



2003

THE EFFECT OF VISUAL ART ON MUSIC LISTENING

Jennifer Sue Shank

University of Kentucky, jshank@gte.net

[Click here to let us know how access to this document benefits you.](#)

Recommended Citation

Shank, Jennifer Sue, "THE EFFECT OF VISUAL ART ON MUSIC LISTENING" (2003). *University of Kentucky Doctoral Dissertations*. 397.

https://uknowledge.uky.edu/gradschool_diss/397

This Dissertation is brought to you for free and open access by the Graduate School at UKnowledge. It has been accepted for inclusion in University of Kentucky Doctoral Dissertations by an authorized administrator of UKnowledge. For more information, please contact UKnowledge@lsv.uky.edu.

ABSTRACT OF DISSERTATION

Jennifer Sue Shank

The Graduate School
University of Kentucky

2003

THE EFFECT OF VISUAL ART ON MUSIC LISTENING

ABSTRACT OF DISSERTATION

A dissertation submitted in partial fulfillment of the
Requirements for the degree of Doctor of Philosophy
in the College of Fine Arts
at The University of Kentucky

By
Jennifer Sue Shank

Lexington, Kentucky

Director: Dr. Cecilia Wang, Associate Professor of Music

Lexington, Kentucky

2003

Copyright ©Jennifer Sue Shank 2003

ABSTRACT OF DISSERTATION

THE EFFECT OF VISUAL ART ON MUSIC LISTENING

The purpose of this study was to examine the effect of visual stimuli on music listening skills in pre-service elementary teachers. “Visual Stimuli” in this study refers to the presentation of arts elements in selected visually projected images of paintings. Music listening skills are defined as those skills needed to identify and interpret musical excerpts. A Pretest-Posttest Control-group Design was used in this study.

Subjects were pre-service elementary general educators enrolled in a large southern university (N=93). Students from intact classes were randomly placed into either the experimental group or the control group. The treatment consisted of six music listening lessons over a two-week period with each group receiving the identical teaching protocol with the exception of the use of paintings with the experimental group. Listening instruction emphasized the identification of melodic contour, instrumentation, texture, rhythm and expressive elements of the compositions.

The Teacher Music Listening Skills Test (TMLST) was constructed by the investigator and administered before and after the treatment. The TMLST was designed to assess music listening skills in adult non-musicians.

Results indicate that the group receiving visual stimuli in the form of paintings scored significantly higher on listening skills ($p < .01$) than the control group which

received no visual stimuli in the form of visually projected images of paintings. There was an instruction effect on both preference and familiarity of the musical pieces for both the control group and the experimental group.

KEY WORDS: VISUAL STIMULI, MUSIC LISTENING SKILLS, PAINTINGS, NON-MUSICIANS, INSTRUMENTAL MUSIC, GESTALT

Jennifer S. Shank

July, 20 2003

THE EFFECT OF VISUAL ART ON MUSIC LISTENING

By

Jennifer Sue Shank

Dr. Cecilia C. Wang
Director of Dissertation

Dr. Lance W. Brunner
Director of Graduate Studies

RULES FOR USE OF DISSERTATION

Unpublished dissertation submitted for the Doctor's degree and deposited in the University of Kentucky Library are as a rule open for inspection, but are to be used with due regard to the rights of the authors. Bibliographical references may be noted, but quotations or summaries of parts may be published only with the permission of the author, and with the usual scholarly acknowledgements.

Extensive copying or publication of the thesis in whole or in part requires also the consent of the Dean of the Graduate School of the University of Kentucky.

A library which borrows this thesis for use by its patrons is expected to secure the signature of each user.

DISSERTATION

Jennifer Sue Shank

The Graduate School
University of Kentucky

2003

THE EFFECT OF VISUAL ART ON MUSIC LISTENING

DISSERTATION

A dissertation submitted in partial fulfillment of the
Requirements for the degree of Doctor of Philosophy
in the College of Fine Arts at
The University of Kentucky

By

Jennifer Sue Shank

Lexington, Kentucky

Director:

Dr. Cecilia Wang, Associate Professor of Music

Lexington, Kentucky

2003

Copyright © Jennifer Sue Shank, 2003

For my Parents

ACKNOWLEDGMENTS

I would like to thank all the people that made the impossible possible. Thank you to Bill and Lisa, for always being there. Thank you to my grandparents, Marge Jossi and August Keyerleber, who have supported me and made sure there was food on the table and a warm place to sleep. Thank you to Dr. Cecilia Wang, whose mentoring, guidance and friendship were invaluable throughout my education. To Dr. David Sogin who has helped me grow from a scared new student to a confident graduate. To Dr. Kate Covington, Dr. Ron Pen and Dr. Skip Kifer for agreeing to sit on my committee. To my colleagues, April McAllister and Donna Irwin, to whom I am eternally grateful for all of the help, support and graded papers. And finally, thank you to my parents, Janet and Bill Shank, for always encouraging me and allowing me to be anything in life.

TABLE OF CONTENTS

ACKNOWLEDGMENTS.....	iii
LIST OF TABLES.....	vi
LIST OF FIGURES.....	vii
LIST OF FILES.....	viii
Chapter One: Introduction.....	1
Chapter Two: Related Literature.....	3
Part One: On Listening.....	3
The Basis of Listening.....	3
Processing of Sound During Listening.....	5
Listening for Understanding.....	7
Listening Lesson Approaches.....	9
Aesthetic Education Through Listening.....	10
Listeners with Different Learning Styles.....	15
Differences Among Listeners.....	17
Motivation for Listening.....	18
Part Two: On Visual Stimuli.....	20
Visual Stimuli and Instruction.....	20
Historical Connection Between Visual Art and Music.....	22
Art in Music Education.....	24
Applications of Gestalt Principles in Art and Music.....	24
Memory and Listening.....	29
Statement of the Hypothesis.....	31
Chapter Three: Methodology and Introduction.....	32
Selection of Subjects.....	32
Research Design.....	33
Instrumentation.....	35
Procedure.....	37
Treatment.....	39
Music and Art Used in the Study.....	40

Chapter Four: Results.....	45
Results Related to Listening Skills.....	46
Results of Hypothesis Testing.....	53
Secondary Results.....	53
Summary.....	57
Chapter Five: Discussion and Recommendations.....	57
Recommendations for Further Research.....	64
Implications for Educational Practice.....	65
Appendices.....	67
Appendix A- TMLST.....	67
Appendix B- Recall Test.....	77
Appendix C- Permission.....	83
Appendix D- IRB.....	84
Appendix E- Sample Listening Lesson Scripts	85
Appendix F- Concepts Taught During Listening Lessons.....	87
Appendix G-Art Survey.....	90
Appendix H- Pilot Study.....	92
References.....	106
Vita.....	117

LIST OF TABLES

Table 4.1 Participant Demographic Information.....	45
Table 4.2 Table of Means for Pre-test TMLST for Subgroups 1-8.....	46
Table 4.3 ANOVA Summary of TMLST for Pre-test Subgroups 1-8.....	47
Table 4.4 Table of Means for Pre-test Part B for Classes 1-4.....	47
Table 4.5 ANOVA Summary of TMLST for Class Sections 1-4.....	48
Table 4.6 ANOVA Summary for Pre-test.....	48
Table 4.7 Mean Values of TMLST Part A.....	49
Table 4.8 Mean Values of TMLST Part B.....	49
Table 4.9 TMLST Means Showing Improvement from Pre-test to Post-test.....	50
Table 4.10 ANOVA Summary of TMLST Post-test for the Experimental and Control Groups..	50
Table 4.11 Table of Means for TMLST Post-test for Subgroups 1-8.....	51
Table 4.12 Table of Means Shows Improvement from Pre-test to Post-test Divided by Subgroups 1-8.....	52
Table 4.13 Means of TMLST Post-test per Excerpt Score for Each Category.....	54
Table 4.14 Mean Rating for Preference and Familiarity.....	55
Table 4.15 Significant Correlations.....	56

LIST OF FIGURES

Figure 2.1 Common Decibel Ranges.....	4
Figure 2.2 The Ear.....	5
Figure 2.3 Wlodkoski’s Time Continuum Model for Motivation.....	18
Figure 2.4 Music and Association with Gestalt Laws.....	28
Figure 3.1 Research Study Design Model.....	34
Figure 3.2 Music Used in the Study.....	41
Figure 3.3 Paintings Used in this Study.....	42
Figure 3.4 Art and Music Combined, Direct and Indirect Relationships.....	42

LIST OF FILES

Dissertation, Jennifer S. Shank, The Univerisity of Kentucky.....645kb

CHAPTER 1

INTRODUCTION

Listening to music is prerequisite to all other musical pursuits. Focus of attention combined with developing a high level of aural discrimination seems to provide the basis for meaningful music listening. Listening contributes to musical understanding and enjoyment as well as increasing one's aesthetic sensitivity (Madsen, C. & Geringer, J.M. 2000). The ability to listen is the first and most important skill that is needed for all musical activities. Haack (1992) states,

Listening is the fundamental skill. Some aestheticians argue or imply that until sounds are heard and perceived as music, there is no music. Clearly this is the practical truth as concerns music listening. Music exists for hearing and listening. Such listening is a skill in and of itself, as well as a vital part of all other musical skills. Yet music listening is among the last and least studied aspects of music (p. 451).

The National Standards for Arts Education (Consortium of National Arts Education Associations, 1994) states that "proficient" students in grades 9-12 should be able to "identify and explain compositional devices and techniques used to provide unity and variety and tension and release in a musical work"(p. 61). "Advanced" students should be able to "analyze and describe uses of the elements of music in a given work that make it unique, interesting and expressive" (p.61). In order to accomplish these tasks students must be able to hear the interaction between the elements of music that the composer has used and be able to recall them.

People who are not musically trained approach listening differently than trained musicians do. The non-trained person listens to features such as texture and melody before other aspects of a musical piece. Previous research has indicated that adults learn better when they are presented with materials in a multi-sensory way. This would suggest that the use of paintings to reinforce musical knowledge would enhance the listening skills of college students.

We compare the arts in order to discover similarities and common elements and to draw parallels between them. Aristotle's influential categorization in *The Poetics* of

painting, music and poetry as *imitative* arts was an element in his quest for a unified theory of aesthetics. The need to compare also comes from the frequent inadequacy or failure of the aesthetic language. Whenever critics and aestheticians have found themselves struggling to describe something they have perceived in a work of poetry, music or visual art, they have often fallen back on expressions such as the “poetry of painting, the painting of poetry or the poetry of music,” attempting to characterize something difficult to define by referring it to something else that is difficult to define. The hope, presumably, is that some aspect of one art form will help to illuminate some aspect of the other (Kagan, 1986). This hope fuels the idea of using art to help understand music. Art and music are interrelated and influential upon each other for inspiration, shared meaning and symbolic representation.

In the present school curriculum, we expect our classroom teachers to integrate the arts into teaching different subjects and one or two courses in teaching music are usually required college courses for teacher preparation programs. When teachers are asked to integrate music into a general education classroom they are expected to make listening an integral part of that, yet, there is very little research to indicate what method is effective in training the listening skills of future teachers.

The purpose of this study is to investigate whether using the projected images of paintings will enhance the ability of pre-service teaching candidates to identify and recognize musical features of particular musical excerpts. If awareness of similarities in the visual stimuli serves as a catalyst for awareness of similarities in the auditory stimuli, this would indicate that visual art should be employed for pedagogical purposes in the future.

CHAPTER TWO

RELATED LITERATURE

This chapter contains a review of literature on listening and visual stimuli. In examining listening, it is important to look at how sound is created and internalized by the ear and brain, how humans process sound, and how people understand that for which they listen. Other important elements to consider are approaches in listening lessons, aesthetic education and listening, listeners with different learning styles, and the motivation for listening. The subject of visual stimuli is a broad topic that can be examined in a multitude of ways. For this study, the aspects of visual stimuli that are most important are those that directly affect how individuals process what they see and how they process it in conjunction with other stimuli. Factors in this research include visual stimuli and instruction, connecting visual art and music, applications of Gestalt principles in art and music, and memory and learning.

Part One

On Listening

The Basis of Listening

The capacity to perceive music and respond at both a cognitive and an affective level can be learned through particular listening experiences. One of the goals of music education is to present strategies which will encourage attention to the music and enable the listener to form cognitive and affective opinions on a piece. In order for these activities to be effective, active engagement is necessary. To engage a listener, activities and lessons must be developed that enhance understanding and allow the listener to organize information in a meaningful way.

Even before examining how to approach active listening, one must consider how one listens. It is the sensory experience of hearing that makes the perception of music possible. The ability for individuals to use their hearing for the purpose of listening varies. Good hearing does not necessarily insure skilled listening and, conversely, poor

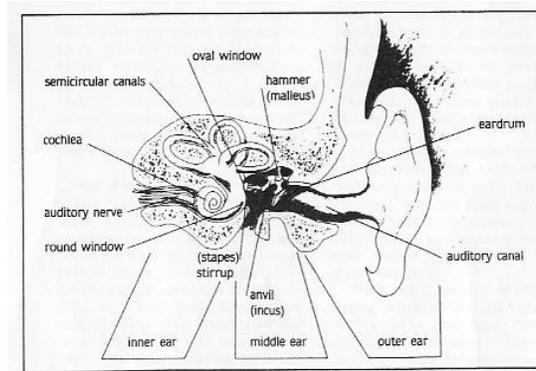
hearing does not indicate an inability to listen. While good hearing is not completely dependent on one's ability to listen well, hearing does play a significant role in the perception of music (Darrow, 1990). Listening is a mental process; the act of hearing is a physical one. Understanding the physical act of hearing can offer insight into the human potential for the capacity to listen and, ultimately, to understand. Examination of the components of the aural process can provide general guidelines for structuring and sequencing listening experiences. Sound consists of vibrations that travel in waves, generally through air. Sound waves travel at different rates of speed; the faster the waves travel the higher the pitch. Frequency is the measured number of vibrations per second and is represented in hertz (Lipscomb & Hodges, 1996). Pitch is a subjective judgment, while frequency is the physical reality of the speed of the sound wave. Normal hearing range is 20-20,000 Hz. Intensity of sound is the amount of energy within a sound wave. Intensity can be measured quantitatively in decibels, but loudness is a subjective measurement of sound. Intensity is measured in decibels (dB). Zero decibels are the quietest sound. Sound that exceeds 120 decibels can cause pain (Lipscomb & Hodges, 1996). Common decibel ranges are presented in the chart below.

Figure 2.1 Common Decibel Levels

Decibel Levels	Sound Source	Musical Level
0dB	just audible sound	
30dB	soft whisper	background music
50dB	normal conversation	mp
60dB	loud conversation	mf
80dB	shouting	f
90dB	shouting	marching band

The ear is divided into three parts: outer, middle and inner ear. (See figure below)

Figure 2.2 The Ear



Sound waves enter the external canal of the outer ear, strike the eardrum and cause the eardrum to vibrate. The vibrations from the eardrum reach the three bones of the middle ear, the malleus, incus and stapes. These bones carry the sound waves across the middle ear to the inner ear. Within the inner ear are the semicircular canals and the cochlea. The semicircular canals are filled with fluid and lined with hairs and are responsible for balance and equilibrium. The cochlea is involved in hearing. Within the cochlea lies the Organ of Corti which is covered with many fine hairs. Sounds of different frequencies affect hair cells at different locations. The thinner, shorter hairs, near the opening of the Organ of Corti, respond to high sounds. The thicker, longer hairs, farthest from the opening, pick up low sounds. Intensity is determined primarily by how many hair cells are affected. The more hairs that are made to vibrate by a sound wave the louder the sound is perceived. The auditory nerve then receives impulses from these hairs and carries it to the hearing center (auditory cortex) within the brain. Once the brain assumes control of the process, hearing becomes listening.

Processing of Sound During Listening

The brain is responsible for the levels of discrimination that we make during listening. Training the brain to listen requires several elements: analysis of the desired auditory task, the structuring of successive approximations to the desired goal, and regular and systematic evaluation of auditory level. According to Norman P. Erber and

Ira J. Hirsh (1978), auditory tasks can be broken into four basic levels of aural processing: (Erber & Hirsh, 1978).

1. Detection, in which the listener determines the presence or absence of specified sound stimuli.
2. Discrimination, in which the listener perceives differences in sound stimuli such as loud and soft or high and low.
3. Identification, in which the listener appropriately applies labels to the sounds
4. Comprehension, in which the listener makes critical judgments regarding the sound stimuli.

There are a number of other listening behaviors that can be subsumed within the four basic levels of the auditory processing mentioned above. In 1977, Derek Sanders developed a hierarchy of auditory processing for speech. Since both speech and music have similar properties, Sanders' hierarchy can be applied to music. The following is that hierarchy with reference to application in music:

1. Awareness of acoustic stimuli.
2. Localization: Can the listener identify the location of the sound source?
3. Attention: Can the listener attend to music over time?
4. Discrimination between speech and non speech or chant and melody.
5. Auditory discrimination: Can the listener discriminate between the timbres of different instruments; can he or she locate the entrance and exit of specific instruments within the total music context?
6. Suprasegmental discrimination: can the listener make discriminations about the expressive qualities of the music?
7. Segmental discrimination: can the listener make discriminations about pitch?
8. Auditory memories: can the listener remember what instruments were heard?
9. Auditory sequential memory: can the listener remember in what order instruments were heard?
10. Auditory syntheses: can the listener make critical judgments regarding form, texture and harmony?

According to Sanders (1977), suprasegmental discrimination is defined as discrimination on a large scale of such things as texture, form and expressive elements and segmental

discrimination is defined as discrimination of musical cues such as pitch. Sanders, along with the other research, suggest that there are steps to listening and the process of listening. This lends itself to what takes place during a listening activity in a music education class such as the one used for this research. Students begin with an awareness of acoustic stimuli and work their way through the hierarchy to achieve auditory memory. Students are presented with a new musical piece to listen to and they are directed as to what to listen for. Students make discriminations whether there are voices or instrumental only, then different timbres, instrumentation and entrances and exits of instruments. After students have made discriminations on timbre and instrumentation, students then make critical decisions on expressive qualities.

Listening for Understanding

Once the hearing process involves mental processing, hearing becomes listening. Successful listening is an active process that enhances understanding of the sound. Listening is temporal because it involves making sense of information that is never all presented at the same time. Understanding of aural events depends on what a listener retains in a continuous moving stream of information (Elliott, D. J. 1995). Processes involved in listening to music include sensory transduction, auditory grouping, analysis of auditory properties and features, and matching immediate sonic events with an auditory lexicon of previously experienced sounds (McAdams, S. 1993). For a listener to deduce meaning and understanding from music, the music must create a meaningful connection to that listener. Elliott (1995) points out that listening to music is analogous to constructing a moving jigsaw puzzle. Listeners do not simply listen from wholes-to-parts or parts-to-wholes because auditory parts and wholes coalesce (p.84). Green (1988) describes the experience of listening to music as the result of the interaction between our perceptions of the inherent meaning of sound (structural elements) and the degree to which the sounds delineate themselves as sounds which are meaningful to us. This would suggest that for listening to be active and successful, the musical sounds must be familiar in some ways and must be associative with meaningful representation. In other words, the sounds must have familiar timbres or instrument sounds and those sounds must match our socially defined concepts about music.

A person who has experienced many ways of organizing particular types of stimuli is at an advantage when confronted by unfamiliar materials that need organization (Tait and Haack, 1984). The importance of segmentation in music cognition has been emphasized in several models of music perception including that of Lerdahl & Jackendoff (1983) and empirical studies by Krumhansl (1996). Listeners regularly exploit melodic cues to recognize and to distinguish between different pieces of music (Rosner & Meyer, 1986). It has also been suggested that anchoring can be effective for the listening experience. Anchoring, as shown in research by Povel and Jansen (2001), appears to be a powerful tool for tracing perceptual mechanisms at work in the on-line processing of music. Anchoring, as was first described by Bharucha (1994), links unstable tones to stable tones and gives the listener something to focus on within the melodic structure. Musical experience is meaningful for the listener when the listener is able to employ information that is familiar to glean understanding. Listening is not a passive process; there is a difference between simple reception and active construction. Certain cognitive abilities must be used in order to perceive the sound signals by the ear and interpret them as music. Acoustical properties of music are organized by the mind and then associations and connections are made (Mullee, 1996). This information would suggest that carefully planned listening experiences may lead to a mode of attending that is both different and more fulfilling than the free associational thinking that listening to music so often involves. It is possible to increase the likelihood of people actually engaging in works of art, moving inside of them through acts of imagination, and perceiving them against their own personal histories as meaningful (Greene, 1986).

Choosing appropriate features for which to listen must be considered. When we listen to music we actively select salient features from the stream of musical sounds, focusing our attention one minute on one part of the sound environment and the next moment on another. Attentional focus is guided by knowledge structures, or schemata, developed through past experience (Dowling, W.J, & Harwood, D. W,1986. and Neisser U. 1976). Listeners focus on what is recognizable first, relying on what they have learned or developed in the past before moving to the new or unrecognizable. Because listeners seek out salient features that are recognizable it is important to consider what musical elements should be the focus in this study.

