THE PERCEPTIONS OF MUSICIANS TOWARD THEIR USE OF COGNITIVE SKILLS IN READING MUSIC AT SIGHT: Q-METHODOLOGICAL STUDY

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CHAPTER I

Introduction

Musicians face tremendous demands on their time during the academic study of music. When they pursue a Bachelor of Arts degree at a liberal arts institution, they must allocate time to practice their given major performance instrument. Most institutions ask students to declare a major performance area for private study and to practice a minimum of one hour per day on that major performance area. In addition to developing individual performance skills, musicians must participate in their major performance ensemble and often in other ensembles. Each ensemble typically receives one academic hour of credit, yet often rehearses three to five hours each week. According to the National Association of Schools of Music (NASM), a music major's studies in the major performance area and supportive courses in music should comprise 10% to 20 % of a music major's curriculum (NASM, 2002).

In a program at a liberal arts institution, a student majoring in music will receive a rounded academic plan of study in the liberal arts. Students are expected to allocate time for general education and the accompanying homework. General studies normally occupy 55% to 70% of a music major's total curriculum (NASM, 2002). In addition, the music major allocates time for the academic pursuit of music which carries another set of time and energy constraints.

The academic pursuit of music includes the study of music theory and aural skills and music history and analysis. Musicianship studies comprise 20% to 25% of the curriculum for those who major in music (NASM, 2002). According to NASM, musicianship studies provide the student competencies that should be "pursued through making and listening to music" (p. 81, NASM, 2002). Traditional course work in musicianship includes, but is not limited to, music theory and aural skills, keyboard harmony, counterpoint, orchestration, conducting, music history and analysis, and music literature.

Music theory and aural skills require a complex cognitive learning structure. Music theory requires the student to focus on the interplay between the processes by which musical sounds achieve meaning and the compositions that embody those meanings (Reimer, 2003). Aural skills require the students to focus on the development of their abilities to hear musical relationships. More importantly, aural skills demand that the students not only hear the musical relationships but also understand those musical relationships in their context (Rogers, 1984). Music history and analysis asks the students to create formal relationships between what has been studied in the theory classroom and what is heard and understood by the student and to place that understanding within a historical context as well as within various compositions (Rogers, 1984).

Statement of the Problem

Many students enter into the collegiate music program after six to ten years of study, depending upon the instrument. Voice majors began to sing in elementary school

and then began to participate in ensembles in the fifth to seventh grade. Many states sponsor competitions during middle school, junior high, and high school in which students are encouraged to begin the study of solo singing. By the time students enter the collegiate music program, they have often sung solos at the district and state level in foreign languages and representing various stylistic periods. These same advanced music students may often enter college not knowing the very fundamentals of how music is put together. The rudiments of music reading are taught to these students, but a transfer of knowledge into a new setting does not always seem to occur. These students, who are often members of the most elite performing groups, have little or no understanding of how the very simplest elements of musical composition were utilized.

This gap in the learning situation may be likened to the child who memorizes a short story. The child cannot read the story but has committed it to memory after hearing many repetitions. The child then stands in front of his/her family and friends, holds a book, and begins to recite the story. Upon completion of the story, the audience cheers and proclaims the child an excellent reader. The child may even win numerous awards at a local recitation tournament. All the while, the child has never really learned to read. The child must depend on others to recite the story until it is committed to memory. Such could be the state of music reading by many music students.

The same situation holds true for many instrumental majors. They have often practiced endless hours to achieve technical facility on their given instrument, but then have no understanding of how to transfer this technical facility into a deep understanding of how pieces of music are composed. These very elite students enter into the collegiate music programs at the top of their game.

Studies at the New England Conservatory of music report that "usually about 25% of the new students will be unable to sight read *any* melodies with fewer than five measures wrong. We expect about 75% of the entering freshmen will be unable to sight read anything beyond a diatonic and stepwise eight-measure melody with fewer than five errors. Although an average of six years of private instrumental study forms the most important part of an entering student's musical background and preparation for advanced study, year after year the results of this examination show there is surprisingly little transfer of skills to a broader musical context" (p. 52, Davidson, Scripp, & Meyaard, 1988d). After a few short months in a collegiate setting these very technically competent musicians are ready to seek a new major.

