin, 1993; Munson; 1986; Pond, 1981; Prevel, 1979; Reinhardt, 1990; Webster, 1989). Children can and do improvise and compose in meaningful ways. Improvisation is the focus of the present study; therefore, composition will not be discussed.

A few researchers have examined children's tonal improvisations. During the 1940's at the Pillsbury Foundation School in Santa Barbara, California, Moorhead & Pond (1978) published one of the first naturalistic studies on children's improvisations. They observed and recorded the spontaneous singing,

chanting, and instrument playing of children, age two through six. Moorhead and Pond found that, with guidance and experience, young children could (1) improvise tonal and rhythm patterns, (2) improvise with a steady beat, and (3) improvise asymmetrical patterns. Early attempts at instrumental improvisations primarily involved tone and timbre explorations.

Prevel (1979) examined over 2,000 children's spontaneous improvisations in a free and unstructured environment. His observations suggest that children's motor energy is reflected in their first attempts at improvisation. What is most important to children is that they identify with the overall effect of their own music making. When children gain the ability to restrain their own movements, they experiment with different colors of sound and different volumes of sound. They also create accents, conclusions, and even introductions. He concluded that the development of children's improvisations owes more to their kinesthetic development than their auditory perception.

Flohr's research (1980) suggests that young children can meaningfully improvise music that incorporates simple musical structures. Flohr observed the improvisational behaviors of four-, six-, and eight-year-old children over a period of ten 15-minute individual sessions. The children improvised on an Orff xylophone using a two octave pentatonic scale. Each child individually participated in three improvisatory phases. The first phase was free exploration. The children were given five minutes to freely explore the sound possibilities of the instrument. The second phase, guided exploration, consisted of a series of eight researcher-directed tasks. Phase three was exploratory improvisation.