For this research the following musical elements will receive focus during listening activities: melodic contour, texture, beat structure, articulation rhythm and instrumentation. Research indicates that listeners' mental representations of novel melodies contain contour information but relatively little information about absolute pitch or exact interval size (Dowling, W. J. 1994). Dowling also states that listeners make errors about interval and absolute pitch of novel melodies soon after they are presented. By contrast, listeners retain contour information for longer periods of time. This would indicate that students would be more successful listening for melodic contour rather than direct melodies. With regard to instrumentation, Rentz (1992) suggests that non-musicians pay less attention to tone colors of strings while selecting the more obvious tone color of brass, percussion and woodwind instruments. For this study, music was chosen to reflect Rentz's research. Beat structure, articulation and texture were chosen based on the model by Sanders (1977). Sanders suggests that the use of suprasegmental discrimination and segmental discrimination allows the listener to pick out global concepts such as form and musical elements such as texture. He also suggests that the highest level in his hierarchy would allow the listener to make critical judgments regarding form and texture.

Listening Lesson Approaches

Carefully planned listening experiences may lead to a mode of attending that is both different and more fulfilling than the reverie and free association thinking that casual listening to music so often involves. Often, these planned listening experiences are organized by following listening guides. The purpose of a listening guide is to focus specifically on what to listen for in music. Strategies for planned listening experiences include presenting a systematic method of music analysis, examining musical styles and treatment of musical structure during different chronological periods, and exploring different forms of music. Some of these approaches include *The Experience of Music* (Reimer, 1972). The book explores the creative process of music, examining the aesthetic sensibilities of the composer, the performer and the listener. Reimer also discusses music by categorizing the structural elements: Rhythm, Harmony, Melody, Tone Color, and Form. Reimer has also created a set of listening lessons to accompany

his 1972 text, *Developing the Experience of Music: Listening Charts* (1973). This text lays out a concise plan for teaching students to listen by dividing lessons by musical element. The listening charts are designed to focus on one musical element at a time. For example, there are eight listening lessons that focus on form with different musical examples for each. *A Concise Introduction to Music Listening* (Hoffer, 1979) suggests a different approach that is more segmented into basic elements, musical form, and musical types, western and nonwestern. Chapters are not laid out by musical element; instead the text is laid out to follow an order of what students should know to be able to listen effectively. Chapters include instruction on how music is written down, how to classify a piece of music and instructions on how to listen.

Each text and listening guide is concerned with changing the listener's perception and origination of various elements in music. Both of these texts offer a great deal of information, but for listeners who are not knowledgeable in music and who may not be familiar with what they are listening for, these guides may be overwhelming or discouraging to a listener. The approach favored by this researcher is to promote listening skills by using materials familiar to the listeners in a multi-sensory setting.

Aesthetic Education Through Listening

The ability to detect aesthetic form (the arrangement of elements that attracts, holds and directs the interest of the listener) is at the heart of music education (Broudy, 1958). This ability is needed to be successful at any musical skill, listening included. Schwadron (1967) states that meaning in music is connected with the uniqueness of the organization and control of sound, notated by symbols and characterized by the relationships of music to the human senses and intellect. Music combines formal elements such as melody, harmony, rhythm, and timbre into aesthetically patterned sounds that have symbolic meaning in a culture of a society and its individuals (Mullee, 1996). The quality of a musical experience depends upon the type of connection that occurs between the perception of musical stimuli and the responses to musical stimuli. Sound emotion is a single musical concept and cultural associations are related in listening to a performance (Masterson, 1994). Green (1988) describes musical experience as a result of the interaction between our perception of the inherent meaning

of sound and the degree to which these sounds delineate themselves as sounds which are meaningful to us. In other words, do they match our socially defined concepts about music? This is particularly relevant in listening situations which present music to which that the listener is unaccustomed.

In experiencing the combination of inherent and delineated meaning of an unfamiliar musical experience, the capacity to actively engage in musical situations gains insight into one's self (musical or otherwise) and into the relationship of one's self to one's own and other musical cultures. Accompanying all such risk-taking, disorientation and eventual musical acculturation is self-examination and the personal reconstruction of one's relationships, assumptions and performances (Elliott, 1990).

The active contribution that listeners make in the aesthetic situation should not be underestimated. Levinson (1990) states that we can feel emotion and recognize its expression in the structure of tones in music. Both the emotion and musical structures reference one another to heighten the expressiveness of the musical focus. Even strictly formalist theories recognize that art, specifically music, is never self contained. Roger Fry (1920) admits that art causes emotional responses based on our physical and psychological traits. Although the basis for awareness in humans lies in the perception of the senses, the scope of aesthetic experiences requires us to expand the definition of perception to include the realms of imagination, fantasy, memory and dreams. This type of inclusion of the perceptual experience is central to music and all of the arts. Dowling and Harwood (1986) have found that listeners find it quite natural to attach general emotional labels to pieces of music.

Dewey (1958) recognized the concept of total organic involvement in art - the biological, the constant rhythm that marks the interaction of the live creature with his surroundings (p. 15). This underlies his philosophy of experience including art:

It is proof that man uses the materials and energies of nature with intent to expand his own life and he does so in accord with the structure of his own organism- brain, sense-organs and muscular system. Art is the living and concrete proof that man is capable of restoring consciously and thus on the plane of meaning, the union of sense, need, impulse and action

characteristic of the live creature. The intervention of consciousness adds regulation, power of selection and predisposition (p.25).

Suzanne Langer (1957) maintains that art possesses the form of living things and that artistic forms are symbolic of human feeling. Art embodies the form of experience-what life feels like. She makes the distinction between discursive forms of symbolization which communicate meanings in an unambiguous manner and presentational symbols such as those used in the arts which communicate metaphorically, where the symbol or symbols must be seen “as a whole” rather than divided into individual meanings.

Berleant (1991), advocating a participatory aesthetic, emphasizes replacing disinterestedness with engagement and contemplation with participation. He outlines the four principal aspects of the aesthetic situation: the creative, the objective, the appreciative and the performative. In his view, “music exemplifies the creative aspect of perception; the composer’s activity in generating musical materials that is paralleled by both the performer and the listener” (p.5). Music as a performing art is unique in that it exists in time and needs to be recreated by both performers and listeners. Clarke (1989) recognizes this, stating that musical events and the way in which they are performed, perceived and created by performer and listeners give greater recognition to the natural relationship that characterizes an organism and its environment.

All of these views of aesthetic experience share commonalities in that they reflect an enlarging of aesthetic experience beyond a particular act of consciousness or disinterested contemplation of a separate aesthetic object. It is the capacity to respond to these properties that concerns us as educators. How does one change perception or understanding of deeper intrinsic meaning? How does a teacher facilitate receptivity?

A place to start is with philosophers such as Langer and Goodman, who have both written extensively on symbolization. Goodman (1968) continues Langer’s line of thinking regarding the difference between discursive and presentational symbol systems. He examines the psychological and educational implications of different kinds of symbolic competencies:

“Once the arts and sciences are seen to involve working with- inventing, applying, reading, transforming, manipulating, - symbol systems that

agree and differ in certain specific ways, we can perhaps undertake pointed psychological investigations of how the pertinent skills inhibit or enhance one another; and the outcome might well call for changes in educational technology” (p.265).

Goodman (1968) calls attention to a range of symbolic codes such as language, gesture, and musical notation. Human artistry is viewed as an activity of the mind, an activity that involves the use and transformation of various symbols and symbol systems. Individuals who wish to participate meaningfully in artistic perception must learn to decode the various artistic symbols in their culture; individuals who wish to participate in artistic creation must learn how to manipulate those symbols. Just as one cannot assume that in the absence of help and support individuals will learn to read and write in their natural language, one can assume that individuals can benefit from assistance in learning to “read” and “write” in the various languages of the arts (Gardner, 1990, p.9). That being said, a music program must address this and students must learn to understand the symbols presented during a listening experience. Information is presented during the performance of a piece of music and students should have the tools needed to participate meaningfully.

The task in music education has been to discover truths about music, musical behavior, and cognitive and affective links so that the aesthetic experience might be identified, pursued and developed in the proper educational setting (Schwadron, 1984, p.17). Broudy (1958) maintains that the place of music in a specific curriculum should be based on aesthetic considerations. Leonhard and House (1972) also write that the primary purpose of music education is to develop the aesthetic potential possessed by every person to its highest level. They believe aesthetic education satisfies our basic need for symbolic experience and provides a means for self-realization and insight (p.115). Reimer (1989) has constructed teaching models supporting his view that insights from aesthetics, when incorporated with the expertise of musicians and educators, can help articulate the values of the music experience and, specifically, listening.

Bowman (1969) calls for an aesthetic-based type of musical listening instruction. He writes, “to engage in criticism as instructional method is to guide students away from

snap judgments, to direct them toward preferences grounded in closely scrutinized value systems undergirded by the fullest possible musical awareness, to foster ultimate sensitivity for the considered views of others and a willingness to entertain alternative perspectives and to develop a tolerance for variousness and difficulty” (p.12). Reimer (1993) states that “music education must concern itself with both the diversity and depth of quality of the musical experience” (p.21). “Music is a universal, human phenomenon, yet at the same time, is a manifestation of a particular cultural belief system about how sound should properly be made into music” (p. 24).

The position of many music education theorists is consistent with the position set forth by the Getty Foundation and the National Endowment for the Arts: arts education should include history, aesthetics and criticism, in addition to performance or production. Unfortunately, emphasis in many music programs is almost entirely performance-based, an emphasis that has generated support from parents and administrators (Leonhard, 1991p.203). Performance programs have done great things for both the profession and the students involved in them. However, general music programs, despite the profession recommendations, have not fared as well. “Many college students claim to have missed out on having music available to them in elementary school and others regret not having taken some music course beyond elementary school” (Drago, 1993 p. 40). Bresler (1993) argues that the goals of music education are agreed upon, yet there exists a gap between desired and actual outcomes. Although perception is the basis of musical experience (Campbell, 1991, p35), the average listener receives no instruction in categorizing musical phenomena. Most music is listened to and filtered through self-created and often biased categories (Cutietta, 1993, p.52).

The literature regarding aesthetics in music education suggests that music educators and administrators seem to agree that the development of listening skills should rank highly as a concept in a music curriculum and that understanding what one listens to is valuable to developing abilities for listening. Active listening is something most people are capable of learning yet it does not receive the focus or attention due to a variety of reasons, including time and budgetary constraints. Because of these constraints, it is all the more important to teach general educators how to listen and how to teach listening effectively.

Listeners with Different Learning Styles

People learn in different ways. In order to have a better understanding of how people learn it is valuable to look at the process by which people learn and the mode people use to learn most effectively. Learning style theory has its roots in the psychoanalytic community (Silver, Strong and Perini, 1997). Carl Jung (1927) was the father of learning style theory in that he noted the differences in the way students perceived, made decisions and interacted, and how active or reflective they were while interacting. Katherine Briggs and Isabel Meyers (1977) created the Myers-Briggs Type Indicator, applied Jung's work and influenced 25 years of research in this area. Educators have become aware of the research of cognitive and educational psychologists in the area of individual differences and learning styles. The research of these psychologists in the area of learning styles, following the lead of Jung and Myers and Briggs, includes that by Grasha and Reichmann, (1975); Hill, (1976); Dunn and Dunn, (1978); Kolb, (1981); Gregorc, (1982); Silver and Hanson, (1995). Although theories in learning style interpret the personality in different ways, nearly all models have two things in common: a focus on process and an emphasis on personality (Silver, Strong & Perini, 1997). Each of these theories provides educators with additional insights into how to work with a diverse population of learners.

Learning styles are broadly described as cognitive, affective and physiological traits that are relatively stable indicators of how learners perceive, interact with and respond to the learning environment (Keefe, 1979). More specifically, style refers to a pervasive quality in the learning strategies or the learning behavior of an individual, "a quality that persists though content may change" (Fischer and Fischer, 1979, p. 245). Learning style can also be defined as a biological developmental set of personal characteristics that make the identical instruction effective for some students and ineffective for others (Dunn and Dunn, 1993). Awareness of these different learning strengths allows educators to customize lessons and presentations using multiple modalities.

Research with secondary education students shows that teaching should address all types of learning styles and use multi-sensory instructional materials, thus providing

resources and alternatives to assist students in gaining mastery of the curriculum (Park, 2000). This research would suggest that given how adults process learning, using a multi-sensory approach to a concept would be more effective than using one mode of teaching and one learning style.

Humans are typically visually oriented and the retention of information presented in a visual form usually exceeds retention of information presented verbally (Levie & Lentz, 1982). Being visually oriented however is typically not enough. Students should have Visual Literacy, the ability to interpret visual messages accurately along with the ability to create such messages (Rakes & Rakes, 1995). Research suggests that the appropriate use of relevant visuals can enhance recall and understanding of material, increase interest and motivation, and promote critical thinking (Blatnik, 1988, Pressley and Miller, 1987 and Issing et al, 1989). Many studies demonstrate that visual learning can positively affect cognitive process such as recall and problem solving (Anglin, 1986; Ritchey, 1982; Yang and Wedman, 1993). Combining one or more learning style also enhances learning. A breadth of processing occurs when identical content is used in two different forms. This then can lead to better memory because understanding of one form is likely to improve understanding through the other form (Craik & Tulving, 1975). Using more than one sensory modality and instructional materials with dual mode presentation, (e.g. visual diagram accompanied by an auditory text) can be more efficient than the equivalent single modality formats (Kalyuga, S, Chandler, P & Sweller, J, 2000). Also, the amount of information that can be processed using both auditory and visual channels can be considerably larger than that using only a single channel (Kalyuga, S, Chandler, P & Sweller, J, 2000). Therefore, it can be assumed that a treatment that actively used both visual and auditory modes for learning a concept would be effective for more learners. It also suggests that using two learning modalities allows the learner to use a representation that may not directly explain a concept but in some way enhances it. A picture that does not directly explain a concept can provide a visual representation in memory to which the student can link supporting ideas (McDaneil & Pressley, 1987). This would lend itself well to using visual art to assist students in listening concepts of musical compositions. For this research, the listening lessons will employ two modalities, the visual and the aural modalities.

Differences Among Listeners

Previous research findings indicate that listeners use different strategies in listening. Since the subjects for this study are adults and musically untrained, it is important to understand how they listen. In regard to the manner in which non-musicians learn to listen, Madsen and Geringer (1990) indicated that musicians attend to listening significantly differently than non-musicians. Musicians spend most of their time attending to melody first, followed by rhythm, dynamics, and timbre, respectively. Non-musicians spend the majority of their time focusing on dynamics, followed by melody, timbre, and rhythm, respectively. Blocher (1990), however, found no significant differences in the ability of musicians and non-musicians to attend to errors in articulation, rhythm, phrasing, intonation, dynamics or note accuracy. Geringer and Madsen (1995), in a study where the subjects were asked to note the prominence of musical elements after they listened to a musical excerpt, found that musicians and non-musicians had different listening patterns. Musicians listed timbre more frequently than non-musicians did. A study by Wolpert (2000) showed that non-musicians did not hear the difference in key or dissonance as well as musicians did. In that study, musicians heard the difference in key 100% of the time whereas non-musicians heard it only 40% of the time. Deutsch (1982) suggests that in recognizing a segment of music, we employ global as well as specific cues, such as overall pitch range and distribution of interval sizes, among others, so that melodies can be identified by their specific cues as a whole. Earlier research results by Madsen (1987) and, Madsen and Wolf, (1979) suggest that people attend to whatever they believe they should be attending to. This implies that non-musicians can be directed to listen for specific ideas in sound.

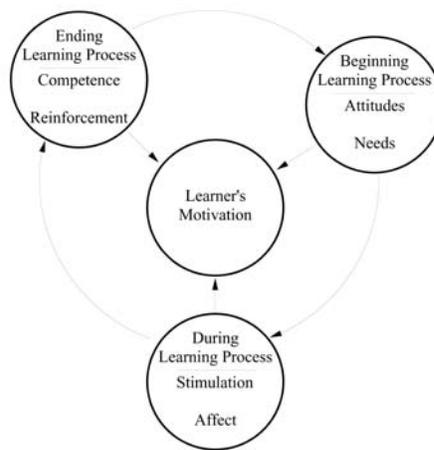
Another consideration is the manner in which adults learn. The adult learner has specific needs and expectations which differ greatly from elementary and secondary school students. Lindeman introduced the pragmatic nature of adult learning in 1926 when he wrote that the approach to adult education should be focused on the situation rather than the subject. Tough (1979) found that many adults start a learning project because they anticipate using knowledge in a concrete way, strong motivation to gain and retain knowledge that will produce some lasting change. Similarly, Scheckley (1983)

found that immediate knowledge was the reason most adults begin learning projects. Literature on adult teaching strategies suggests the development of short, intensive learning experiences with direct applications to the adult students' lives (Wratcher and Jones, 1988; Pomerance, 1991). Thus, lessons for adults should be interactive, well managed with regard to time, and most of all, practical with regard to future use. This would suggest that the present study should attend to adult's learning needs. The lessons should be relevant, intensive, and short in nature.

Motivation for Listening

Wlodkoski's (1985) Time Continuum Model of Motivation focuses on the internal motivation of adults. Wlodkowski defines this as "a condition expressed by the individual as an internal force that leads the person to move in the direction of the goal" (p. 17). He believes that the motivation to learn is internal and depends on the students' needs and expectations at a given time in the learning process. This model has been applied successfully in research by Mullee (1996) and would serve well as a basis for the present study.

Figure 2.3 Wlodkoski's Time Continuum Model for Motivation



The model consists of three time frames in the learning process: beginning, duration and end. For each time frame there are two major factors of motivation present. The beginning motivation is mostly effected by the learners' attitudes towards the general learning environment, instructor subject matter, self, and the basic needs of the learner at the onset of learning. During the learning process, motivation is influenced by the stimulation and interest of the learner and the affective experience that learning provides. At the end, the learner is able to apply new skills and become aware of new knowledge, thereby feeling competent.

At the beginning of the process, the instructor needs to create a positive, comfortable learning atmosphere to establish positive learner attitudes. Wodolwski goes on to write that the beginning time frame is a critical period in determining the way learners respond to and feel about what they are experiencing. At the same time that attitude is being established and supported, the instructor should also attempt to maintain learner attention and build learner interests. To insure a positive affective experience and emotional climate, learners need from the instructor encouragement and assistance that integrate their emotions within the learning process, methods and strategies that emphasizes cooperation and maximize learner involvement, and sharing that contributes to a supportive environment. Finally, the instructor should acknowledge the positive changes that learning has produced and affirm and continue motivation for application and future learning.

Part Two

On Visual Stimuli

Visual Stimuli and Instruction

Research in learning style shows that individuals utilize different types of stimuli, auditory, visual, tactile and kinesthetic, to enhance learning. One of those stimuli is visual, or using the sense of sight. Visual learning represents a particular form of human achievement, one that includes the ability to notice what is visually subtle and use it in ways that are personally meaningful (Eisner, E. 1998). Eisner also goes on to state that visual learning pertains not only to our capacity to construe meaning from the visual forms around us but to our capacity to create connections of visual stimuli with other forms of stimuli including auditory stimuli. Apart from listening to auditory stimuli, in the form of lecture and verbal instruction, visual stimuli are used extensively in instruction in the form of charts, pictures, diagrams and video imaging. The visual stimulus is then processed into a meaningful representation for the individual enhancing what he or she is learning. Research indicates that the amount of information that can be processed using both auditory and visual channels may be considerably larger than information processed using a single channel (Kalyuga, Chandler, and Sweller, 2000). Studies, including those by Anglin (1986), Ritchey (1982) and Yang & Weidman (1993), demonstrate that visual learning can positively affect cognitive processes such as recall and problem solving. The appropriate use of visuals can enhance recall and understanding of material, increase motivation, and promote critical thinking (Blatnik, 1998; Levie and Lentz, 1982; Levie 1987; and Peeck 1987). The manner in which information is presented visually can make a significant difference, especially for students who have difficulty in one or more perception areas (Dickey, J.P. & Hendricks, R.C 1991). It is noteworthy that the visual does not have to directly explain a concept in order to provide a link for the memory process. In *Imagery and Related Mnemonic Devices* by McDaniel and Pressley (1987), the authors point out numerous examples of how visual stimuli do not have to be a complete one-to-one relationship with the particular concept or event to be effective in creating a memory link.

Since the use of visual stimuli can affect memory and thus learning, the use of visual stimuli should be made to enhance the music learning as well. The use of visual-spatial stimuli to reinforce auditory discrimination has been incorporated in some popular approaches to music teaching such as the Orff or Kodaly approaches. These approaches make use of graphic representation of sound prior to learning musical notation and they meet with strong endorsements from theorists and practitioners alike (Boardman, E., 2001; Boardman & Andress, B., 1981, and Nye R.E. & Nye V.T., 1977). In fact, research has been conducted using visual stimuli and music to indicate positive relationships. Results of a study by Forsythe, J.C. & Kelly, M.M. (1989) suggest that the use of visual cues paired with melodies is an effective aid to aural discrimination among fourth grade subjects. In this study, 30 brief melodies were paired with visual cues in the form of hand cues. There was a significant difference in identifying melodies between those students who received visual cues and those students who did not. Other studies have also shown positive results pairing visual and aural modalities. Olson (1978, 1981) conducted several studies concerned with the perception of melodic contour in visual and aural modes. Subjects were asked to determine whether visual and aural stimuli presented matched and although research proved not to be significant it did suggest that aural and visual stimuli could be paired temporally. Hair (1993) showed that children were able to articulate descriptions of music when they were allowed to use drawn representations or symbols and icons. Hair (1995) also showed that color was effective when asking both adults and children to associate color to mood and a musical composition.