In what ways do musicians view the academic study of music? "Undergraduate music students begin their training with a high degree of skill and experience in musical performance, but little patience for learning that does not directly involve their instruments" (p. 1, Davidson, Scripp, & Fletcher, 1995). It should also be noted that many instructors teaching the academic study of music are not specialists in the field of music theory and aural skills but are specialists in performing (Rogers, 1984).

It is important to understand that it is incumbent on the instructor to instill in his/her students the relevance of the academic study of music to the performing life of the musician. Many students fail to see that connection. Can undergraduate instructors acquire a better understanding of the cognitive sciences so as to better prepare their students? To understand the question, one must draw from research currently being conducted in the fields of music theory and music psychology.

Many in the field of music theory pedagogy are calling for a more extensive dialogue with those in the field of music cognition (Butler, 1992, Davidson & Scripp, 1988a, Marvin, 1995). Cognitive experimentation in the field of music allows instructors to directly explore issues in the aural skills, harmony, and analysis classrooms.

For those who advocate such dialogues, the expectations are that such discussions will demonstrate the implications for developing and refining both musical understanding and musical skills (Klonoski, 1999). While both of these goals are the primary goals in the study of music theory and aural skills, many theorists posit that most cognition experiments lack relevance to "real" music (Butler, 1992). Others point to gaps that occur between the study of music cognition and aural skills (Karpinski, 2000). Still others point for a need to better understand the nature of cognitive skills in music (Davidson & Scripp, 1992), and they point out the disconnectedness of musical cognitive skills in the immature, untrained, or inexperienced musician (Davidson & Scripp, 1992). They state unequivocally that the development of musical skill in the novice musician and the mastery of those skills are the business of music education, and they question whether music educators are actually focused on the development of musical cognitive skills (Davidson & Scripp, 1992).

The gap facing undergraduate music faculty in preparing their students to understand the relevance of the academic study of music to their performing instrument is of concern to those who specialize in music theory pedagogy and to those who specialize in music psychology. This dissertation seeks to elicit the views of those who have undergone or who are in the midst of the academic study of music. The study seeks to provide those in the field of music theory and psychology a comprehensive look at the

array of perceptions held by those who have completed, those who are currently working on, or those who have left the field of study. It is important to understand the views so that we might better inform our practice.

Theoretical Framework

Work that began to refine and explain the process by which a musician knows music was published by Lyle Davidson and Larry Scripp (1988 a-d). The researchers first began their work at Project Zero under the auspices of Howard Gardner. While at Project Zero, Davidson and Scripp (1992) observed and documented the development of the musical language in children.

The researchers observed that children develop contour schemes to account for emerging tonal knowledge. They further state that unless children were given formal training that would include both instrumental and theoretical, the complete integration of contour schemes into a functioning tonal system would be incomplete (Davidson & Scripp, 1988b).

All of the research conducted on developing musicians was published in an article in the Handbook of Research on Music Teaching and Learning titled “Surveying the Coordinates of Cognitive Skills in Music” (Davidson & Scripp, 1992). Extensive research was conducted on various age levels. From the research, the researchers provide a theoretical framework for understanding and describing the views of musicians toward the study of music theory and aural skills.

Davidson and Scripp (1992) suggest a cognitive skills matrix as a tool for understanding how musicians think about music. The researchers called for coordination of three distinct ways of knowing. They believed that cognitive skills could be mapped in musical production, or compositional and performance skills; perception, or discrimination and monitoring skills; and in reflection, or critical thinking and reenvisioning skills.

They continued by suggesting that these skills should be observed in two conditions: in performance and outside performance. The researchers observed that in performance, musicians use knowledge in a dynamic fashion. The knowledge is utilized in a particular way that is congruent to the action being performed. The researchers contend that the musician is intuitively aware that music is unfolding in the course of time.

For this reason, Davidson and Scripp (1992) suggest that the knowledge in performance is used in three distinct ways. The researchers suggest that music knowledge in this realm is action-procedural, or knowledge expressed in a given action; perception-in-action, or knowledge which is the result of being aware of the notation and its expression during a performance; and reflection-in-performance, or knowledge gained and utilized by being influenced by the given performance itself.