While visual art is expressed in space and music is expressed through time, and each is unique as an art form, music and art do have common linkage. Both evoke human feelings and both rely on the concept of unity and contrast for expression. Specifically, it is the structure that makes it possible to correlate art and musical stimuli. Goldberg, and Schrack, (1986) stated that the correlation of musical and visual structures is a theoretical discipline to be worked out creatively, similar to counterpoint or common practice harmony. It involves studying the basic concepts common to both visual and musical arts such as line, texture, rhythm and color and analyzing works of artists like Kupka, Kandinsky and Klee who have developed ideas of correlation. Limbert and

Polzella (1998) showed that listening to matching music while viewing paintings apparently intensified the listening experience. Haack (1970) showed that the use of visual exemplars was found to enhance the development of the desired musical concepts significantly and to bring about a definite improvement in related art viewing skills. Stravinsky and Scriabin possessed skills of color hearing and their compositions express richness in timbre. Scriabin assigned each pitch a direct color through chordal complexities and according to some sources, he deduced the full cycle from his spontaneous recognition of C=red, D=yellow and F#= Blue (Shaw-Miller, 2002). Composers are not the only artistic individuals to have chromosthesis. It is documented that Kandinsky also had this trait and painted to express colors in sound (Maur, 1999). Not only did Kandinsky have chromosthesis but he related art to music in a direct way. He wrote, “Color is the keyboard, the eye is the hammer, the soul the piano. The artist is the hand that purposefully sets the vibrating by means of this or that key” (Lindsay & Vergo, 1982).

Studies using music to enhance art skills have also been conducted. Limbert M. and Polzella (1998) clearly showed that the music affects the artistically naive listeners while viewing representational and abstract paintings in their perceptions of the paintings. All of the above information gives validity to using visual stimuli in music instruction. This research attempts to study the effects of paintings on a subject’s ability to listen and recall musical elements.

Historical Connection Between Visual Art and Music

Music and art have been intertwined and compared since early times. In the early 17th century, in his *Critical Reflections on Poetry and Painting* (1715), the Abbe Dubos claimed that “Just as paintings represent the forms and colors of nature, so does music represent the tones, the accents, the sighs, the modulations of the voice, in short all of the sounds through which nature itself expresses the feelings and passions...”. Another early analogy between painting and music appeared in 1762 in Giovanni Bellori’s *Lives of Modern Painters, Sculptors and Architects*. Describing Lanfranco’s ceiling decoration at St. Andrea dell Valle in Rome, Bellori wrote, “ This painting has been rightly compared to full-bodied music, in which all the tones come together to form a harmony.” In 1849,

Thomas Purdie published a book entitled *Form and Sound: Can their beauty be dependent on the same physical laws?* Purdie sought to demonstrate that visual artistic beauty was universally based on mathematical ratios, manifested in music as the harmonic ratios of vibrating strings (Scheuller, H. M. 1953). From this comparison and relationship, composers and painters alike have been influenced and created art based on the other art form. Sometimes the connections can be loose and vague, other times more intertwined.

Visual artists in the 1800's explored expressing specific musical elements or musical form. By the end of the nineteenth century, music and art were trading key ideas back and forth. In 1853, John Ruskin stated, "We are to remember that the arrangement of colors and lines is an art analogous to the composition of music." (Kagan, 1986). A prime instance is Claude Debussy's seemingly impressionistic technique of "stippled notes". His suppression of the principle musical development through time in favor of juxtaposed fields of contrasting tone color was also used in visual arts of the same time period. By the 1890's, musical elements in paintings often went hand in hand with an allegorical symbolism. In Gustav Klimt's *Music*, a sphinx stands for the infallible nature of music (Maur, K. 1999). Klimt also translated the hymn from Beethoven's 9th Symphony "*Fruede Schoner Gotterfunken Diesen Kuss der gazen Welt*" into visual allegory (Willsdon, 1996). Another example of allegory and imagery used to cross the visual and the music world is the work of Mendelssohn. Mendelssohn used visual imagery to express his music, including *Hebrides* and his *Symphony Number 2, the Italian* (Grey, T. 1997).

In addition to allegorical and imagery representation, composers and painters alike have frequently gleaned ideas from or borrowed from procedures in sibling arts. The reciprocal relationship runs like a thread throughout the 19th and 20th century. Using similar symbolic information is one example of this. Leitmotif has the status of symbol, which is often subjected to patternization, variation, development or metamorphoses. With the concept of patterns as a basis, it is possible to employ a visual pattern that is symbolic of meaning that works in the same manner as the leitmotif (Goldberg & Schrack, 1986). The romantics envisaged breaking down the barriers between the various genres to create a *Gesamtkunstwerk*, a total, comprehensive, or what today would

be termed a multimedia or interdisciplinary work of art. In this, music was granted a leading role (Maur, K. 1999). Phillip Otto Runge saw in music the common primordial source of all the arts and a guarantor of beauty. He discovered the possibility of a figurative painting, his *Lesson of the Nightingale*, on the basis of the fugal principle of imitation.

Art in Music Education

Art is found in education, both within and outside the music classroom. Outside the music classroom art has been used in courses such as English and History. Erickson (1995) found that students in history classes were able to incorporate knowledge of individual artists and develop a historical perspective as they looked at artworks. In each of these examples, art is used to enhance the learning in other disciplines either as allegorical, symbolic or direct representation. As in music, art is used in history texts to reinforce time periods as well as to depict historical scenes and events.

Music educators often advocate a multi-sensory approach to learning, particularly as a way of accommodating individual differences among learners. Using multi-sensory approach brings excitement in learning of all subjects for both teachers as well as students (Wang & Sogin, 1998,1998,1991). Music curriculum text books use art to reinforce musical elements, addressing the needs of visual learners. Examples of integration of art in music lessons are found in the most recent and popular texts including *Making Music* (2002), *Share the Music* (1995) and *Music Connection* (1995). In all three of these text series, art works are used to reinforce music concepts including timbre, theme and variation, and musical imagery. At the secondary and collegiate level, music history texts such as *History of Western Music* by K M. Stolba use art works to emphasize historical period and to reinforce the relationship between the art and music of a given time period.

Application of Gestalt Principles in Art and Music

Gestalt theory is a broadly interdisciplinary general theory which provides a framework for a wide variety of psychological phenomena, processes, and applications. Human beings are viewed as open systems in active interaction with their environment.

It is especially suited for the understanding of order and structure in psychological events and has its origins in some orientations of Johann Wolfgang von Goethe, Ernst Mach, and particularly of Christian von Ehrenfels and the research work of Max Wertheimer, Wolfgang Köhler, Kurt Koffka, and Kurt Lewin (Gordon 1989). According to Keith Swanick, Gestalt psychology is “the organization of sensory information into meaningful wholes based on prior experience” (1988). The sensory information is then grouped by one of four ways: Proximity, Similarity, Common Direction or Simplicity. These four make up the following four laws: 1.) The law of proximity: Elements are grouped according to nearness in space or time; 2.) The law of similarity: Objects or events are grouped with “same” attributes, such as timbre, color or shape; 3.) The law of common direction: Elements are grouped according to their extrapolated completion; 4.) The law of simplicity: Information is grouped with a preference for smoothness, symmetry and regularity (Radocy, R & Boyle, J., 1988). The principles of Gestalt provide the basis for learners to discover the underlying nature of a topic or problem (i.e., the relationship among the elements). Gaps, incongruities or disturbances are an important stimulus for learning and instruction should be based upon the laws of organization: proximity, closure, similarity and simplicity.

These four laws and principles of Gestalt are often applied in the visual realm or to separate theories of visual perception. The visual realm in and out of art has relied on the principles of Gestalt to support its work. Visual perception is the bedrock on which many ideas inevitably build their foundation (Kepes, G. 1965). The use of imagery and visual thinking processes are primary ways of exploring, expressing and communicating the known and imagined properties of a system, theory or general phenomenon (Arnheim, 1954, 1974). Visual ways of thinking and learning move across, between and through disciplinary commitments. This connection through vision creates a kind of convergence that defines contemporary views of interdisciplinary areas. Vision is a natural connecting force that can reestablish relationships that have been obscured by arbitrary divisions (Klein, 1990). The Gestalt principles of similarity, continuity, proximity and closure are the primary factors and forces that create and emphasize visual units, groupings and organized wholes within a given perceptual setting. The degree of visual order or disorder perceived within a setting is dependent to a large degree on the

recognition, interpretation and communication of these unifying principles (Wenger, 1997). Gestalt is part of a language of vision present in the simplest forms of mark making as well as the complex configurations found in a work of art. In art, a unified entity or whole can be a singular composition or individual graphic elements that make up the totality of a creative work.

Since both art and music can be analyzed by studying the underlying structure, the Gestalt principles can be applied to both visual and auditory stimuli. Musicians have not researched extensively the use of the principles of Gestalt with auditory stimuli, however some studies do exist. As early as 1890, Ehrenfels introduced the concept of *Gestaltqualität*. This concept was explained using a musical example. “When we hear a tune, the experience of the tune itself (the *gestaltqualität*) is something more than the aggregate of the notes. It is not reducible to individual notes and is not an adding together of simple sensations. For example, the last three notes of ‘God Save the Queen’ are the same as the first three notes of ‘Three Blind Mice’.” (Gordon, 1989, p.55). Even Leonard Meyer, who subscribes to the theory of an emotional response to music, argues that the work of Gestalt Psychologists has shown beyond a doubt that understanding is not a matter of perceiving single stimuli, or simple sound combinations in isolation, but is rather a matter of grouping stimuli into patterns and relating these patterns to one another. (1956, p. 6). Meyer goes on to explain that the mind in its selection and organization of discrete stimuli into figures and groupings appears to obey certain general laws, including the Law of Good Continuation. He points out that the general laws that the mind follows to group items operates within a socio-cultural context. It can be inferred from this that listeners use this Gestalt Law to listen to music that has characteristics that are identifiable within a particular socio-cultural context. This would help to support why people listen for the familiar before moving on to the unfamiliar.

In support of Contour, Dowling (1994) explains the role of Gestalt Principles in contour. He states that a melody is very much an integrated whole, a Gestalt. He points out that the tonal context affects memory for contour and that contour interacts with both tonality and rhythm in perception and memory. In his *Auditory Scene Analysis*, Bregman (1990) describes a range of perceptual processes that enable us to construct an auditory picture of the environment and form sensory data much the way Dowling

suggests the listener deals with contour. Bregman identified two types of processes: a.) primitive, automatic process and b.) Schema driven or learnt processes. The cues used by the primitive processes to group sound events together to construct patterns are akin to the Gestalt Laws of grouping. It has been shown that Gestalt Laws operate in the perception of visual arrays and it can be said that it is true in of music also. In the case of vision, elements that are close together in space are more likely to belong to the same objects than are elements that are spaced further apart.

The same line of reasoning holds for elements that are similar rather than those that are dissimilar (Deutsch, D. 1999). In the case of hearing, similar sounds are likely to have originated from a common source and dissimilar sounds from different sources. A sequence that changes smoothly in frequency is likely to have originated from a single source, whereas an abrupt frequency transition may reflect the presence of a new source. Components of a complex spectrum that arise in synchrony are likely to have emanated from the same source, and the sudden addition of a new component may signal the emergence of a new source (Deutsch, D. 1999 pp. 300-301). A sequence of musical tones tends to be heard as groupings of organized metrical, rhythmic, melodic and harmonic units. Smaller units are joined together to form larger units in an embedded, hierarchical fashion. The tones are then grouped together according to function, and other attributes. These groupings are then perceived as similar based on such things as similarity in frequency, spatial location, or having temporally synchronous onsets or offsets (Krumhansl, C. 1990). Royal and Fiske (2000) took these identified processes and their relationship to Gestalt and suggested grouping boundaries along various dimensions of sound based on the four Gestalt Laws. They suggest that boundaries between groups are likely to be apparent where these laws are broken. Royal and Fiske suggest that for each Gestalt Principle the musical concepts of pitch, time, timbre loudness and space have a relationship. Pitch and proximity are apparent when there is a change in register. Time has a relationship in similarity when there is a change in articulation. The example in the table below uses pitch, time and duration, timbre, loudness, and space to illustrate the boundaries and their association with each of the gestalt laws.

Figure 2.4 Music and Association with Gestalt Laws.

Grouping boundaries along various dimensions of sound * contrary to:				
	*Proximity	*Similarity	*Good Continuation	*Common Fate
<i>Pitch</i>	change in register		change in melodic direction	contrary or oblique
<i>Time</i>	rests and long notes	articulation	change in pulse	onsets and offsets
<i>Timbre</i>		change in timbre	evolution of timbre over time	evolving components of timbre
<i>Loudness</i>		Changes in loudness and stress	unpredictable change in loudness	differing rates/ directions of loudness
<i>Space</i>	spatially separate Sources		unpredictable movement in space	moving in different Directions/ Along diff. Trajectories in space

Koniari, Predazzer and Melen (2001) suggest that listeners are able to build a mental representation of a piece but that mental representation does not keep all of the details of the actual piece; instead listeners pick up and focus on specific cues, or cue abstraction. (Referred to as cue extraction in Deliege, 1987, 1989; Deliege & El Ahmadi, 1990). While listening to a piece of music, listeners pick up from the musical surface small entities that contrast sufficiently to attract listeners' attention. The cues provide temporal landmarks: the passages based on a given cue are approximated and localized by the listener in the course of the musical piece. Listeners are then assumed to be able to reorder the different segments along a mental line resulting in a mental schema. Neisser (1976, p. 54) states "A schema... is internal to the perceiver, modifiable by experience and somehow specific to what is being perceived. The schema accepts information as it becomes available at sensory surfaces and is changed by that information." The cues also

constitute the basis of a categorization process. This categorization process then relies on the categories of Gestalt to help listeners place information in a useable, retrievable place within memory. The abstracted cues are the bases on which different structures of a piece are compared to each other. All of this would suggest that the law of similarity can be very effective given that listeners use cue abstraction to obtain musical information. If students are encouraged to listen for and view examples of similarity during listening lessons it is suggested that it will help during recall.

Memory and Listening

While the Gestalt Principles enable people's perceptions of visual and auditory stimuli, learning takes place only when the new information can be stored as memory in the brain. The listener does not initially remember exactly what was heard but remembers certain global features of overall pattern such as contour and key (Dowling, 1978; Dowling & Barrlet, 1981; Dewit and Crowder, Dowling Et el, 1995/1998; Dowling, Tillman & Ayers 2002). Tulving (1983/1984) suggests a theory of episodic memory where memory, while listening to music, stores traces of past events to recall during a new listening experience. Both of these theories suggest that information that a listener possesses on contour, rhythm and other musical elements will enable the listener to remember salient features of the musical composition. Further, in this study, the participant is asked to use inter-sensory memory systems. Research by Berlin (1976), Goehr (1990), and Peeck (1987) suggests that music is an inter-sensory experience and that auditory images in memory are often accompanied by kinesthetic and visual images. This was further proven by Mitchell and Gallaher (2001) with studies of children, music and memory of dance and visual image. Paivio (1986) suggests that memory involves separate but interacting storage systems for verbal information and nonverbal images. Pavio also suggests that verbal input alone is less likely to be stored in verbal and nonverbal systems whereas visual information presented with verbal information is more likely to be stored and retrieved. This information would indicate that the participants in this study who are given more than one modality will be more likely to be successful in remembering and recalling information than those participants who are only given one modality.

An additional type of memory that is crucial for this study is recall or memory over an amount of time. Recall is the ability to retain and reproduce information at a later time. The amount of time between recall is the ability to retain and reproduce information at a later time. The amount of time between obtaining information and when it is recalled can be categorized under short or long term memory, depending on when it is recalled. Short-term memory is also sometimes referred to as working memory. Research suggests that within the brain, temporal oscillators provide the context that serves as the basis for retrieval. Temporal oscillators are neural cell assemblies that fire in regular cycles but with different oscillators cycling at different frequencies. Oscillators therefore provide a rich signal that change continually over time (Mayberry, et.al, 2002). Burgess and Hitch (1996) and Hitch et el. (1996) include temporal oscillators as one of several features in models on short-term or working memory. In these models, the current signal from a set of oscillators is associated with each item to be remembered. Then, at recall, the oscillators are reset to the point they had occupied in their cycles at the commencement of the recall. As the oscillators are replayed, their changing signal then provides cues for the ability to recall (Mayberry, et al, 2002).

Memory is crucial for any listener. Without an ability to remember and recall the listener is not capable of making choices about a presented piece of music, whether it be the first time the listener hears the music or subsequent times.

Hypothesis

Based on the discussions above regarding the relationships of visual stimuli and strategies used in listening, it is logical to assume that pointing out similarities in paintings may assist elementary education majors to identify musical elements while listening to a musical composition. For this research it is hypothesized that “Using paintings in music listening lessons will enhance musical listening skills.”

© Jennifer Sue Shank, 2003

CHAPTER 3

METHODOLOGY

Introduction

Elementary education majors at The University of Kentucky served as subjects for this study. The university is a nationally ranked institution with over 28,000 students. The University offers over 50 Education related degrees and certificate programs, with 1,452 students enrolled in the College of Education at the undergraduate level. The College of Education has a diverse population including African American, Native American, Asian and Hispanic Students. This school was selected for this study on the basis of available subjects and access to classes appropriate to the study. The treatment was administered during the second semester of Teaching Methods in the Elementary Grades. The treatment took place in a music education research classroom on the campus of the university. The classroom was set up for various music activities and music education activities including listening, performance and movement. The experimental group received instruction as well as viewing visually projected paintings during the listening lesson. The control group received only instruction while listening to music. Both groups received treatment by the same instructor and pre-tested and post-tested using the same test. The data was analyzed to find whether or not the group receiving integrated art and music lesson scored higher at the post-test.

Selection of Subjects

Four of the five sections of MUS 261- Teaching Methods in Elementary Grades were chosen for participation in this study. Students enrolled in all sections of the class without prior knowledge of the study. The chosen sections were informed verbally and in writing at the beginning of the semester that they would be involved in the study. Students meeting the following criteria were candidates for this study: (a.) elementary education or special education majors (b) completion of Music for Elementary Education Majors I, or proof of competency of concepts taught in that class (c) completion of all

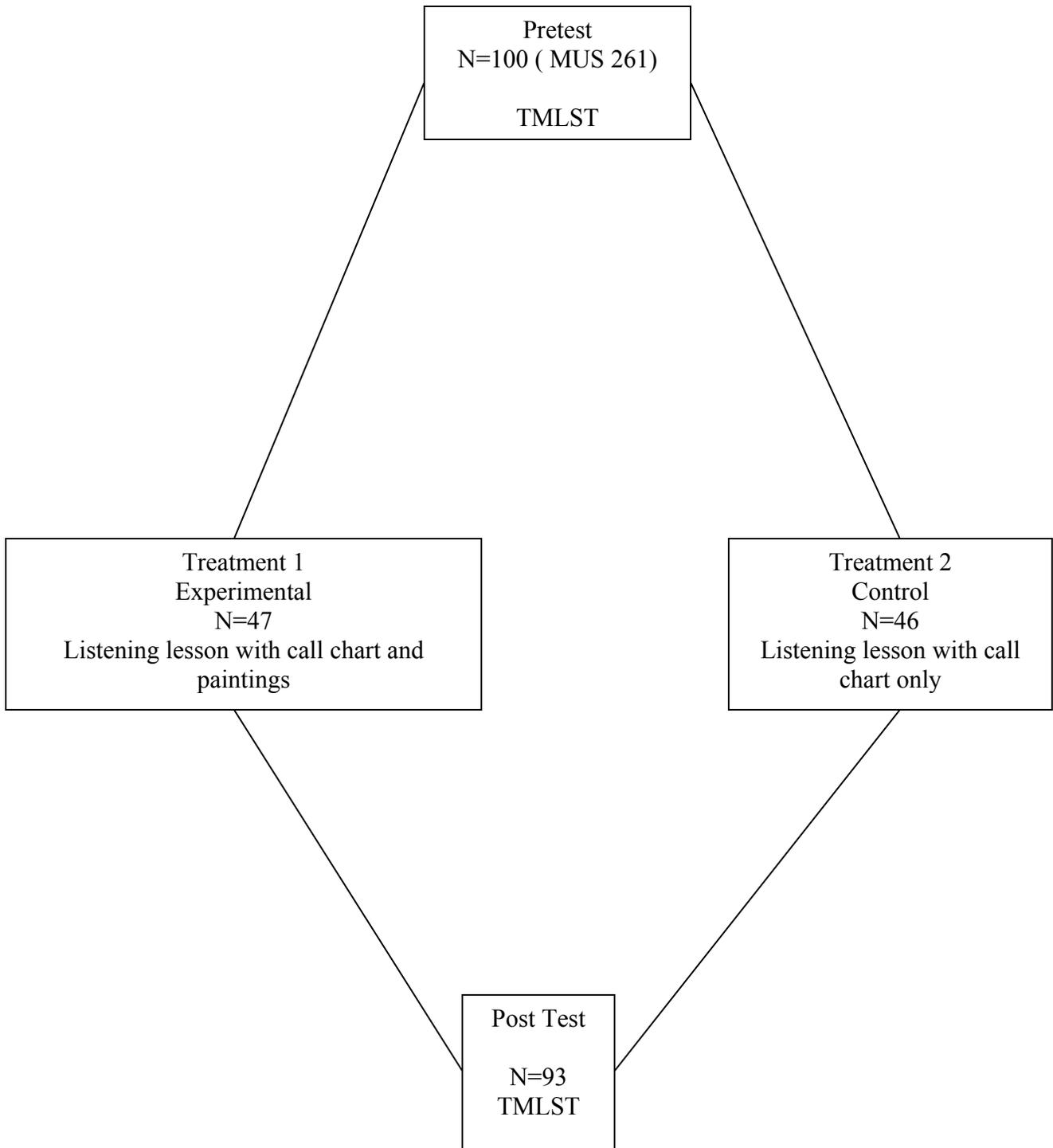
parts of the study and (d) no excessive absences during the pre-test and post-test as well as the duration of the study.

The subjects ranged in age from 20 to 36, with varied musical skills. Subjects were polled at the beginning of the class for previous musical experience and previous art appreciation courses they may have taken. Subjects ranged from students with very little experience other than the first method's class, to accomplished musicians with ten or more years of playing or singing experience. Subjects also ranged from students that have taken multiple art appreciation or art education classes to those students who have had no formal art education. The four classes met on Mondays, Wednesdays and Fridays for 50-minute sessions between the hours of 8:00am to 1:00pm and were taught by a team of two instructors. Students in each class were randomly placed into the experimental group or the control group creating eight subgroups. These eight subgroups received instruction from both instructors with each instructor teaching different topics.

Research Design

The design for this study was a Pre-test Post-test Experimental Design with the random assignment of subjects to either the control or experimental group from four intact class groups of approximately 25 students each. Ninety-three subjects completed the study with 46 subject in the control group and 47 subjects in the experimental group. Figure 3.1 below shows the design and procedure for the study.

Figure 3.1: Research Study Design Model



Instrumentation

Teacher Music Listening Skills Test (TMLST)

The Teacher Music Listening Skills Test was designed by the researcher and was used for both the pre-test and post-test. The content of the test aligns with the course materials studied by the students. The purpose of the pre-test was to establish that the subjects had knowledge of musical elements and vocabulary including expressive elements and form types. The pre-test would also indicate whether the subjects were homogeneous with regard to listening ability. The Teacher Music Listening Skills Test (TMLST) took approximately 25 minutes and was administered prior to the beginning of the treatment and immediately after the treatment. The test consisted of two parts. TMLST-A had ten questions. Six of the questions were matching items and four were multiple choice items with a maximum score of ten. Part A measured basic knowledge and vocabulary about musical expressive elements and form. TMLST Part B is the main section of the test, and it measures the listening skills of the subjects needed to identify the musical elements in the musical excerpts. (See Appendix A). Musical excerpts were 1:00 to 1:12 long. The TMLST-B had one fill in the blank and seven items that were multiple-choice with a maximum possible score of 64.

To establish validity of the test, a panel of six music experts took the test independently. The music experts consisted of music educators, graduate students in music education, and professional musicians. They agreed that responses to the test were indicative of music listening skills and musical knowledge required for listening. The reliability was tested by the use of interjudge reliability. Fifty percent of both the pre-test and post-test of the TMLST taken by subjects were judged by another researcher to calculate the interjudge reliability. The test was developed, revised and piloted over a period of weeks using other students with similar backgrounds prior to this study which prompted several changes to improve the instrument and administrative aspect of the test. (See appendix H for the pilot study.)

The post-test was identical to the pre-test with the exception that the order of the presentation of the musical excerpts was changed. For each excerpt, in addition to items

for listening skills, two items of self-rating scales were added. Students were asked to rate the Familiarity of the piece on a scale of 1-7 and they were also to rate Preference, how well they liked the piece, also on a scale of 1-7.

Procedure

Permission for using subjects in this study was obtained through the university Office of Human Research Studies during the semester prior to the study. Students were also informed in writing and verbally at the beginning of the semester that class work would be used in an upcoming research study during the course of the semester. No indication was made of exact assignments or units during the course of the semester. (See Appendix C and D)

The pre-test was administered during the third week of the spring semester. The Teacher Music Listening Skills Test was administered on Monday, the week prior to the treatment. The test took 25 minutes to administer and was administered in the music education resource room where all MUS 261 classes meet regularly on a Monday, Wednesday, Friday schedule. The students took the pre-test at their regularly scheduled class time with no differentiation between the control and treatment group. The test included a practice excerpt so students could familiarize themselves with the test procedure prior to taking the test items. Each student was given a copy of the instructions and questions and a packet of answer sheets. Directions for the listening test were read aloud and students were given a practice excerpt. The excerpt was played once and students were to answer questions in Part B through question number seven. Questions one through seven involved listening to general characteristics of the piece such as instruments texture and rhythm. Then, for question number eight, a shorter version of the same excerpt of eight to twelve seconds was played to highlight only the main melody and the students were to select one of the given contours that matched the melody. (See appendix A) After the practice excerpt and students were given a chance to ask questions, the test was administered without pause. Students were asked to complete, and given time to complete, Part A before moving on to the listening portion of Part B. At the end of the eighth excerpt students were asked to double check that their name and class section was on the answer sheet and then both the answer packet and the question sheets were collected.

The class period after the tests were administered the students were randomly assigned to either the control or experimental groups and students were to attend 25 minutes of the 50 minute class with the researcher and 25 minutes of the 50 minute class with the second instructor who was presenting different material. Students were not informed of the differences in the split classes, just that they were split and depending on the group attended class with the researcher first or class with the other instructor first.

The preparation included planned instructional content and instructional environment. In order to control for extraneous variables, the researcher delivered all of the instruction for this study. Prior to the experimental treatment all subjects reviewed music concepts and elements for listening. For the treatment, both the experimental and control groups met in a “smart” classroom during the study. This classroom was equipped with projection equipment and a computer in addition to the standard equipment found in a classroom. The visual presentation of the paintings for the sections receiving the treatment was projected onto a screen in the classroom using a projector attached to the classroom computer and a PowerPoint slide presentation. The musical examples for both the treatment and the control group were played from a single CD, compiled and burned by the researcher, with each excerpt lasting between two and three minutes. Salient information was written on a dry erase board, such as composer, title of composition, contour shape, texture and instrumentation. Both the treatment and the control groups met three times a week on a Monday, Wednesday, Friday schedule. Classes met in the morning or early afternoon, depending on the class. No classes met after 1:00pm in the afternoon.

A final preparatory measure concerned the possible cancellation of class due to severe inclement weather. In that event, class would be cancelled for the duration of the severe inclement weather and class would resume where it ended at the conclusion of the severe weather. The class schedule would be modified to accommodate all of the scheduled lessons for the treatment of the study. No lesson would be omitted from the study.

Treatment

The treatment phase consisted of six teaching sessions within a span of two weeks. The sessions were divided as follows: three sessions in week one and three sessions in week two, following a Monday, Wednesday, Friday schedule. Each session lasted a total of 25 minutes. Each session for both the treatment and control groups was taught by the researcher. Each session was scripted (See Appendix E) so that both the treatment and control groups were to receive identical instruction, with the exception of the addition of the visual stimuli in the form of paintings projected in front of the class via a PowerPoint presentation for the experimental group. The scripted lessons were strictly adhered to by the researcher to ensure that lesson contents and delivery were identical for each treatment session.

The same instructional strategy was followed in each session. Class began with roll call followed by a brief introduction of the listening piece for that particular day. The introduction included information regarding title, composer, and a general historical background. Students listened to the musical excerpt a total of three times throughout each session. The excerpt was first played after the general information was presented to the class. Students were asked to just listen to the piece. After students listened to the excerpt once, salient features were discussed such as instrumentation, contour, texture and beat structure. The second time the piece was played students were instructed to listen for the specific items discussed. After the second playing, students in the treatment group that received paintings were shown projected images of the appropriate painting. The salient features that most related to the music were pointed out and the music was played a third and final time while the image remained projected for the students. The control group heard the piece a third time without the presence of the paintings. There were six musical examples all together, all instrumental, and all written for orchestra, chamber orchestra or string quartet. Paintings were chosen based on several criteria including the painting's direct relationship to the piece of music or composer, musical elements reflected in a visual way and the measured element of similarity apparent in

each work, and opinions of expert artists. In the treatment group, paintings were used as a tool for analogy to stress what was illustrated in the lecture and on the dry erase board.

Music and Art Used in this Study

The music and art used in this study were chosen after careful consideration. The musical pieces chosen for this study all had to meet certain strict criteria in order to eliminate possible unforeseen musical effects. All pieces had to be instrumental and performed by either full orchestra or string quartet. Each piece had to be usable when two to three minute portions of excerpts were extracted, and still contain identifiable melodies, harmonies and form structure that remained consistent throughout the piece. Each musical piece had to have musical characteristics that were easily recognizable, including clear instrumentation, texture and a clear melodic contour. Only musical pieces from eras ranging from the baroque to early 20th century were considered. Pieces associated with preconceived visual imagery or pieces that were traditionally labeled as programmatic were not eligible. Pieces that had been used in mass marketing or advertising were not eligible so as to prevent any preconceived association with imagery or a particular product. Finally, musical pieces selected for this study needed to embody the Gestalt Laws of Similarity as laid out by Christian Von Ehrenfels and reinforced musically by Royal and Fiske (2002).

Following the above guidelines the following pieces were used in this research: *The Soldier's Tale* by Igor Stravinsky measures 1-36, recorded by the Los Angeles Chamber Orchestra and conducted by Gerard Schwarz in 1984. *A Night in the Tropics* the andante movement by Louise M. Gottschalk measures 1-56, recorded by The Utah Symphony Orchestra and conducted by Maurice Abravanel in 1986. *Symphony No 9*, fourth movement by Ludwig von Beethoven measures 13-36, recorded by The London Classical Players and conducted by Roger Norrington in 1987. *Symphony No 94 in G Major* Andante movement by Franz Joseph Haydn measures 1-48, recorded by The London Philharmonic Orchestra and conducted by Sir George Solti in 1984. *Contrapunctus 2* by J.S. Bach the entire piece, recorded by The Juilliard String Quartet in 1992. *Valse Triste* by Jean Sibelius measures 9- 56, recorded by The Estonian National Symphony Orchestra and conducted by Paavo Jarvi in 2002. All recordings were

digitally copied from compact discs onto a single compact disc using I-Tunes® software by Apple.

Figure 3.2: Music Chosen for this study

<u>Title</u>	<u>Composer</u>
The Soldier' Tale	Igor Stravinsky
A Night in the Tropics	Louis M. Gottschalk
Symphony #94	F.J. Haydn
Symphony #9	Ludwig von Beethoven
Contrapunctus #2	J. S. Bach
Valse Triste	Jean Sibelius

Paintings chosen for this study fell into 2 distinct categories: paintings that were directly related to a musical selection in some way as indicated by previous literature and paintings that had a relationship with a musical selection in a general or causal manner. For example; *Beethoven Frieze: Hymn of Joy (detail)* 1902 by Gustav Klimt was painted as a direct visual representation of Beethoven's Fifth Symphony and specifically, the last movement of the symphony. *Sunday on the Island of La Grande Jatte* 1884-1886, oil on canvas by George Seurat has a casual relationship using the pointillism in the painting to support the music of Maurice Gottschalk and his extensive use of staccato within *A Night in the Tropics*. Paintings, regardless of category, were chosen based on a set of art elements criteria that work well with the Gestalt Principle of Similarity and can be applied. A panel of artists was asked to rank a pool of 15 paintings that fit these parameters. The panel was comprised of four art professors and an art teacher. The panel was asked to rank the paintings on a series of arts elements and how closely each painting came to the Gestalt Principle of Similarity. The panel was asked to use a scale of 1-10, to rate each painting with one being no similarity at all and 10 being extremely similar. The elements that were focused on were color, form, shape, texture, balance, pattern and rhythm. (See Appendix F and Appendix G). From the pool of 15 paintings, eight paintings were considered to fit the criteria. The researcher chose six paintings that scored the highest or received the most agreement by the art experts. From the eight

eligible paintings, six were chosen for this study. The paintings were: *La Dance* 1909/10, Oil canvas by Henri Matisse; *Beethoven Frieze: Hymn of Joy* (detail) 1902 by Gustav Klimt; *Fugue (Controlled Impression)* 1914, oil on canvas by Wassily Kandinsky; *Fugue* from the diptych *Prelude and Fugue* 1907, tempera on paper by Mikalojus Konstantinas Ciurlionis; *A Sunday on the Island of La Grande Jatte* 1884-1886, oil on canvas by George Seurat and *Untitled* 1932, oil on cardboard by Paul Klee (See Appendix G).

Figure 3.3: Paintings Used in this Study

<u>Painting</u>	<u>Artist</u>
La Dance	Henri Matisse
Beethoven Frieze: Hymn of Joy	Gustav Klimt
Fugue	Wassily Kandinsky
Fugue	M.K. Ciurlionis
Sunday on the Isle of La Grande Jatte	G. Seurat
Untitled	Paul Klee

Each painting and its related musical excerpt are listed below. The list of paintings and music is displayed in two categories. Art and music with a direct relationship for this study and art and music with an indirect relationship.

Figure 3.4 Art and Music Combined, Direct and Indirect Relationships

Directly Related Paintings and Music

Fugue by Ciurlionis	Contrapunctus #2 by J. S. Bach
Beethoven Frieze by Klimt	Symphony #9 by Beethoven
Fugue by Kandinsky	Soldier's Tale by Stravinsky

Indirectly Related Paintings and Music

Untitled by Paul Klee	Valse Triste by Sibelius
Sunday on the Isle... by Seurat	Night.. Tropics by Gottschalk
La Dance by Henri Matisse	Symphony #94 by F.J. Haydn

The Teacher Music Listening Skills Test (TMLST) was administered as a post-test during the class session that immediately followed the final treatment session. This test was identical to the pre-test in content; however, the musical excerpts were presented in a different order than in the pre-test. This was done in order to lessen the possibility, if any, that students carry over what they remember from the pre-test instead of listening anew. Using the same testing instrument for both pre-test and post-test allowed the researcher to examine the amount of improvement in listening skills by the students and minimize extraneous variance due to different measuring tools.

The measure of reliability for the TMLST was obtained by having another researcher score the tests independently. This independent judge was first trained to use the grading criteria and the judge scored fifty percent of responses selected randomly from all participants. The interjudge reliability was computed by Pearson r and was found to be .89 ($p < .001$) for the pre-test and .93 ($p < .001$) for the post-test.

Apart from investigating whether the treatment had any effect on listening skills, the researcher also wondered whether the treatment would make any difference in students' ability to recall musical information. A recall test was designed to collect data for this secondary interest.

The second portion of the post-test, or the Recall Test, was administered 14 days after the last day of treatment. The Recall Test was also designed by the researcher. The test was designed to measure recall of salient musical features, visual imagery, as well as title and composer information of pieces presented during the treatment sessions. The Recall Test consisted of eight listening examples. Students were asked four questions following each musical example. The musical examples chosen for the Recall Test included four musical excerpts used during the treatment, two musical examples used as detractors for the pre-test and post-test, and two musical excerpts that were completely new. (See Appendix B)

The musical excerpts were played once each and students were given time to answer the questions before the next excerpt was played. The measure of reliability for the Recall Test was also obtained by having the same outside researcher score the tests independently. The judge was trained to use the grading criteria and the judge scored

fifty percent of the responses selected randomly. The interjudge reliability was computed by Pearson r and was found to be .86 ($p > .001$).

The procedure for this research was carried out with little problem. Students adapted quickly and were very cooperative during the split classes. Students had three minutes travel time between classrooms during the treatment and transition. The use of equipment, recordings and the PowerPoint presentation also had no glitches or problems to speak of. The overall time structure of the project was slightly affected by inclement weather and the canceling of classes campus wide for a number of days. Due to the campus closing and the inclement weather, the study was pushed back by one week but no treatment sessions were changed or omitted because of this situation. The research schedule was finished as planned.

There was some mortality in the study due to a variety of factors. At the onset of the study 102 students took the pre-test. Ninety-three students completed the study in its entirety. Students were lost during the study for the following reasons: Four students did not attend at least five of the six research sessions or take the pre-test. Three students did not take the post-test and could not schedule a make up time for the post test and one student withdrew from the class during the study.

Other observations during the treatment sessions include the keeping of a journal by the researcher. During the treatment portion of this study the researcher kept an anecdotal journal of qualitative observations. Some observations indicative of the journal included how students reacted during the viewing of the paintings in the case of the experimental group and how students reacted to musical selections. A second observation was obtaining demographic information about each of the study participants. Since all of the students were enrolled in the same class, students were asked to voluntarily fill out an information sheet with demographic information in it including age, type of education prior to college, years of musical experience and what type of musical experience if any it was. Students filled this sheet out the first day of classes in the spring semester. The data was collected according to plan with good test reliability and the statistics obtained from the pre-test and post-test are ready to be analyzed.

© Jennifer Sue Shank, 2003

CHAPTER 4

RESULTS

This study used a Pre-test Post-test Experimental design to measure the effects of using paintings in the form of visually projected images to enhance music listening skills of college education majors. The independent variable was the use of visual stimuli at two levels, with or without the visually projected image of paintings. The dependent variable was listening skills as indicated by the scores of the TMLST. The research hypothesis “Using paintings in music listening lessons will enhance musical listening skills,” was converted to the null hypothesis in order to test for statistical significance. The null hypothesis for this research is, “Using paintings in music listening lessons has no effect on musical listening skills.” The level of significance was set at .01. This chapter will present preliminary descriptive statistics and the results of the statistical test for significance for the hypothesis and related data.

The subjects’ demographic information is listed in Table 4.1. The subjects for this study had a mean age of 21.3 years (sd=2.99). Ninety-seven percent of the students were female and all were elementary music education majors at a major southern university. The students had an average musical experience of 4.6 years with the experience being evenly distributed between instrumental and choral music experience. Musical experience included participating in ensembles at or above the high school level or private lessons on an instrument or voice.

Table 4.1: Participant Demographic Information

Mean Age	21.3 years
Gender	97% female 3% male
Mean Musical Experience	4.6 years

Results Related to Listening Skills

The testing instrument for this study was the Teacher Music Listening Skills Test (TMLST) (see page 35). The test had a combined pre-test and post-test interjudge reliability of .91 ($p < .001$). Table 4.2 shows the means and standard deviation on the Pre-test for each of the eight subgroups created from the four sections used in the research. Subgroup 1 had an $n=12$, a mean of 35.83 and an $sd=6.25$. Subgroup 2 had an $n=12$ with a mean of 34.16 and an $sd=6.17$. Subgroup 3 had an $n=8$, a mean of 31.25 and an $sd=8.08$. Subgroup 3 had the lowest number of subjects and the lowest mean score of the eight subgroups because of absences within the study. As mentioned previously in this study, several participants were not able to take the Pre-test or complete the study. Three of these individuals came from Subgroup 3 and this is reflected in a lower mean score for this subgroup. Subgroup 4 had an $n=11$, a mean of 32.27 and an $sd=8.10$. Subgroup 5 had an $n=13$, a mean of 36.69 and an $sd=5.73$. Subgroup 6 had an $n=13$, a mean of 37.90 and an $sd=5.30$. Subgroup 7 had an $n=13$, a mean of 34.76 and an $sd=6.41$. Subgroup 8 had an $n=13$, a mean of 35.30 and an $sd=5.79$. The pooled standard deviation was 6.45.

Table 4.2 Table of Means for TMLST Pre-test for Subgroups 1-8
(Max=78)

Section	Subgroup	N	Mean	St. Dev
1	1	12	35.83	6.25
1	2	12	34.16	6.17
2	3	8	31.25	8.08
2	4	11	32.27	8.10
3	5	13	36.69	5.73
3	6	13	37.90	5.30
4	7	13	34.76	6.41
4	8	13	35.30	5.79

In order to compare the TMLST pre-test scores for different subgroups, an analysis of variance (ANOVA) was used. No statistical significance was found due to splitting groups into subgroups.

Table 4.3 shows that creating eight subgroups did not yield any significant difference on pre-test listening scores ($F=1.18$, $df=7, 85$). This means that these subgroups were considered equal before the experimental treatment.