The researchers contend that musicians also utilize their knowledge of music outside the purview of musical performance. Musical knowledge in production outside of the arena of performance involves the composition of music. In this sphere, a musician must use notation to convey to another musician a set of procedures which he/she is obliged to utilize during performance.

In a perceptual setting outside of musical performance, musicians must convey their knowledge through the recognition or discrimination of various musical elements such as the pitch of a melody or harmonic structure, the timbre of a given instrument, the rhythmic structure of a piece of music, or the overall compositional form of a particular piece of music. Perception in this capacity is highly utilized in the collegiate musicians' curriculum. On a regular basis, the musicians would be expected to use this knowledge in the music theory and aural skills classroom and in the music history and analysis classroom.

Finally, the researchers suggest ways in which musicians use reflective knowledge outside of performance. In this arena, the researchers contend that musicians utilize reflective knowledge to conceive new ways of practicing on their instruments. The musician might also use reflective knowledge in formulating new ideas for interpreting a piece of music in a new manner.

For the researchers, this intense web of knowledge is best represented by the mature musician. The goal of music education is to develop and foster this web of knowledge. Davidson and Scripp (1992) believes that the matrix will help to refine educators' understandings of the cognitive skills necessary to artistic development and practice. They believe the matrix will provide a cognitive map for educators.

In addition to doing work with children, the researchers were actively exploring the processes that collegiate musicians work through as they develop their skills of sight-singing music. Students were encouraged to focus on the development of skills related to musical performance but were asked to remember that they should do more than just develop their performing skills. They were asked to remember that they must develop the

ability to solve problems during performances and to demonstrate a mastery of reflection necessary to integrate new skills into their specific chosen practice, i.e. performer, conductor, composer, educator, etc. (Davidson & Scripp, 1988a).

Out of the research conducted with the collegiate musicians came a schema of three levels of understanding. The schema allowed the researchers to demonstrate a web of understanding in using sight-singing abilities. The researchers observed students developing across all three levels in a two-year course of study. The observable behaviors articulated by the researchers were changed into Q-statements for the purpose of this study (Davidson, Scripp, & Meyaard, 1988d).

Purpose of the Study

The purpose of this study was to describe the perceptions of musicians toward their experience of the academic study of music. The study describes the views of the student, faculty, and professional musicians concerning the role of music theory and aural skills in their performing life, specifically in sight-singing music.

Views of musicians were studied using a Q-sort with statements taken from observable characteristics published by Davidson and Scripp (1988d). Q-methodology is a research method that can describe subjective perceptions about behaviors and compare the relative strengths of those behaviors within an individual (Brown, 1980). Respondents completed the Q-sort under the following condition of instruction, “What best describes your approach to sight-reading a new piece of music?”

The results of this research offer those in music education an insight into the perceptions held by students, faculty, and performers as to how they utilize the skills garnered in the music theory and aural skills classrooms. These perceptions reveal how the musicians perceive they are using the knowledge studied in the music theory and aural skills classroom. Results of this study may assist those in the fields of music cognition and music theory by giving insights into these perceptions. The musicians give insight about how they perceive they are processing mentally as they sight-sing. This study may help those teaching music theory and aural skills to understand the perceptions that various musicians hold concerning their academic study of music and what changes in pedagogy might alter those perceptions.

Significance of the Study

Research concerning the perceptions of musicians to their academic study of music has been minimal. This research study examined the role of perception as related to the academic study of music. Information gathered may assist researchers in the fields of music cognition and music theory to understand the perceptions that musicians hold concerning how they use the skills acquired in the aural skills classroom in their respective performance practice.

Many students fail to see the relevance of the study of music theory and aural skills in their quest to become better performers. The study was designed to show the perceptions held of skills acquired in the academic study of music theory and aural skills in the performing life of a musician. Furthermore, the study was designed to show the

importance of music cognition and how educators might want to incorporate findings so as to effectively impact the pedagogy of music theory and aural skills.

Research on teaching methodologies enlightens the academy, improves student retention and success, and ultimately produces a more highly competent graduate. Such research may be of particular benefit to music education at all levels and may be of benefit to the educational community at large.

Research Questions

Research questions investigated in this study were:

1. What perceptions do musicians have about learning how to sight-sing a new piece of music using the skills acquired in the music theory and aural skills classroom?
2. How might the role of the musician (student, faculty, or professional performer) assist in describing the perceptions identified?
3. In what ways did Davidson and Scripp's theory assist in understanding the perceptions held by the musicians who participated in the study?