Table 4.3: ANOVA Summary of TMLST for Pre-test Subgroups 1-8

Source	DF	SS	MS	F	Prob
Group	7	343.0	49.0	1.18	ns
Error	85	3535.8	41.6		
Total	92	1878.7			

Table 4.4 shows the means and standard deviations for the pre-test scores of TMLST of the original four classes. Section One had an $n=23$, a mean of 35.13 and $sd=6.24$. Section Two had an $n=20$, a mean of 31.85 and $sd=7.67$. Section Three had an $n= 24$, a mean of 37.25 and $sd=5.45$. Section Four had an $n=26$, a mean of 35.03 and $sd=5.99$. The pooled standard deviation was 6.32. Table 4.5 shows that ANOVA results for the four sections. There is no statistical significance among the four sections ($F=2.67$, $df=3, 89$).

Table 4.4 Table of Means for TMLST Pre-test for Classes 1-4

Section	Subgroup	N	Mean	St. Dev
1	1&2	23	35.13	6.24
2	3&4	20	31.85	7.67
3	5&6	24	37.25	5.45
4	7&8	26	35.03	5.99

Table 4.5: ANOVA Summary of TMLST for Class Sections1-4

Source	DF	SS	MS	F	Prob
Group	3	320.1	106.7	2.67	ns
Error	89	3558.8	40.0		
Total	92	3878.7			

Since no difference in the TMLST was found among the four class sections or the eight subgroups, one can assume that the participants were homogeneous in listening skills before the treatment. Further analysis would focus the two groups as designated control and experimental groups. The experimental group was comprised of subgroups 1, 3, 5 and 7 and the control group was comprised of subgroups 2, 4, 6 and 8. The mean Pre-test score of the control group and experimental group were 34.97 and 34.91 respectively. Table 4.6, below shows the ANOVA summary for control and treatment groups. The data shows that the two groups are very close to identical, with an f- value close to zero of 0.00, df=1,91 for the TMLST Pre-test.

Table 4.6: ANOVA Summary for Pre-test

Source	DF	SS	MS	F	Prob
Group	1	0.1	0.1	0.00	ns
Error	91	3878.6	42.6		
Total	92	3878.7			

The descriptive statistics for the TMLST Part A and Part B are listed below in table 4.7 and 4.8. The maximum score for the TMLST is 74 points. The maximum score for part A was 10 points. For part A, the control group scored a mean of 6.02 (sd=1.74) on the

pre-test and 6.43 (sd=4.33) on the post test. The experimental group scored 6.02 (sd=1.72) on the pre-test and 6.80 (sd=4.33) on the post-test. For part B of the TMLST, pre-test the control group scored an average of 28.96 (sd=5.64) and the experimental group scored an average of 28.89 (sd=5.60). Both groups improved from the pre-test to the post-test. The control group scored an average of 29.65 (sd=4.62) on the post-test and the experimental group scored an average score of 40.00 (sd=5.74).

Table 4.7: Mean Values of TMLST Part A (Max. 10 points)

	Pre-test	Post-test
Control Group N=46	6.02 (sd=1.74)	6.43 (sd=4.33)
Experimental Group N= 47	6.02 (sd=1.72)	6.80 (sd=4.33)

Table 4.8: Mean Values of TMLST Part B (Max. 64 points)

	Pre-test	Post-test
Control Group N=46	28.96 (sd=5.64)	29.65 (sd=4.62)
Experimental Group N= 47	28.89 (sd=5.60)	40.00 (sd=5.79)

As it was mentioned in Chapter Three, Part A of the TMLST measured the basic knowledge and terminology involved in music listening while Part B contained items specifically designed for measuring skills listening to recorded music excerpts. The composite scores were used to compare the performance of the control group and the experimental group. The Paired t-test was used to find out if each group improved significantly from the Pre-test to the Post-test.

Table 4.9 TMLST Means Showing Improvement from Pre-test to Post-test

	Pre-test	Post-test	t-value
Control Group	34.97	35.84	ns
N=46	(sd=6.55)	(sd=5.81)	
Experimental Group	34.91	47.26	10.11*
N= 47	(sd=6.50)	(sd=6.08)	

*p<.001

Table 4.10 shows the results of ANOVA for TMLST Post-test means of the experimental and control groups. The numbers shows that there is a significant difference with the Post-test part B for the control and experimental groups with an f value of 87.97, df=1, 91, p<.001.

Table 4.10: ANOVA Summary of TMLST Post-test for the Experimental and Control Groups

Source	DF	SS	MS	F	Prob
Group	1	3116.1	3116.1	87.97	.001
Error	91	3223.4	35.4		
Total	92	6339.6			

Scores of the TMLST for students in both the control group and the treatment group did show an increase in value. However, the control group did not have a statistically significant gain from the pre-test scores to post-test scores. As shown in Table 4.9 the control group had a Pre-test mean of 34.97 (sd=6.55) and a Post-test mean of 35.84 (sd=5.81), with a t-value of .35 which is not significant. The Experimental group, however, did show a statistically significant improvement. The Pre-test score was 34.91 (sd=6.50) and a post-test score of 47.26 (sd=6.08) with a t value of 10.11, $p < .001$. See Table 4.9.

Table 4.11 shows the means and standard deviation for TMLST Post-test for Subgroups 1-8. The mean scores are much higher for those subgroups that were part of the experimental group. Subgroups 1, 3, 5, and 7 were part of the experimental group.

Table 4.11 Table of Means for TMLST Post-test for Subgroups 1-8
(Max=78)

Section	Subgroup	N	Mean	St. Dev
1	1	12	50.00	7.28
1	2	12	36.09	4.45
2	3	8	48.33	4.61
2	4	11	35.91	6.86
3	5	13	46.85	5.80
3	6	13	36.91	3.00
4	7	13	45.00	6.18
4	8	13	35.01	4.71

Table 4:12 TMLST Means Showing Improvement From Pre-test to Post-test by Subgroups 1-8.

	Pre-test	Post-test
Exp.Sub Group 1	35.83	50.00
N=12	(sd=6.25)	(sd=7.28)
Exp. Sub Group 3	31.25	48.33
N=8	(sd=8.08)	(sd=4.61)
Exp. Sub Group 5	36.69	46.85
N=13	(sd=5.73)	(sd=5.80)
Exp. Sub Group 7	34.76	45.00
	(sd=6.41)	(sd=6.18)
<hr/>		
Cont. Sub Group 2	34.16	36.09
N=12	(sd=6.17)	(sd=4.45)
Cont. Sub Group 4	32.27	35.91
N=11	(sd=8.10)	(sd=6.86)
Cont. Sub Group 6	37.90	36.91
N=13	(sd=5.30)	(sd=3.00)
Cont. Sub Group 8	35.30	35.01
	(sd=5.79)	(sd=4.71)
<hr/>		

Table 4.12 shows the improvement by students in the experimental group and the control group. A t-test on the subgroup Post-test TMLST Means yielded a value of $t=9.64$, $df=6$, $p<.001$. This further confirms that the post-test scores of the experimental group are significantly different than those of the control group.

Results of Hypothesis Testing

The results of the data analysis up to this point indicate that students in the experimental group scored 11.42 points higher than the control group, and the difference is statistically significant. This test calls for the rejection of the null hypothesis that “using paintings has no effect music listening skills” and an acceptance of the research hypothesis “Using paintings in music listening lessons will enhance musical listening skills.”

Secondary Results

Now that we know using images of paintings in music listening instruction enhanced music listening skills, it would be interesting to compare the effect of the two categories of paintings, namely paintings directly related to the music or paintings indirectly related to the music. Directly-related painting and music refer to those pieces that, as described in chapter three, have a direct relationship and were created to compliment or represent the music. To do this the Post-test Part B listening scores of TMLST were first partitioned by the painting category. There were eight musical excerpts in the TMLST, three pieces in each category and two not part of the instrumentation. Since only the experimental group’s students viewed the images only their scores were examined. It was found (Table 4.13) that the type of painting/music categories had no effect on listening scores.

Table 4.13 Means of TMLST Post-test per Excerpt Score for Each Category

Category of Painting/Music	Post-test score	t-test
Directly Related	5.20 (sd=.72)	1.19(ns)
Indirectly Related	4.85 (sd=.81)	
Non-instructional	4.75 (sd=.83)	

In addition to examining the effect of visual stimuli in listening skill, its effect on Familiarity and on Preference was also observed. Familiarity as well as Preference was measured for each excerpt by having the participants rate each on a scale of one to seven. Pre-test for the control group had a mean Preference score of 3.75 (sd=1.14) and the experimental group had a mean score of 3.69 (sd=1.06). Table 4.14 shows the means and standard deviation for Familiarity and Preference. The mean rating for Familiarity at the Pre-test was 1.73 (sd=1.14) for the control group and 1.75 (sd= .89) for the Experimental Group. There was growth between the pre-test and post-test in both the control and experimental groups in both preference and more noticeably in familiarity. For Preference, the scores increased .51 for the Control group and .86 for the Experimental group. Since there was no further difference found neither in the Pre-test nor the Post-test between the Experimental and the Control Group, for Preference or Familiarity, the increase in Pre-Post scores would be due to the effect of the instruction rather than a difference in treatment. Statistical analysis using a paired t-test indicates that there was a statistical significant difference between the Pre-test and Post-test scores for both the control and experimental groups for Preference as well as Familiarity. The score for familiarity increased more dramatically. The control group went from a mean score of 1.73 (sd= 1.02) to a mean score of 4.42 (sd=1.19) and the experimental group went from a mean score of 1.74 (sd=.89) to a mean score of 4.35 (sd=1.29).

Table 4.14: Mean Rating for Preference and Familiarity
(Max 7)

<u>Preference</u>	<u>Pre-test</u>	<u>Post test</u>	<u>t-test</u>
Control	3.80 (sd=1.23)	4.31 (sd=.92)	3.25*
Experimental	3.68 (sd=1.06)	4.54 (sd=.98)	3.98**
<u>Familiarity</u>			
Control	1.73 (sd=1.02)	4.42 (sd=1.12)	14.20**
Experimental	1.74 (sd=.89)	4.35 (sd=1.29)	11.01**

*p<.01 **p<.001

The Pearson r was used to examine the relationship between various observations. Results are shown in Table 4.15. The correlations indicate that all Music Test Scores are positively correlated. The TMLST had a low correlation when comparing the composite scores of Pre-test to the Post-test for all participants ($r=.199$). The Pre-test/Post-test correlation for the control group ($r=.489$) is much higher than that for the experimental group ($r=.091$). This is evidence that the scores of control group did not change much whereas those from the experimental group did. The correlation coefficients for the TMLST PartA/Part B were moderate, with $r=.410$ for the Pre-test and $r=.532$ for the Post-test. These numbers give support to TMLST as a reliable measure. Familiarity and Preference had a positive correlation both before ($r=.384$) and after the instruction ($r=.622$) with the correlation after the instruction being higher. There were no other significant correlations indicating that music listening skills per se are not related to musical preference or familiarity with the music.

Table 4.15 Significant Correlations

Variables	Pearson r
TMLST Pre-test and Post-test	.199
Control Group	.489**
Experimental Group	.091
Pre-test Part A and Part B	.410**
Post-test Part A and Part B	.532**
Familiarity and Preference	
Before Instruction	.384**
After Instruction	.622**
Familiarity and TMLST	
Pre-test all Subjects	.083
Post-test all Subjects	.054
Preference and TMLST	
Pre-test all Subjects	-.09
Post-test all Subjects	.216
Familiarity and TMLST	
Post-test Control Group	-.07
Post-test Experimental Group	.20

*p<.01, **p<.001

Finally, Recall was measured as a secondary question for this study. The Recall Test had a possible score of 32 points. The Recall test did not show any significant difference between the control and experimental group. The control group scored a mean of 14.4 (sd=1.86) and the experimental group scored a mean of 14.6 (sd=1.66). Recall was not affected by either instrumentation or treatment.

Summary

Results of Hypothesis Testing

After analysis of all the data, the null hypothesis “Using paintings in music listening lessons has no effect on musical listening skills” is rejected. The research hypothesis “Using paintings in music listening lessons will enhance musical listening skills” is accepted.

The findings may be summarized as follows.

1. Instruction that involves the use of visual stimuli results in a higher post-test score on assessments of music listening skills.
2. Familiarity of musical excerpts is increased after instruction for both groups.
3. Preference for musical excerpts is increased after instruction for both groups.
4. The relationship of art to music does not have to be direct to result in higher post-test scores.

CHAPTER 5

DISCUSSION AND RECCOMENDATIONS

The purpose of this study was to examine the effect of visual stimuli on music listening skills in pre-service elementary teachers. The research hypothesis that “Using paintings in music listening lessons will enhance musical listening skills” was tested and accepted. “Visual Stimuli” refers to the presentation of arts elements in selected paintings in the form of projected images on a screen. Subjects were pre-service elementary general educators enrolled in a large southern university (N=93). Students from each of four intact classes were randomly placed into either the experimental group or the control group. The treatment consisted of six music listening lessons over a two-week period, each group receiving the identical teaching protocol with the exception of the use of visually projected paintings for the experimental group. Listening instruction emphasized the identification of melodic contour, instrumentation, texture, rhythm and expressive elements of the compositions.

The Teacher Music Listening Skills Test (TMLST) was constructed by the investigator, piloted and administered before and after the treatment. Pre-test data for the eight subgroups showed no difference, and the observations were consequently examined for differences between the control group and the experimental group only. The groups were very similar in demographics. Years of musical experience per each participant was evenly divided between the experimental and control groups making the experimental group and the control group as equal as possible prior to the study. Results indicate that the group receiving visual stimuli in the form of paintings scored significantly higher on listening skills ($p < .01$) than the control group which received no visual stimuli.

Part A of the TMLST pertained to basic vocabulary related to music and showed no change between groups from pre-test to post-test, with scores of 6.02 and 6.43 respectively for the control group and 6.02 and 6.80 for the experimental group. This would indicate that neither the treatment nor the teaching affected Part A of the TMLST. This was as expected. Scores for Part B of the TMLST pertain to the application of

listening skills and they showed a significant increase for the experimental group. The experimental group went from a mean score of 28.89 to a mean score of 40.00 which showed a significant gain in listening skills. This would indicate that the treatment of using visually projected images of paintings in this study was effective in teaching listening skills. The improvement by the treatment group was measured at a t value of $10.11 < p.001$ suggesting a significant improvement. This data would support that the visual treatment was successful in teaching elements such as contour, main and auxiliary instruments, rhythm and beat structure. Preference and Familiarity were not affected by the treatment in this study but the data does suggest that Familiarity as well as preference was affected by the instruction in both the control and treatment groups. The control group had a Pre-test mean score of 3.80 and the experimental group had a Pre-test mean score of 3.68. The Post-test scores increased to 4.48 and 4.43 respectively. In the category of Familiarity, the increase was from a mean score of 1.73 for the control and 1.74 for the experimental to 4.42 and 4.35 respectively. This is a significant increase and suggests that the instruction and just hearing the pieces numerous times throughout the treatment helped the students become familiar with the pieces of music regardless of the use of visual stimuli. The gain of Preference scores increased from Pre-test to Post-test for each group also but at a smaller margin.

Correlations were run to examine the relationship between various observations. Correlations were run between the Pre-test and Post-test of the TMLST as well as Familiarity and Preference and how they correlated with the TMLST. All of the correlations moved in a positive direction, which is important because it would indicate the success of the TMLST and the relationship of Preference and Familiarity. The correlation between Preference and Familiarity was not terribly high, but because it is positive it could support research done by Siebenaler (1999). He found that there was a strong correlation between familiarity and preference in students' learning of new songs. The same could be suggested here as students became more familiar with pieces that data would suggest that the preference increased as well.

Although this study was well constructed and worked well with the population it was studying there were some threats to validity that should be addressed. During the course of the treatment there was a severe weather event. The university and city were

crippled with an ice storm that closed the university for a number of days requiring treatment days to be extended to accommodate the time lost while the university was not holding classes. This had the potential of adversely affecting the study by delaying the time between presented excerpts and Post-testing, extending the time between the excerpt presentation and the post test beyond what the original study had called for. There was also some mortality during this study. Although the total sample for the study was sufficient to show significant results that can be inferred to a larger population of pre-service educators, a total of nine subjects were removed from the study for various reasons mentioned previously in this text. In addition, there was some concern that subjects in the control group would interact with those subjects in the experimental group. Students in each group interacted with each other before and after each treatment as they arrived and left from class. The researcher did not instruct the students that they were not to discuss what was happening in each class session for fear that it would heighten the subjects' awareness that the treatments were different. When a student asked if all students were hearing the same music or seeing the same paintings, they were told that everyone in their group saw and heard the same thing. To reduce experimenter effects, scripts were followed implicitly as mentioned earlier in research. Although none of these threats to validity was overt enough to alter the results it is important to consider what can be improved for similar future studies.

The current study attempted to address the need and importance for an aesthetic education through listening. Broudy (1958) stated that the ability to detect aesthetic form (the arrangement of elements that attracts, holds and directs the interests of the listener) is at the heart of music education. This still holds true today and this study was designed to direct the listener to identify elements that make up the aesthetic form by using, in the case of the experimental group, a multi-sensory approach. Listeners were directed to use visual images in the form of paintings. The results here are in agreement that students were more successful identifying some of the elements needed to detect aesthetic form after a treatment with a multi-sensory approach. Berleant (1991) argued for a participatory aesthetic, emphasizing engagement and contemplation with participation. The treatment in this study encouraged active engagement. Anecdotal reports were made informally and showed evidence that students interacted with the music and art as well as

continued use of art and music after the end of the treatment implying that students were actively engaged in listening. The Getty Foundation and the National Endowment for the Arts stand by the position that arts education should include aesthetics as well as performance and production. Developing successful listening lessons such as the ones found in this study exposes students to the aesthetic element and would support the position held by these two organizations. Students were given an opportunity to listen to and study musical excerpts creating the opportunity to develop an aesthetic view of the piece.

The findings in this study support the argument that people learn in a variety of ways. Research by Park (2000) suggests that when teaching secondary education students, multi-sensory instructional materials should be presented. The data of this study would suggest that students, given multi-sensory instructional materials, are more successful than those students who received instructional material aurally only. Students given multi-sensory instruction using paintings scored higher on the TMLST than those students who did not receive lessons in a multi-sensory way. This study also reinforces work done by Kalyuga, Chandler and Sweller (2000) suggesting that the amount of information being processed using both auditory and visual channels is significantly larger than the amount of information processed using only a single channel. Previous research has also suggested the importance of using an integrated approach to teaching by engaging more than one of the senses. This was reinforced by this study with the statistically significant scores by those subjects that were presented musical information as well as visual stimuli utilizing the senses of both sight and hearing.

This study addressed the specific learning needs of the population participating in the study. Students at the secondary and adult level have specific needs. The treatment followed the need to be well managed with regard to time, relevant to the students in a practical manner, intensive in material presentation and short in nature. It can be inferred by the positive results of this study that the subjects responded well to the model presented for teaching adults. Students were receptive to the material presented and as shown by the data in the Pre-test and Post-test, the scores reflect the success of the model. The subjects also responded as expected with regard to what they listened for. Studies conducted by Madsen and Geringer (1990) suggested that non-musicians listen for

specific things such as instrumentation, timbre and rhythm. The current study supports the research by Madsen and Geringer. Subjects did indeed listen for instrumentation, timbre and rhythm accurately. Recall was also measured as secondary data collection. The data did not show any difference between the control and experimental groups suggesting that possibly the treatment or teaching did not affect recall of musical features or names associated with this piece. The testing instrument for Recall here was designed to observe the students' ability to recall composer, composition and painting by using open-ended questions in order to avoid giving cues. The responses suggest that such open-ended questions failed to trigger the retrieval of the target information.

The research utilized the Gestalt Theory and more specifically the Gestalt Law of Similarity as the basis. Gestalt theory is the "organization of sensory information into meaningful whole based on experience" (Swanick, 1988). This study presented sensory information in the form of visual and aural sensory stimuli via paintings and music. Students were then guided to create a meaningful whole in the context of using listening lessons and in the case of the experimental group with the addition of projected images of paintings. Increased Post-test scores provided the clue that students were probably successful in creating a meaningful whole. After the completion of the treatment, students in both the control and experimental groups were able to answer questions regarding an excerpt of music better than they could prior to the study, thus suggesting that the musical excerpts had become meaningful for them. The degree of success is reflected in the amount of improvement by each group indicating that the subjects in the experimental group did much better. The indication is that using visual stimuli with aural stimuli aided in making the musical excerpts more meaningful. The use of the Gestalt Law of Similarity alone was to narrow the scope of the research to a manageable size given time and class restraints. The Gestalt Law of Similarity was used successfully for the selection of art and music pieces with elements that exemplify possible groupings with similar attributes. The findings here suggest that the different manner of similarity is not crucial. Paintings and music with a direct relationship or having a strong similarity in characteristics scored the same as those art and music examples that had an indirect relationship. This seems to imply that specific associations are not as important as

providing opportunities for increased sensory organization in proactive music listening skills.

A secondary outcome of this study was made possible by the observations collected in a journal kept by the researcher. During the course of the two weeks of treatment the researcher kept a journal of qualitative notes for both the control and treatment group. The journal was used to document things including how often students offered their own insights or comments about the music and or the art work, how often students asked questions regarding the art, music or the composer, and how interested the subjects were in the music and in the case of the experimental group, the art work. After examining the anecdotal information found in the journal it was discovered that the subgroups participating in the experimental treatment were more vocal during class, asked more questions during the presentation and used the correct vocabulary more often when describing each of the elements when answering questions in class than the control group. Students in the experimental group also showed a great deal of interest in the paintings as a stand-alone item, asking questions about the artist, medium and time period. Although this was not observed in the control group, it is important to note the level of interest in the paintings the students in the experimental group exhibited. Lastly, several students in the experimental group expressed motivation to use listening in their future classrooms as an integrated activity. Several students in the experimental group sought out information to integrate art and music for various projects in other methodology classes outside of music.

There were also several observations of the study participants after the conclusion of the two weeks of treatment. Students in the elementary music methods class are required to complete and teach a listening lesson similar to the ones presented during the treatment by the end of the semester. Students this year, regardless of placement in the control or treatment groups, had better lesson presentations and a more effective delivery than what has been observed in the same class in years passed. Regardless of being assigned to control or experimental groups, students used correct music vocabulary to describe the listening correctly more often and more accurately in their own listening presentations. The listening lessons that students presented this year were also very detailed. Students addressed what to listen for within the lesson and

students utilized multiple learning modalities to teach selected piece of music. Because there is no hard data to support these observations, this data cannot be included in the scope of this study, but I feel that it is important to mention the effect the study had on other aspects of what the students were doing during over the course of the semester.

Recommendations for Further Research

There is a great deal still to be examined in the field of using art to teach aspects of music. Art and music, although often associated, are rarely studied together or used as a tool to teach skills in the other. Opportunities for further research include running this same study using other Gestalt Laws to relate the art work and the music. This study only considers the Gestalt Law of Similarity but there is a significant amount of data to be collected using Proximity, Common Fate or Good Continuation to relate the art and music to each other. Data from similar studies using proximity, common fate or good continuation could add strength to the argument that the Gestalt Theory is effective in relationship to music.

It would also be beneficial to examine these same effects on different learning populations including school-aged children at different developmental levels, musicians and the elderly. Using different populations with the same independent and dependent variable could ultimately strengthen the argument for using multi-sensory modalities to teach music, regardless of population or musical training. The measurement of recall did not yield any useful information in this particular study, but the measurement of recall using visual stimuli should be studied, especially within the parameters of recall in music. The independent and dependent variable could also be manipulated to include other music skills besides listening, and other forms of art work besides paintings. The results of this study suggests that the art work presented does not have to directly relate to the music to be effective; the same may also prove to be true with multiple mediums of art. Finally this study could also be reversed and music could be used to help teach aspects of an art lesson.

Implications for Educational Practice

As mentioned previously, overall students in both groups seemed to be much more comfortable with the material that they were teaching during their assigned listening lessons after the completion of the treatment than in previous years, and research such as Kvet and Watkins (1993) showed that pre-service teachers who are comfortable with material are more likely to use it in their future classroom than those that are not comfortable with new concepts or curricula. This would suggest that the pre-service teachers in this study might be more apt to integrate listening into their general curricula in future classroom situations. This would support the importance of this study with regard to teaching pre-service teachers.

The findings of this study confirmed previous research findings that the visual stimuli or paintings do not have to have a strong similarity or direct relationship with the music presented to enhance listening. The success of both the directly-related paintings and the indirectly-related paintings would suggest that using images can be effective and should be included in music lessons in future classrooms. Regardless of a direct or indirect relationship with art and music, one of the concerns here apart from the aesthetic value, was to ascertain that the art works used should be accessible to educators. The pool of 15 paintings that the researcher began with was picked for accessibility, aesthetic reaction and by educational content decided by the researcher. These paintings were then ranked by professional artists and an examination of each painting's history was conducted. Paintings ranged from strongly related to not at all; from those paintings, six high scoring paintings were used. The research shows that the treatment was successful regardless of the ranking of the paintings with regard to similarity and relationship. The researcher for this study did not have a great deal of training in art when she picked the art work, which would suggest it is not crucial that there be a deep understanding of art to accomplish this or similar studies. The key is to research its origin and obtain information for each of the art pieces, and examine its relationship to the music that it may accompany. With the readily available resources on the internet, art work is accessible for any teacher, without the need for slides or access to an art museum. Basic art knowledge can be gained from a variety of sources including art specialists, books and

websites and information on the origin and history of a painting is as easily accessible from the same sources.

In conclusion, the present research confirms that using images of paintings can enhance music listening skills in adults and should be included in teacher preparation programs. Such effect on children needs to be researched in the near future. This study is only near the beginning of what can be researched in the field of Gestalt and music and using art in teaching music skills. It has reinforced both the relationship between Gestalt and music and that of art and music listening. This study would serve as a catalyst in developing more research that will strengthen the relationship between art and music in teaching music skills. There is a great deal of research still to be done in both Gestalt and music, and art and music.

APPENDIX A TMLST

PLEASE ANSWER ALL QUESTIONS. PLEASE GUESS IF YOU ARE NOT SURE

Part A- Matching

A-I Expressive Elements

Match the expressive element with its symbol. Circle the correct letter name on the answer sheet.

- | | | |
|----------------|----|----|
| 1. Accent | a. | e. |
| 2. Slur | | |
| 3. Staccato | b. | f. |
| 4. Decrescendo | | |
| 5. Fermata | c. | g. |
| 6. Repeat sign | d. | h. |

A-II Form

Match the Musical Form with its pattern. Circle the correct letter name on the answer sheet. (Questions 7-10)

- | | |
|------------------------|--|
| 7. Binary | a. ABA |
| 8. Rondo | b. BBAB |
| 9. Theme and Variation | c. ABAB |
| 10. Ternary | d. ABACADA |
| | e. A ₁ A ₂ A ₃ A ₄ |

Part B- Listening

For each musical excerpt you are to listen to, study the answer sheet and answer the question during the playing of the excerpt. Place all responses on the separate Answer Sheet.

- Name the instrument or instruments playing the main melody.
- Circle all other instrument or instruments you hear.
- Identify the texture. Circle the appropriate type.
- Choose an answer that best represents the piece.
 - What can you say about the rhythmic motive?
 - What is the predominant group of beats?
 - What is the predominant tempo?
 - What is the overall articulation?
- Study the following patterns and identify the contour that best represents the main melody as **part of the excerpt is played again.**

Circle the appropriate number on the answer sheet

- On a scale of 1-7, how familiar is the piece of music to you?
(1 being not at all, 7 being very familiar)
- On a scale of 1-7 how well do you like the piece of music?
(1 being not at all, 7 being very much)

TMLST

Answer Sheet Part A- Matching

A-I Expressive Elements

Match the expressive element with its symbol. Circle the correct letter name.

- | | | | | | | | | |
|----------------|---|---|---|---|---|---|---|---|
| 1. Accent | a | b | c | d | e | f | g | h |
| 2. Slur | a | b | c | d | e | f | g | h |
| 3. Staccato | a | b | c | d | e | f | g | h |
| 4. Decrescendo | a | b | c | d | e | f | g | h |
| 5. Fermata | a | b | c | d | e | f | g | h |
| 6. Repeat Sign | a | b | c | d | e | f | g | h |

A-II Form

Match the Musical Form with its pattern. Circle the correct letter name.

- | | | | | | |
|---------------------------|---|---|---|---|---|
| 7. Binary | a | b | c | d | e |
| 8. Rondo | a | b | c | d | e |
| 9. Theme and
Variation | a | b | c | d | e |
| 10. Ternary | a | b | c | d | e |

Part B- Listening

Excerpt # 1

a. Main instrument (s) _____

b. Full Orchestra Strings Woodwinds Percussion

c. Circle only one: Homophonic Polyphonic Heterophonic Monophonic

d. Circle only one choice for each item:

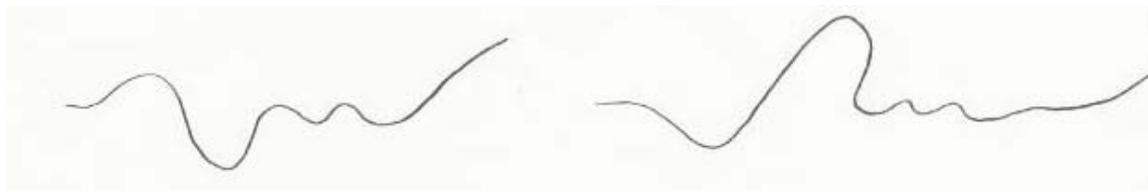
Rhythm: i) even uneven syncopated Repetition of Rhythmic motive

Grouping Of beats: ii) Duple Triple Compound Irregular

Tempo: iii) Allegro Moderato Presto Largo

Articulation iv) Staccato Legato Pizzicato Marcato

e. Choose one contour:



i.)

ii.)

f. Not Familiar at All 1 2 3 4 5 6 7 Very Familiar

g. Do Not Like at All 1 2 3 4 5 6 7 Like Very Much

Part B- Listening

Excerpt #2

a. Main instrument (s) _____

b. Timpani Bassoon Piccolo Violin

c. Circle only one: Homophonic Polyphonic Heterophonic Monophonic

d. Circle only one choice for each item:

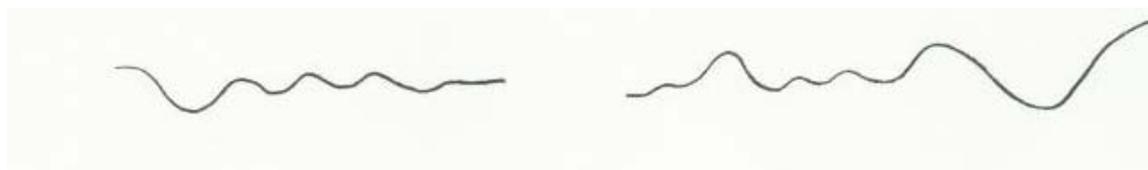
Rhythm: i) even uneven syncopated Repetition of Rhythmic motive

Grouping Of beats: ii) Duple Triple Compound Irregular

Tempo: iii) Allegro Moderato Presto Largo

Articulation iv) Staccato Legato Pizzicato Marcato

e. Choose one contour:



i.)

ii.)

f. Not Familiar at All 1 2 3 4 5 6 7 Very Familiar

g. Do Not Like at All 1 2 3 4 5 6 7 Like Very Much

Part B- Listening
Excerpt #3

a. Main Instrument (s) _____

b. Woodwinds Full Orchestra Tambourine Clarinet

c. Circle only one: Homophonic Polyphonic Heterophonic Monophonic

d. Circle only one choice for each item:

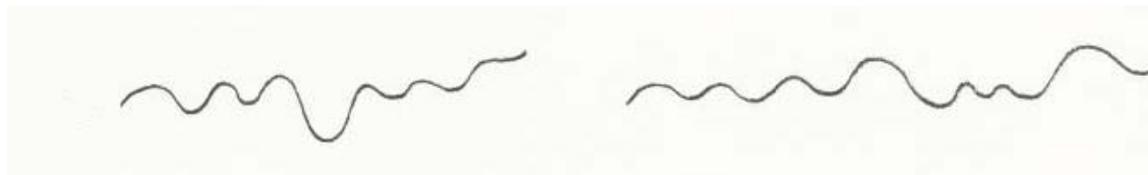
Rhythm: i) even uneven syncopated Repetition of Rhythmic motive

Grouping Of beats: ii) Duple Triple Compound Irregular

Tempo: iii) Allegro Moderato Presto Largo

Articulation iv) Staccato Legato Pizzicato Marcato

e. Choose one contour:



i.)

ii.)

f. Not Familiar at All 1 2 3 4 5 6 7 Very Familiar

g. Do Not Like at All 1 2 3 4 5 6 7 Like Very Much

Part B- Listening

Excerpt #4

a. Main instrument (s) _____

b. Rhythm Instruments Piano Low brass Clarinet

c. Circle only one: Homophonic Polyphonic Heterophonic Monophonic

d. Circle only one choice for each item:

Rhythm: i) even uneven syncopated Repetition of Rhythmic motive

Grouping Of beats: ii) Duple Triple Compound Irregular

Tempo: iii) Allegro Moderato Presto Largo

Articulation iv) Staccato Legato Pizzicato Marcato

e. Choose one contour:



i.)

ii.)

f. Not Familiar at All 1 2 3 4 5 6 7 Very Familiar

g. Do Not Like at All 1 2 3 4 5 6 7 Like Very Much

Part B- Listening

Excerpt #5

a. Main instrument (s) _____

b. Flute Trumpet Strings Bass drum

c. Circle only one: Homophonic Polyphonic Heterophonic Monophonic

d. Circle only one choice for each item:

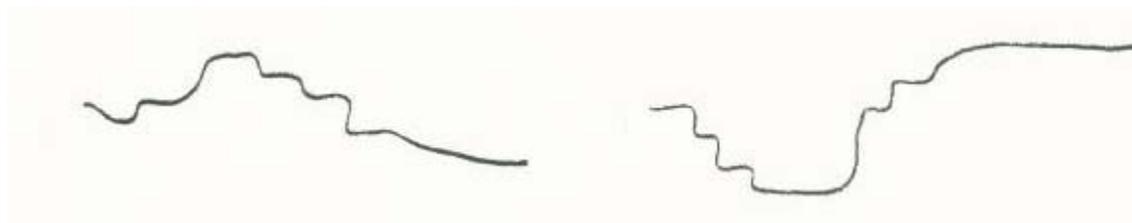
Rhythm: i) even uneven syncopated Repetition of Rhythmic motive

Grouping
Of beats: ii) Duple Triple Compound Irregular

Tempo: iii) Allegro Moderato Presto Largo

Articulation iv) Staccato Legato Pizzicato Marcato

e. Choose one contour:



i.)

ii.)

f. Not Familiar at All 1 2 3 4 5 6 7 Very Familiar

g. Do Not Like at All 1 2 3 4 5 6 7 Like Very Much

Part B- Listening

Excerpt #6

a. Main instrument (s) _____

b. Percussion Horn Oboe Brass

c. Circle only one: Homophonic Polyphonic Heterophonic Monophonic

d. Circle only one choice for each item:

Rhythm: i) even uneven syncopated Repetition of Rhythmic motive

Grouping Of beats: ii) Duple Triple Compound Irregular

Tempo: iii) Allegro Moderato Presto Largo

Articulation iv) Staccato Legato Pizzicato Marcato

e. Choose one contour:



i.)

ii.)

f. Not Familiar at All 1 2 3 4 5 6 7 Very Familiar

g. Do Not Like at All 1 2 3 4 5 6 7 Like Very Much

Part B- Listening

Excerpt #7

a. Main instrument (s) _____

b. Full Orchestra Rhythm Instruments Bassoon Horn

c. Circle only one: Homophonic Polyphonic Heterophonic Monophonic

d. Circle only one choice for each item:

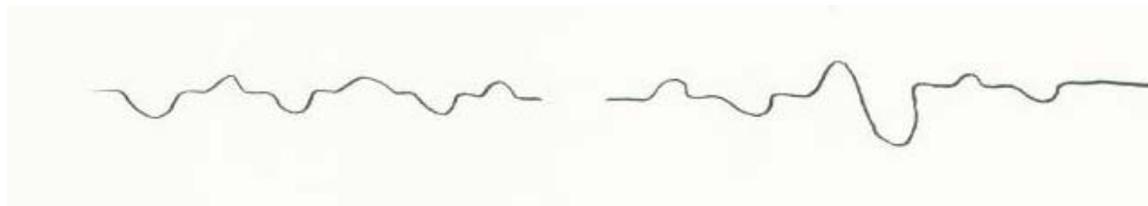
Rhythm: i) even uneven syncopated Repetition of Rhythmic motive

Grouping Of beats: ii) Duple Triple Compound Irregular

Tempo: iii) Allegro Moderato Presto Largo

Articulation iv) Staccato Legato Pizzicato Marcato

e. Choose one contour:



i.)

ii.)

f. Not Familiar at All 1 2 3 4 5 6 7 Very Familiar

g. Do Not Like at All 1 2 3 4 5 6 7 Like Very Much

APPENDIX B- Recall Test

Name _____

Section _____

This exercise is to assess your ability to identify musical elements from listening to music. Your careful responses will provide me with the feedback about the unit on listening.

Instruction: You will hear several excerpts of musical composition. After listening to each musical excerpt, please answer the questions to the best of your ability. You will be given time after each excerpt to write your answers. The excerpts will be played only once.

In your opinion, how do you feel about the listening unit? (choose one response and circle)

- I would like more lessons in music listening
- I think I learned enough for now
- I think the listening unit is too long

Excerpt #1

1. Have you ever heard the piece before? (circle yes or no below)

YES

NO

2. Describe this piece as best as you can. Use what you have learned during the listening lessons; include the usage of as many musical elements as possible.

- Title (if known) _____
- Composer (if known) _____
- Musical elements _____
- _____
- _____
- _____
- _____

3. What Visual image comes to mind as you listen to this piece?

Excerpt #2

4. Have you ever heard the piece before? (circle yes or no below)

YES

NO

5. Describe this piece as best as you can. Use what you have learned during the listening lessons; include the usage of as many musical elements as possible.

○ Title (if known) _____

○ Composer (if known) _____

○ Musical elements _____

○ _____

○ _____

○ _____

○ _____

6. What Visual image comes to mind as you listen to this piece?

Excerpt #3

7. Have you ever heard the piece before? (circle yes or no below)

YES

NO

8. Describe this piece as best as you can. Use what you have learned during the listening lessons; include the usage of as many musical elements as possible.

○ Title (if known) _____

○ Composer (if known) _____

○ Musical elements _____

○ _____

○ _____

- _____
- _____

9. What Visual image comes to mind as you listen to this piece?

Excerpt #4

10. Have you ever heard the piece before? (circle yes or no below)

YES

NO

11. Describe this piece as best as you can. Use what you have learned during the listening lessons; include the usage of as many musical elements as possible.

- Title (if known) _____
- Composer (if known) _____
- Musical elements _____
- _____
- _____
- _____
- _____

12. What Visual image comes to mind as you listen to this piece?

Excerpt #5

13. Have you ever heard the piece before? (circle yes or no below)

YES

NO

14. Describe this piece as best as you can. Use what you have learned during the listening lessons; include the usage of as many musical elements as possible.

- Title (if known) _____
- Composer (if known) _____
- Musical elements _____
- _____
- _____
- _____
- _____

15. What Visual image comes to mind as you listen to this piece?

Excerpt #6

16. Have you ever heard the piece before? (circle yes or no below)

YES

NO

17. Describe this piece as best as you can. Use what you have learned during the listening lessons; include the usage of as many musical elements as possible.

- Title (if known) _____
- Composer (if known) _____
- Musical elements _____
- _____
- _____

- _____
- _____

18. What Visual image comes to mind as you listen to this piece?

Excerpt #7

19. Have you ever heard the piece before? (circle yes or no below)

YES

NO

20. Describe this piece as best as you can. Use what you have learned during the listening lessons; include the usage of as many musical elements as possible.

- Title (if known)_____
- Composer (if known)_____
- Musical elements _____
- _____
- _____
- _____
- _____

21. What Visual image comes to mind as you listen to this piece?

Excerpt #8

22. Have you ever heard the piece before? (circle yes or no below)

YES

NO

23. Describe this piece as best as you can. Use what you have learned during the listening lessons; include the usage of as many musical elements as possible.

- Title (if known) _____
- Composer (if known) _____
- Musical elements _____
- _____
- _____
- _____
- _____

24. What Visual image comes to mind as you listen to this piece?

APPENDIX C - Permission

I understand that in taking this MUS 261 course, some of the regular work and assignments will be used as data for a research study related to a dissertation on effective teaching techniques. My grades will not be affected in any way and my name will not be mentioned anywhere. If I have any concerns or reservations I will contact my instructor as soon as possible.

Signed _____

Date _____



Office of Research Integrity

*Office of the Vice President
for Research*
315 Kinkaid Hall
Lexington, KY 40506-0057
(859) 257-9428
Fax: (859) 257-8995
www.uky.edu

EXEMPTION CERTIFICATION

MEMO: Jennifer S. Shank
Fine Arts - Music
105 Fine Arts Building
Campus 0022

FROM: Institutional Review Board
c/o Office of Research Integrity

SUBJECT: **Exemption Certification for Protocol No. 03-0049-X4Q**

DATE: February 12, 2003

On February 10, 2003, it was determined that your project entitled, *The Effect Of Visual Art On Music Listening*, meets federal criteria to qualify as an exempt study.

Because the study has been certified as exempt, you will not be required to complete continuation or final review reports. However, it is your responsibility to notify the IRB prior to making any changes to the study. Please note that changes made to an exempt protocol may disqualify it from exempt status and may require an expedited or full review.

The Office of Research Integrity will hold your exemption application for five years. Before the end of the fifth year, you will be notified that your file will be closed and the application destroyed. If your project is still ongoing, you will need to contact the Office of Research Integrity upon receipt of that letter and follow the instructions for completing a new exemption application. It is, therefore, important that you keep your address current with the Office of Research Integrity.

If you have any questions, please contact the Office of Research Integrity at 859-257-9428.

0015R

APPENDIX E-Sample Listening Lesson Scripts

Goal: To enhance listening by using musical elements and in the case of the experimental group, to enforce listening.