Definition of Terms

Attitudes, beliefs, and perceptions—approaches, ways of thinking, thoughts, views, awareness, acuity, perceptions, or values which may influence behavior

Concourse—theoretical sphere of influence of potential Q-sort items obtained from relevant literature, interviews, or other empirical sources

Condition of instruction—description of the position given to the respondents to guide the Q-sort

Content—subject matter being taught; curriculum

Factor analysis—statistical means by which subjects are grouped or group themselves through the process of Q-sorting

Factor array—a composite Q-sort representing a specific point of view statistically explaining each factor

Form board—board or sheet of paper designed by the researcher so that the respondent may place Q-sort items after the condition of instruction is introduced

Generalizations of attitudes—preferences held by persons defining a given factor

Item score—rank assigned to an item based on its position on the form board following a Q-sort exercise

Learning environment—where teaching and learning is taking place; physical arrangement or location

Non-significant loading—statistically insignificant loading on all factors; items in the Q-sort that do not expose the respondent's perspective

Process—the progression of the presentation of information

P-set or P-sample—the set of persons participating in the study; when multiple sorts are included, the P-set involving all sorts by the individuals in the study

PQ Method—personal computer Q-analysis; software program developed by Steven Brown that is designed to perform Q-factor analysis

Q-factor—a particular perspective found to be in common by respondents who have sorted items in a similar way in a Q-sort

Q-factor analysis—creating an interpretation and validation of the factors that demonstrate common perspectives among the sample population participating in the study

Q-item—a statement of perception included in a Q-sample and arranged in a particular order after the condition of instruction is given in a Q-sort exercise; items generally taken from the concourse

Q-methodology—a research method designed to demonstrate personal perspectives rather than deductive reasoning, diagnosis, and prediction

Q-sample—collection of Q-items making up the concourse and used in the Q-sort

Q-sort—the arrangement of the Q-items in order of significance according to the conditions of instruction presented to the participants in the study

Significant loading—factor loading which cannot be explained by random assignment

Subjectivity—the study of a person's communication of his or her perception and viewpoint

Summary

This chapter introduced the problem facing music educators at the collegiate level concerning the time constraints faced by their students and the challenges of demonstrating the relevance of studying music theory and aural skills. The theoretical framework of this study was also introduced. The theoretical framework utilizes the research conducted by Lyle Davidson and Larry Scripp (1988d) and their contention that

collegiate musicians should strive towards the development of a web of understanding of music theory and aural skills.

The purpose of this study was introduced as a study of the perceptions held by musicians toward the academic study of music. The significance of the study provides those working in music education and the music psychology a richer understanding of the perceptions held by musicians concerning the utilization of the skills developed in the music theory and aural skills classroom.

Chapter II will examine the literature relevant to this study. Literature concerning the teaching of music theory and aural skills will be examined. Literature concerning research in the field of music cognition will be reviewed and literature concerning Q-methodology will be reviewed.

CHAPTER II

Review of Related Literature

This chapter will review the current literature concerning the teaching of music theory and aural skills. It will also examine current research in the field of music cognition. Many who work in both fields are calling for a dialogue so as to more effectively impact the training of future musicians.

There are two books which provide a comprehensive discussion on the teaching of music theory and aural skills. The books also survey current approaches to teaching these subjects. The text Teaching Approaches in Music Theory by Michael R. Rogers (1984) gives the reader an overview of the problems associated with the teaching of music theory. The book primarily addresses the issues found in the contemporary undergraduate program of music instruction. The text is broken into three sections, each addressing certain fundamental issues.

The first section addresses four paradoxes commonly found in the music theory community: (1) integration vs. separation; (2) Comprehensive Musicianship, or CM, vs. isolation; (3) historical vs. astylistic approaches; and (4) concepts vs. skills. Briefly, each paradox represents certain schools of thought concerning the teaching of music theory.

Concerning integration vs. separation, the central issue is whether one divides written skills, aural skills, and analysis into four comprehensive classes. If one subscribes

to the integration approach, the three subjects are integrated into one class, which is a semester in length. The traditional approach is to divide the subjects into two or three separate and distinct classes, each a semester in length for a total of eight to twelve classes. If the approach is one of four comprehensive classes, the danger is that the instructor will dwell too heavily towards either written work, and thus neglect aural and listening skills, or the converse. Should the program be divided into eight to twelve classes, the danger is that the students will fail to recognize the unity of musical knowledge.