Objective: Students will be able to identify and recognize salient musical elements that will assist in the identification and categorization of musical excerpts.

Lesson will run 25 minutes:

Attendance and class announcement are to be made at the beginning of each treatment and are not to exceed 3 minutes.

- The Musical excerpt is introduced by writing the title and composer's name on the dry wipe board.
- Title of composition is read out loud and the composers name is read out loud. Birth and Death dates are given for the composer to give context to a time frame for the composition.
- Events happening at the same time in history are pointed out, Beethoven, and the French revolution, American Revolution etc.
- Biographical information about the composer is presented verbally, with no visual cues or prompts. Ex: Beethoven became deaf and was not a product of a patronage system.
- The Composition is introduced in context to the composer's life, when it was written, why, and how long it took.
- Excerpt of the composition is played in it's entirety without further discussion. Students are not asked to listen to any salient musical elements in particular.
- After the piece is listened to once, a list of seven musical elements is written on the board below the Composer and Composition title. The seven elements are:
 1. Main Instrument or instruments
 2. Auxiliary instruments
 3. Contour
 4. Rhythm
 5. Beat Structure
 6. Texture
 7. Articulation
- These elements are written in this order on the board. Students are invited to comment on each element offering their opinion and insight as to what they heard on the first time they have heard the piece.
- After students have been asked to fill in the blanks without prompting, the instructor asks pointed questions to guide the listeners to what they heard.
- The piece is played a second time, with interjections where necessary to point out each element listed on the board as it becomes clear.

- After the second time the piece is heard students are asked to contribute to the list in any further way they would like to.
- After listening to the piece a second time, in the case of the experimental group a painting assigned to the excerpt was projected in front of the students and where applicable portions of the painting was used to reinforce salient musical elements. For example, in Gottschalk and Suerat, the style of painting or pointillism reinforces the articulation of the piece.
- Students were invited to ask any questions about the excerpt, and in the case of the experimental group, the paintings.
- The piece of music was played a third and final time without discussion or interruption for both groups.
- Class was dismissed.

APPENDIX F- Concepts Taught During Listening Lessons.

Lesson One-

A Night in the Tropics by L. Gottschalk. The painting used is *Sunday on the Island of La Grande Jatte* by G. Suerat.

Elements to be discussed:

1. Main Instrument or Instruments
2. Auxiliary Instruments
3. Rhythm
4. Beat Structure
5. Texture
6. Articulation
7. Contour

Dominant art elements present in the painting and associated with musical elements.

1. Articulation- associated with the style of painting called pointillism.
2. Contour- associated with the form and how the eye travels from one element to the next returning to the beginning. The contour is repetitive and returns to the beginning of the excerpt.
3. Texture- associated with the alternating use of light and dark areas of the painting with the thick and thinly orchestrated sections of the musical excerpt.

Lesson Two-

Soldier's Tale by Stravinsky. The painting to be used is *Fugue* by W. Kandinsky.

Elements to be discussed:

1. Main Instrument or Instruments
2. Auxiliary Instruments
3. Rhythm
4. Beat Structure
5. Texture
6. Articulation
7. Contour

Dominant art elements present in the painting and associated with musical elements.

1. Instrumentation, Main and Auxiliary- the association of specific instruments both carrying the main melody and in auxiliary roles and the use of color for the representation of each instrument timbre.
2. Texture- The association of the placement of color upon color in association with the blending of timbres.

Lesson Three-

Contrapunctus #2 by J.S. Bach. The painting used was *Fugue* by Ciurlionis.

Elements to be discussed:

1. Main Instrument or Instruments
2. Auxiliary Instruments
3. Rhythm
4. Beat Structure
5. Texture
6. Articulation
7. Contour

Dominant art elements present in the painting and associated with musical elements.

1. Contour- The shapes of the pine trees represent the shape of this melody.
2. Texture- The painting is a direct representation of the texture of a fugue
3. Instruments, Main and Auxiliary. - The painting represents the entrances of each of the instruments in the fugue and the shape of the fugue with its use of altered subjects.

Lesson Four-

Symphony #9 the fifth movement by L. von Beethoven. The painting used was *Beethoven Frieze* by Klimt.

Elements to be discussed:

1. Main Instrument or Instruments
2. Auxiliary Instruments
3. Rhythm
4. Beat Structure
5. Texture
6. Articulation
7. Contour

Dominant art elements present in the painting and associated with musical elements.

1. The overall painting was Klimt interpretation of this particular musical excerpt.
2. Texture- Represented in the color and spacing used in the painting
3. Contour- The shapes used in the painting represents the contour of the main melody.

Lesson Five-

Symphony #94 Movement 2 by Haydn. The painting used was *La Dance* by Henri Matisse.

Elements to be discussed:

1. Main Instrument or Instruments
2. Auxiliary Instruments
3. Rhythm
4. Beat Structure

5. Texture
6. Articulation
7. Contour

Dominant art elements present in the painting and associated with musical elements.

1. Contour- The shapes of Matisse are simple and can be associated with the simple lines of the Matisse images of dancing individuals.
2. Articulation- The articulation of the piece of music is clean with no ambiguities; the images in the paintings along with the color convey the same idea.
3. Beat Structure- The beat structure of the music is straight forward with no unusual differences and can be represented by the construction of the images in the painting.

Lesson Six-

Valse Triste by Sibelius. The painting used is *Untitled* by Paul Klee.

Elements to be discussed:

1. Main Instrument or Instruments
2. Auxiliary Instruments
3. Rhythm
4. Beat Structure
5. Texture
6. Articulation
7. Contour

Dominant art elements present in the painting and associated with musical elements.

1. Texture- The excerpt has a very dense texture with multiple timbres being sounded at the same time. The painting can be associated with the dense musical texture by the very dense imagery and use of colors in the painting.
2. Beat Structure- The excerpt has an indeterminate beat structure and the painting conveys an indeterminate imagery.

APPENDIX G- Art Survey

Dear Professor/Artist.

I, Jennifer Shank, appreciate your willingness to help as an expert judge regarding some art works. I am working on my dissertation that researches the use of painting as a catalyst to learn about music composition. Specifically, I hope that pointing out similarities in painting might stimulate listeners to listen for similarities in music. Your expertise will enable me to select art works that are good examples of containing “**similarity**” within the artwork itself.

According to the Gestalt principles, the definition of **Similarity** is that “Items similar in some respect tend to be grouped together”. In the case of painting, I’d like to have your opinion about the **extent of similarity** for each of the art elements or principles in a specific painting.

Enclosed you will find a CD rom with slides of 11 art works. Please use the enclosed rating sheets to rate each of the art works presented. When you have finished please return the packet to either Dr. Cecilia Wang’s mailbox or mine in room 105 of the fine arts building. Thank you in advance for your time and effort.

Sincerely,

Jennifer Shank

Please rate **each** of the following paintings on **similarity** for each of the following artistic elements and principles in the scale of 1-10.

Please feel free to comment or explain your rating if you wish.

1 denotes **No Similarity**

10 denotes **Very Strong Evidence of Similarity**

Painting #	Slide #										Comments
Color	1	2	3	4	5	6	7	8	9	10	
Form	1	2	3	4	5	6	7	8	9	10	
Shape	1	2	3	4	5	6	7	8	9	10	
Texture	1	2	3	4	5	6	7	8	9	10	
Balance	1	2	3	4	5	6	7	8	9	10	
Pattern	1	2	3	4	5	6	7	8	9	10	
Rhythm	1	2	3	4	5	6	7	8	9	10	

Thank you very much!!

APPENDIX H- Pilot Study

Pilot Study

Prior to the beginning of this study, a pilot study was run to test the feasibility of the research and the researcher-created pretest and posttests. The pilot was run with music education majors and non-musicians from a nearby university, and non music majors in a music appreciation class at this university. The pilot study was run over a course of 5 days with one day for the pretest and the first day of treatment, a second day of treatment, and the music knowledge portion of the posttest on the third meeting. The results, although not significant, did suggest that the use of visual stimuli in the form of paintings could enhance musical knowledge in the areas of texture and instrumentation, melodic contour and form.

Subjects

The subjects for the pilot study were students enrolled in music appreciation classes and elementary and middle school education methods classes at Campbellsville University, as well as students enrolled in a music appreciation class at the University of Kentucky. Both music appreciation classes and elementary education methods classes were used due to class size and class availability. Students in all of the classes used were untrained, or non-musicians. The total population for the study was n=86. Classes were randomly assigned to the control or treatment groups.

Procedure

The pretest was administered prior to the treatment session during the first meeting. The pretest took approximately 15 minutes to administer. After the pretest, the treatment was administered. For this study, the treatment was 25 minutes long and one excerpt was presented each treatment, each session. Excerpts were first presented by introducing the piece with pertinent composer information and the title. The excerpt was then played once for the subjects without interruption and without instructions to listen for specific elements. Students then received approximately 10 minutes of lecture with the use of call charts and, in the case of the experimental group, paintings to reinforce the musical concepts being covered. During the lecture portion of the treatment, portions of the excerpt were played to reinforce specific points. Students in both the control and experimental groups were given identical information with the exception of the paintings for the experimental group. The students then heard the excerpt in its entirety two more times in succession. The first time the researcher pointed out features as the music was played. The second time, the music was played without interruption or discussion. For each excerpt, instrumentation was discussed. Depending on the strength of melodic contour texture, or form within the excerpt, those concepts were featured as well. For excerpt one and melodic contour and texture was stressed as well as instrumentation. For excerpt three and four, form was stressed along with instrumentation. Excerpts one and two were presented on treatment day one and excerpts three and four were presented during treatment day two.

The posttest was administered on a subsequent class meeting after all four excerpts were presented. Students were aware there would be a posttest but were not asked to prepare for it in any particular way.

Music and Artwork Used in Pilot Study

The music and artwork chosen for the pilot study were from selections being considered for the research study. All of the music was instrumental in nature, with similar instrumentation. Excerpts were purposely chosen to not be immediately recognizable and each excerpt was no longer than three minutes long. The following excerpts were used: 1. Symphony No.4 in A Major, Opus 90 “Italian” Movement 2 Andante Con moto by Felix Mendelssohn. 2. Symphony, “A Night in the Tropics” Movement One, Andante by Louise Moreau Gottschalk. 3. “The Soldier’s Tale” The Soldiers March by Igor Stravinsky. 4. Symphony No.2, Opus 43 in D Major, Movement One, Allegretto by Jean Sibelius. Music was chosen based on instrumentation and the music’s association with visual art or stimuli. The artwork chosen for the experimental group was chosen after consulting art faculty and measuring the element of similarity apparent in each work. Paintings used included works by George Suerat, Mendelssohn, Kandinsky, and Goya.

Pretest and Posttest

The pretest and posttest were researcher-created and designed to measure musical knowledge and preference. It is important to note that the posttest was revised several times and administered a second time after flaws were found in the first test design. The

post test was given with familiar excerpts and unfamiliar excerpts with a total of five excerpts in all. Both the pretest and posttest had a possible score of 25 points.

PILOT PRETEST AND POSTTEST

Part A- Matching

A-I Expressive Elements

Match the expressive element with its symbol. Circle the correct letter name on the answer sheet.

- | | |
|-----------------|----|
| 10. Accent | a. |
| 11. Slur | b. |
| 12. staccato | c. |
| 13. decrescendo | d. |
| 14. fermata | e. |
| 15. repeat sign | f. |
| | g. |
| | h. |

A-II Form

Match the Musical Form with its pattern. Circle the correct letter name on the answer sheet. (Questions 7-10)

- | | |
|-------------------------|--|
| 16. Binary | a. ABA |
| 17. Rondo | b. BBAB |
| 18. Theme and Variation | c. ABAB |
| 10. Ternary | d. ABACADA |
| | e. A ₁ A ₂ A ₃ A ₄ |

Part B- Listening

For each musical excerpt you are to listen, place all responses on the separate Answer Sheet.

- Name the instrument or instruments playing the main melody.
- Name another instrument or instruments you hear.
- Identify the texture. Circle the appropriate type.
- Choose an answer that best represents the piece.
 - What can you say about the rhythm?
 - What is the predominant meter?
 - What is the predominant tempo?
 - What is the predominant articulation?
 - What is the overall dynamic level?
- Study the following patterns and identify the contour that best represents the main melody as part of the excerpt is played again.

Circle the appropriate number on the answer sheet

- On a scale of 1-7, how familiar is the piece of music to you?
(1 being not at all, 7 being very familiar)
- On a scale of 1-7 how well do you like the piece of music?
(1 being not at all, 7 being very much)

Name _____

Mus 100, Section _____

Date _____

Answer Sheet
Part A- Matching

A-I Expressive Elements

Match the expressive element with its symbol. Circle the correct letter name.

- | | | | | | | | | | |
|-------------|----|---|---|---|---|---|---|---|---|
| Accent | 1. | a | b | c | d | e | f | g | h |
| Slur | 2. | a | b | c | d | e | f | g | h |
| Staccato | 3. | a | b | c | d | e | f | g | h |
| Decrescendo | 4. | a | b | c | d | e | f | g | h |
| Fermata | 5. | a | b | c | d | e | f | g | h |
| Repeat Sign | 6. | a | b | c | d | e | f | g | h |

A-II Form

Match the Musical Form with its pattern. Circle the correct letter name.

- | | | | | | | |
|------------------------|-----|---|---|---|---|---|
| Binary | 7. | a | b | c | d | e |
| Rondo | 8. | a | b | c | d | e |
| Theme and
Variation | 9. | a | b | c | d | e |
| Ternary | 10. | a | b | c | d | e |

Part B- Listening

Excerpt #1

a. Main instrument (s) _____

b. Other instrument(s) _____

c. Circle only one: Homophonic Polyphonic Heterophonic Monophonic

d. Circle only one choice for each item:

- | | | | |
|--------------|----------|------------|--------------------|
| i) even | uneven | syncopated | lots of repetition |
| ii) 2/4 | 3/4 | 4/4 | 6/8 |
| iii) Allegro | Moderato | Presto | Largo |
| iv) Staccato | Legato | Pizzicato | Marcato |
| v) pp | f | mp | ff |

e. Choose one contour:

i.)

ii.)

f. Not Familiar at All 1 2 3 4 5 6 7 Very Familiar

g. Do Not Like at All 1 2 3 4 5 6 7 Like Very Much

Part B- Listening

Excerpt #2

a. Main instrument (s) _____

b. Other instrument(s) _____

c. Circle only one: Homophonic Polyphonic Heterophonic Monophonic

d. Circle only one choice for each item:

- | | | | |
|--------------|----------|------------|--------------------|
| i) even | uneven | syncopated | lots of repetition |
| ii) 2/4 | 3/4 | 4/4 | 6/8 |
| iii) Allegro | Moderato | Presto | Largo |
| iv) Staccato | Legato | Pizzicato | Marcato |
| v) pp | f | mp | ff |

e. Choose one contour:

i.)

ii.)

f. Not Familiar at All 1 2 3 4 5 6 7 Very Familiar

g. Do Not Like at All 1 2 3 4 5 6 7 Like Very Much

Part B- Listening

Excerpt #3

a. Main Instrument (s) _____

b. Other instrument(s) _____

c. Circle only one: Homophonic Polyphonic Heterophonic Monophonic

d. Circle only one choice for each item:

- | | | | |
|--------------|----------|------------|--------------------|
| i) even | uneven | syncopated | lots of repetition |
| ii) 2/4 | 3/4 | 4/4 | 6/8 |
| iii) Allegro | Moderato | Presto | Largo |
| iv) Staccato | Legato | Pizzicato | Marcato |
| v) pp | f | mp | ff |

e. Choose one contour:

i.)

ii.)

f. Not Familiar at All 1 2 3 4 5 6 7 Very Familiar

g. Do Not Like at All 1 2 3 4 5 6 7 Like Very Much

Part B- Listening

Excerpt #4

a. Main instrument (s) _____

b. Other instruments(s) _____

c. Circle only one: Homophonic Polyphonic Heterophonic Monophonic

d. Circle only one choice for each item:

- | | | | |
|--------------|----------|------------|--------------------|
| i) even | uneven | syncopated | lots of repetition |
| ii) 2/4 | 3/4 | 4/4 | 6/8 |
| iii) Allegro | Moderato | Presto | Largo |
| iv) Staccato | Legato | Pizzicato | Marcato |
| v) pp | f | mp | ff |

e. Choose one contour:

i.)

ii.)

f. Not Familiar at All 1 2 3 4 5 6 7 Very Familiar

g. Do Not Like at All 1 2 3 4 5 6 7 Like Very Much

Part B- Listening

Excerpt #5

a. Main instrument (s) _____

b. Other instrument(s) _____

c. Circle only one: Homophonic Polyphonic Heterophonic Monophonic

d. Circle only one choice for each item:

- | | | | |
|--------------|----------|------------|--------------------|
| i) even | uneven | syncopated | lots of repetition |
| ii) 2/4 | 3/4 | 4/4 | 6/8 |
| iii) Allegro | Moderato | Presto | Largo |
| iv) Staccato | Legato | Pizzicato | Marcato |
| v) pp | f | mp | ff |

e. Choose one contour:

i.)

ii.)

f. Not Familiar at All 1 2 3 4 5 6 7 Very Familiar

g. Do Not Like at All 1 2 3 4 5 6 7 Like Very Much

Part B- Listening

Excerpt #6

a. Main instrument (s) _____

b. Other instrument(s) _____

c. Circle only one: Homophonic Polyphonic Heterophonic Monophonic

d. Circle only one choice for each item:

- | | | | |
|--------------|----------|------------|--------------------|
| i) even | uneven | syncopated | lots of repetition |
| ii) 2/4 | 3/4 | 4/4 | 6/8 |
| iii) Allegro | Moderato | Presto | Largo |
| iv) Staccato | Legato | Pizzicato | Marcato |
| v) pp | f | mp | ff |

e. Choose one contour:

i.)

ii.)

f. Not Familiar at All 1 2 3 4 5 6 7 Very Familiar

g. Do Not Like at All 1 2 3 4 5 6 7 Like Very Much

Part B- Listening

Excerpt #7

a. Main instrument (s) _____

b. Other instrument(s) _____

c. Circle only one: Homophonic Polyphonic Heterophonic Monophonic

d. Circle only one choice for each item:

- | | | | |
|--------------|----------|------------|--------------------|
| i) even | uneven | syncopated | lots of repetition |
| ii) 2/4 | 3/4 | 4/4 | 6/8 |
| iii) Allegro | Moderato | Presto | Largo |
| iv) Staccato | Legato | Pizzicato | Marcato |
| v) pp | f | mp | ff |

e. Choose one contour:

i.)

ii.)

f. Not Familiar at All 1 2 3 4 5 6 7 Very Familiar

g. Do Not Like at All 1 2 3 4 5 6 7 Like Very Much

Part B- Listening

Excerpt #8

a. Main instrument (s) _____

b. Other instrument(s) _____

c. Circle only one: Homophonic Polyphonic Heterophonic Monophonic

d. Circle only one choice for each item:

- | | | | |
|--------------|----------|------------|--------------------|
| i) even | uneven | syncopated | lots of repetition |
| ii) 2/4 | 3/4 | 4/4 | 6/8 |
| iii) Allegro | Moderato | Presto | Largo |
| iv) Staccato | Legato | Pizzicato | Marcato |
| v) pp | f | mp | ff |

e. Choose one contour:

i.)

ii.)

f. Not Familiar at All 1 2 3 4 5 6 7 Very Familiar

g. Do Not Like at All 1 2 3 4 5 6 7 Like Very Much

REFERENCES

- Anglin, G.J. (1986). *Cognitive psychology and its implications 3rd Ed.* New York, NY: Freeman.
- Arnheim, R. (1954,1974). *Art and visual perception: a psychology of the creative eye.* Berkeley, CA: University of California Press.
- Beethoven, J., Bohn, D., Hiley, M. et.al. (1995). *The music connection.* Parsippany, NJ: Silver Burdett.
- Beethoven, J., Brumfield, S., Campbell, P.S et al. (2002). *Making music.* Parsippany, NJ: Scott Foresman.
- Berleant, A. (1991). *Art and engagement.* Philadelphia: Temple University Press.
- Berlin, S. R. (1976). *Verbal and musical facilitation of vividness of mental imagery, A comprehensive study.* Unpublished Doctoral Dissertation, California School of Professional Psychology: Fresno.
- Bharucha, J. J. (1994). Tonality and expectation. In R. Aiello & J. Sloboda (Eds.), *Musical Perceptions* (pp. 215-239). New York: Oxford University Press.
- Blatnik, F. (1988). *Study confirms teaching with videodisc beats textbook methods.* T.H.E. Journal, 16, 58-60.
- Blocher, L.R. (1990). *An analysis of college band instrumentalists' detection of common performance errors.* Paper presented at the Southern Division CBDNA/NBA Conference, Tallahassee, FL.
- Boardman, E. (2001). *Generating a theory of music instruction.* Music Educators Journal. 88, 2, 45-53.
- Boardman, E. & Andress, B. (1981). *The Music Book.* New York, NY: Holt, Rinehart, and Winston.
- Bowman, W. (1969). *Philosophy, criticism and music education: some tentative steps down a less traveled road.* Bulletin for the Council of Research in Music Education, 114, 1-19.
- Boyer-White, R., Campbelle-Dugard, M., de Frece, R., et.al.(1995). *Share the music.* New York: McGraw Hill.