Concerning Comprehensive Musicianship, or CM, vs. isolation, the notion is whether one should interrelate three to four subjects typically taught as isolated courses. Such approaches might be to include music literature, harmony, counterpoint, and music analysis into one comprehensive setting. The challenge in this approach is to find texts to support the approach and to find faculty with a background extensive enough to comprehend the relationship between the details and the larger picture. The challenge posed by isolation is whether or not the student grasps the relationships that exist between the isolated topics.

Concerning the historical vs. astylistic approach, the faculty must decide whether to correlate the development of music theory with the accompanying music history program. Certain questions arise when using this approach. Should these issues be addressed chronologically? Should the program address stylistic differences between musical periods? Perhaps the greater question is how one might encourage the faculty to adopt a combination approach. It is most important for students to develop a deep sense

of understanding of the threads that weave in and out of the development of music over time.

The final comparison is between approaches that stress concepts vs. skills. This comparison concerns curriculums that either stress speculative thinking or programs that stress practical musicianship. Once again, the challenge is to create a combination of the two concerns so that programs produce students who are “thinking” performers.

After comparing philosophies of approach, the text moves into the discussion of the elements of thinking and listening: mind training, musical analysis, and ear training. As each element is discussed, the critical concerns of that element are addressed.

The first element addressed is mind training. The primary concern is the role of fundamentals. It is very sad that many students complete twelve years of common education and come to a higher education program totally illiterate of the musical language. Many are quite disciplined performers but lack a basic fundamental understanding of how music functions. Sadly, the student must either take a basic fundamentals of music course or spend a good deal of time in the first semester of theory focusing on the fundamentals of music. The author makes the case for a solid grounding in the basics, or the future will be spent filling in the gaps.

The next concern of mind training is the study of tonal harmony. In the study of tonal harmony, there are several critical issues. The first addressed by the author is the use of Roman numerals to label the function of a chord. The author explores the question of whether the student understands the label as a technique for implying the function of the chord or if the student’s understanding of functionality is flawed. The author then explores chordal function in terms of link/preparation, cadence signal, and arrival/repose.

This terminology would seem to advance a more cognitively driven approach to understanding tonal harmony.

The second critical issue addressed is that of hierarchy vs. equality. The technique of utilizing Roman numerals in tonal analysis would seem to place all chords on an equal level. The notion of functionality would suggest that a hierarchy exists among chords, which according to the author, is a deeper understanding of tonal implications.

The next critical issue explored is that of horizontal vs. vertical analysis. The author suggests that many attempt to account for each tone in a vertical tonal analysis. He suggests that this leads to a plethora of Roman numerals. It is more important to hear the music as a chain of related events as opposed to isolated occurrences.

The final issue is the study of harmony vs. the study of tonality. The study of harmony is the study of chords. The study of tonality includes the study of chords and chordal function but also includes a richer interpretation of the expressive power of the music.

The next element examined is musical analysis. The author makes the case that true analysis involves explanations, or the how and why of musical events; connections, or the concern for process, change, and motion in musical events; relationships, or how musical events impact the overall experience of the piece; patterns, or how individual musical events tend to group together; hierarchies, or the levels of relationships to patterns; and comparisons, or the examination of similarities and differences among sections. The goal is to discover general principles imbedded in musical periods.

From an examination of teaching musical analysis, the author moves to the third element of ear training or aural skills. The author contends that ear training may be

divided into two distinct stages. The first stage is the accurate perception and subsequent labeling of individual events. The second stage is the comprehension of musical relationships.

In each of the three elements, the author is making the case for full, or deeper, understanding of the musical experience. In several instances the author uses the term *holistic*. The use of the term implies that one should engage the heart, the mind, and the soul to achieve the fullest, deepest, most complete experience to be had. When such an experience is achieved, one can claim to *know* something.

The second book is Aural Skills Acquisition by Gary S. Karpinski (2000). This is a text that examines the teaching of aural skills to college musicians. The text examines the teaching of aural skills in light of current brain research and teaching pedagogy. The text is divided into two parts. Part One examines listening skills and Part Two examines reading and performing skills.

Karpinski (2000) begins his book by laying out the basic features that musicians begin to identify in the very earliest stages of formal study. Those basic features of music include texture, timbre, tessitura and register, tempo, and articulation. It is the author's belief that these basic features are "all important aspects of musical composition and performance that every educated musician should be able to identify and discriminate among aurally" (p. 17, Karpinski, 2000). After each of these terms and their constitutive parts are examined, Karpinski moves into fundamental concepts. He seeks to form a generative, or spiral, curriculum, where each concept builds on the prior.

The first fundamental concept examined is that of pulse and meter. He believes that "of all the abilities involved in the temporal aspects of music listening, perception of

the pulse is perhaps the most fundamental" (p. 20, Karpinski, 2000). As a test for the perceptibility of pulse, he suggests either clapping or the tapping lightly upon the desk.

After the student perceives pulse, Karpinski (2000) suggests that the students move on to discover meter. He introduces primary and secondary pulses and suggests that once this basic concept is understood, one may then introduce the fundamental distinction between duple and triple meters. When the student is comfortable with this knowledge, one may progress to quadruple meter and then broach the topic of compound meter.

Once these concepts are fully understood, the groundwork has been laid for rhythmic dictation. Karpinski quotes Allen McHose, author of the Eastman Series' Teachers Dictation Manual, that "rhythmic dictation precedes melodic and harmonic dictation" (p. 32, Karpinski, 2000). Karpinski is now ready to move forward in examining the concept of pitch.

The first aspect of pitch that the author takes into account is that of pitch matching. For those students who are experiencing difficulty, Karpinski (2000) points out that problems may be centered in vocal production issues or the lack of vocal performance experience on the part of the student.

The next aspect of pitch to be examined is pitch memory. The two basic aspects of this skill are recognition and recall. The skill of recognition requires that a student listen to a pitch and then, after a slight period of delay, listen to a second pitch. The student must then tell whether the pitches are the same or different. Recall asks a student to reproduce a pitch that is heard. When this skill has been mastered, the student begins to work on the memory of pitch collections. This skill will also take into consideration the inference of tonic and the perception of melodic contour. As the student progresses in

building upon these skills, one can begin to work on the identification of scale degrees and subsequently the identification of intervals.

Karpinski (2000) now addresses the perception of melodic contour. He addresses two aspects of melodic contour, direction and step-verse-leap motion. It is his contention that if a listener can accurately determine both of these, then scale-degree identification will be significantly impacted. His belief is that all of the skills discussed thus far are essentials to scale-degree identification.

The first aspect of scale-degree identification is the skill of moving from the unknown to the known. This skill asks the listener to move from an unidentified scale-degree to the tonic. Karpinski (2000) identifies several techniques for aiding the listener.

The next aspect to be addressed is the identification of intervals. Karpinski (2000) contends that precious time is wasted in continuous repetition of interval identification. Karpinski (2000) offers four reasons that this is wasted time. First, errors accumulate serially. Second, the bulk of research shows little evidence of connection between the ability to identify intervals acontextually and the ability to identify intervals in a tonal context. Third, listeners appear to remember and understand tonal music in references to diatonic collections and scale-degree functions. Fourth, this calls into question the reason we are teaching this discipline. What type of musical thinking are we attempting to foster in our listeners? Do we want to foster minutia in our listeners, or do we wish them to fully grasp the functionality of the pitch collections?

In the final pages of Chapter Two, Karpinski (2000) encourages teachers to deal carefully with those students who possess absolute pitch. While we still do not fully

understand the genesis of absolute pitch, it provides special challenges in the ear-training classroom.

Chapter Three addresses the issues surrounding melodic dictation. The author spends the first few pages of the chapter addressing the complicated process surrounding dictation and the problems of cognition, which accompany the skill. Karpinski (2000) suggests two strategies that can aid the student in extending the capacity of short-term musical memory.