Bregman, A. S. (1990). *Auditory scene analysis: the perceptual organization of sound*. Cambridge, MA: MIT Press.

Bresler, L. (1993). *Music in a double bind: Instruction by non-specialists in elementary schools*. Bulletin for the Council of Research in Music Education, 115, 1-13.

Briggs, K. C. & Myers, I. B. (1977). *Myers-Briggs type indicator*. Palo Alto, California: Consulting Psychologist Press.

Broudy, H. S. (1958). A realistic philosophy of music education. In N.B. Henry (Ed.), *Basic Concepts in Music Education*.(146-181). Chicago: National Society for the Study of Education.

Burgess, N. & Hitch, G.J. (1996). *A connectionist model of STM for serial order*. Psychological Review, 106, 551-581.

Campbell, M.R. (1991). *Musical learning and the development of psychological processes in perception and cognition*. Bulletin for the Council on Research in Music Education, 107, 35-42.

Clarke, E.R. (1989). *Mind the gap: formal structures and psychological processes in music*. Contemporary Music Review, 3, 1-13.

Consortium of National Arts Education Association. (1994). *National standards for arts education: what every young American should know and be able to do in the arts*. Reston, VA: Music Educators National Conference.

Craik, F.M. & Tulving, E. (1975). *Depth of processing and retention of works in episodic memory*. Journal of Experimental Psychology, 104, 268-293.

Cutietta, R.A. (1993). *The musical elements, Who said they're right?* Music Educators Journal, 79, 48-53.

Darrow, A.A. (1990). *The role of hearing in understanding music*. Music Educators Journal. 77, 4, 24-28.

Deliege, I. (1987). *Grouping conditions in listening to music: an approach to Lerdahl and Jackendoff's grouping preferences rules*. Music Perception, 4, 325-360.

Deliege, I. (1989). A perceptual approach to contemporary musical forms, in S. McAdams & I. Deliege (Eds.) *Music and Cognitive Science (Special Issue)*. Contemporary Music Review, 4, 213-230.

- Deliege, I. & El Ahmadi, A. (1990). *Mechanisms of cue abstraction in musical groupings: A study of perception of Sequenza IV for viola solo by Luciano Berio*. *Psychology of Music*, 18, 18-44.
- Deutsch, D. (1982, 1999). Grouping mechanisms in music. In D. Deutsch (Ed.) *The psychology of music*. San Diego, CA: Academic Press.
- Dewey, J. (1958). *Art as experience*. New York: G.P Putnam's Sons.
- Dewitt, L.A. & Crowder, R.G. (1986). *Recognition of novel melodies after brief delays*. *Music Perception* 3 p. 259-274.
- Dickey, J.P. & Hendricks, R.C. (1991). *Visual perception qualities of instructional materials*. *The Clearing House*, 64, 168-170.
- Dowling, W.J. & Bartlett, J. C. (1981). *The importance of interval information in long term memory*. In S.W. Ye (Ed.) *Music Mind and Science*. (pp. 166-188). Seoul: Seoul National University Press.
- Dowling, W.J. (1994). Melodic contour in hearing and remembering melodies. In R. Aiello & J. A. Sloboda (Eds.), *Musical Perceptions* (pp. 173-190). New York: Oxford University Press.
- Dowling, W.J. & Harwood, D.L. (1986). *Music cognition*. Orlando, FL: Academic Press.
- Dowling, W.J, Tillmann, B. & D. Ayers. (2001). *Memory and the experience of hearing music*. *Music Perception* 19, 2, 249-276.
- Drago, M. (1993). *College musicianship: does it work?* *Music Educators Journal*, 79, 40-43.
- Dubos, A. (1715, 1748). *Critical reflections on poetry and painting*. Reprint from the fifth edition. New York: AMS Press.
- Dunn, R. & Dunn, K. (1978). *Teaching students through their individual learning styles*. Englewood Cliffs, NJ: Prentice-Hall.
- Dunn, R & Dunn, K. (1993). *Teaching secondary students through their individual learning styles: practical approaches for grades 7-12*. Boston: Allyn and Bacon.
- Eisner, E. W. (1998). *The kind of schools we need: personal essays*. Portsmouth, NJ: Heinemann Press.

- Elliott, D. J. (1995). *Music matters: a new philosophy of music education*. New York: Oxford University Press.
- Elliott, D.J. (1990). *Music as culture: toward a multi-cultural concept of art education*. *Journal of Aesthetic Education*, 24 (1), 147-166.
- Erber, N.P. & Hirsh, I. (1978). Auditory training. In H. Davis & S.R. Silverman. (Eds.) *Hearing and Deafness*. (pp.358-361). New York: Holt, Rinehart and Winston.
- Fischer, B. & Fischer, L. (1979). *Styles in teaching and learning*. *Educational Leadership*, 36, 245-254.
- Forsythe, J.L. & Kelly, M.M. (1989). *Effects of visual-spatial added cues on fourth-graders' melodic discrimination*. *Journal of Research in Music Education*. 37, 4, 272-277.
- Fry, R. (1920). *Vision and design*. Cleveland: World (1956 Printing).
- Gardner, H. (1990). *Art education and human development*. Los Angeles: Getty Center for Education in the Arts.
- Geringer, J.M. & Madsen, C. F. (1995). *Focus of attention to elements and listening patterns of musicians and non-musicians*. *Bulletin for the Council of Research in Music Education*, 127, 80-87.
- Goehr, A. (1990). *Music as communication*. In D.H. Mellor (Ed.) *Ways of Communicating*. (pp.125-142). Cambridge: Cambridge University Press.
- Goldberg, T. & Schrack, G. (1986). *Computer-aided correlation of musical and visual structures*. *Leonardo*, 19 (1),11-17.
- Goodman, N. (1968). *Languages of Art*. Indianapolis: Bobbs Merrill.
- Gordon, I.E. (1989). *Theories of visual perception*. New York: John Wiley and Sons.
- Grasha, A.F. & Reichmann, S.W. (1975). *Student learning styles questionnaire*. Cincinnati, OH: University of Cincinnati Faculty Resource Center.
- Green, L. (1988). *Music on deaf ears*. Manchester, U.K.: Manchester University Press.
- Greene, M. (1986). *The spaces of aesthetic education*. *Journal of Aesthetic Education*, 20 (4), 56-62.
- Gregorc, A.F. (1982). *Gregorc style delineator*. Maynard, MA: Gabriel Systems.

- Grey, T. (1997). *Tableaux vivants: landscape, history, painting and the visual imagination in Mendelssohn's orchestral music*. *Nineteenth Century Music*, 21, 38-76.
- Haack, P. (1970). *A study involving the visual arts in the development of musical concepts*. *Journal of Research in Music Education*, 18, 392-398.
- Haack, P. (1992). The acquisition of music listening skills in R. Colwell (Ed.) *Handbook of research on music teaching and learning* (pp. 451-465). New York: Schirmer Books.
- Hair, H. I. (1993). *Descriptive vocabulary and visual choices: Children's responses to conceptual changes in music*. *Bulletin for the Council of Research in Music Education*, 91, 59-69.
- Hair, H.I. (1995). *Children's descriptions and representations of music*. *Bulletin for the Council of Research in Music Education*, 119, 41-48.
- Halpern, A. R., Bartlett, J.C. & W. J. Dowling (1998). *The perception of mode rhythm and contour in unfamiliar melodies: Effects of age and experience*. *Music Perception*, 15 (4), 335-355.
- Hill, J.E. (1976) *The educational sciences*. Bloomfield Hills, MI: Oakland Community College Press.
- Hitch, G.J., Burgess, N., Towse, J.N. & Culpin, V. (1996). *Temporal grouping effects in immediate recall: A working memory*. *Quarterly Journal of Experimental Psychology: Section A- Human Experimental Psychology*, 49 (1), 116-139.
- Hoffer, C.R. (1979). *A concise introduction to music listening, 2nd ed*. Belmont, CA: Wadsworth Publishing Co.
- Issing, L.J., Hanneman, J. & Haack, J. (1989). *Visualization by pictorial analogies in understanding expository text*. In H. Mandl and J. R. Levin, (Eds.). *Knowledge acquisition from text and pictures*. Amsterdam: North- Holland.
- Jung, C. (1927). *The theory of psychological type*. Princeton, NJ: Princeton University Press.
- Kagan, A. (1986). *Ut pictura musica, Ito 1860*. *Arts Magazine*, 60 (9), 86-91.
- Kalyuga, S., Chandler, P. & Sweller, J. (2000). *Incorporating learner experience into the design of multimedia instruction*. *Journal of Educational Psychology*, 92 (1), 126-136.

Keefe, J.W.(1979). *Learning style overview student learning styles*. Reston, VA: National Association of Secondary School Principals.

Kepes, G. (Ed.) (1965). *Education and vision: vision and value series vol 1*. Taiwan: Central Book.

Klein, J. T. (1990). *Interdisciplinary history, theory, and practice*. Detroit, MI, Wayne State University Press.

Kolb, D. A. (1981). Learning styles and disciplinary differences. In A.W. Chickering (Ed.), *The modern college* (pp. 231-255). San Francisco: Jossey- Bass.

Koniari, D., Predazzer, S. & Melen, M. (2001). *Categorization and schematization process used in music perception by 10-11 year old children*. Music Perception, 18 (3), 297-324.

Krumhansl, C.L. (1996). *A perceptual analysis of Mozart's Piano Sonata: segmentation, tension, and musical ideas*. Music Perception, 13, 401-432.

Krumhansl, C. L. (1990) *Cognitive foundations of musical pitch*. New York: Oxford University Press.

Kvet, E.J. & Watkins, R.C. (1993). *Success attributes in teaching music as perceived by elementary-education majors*. Journal of Research in Music Education. 41, 1, 70-80.

Langer, S.K. (1957). *Philosophy in a new key, 3rd Ed*. Cambridge, Massachusetts and London, England: Harvard University Press.

Leonhard, C. (1991). *Status of arts education in American public schools: report on a survey conducted by the national arts education research center at the University of Illinois*. Evanston, IL: University of Illinois.

Leonhard, C. & House, R.W. (1972). *Foundations and principles of music education, 2nd ed*. New York: McGraw Hill, Inc.

Lerdahl, F., & Jackendoff, R. (1983, 1996). *A generative theory of tonal music*. Cambridge: MIT Press.

Levie, W. H. and Lentz, R. (1982). *The Effect of text illustrations: a review of research*. Educational Communication and Technology Journal, 30,195-232.

- Levie, W.H. (1987). Research in pictures: A guide to the literature. In D.M. Willows & H. A. Haughton, (Eds.), *The psychology of illustration. Volume 1: Basic Research*. New York: Springer-Verlag.
- Levinson, J. (1990). *Musical literacy*. Journal of Aesthetic Education, 24, 1-17.
- Limbirt, W. M. & Polzella, D. J. (1998). *Effect of music on the perception of paintings*. Empirical Studies of the Arts. Vol. 16 (1), 33-39.
- Lindeman, E.C. (1926). *The meaning of adult education*. New York: New Republic.
- Lindsay, R. & Vergo, A. (Eds.), (1982). *Kandinsky, "Concerning the spiritual in art."* New York: Springer-Verlag.
- Lipscomb, S. D. & Hodges, D. A. (1996). Hearing and music perception. In D. A. Hodges,(ed.) *The handbook of music psychology*. San Antonio, TX: IMR Press.
- Madsen, C. K. (1987). Background music: competition for focus of attention. In C.K. Madsen & C. A. Prickett (Eds.) *Applications for research in music behavior*.(pp.315-325.) Tuscaloosa AL: University of Alabama Press.
- Madsen, C. K. & Geringer, J.M. (2000). *A focus of attention model for meaningful listening*. Bulletin for the Council of Research in Music Education, 147, 103-108.
- Madsen, C. K. & Geringer, J.M. (1990). *Differential patterns of music learning: focus of attention of musician versus non-musicians*. Bulletin for the Council of Research in Music Education, 105, 45-57.
- Madsen, C. K & Wolfe, D. E. (1979). *The effect of interrupted music and incompatible responses on bodily movement and music attentiveness*. Journal of Music Therapy, 16 (1), 36-42.
- Masterson, M. L. (1994). *Moving beyond "it's got a good beat."* Music Educators Journal, 80, (6), 24-28.
- Maur, K. (1999). *The sound of painting*. Munich, New York, NY: Prestel.
- Mayberry, M., Parmentier, F.B.R., & Jones, D. M. (2002). *Grouping of list items reflected in the timing of recall: implications for models of serial verbal memory*. Journal of Memory and Language, 47, 360-385.
- McAdams, S. (1993). *Thinking in sound: The cognitive psychology of human audiation* Oxford: Clarendon Press.

- McDaniel, M.A. and Pressley, M. (Eds.) (1987). *Imagery and related mnemonic processes*. New York: Springer-Verlag.
- Meyer, L. (1956). *Emotion and meaning in music*. Chicago: University of Chicago Press.
- Mitchell, R. W. & Gallagher, M.C. (2001). *Embodying music and matching music and dance in memory*. *Music Perception*, 19. (1), 65-85.
- Mullee, M. (1996). *Development of a workshop to improve adult music listening skills*. Unpublished Doctoral Dissertation: Columbia University.
- Neisser, U. (1976). *Cognition and reality: principles and implications of cognitive psychology*. New York: Freeman.
- Nye, R. E., Nye, V.T., Martin, G.M. & M.L. Rysselberghe. (1992). *Music in the elementary school 6th ed.* Englewood Cliffs, NJ: Prentice-Hall.
- Olson, G.B. (1978). *Intersensory and intrasensory transfer of melodic contour perception by children*. *Journal of Research in Music Education*, 26, 41-47.
- Olson, G.B. (1981). *Perception of melodic contour through intrasensory matching and intersensory transfer by elementary students*. *Journal of Education Research*, 74, 358-362.
- Paivio, A. (1986). *Mental representations: a dual-coding approach*. NY: Oxford University Press.
- Park, C. C. (2000). *Learning style preferences of Southeast Asian students*. *Urban Education*, 35 (3), 245-268.
- Peeck, J. (1987). The role of illustrations in processing and remembering illustrated text. In D. M. Willows & H. A. Houghton, (Eds.). *The psychology of illustration. volume 1: basic research*. New York: Springer- Verlag.
- Pomerance, A. (1991). *An experimental whole-language in-service workshop for adult literacy tutors and learners*. Philadelphia: The Center for Literacy. (ERIC ED 362780)
- Povel, D. & Jansen, E. (2001). *Perpetual mechanisms in music processing*. *Music Perception*, 19 (2), 169-198.

- Pressley, M. & Miller G. E., (1987). Effects of illustrations on children's listening comprehension and oral prose memory. In D.M. Williams & H.A. Houghton (Eds.) *The Psychology of Illustration Vol. 1 Basic Research*. New York: Springer-Verlag.
- Purdie, T. (1849) *Form and sound: can beauty be dependent on the same physical laws?* Edinburgh.
- Radocy, R. & Boyle D., (1988). *Psychological foundations of musical behavior*. Springfield, IL: C. C . Thomas.
- Rakes, G.C. and Rakes, T.A. (1995). *Using visuals to enhance secondary students' reading comprehension of expository texts*. *Journal of Adolescent and Adult Literacy*, 39, 46-54.
- Reimer, B. (1972). *The experience of music*. Englewood Cliffs, NJ: Prentice-Hall
- Reimer, B. (1989). *Music education and aesthetic education: past and present*. *Music Educators Journal*, 75, (6), 22-28.
- Reimer, B. (1993). *Music education in our multimusical culture*. *Music Educators Journal*, 79 (7), 21-26.
- Reimer, B. & Evans, G.(1973). *Developing the experience of music: Listening Charts*. Englewood Cliffs, NJ: Prentice-Hall.
- Rentz, E. (1992). *Musicians' and non-musicians' aural perception of orchestral instrument families*. *Journal of Research in Music Education*, 40 (3), 185-192.
- Ritchey, G.H. (1982). *Pictorial detail and recall in adults and children*. *Journal of Experimental Psychology*, 8, 139-141.
- Rosner B. S. & Meyer, L. B. (1986). *The perceptual roles of melodic process contour and form*. *Music Perception*, 4 (1), 1-40.
- Royal, M.S. & Fiske, H.E. (2000). *Cognitive context and musical learning: how to have it both ways*. *Bulletin for the Council of Research in Music Education*, 147, 159-163.
- Sanders, D.A. (1977). *Auditory perception of speech*. Englewood Cliffs, NJ: Prentice- Hall.

Scheckley, B. G. (1983). *Adults learning as a function of temperament ego maturity and perceived locus of control: How individual differences affect adult learning projects*. Doctoral Dissertation: University of Connecticut.

Scheuller, H. M. (1953). *Correspondence between music and the sister arts according to eighteenth century theory*. *Journal of Aesthetic and Art Criticism*, XI 334-359.

Schwadron, A. A. (1967). *Aesthetics: dimensions of music education*. Washington: MENC.

Shaw-Miller, S. (2002). *Visible deeds of music: Art and music from Wagner to Cage*. New Haven: Yale University Press.

Siebenaler, D. J (1999). *Student song preference in the elementary music class*. *Journal of Research in Music Education*. 47, 3, 213-233.

Silver, H., Strong, R, and Perini, M. (1997). *Integrating learning styles and multiple intelligences*. *Educational Leadership*, 55, 22-27

Silver, H.F. and Hanson, J.R. (1995). *Learning styles and strategies*. Woodbridge, NJ: The Thoughtful Education Press.

Stolba, K M. (1990) *The development of western music*. Dubuque, IA: Wm. C. Brown Publishers.

Swanick, K. (1988). *Music, mind and education*. New York: Routledge.

Tait, M. & Haack, P. (1984). *Principles and processes in music education: new perspectives*. New York & London: Teachers College Press.

Thompson, W.F. & Schellenberg, E.G., (2002). Cognitive constraints on music listening. In Richardson, C. & Colwell, R., (Eds.) *The new handbook of research on music teaching and learning*. (p. 461-483) Reston, VA: MENC.

Tough, A. (1979). *The adults' learning project: A fresh approach to theory and practice in adult learning*. 2nd Edition. Toronto, Ont: The Ontario Institute for Studies in Education.

Tulvig, E. (1983,1984). *Elements of episodic memory*. Oxford: Oxford University Press.

Wang, C. & Sogin, D. (1998) *Arts infused education in Kentucky*. Multimedia Interactive CD-Rom, The Galef Institute and the National Endowment for the Arts.

Wang, C. & Sogin, D. (1998). *The role of the arts in different ways of knowing*. Conference Proceedings of the 23rd Congress of the International Society for Music Education, Pretoria, South Africa.

Wang, C. & Sogin, D. (1991). *Evaluating the basic arts program: Final report*. Frankfort, KY: The Kentucky Arts Council.

Wenger, R. (1997). *Visual art, archeology, and gestalt*. Leonardo, 3, 1, 35-46.

Willsdon, C. A. (1996). *Klimt's Beethoven frieze: Goethe, tempelkunst and the fulfillment of wishes*. Art History, 19 (1), 44-73.

Wlodkoski, R. J. (1985). *Enhancing adult motivation to learn*. San Francisco: Jossey- Bass.

Wolpert, R.S. (2000). *Attention to key in a nondirected music listening task: musicians and non musicians*. Music Perception, 18 (2), 225-230.

Wratcher, M.A. & Jones R.O., (1988). *Designing support programs for adult freshman: A case study using a time management workshop*. Paper presented at conference on freshman year experience. (ERIC ED 299911).

Yang, C. L. and Wedman, J.F. (1993). *A study of the conditions influencing analogical problem solving*. Journal of Research and Development in Education, 26, 213-221.

Vita

Name

Jennifer Sue Shank

Date and Place of Birth

July 20, 1971

Cleveland, Ohio

Degrees Awarded

Master of Music

The University of Kentucky
Lexington, Kentucky

Bachelor of Arts

Shepherd College
Shepherdstown, West Virginia

Orff Certification, Levels I and II

Professional Positions Held

- | | |
|-----------|---|
| 1998-2003 | Teaching Assistant
University of Kentucky
Lexington, Kentucky |
| 1998-1999 | General Music Education Specialist
St. Marks
Richmond, Kentucky |
| 1995-1998 | Band Director
Manassas Park High School
Manassas Park, Virginia |

1994-1995 General Music Education Specialist
 St. Joseph School
 Martinsburg, West Virginia

Presentations

The Effect of Musicing on Recognition of Music Concepts by College Students Presented at the American Orff Schulwerk National Conference, Cincinnati, OH; November 2001

Studying Affective Response in Non-Musicians Presented at the Southern Division of the Music Educators/Kentucky Music Educators Conference, Louisville KY; Feb 2001

Folk Songs and the World Wide Web Presented at the National Symposium of Music Instruction Technology at Auburn University, Auburn, AL; July 1999

Membership in Professional Organizations

Music Educators National Conference

Kentucky Music Educators Association

American Orff- Schulwerk Association

Kentucky Orff-Schulwerk Association

College Music Society