The first strategy suggested is extractive listening. The author defines the strategy as the "combination of focused attention and selective memorization" (p. 71, Karpinski, 2000). The goal of the strategy is "to focus attention on a selected segment of musical stimulus and remember that segment despite the inhibitive nature of surrounding musical material" (p. 72, Karpinski, 2000). To develop this skill, the author suggests four competencies: singing back short melodies, singing back those short melodies but during interference material, singing back those short melodies at a sotto voce level during interference material, and silently auralizing the short melodies during interference material. The author finds that students not only become more proficient at the skill of dictation, but also their music listening proficiency improves in a variety of settings.

The second strategy suggested by the author is chunking. When a student understands a variety of musical features, a student is able to encode music in meaningful chunks. Chunking is a means to extend the limits of short-term memory.

These two strategies lead to musical understanding. According to the author there are two aspects of musical understanding. He suggests that the two aspects are duration and pitch. To develop an understanding of rhythmic duration, one may utilize a

solmization system. To date, the system that provides a one-to-one mapping of metric units is the Takadimi method.

The second aspect of musical understanding is pitch. The author introduces the argument that exists between the movable-do system of pitch solmization, the use of numbers, and the focus of do-based versus la-based minor. The author makes a sound argument for teaching movable-do over numbers and an equally compelling case for teaching do-based over la-based minor.

The final step in melodic dictation is notation. The concept here involves taking the aural stimuli and translating it into musical symbols. Once students understand the meter and rhythm of a given passage, they need to be provided only with the beat unit in order to translate protonotation into actual rhythm notation. Once students understand the scale degrees of the pitches of a passage, they need to be provided with only the tonic pitch in order to translate the protonotation into actual pitch notation.

The remaining pages of the chapter are dedicated to a discussion of extramusical cues and their appropriate place in aural skills training. In addition to extramusical cues, the final pages of the chapter evaluate assessment tools and evaluation rubrics. The author examines Kraft's *A New Approach to Ear Training*, *MacGamut* software, the *GRE Music Test*, and the *Advanced Placement Examination in Music Theory*. The author also has four suggestions for providing feedback to students. He suggests that teachers should "correct and evaluate the rhythms first, correct and evaluate the pitches in light of the corrected rhythms, evaluate other details of notation, and look for obvious sources of errors and offer meaningful, usable feedback" (p. 108-109, Karpinski, 2000).

Chapter Four is an examination of polyphonic and harmonic dictation. The first topic of the chapter is polyphonic dictation. Karpinski (2000) points out that two-voice polyphonic dictation is a part of the GRE. The belief is that listeners should process multiple voices simultaneously. The author suggests that research has shown humans have the ability to practice selective listening, or the *cocktail effect*. The notion is that we possess the ability to extract and focus on one stimulus from a variety of stimuli.

The remaining pages of the chapter are dedicated to the skill of harmonic dictation. The author points out several approaches. The first procedure is the traditional procedure referred to as part writing. This procedure asks the listener to transcribe all voices, and the resulting texture will give the listener all of the necessary information to identify all the harmonies produced. The next procedure identified asks the listener to arpeggiate the harmonies as they pass. Both procedures are reductionist approaches.

Another approach asks the listener to identify the harmonies as complete entities. This procedure is referred to as the Gestalt procedure. The author suggests that the goal of "an integral aspect of many expert listeners' strategies involves a certain amount of raw, whole-harmony recognition" (p. 119, Karpinski, 2000).

The key underpinning of most approaches to harmonic listening is the recognition of the bass line. The author suggests that moving from single voice melodic dictation to two-voice polyphonic dictation can serve as an intermediate step to bass line recognition. As one is aware of the bass line, one must also be aware of the inversion of chords produced by the bass line. Implications in bass line awareness involve the ability to discern chord quality and voice leading.

Chapter Five addresses other listening skills that are important in the study of aural skills. Such topics addressed include transcriptions, instrumental playback, error detection and correction, advanced hypermeter, identification of key areas, recognition of other compositional techniques, identification of pitch collections, and finally, aesthetics.

The final three chapters address the various approaches to reading and performing skills. The first performing skill addressed is vocal performance. The author contends that all musicians should have a basic grasp of how to utilize their own voice.

The author then moves into the process of teaching sight-reading. He begins with the inculcation of the major scale and the utilization of solmization. The author then provides a variety of sequential patterns so as to create a strong sense of tonic in the listener. The practice of singing sequential patterns also helps the reader to associate the idea of pitch collections.

The student is now ready to progress to sight-reading. The author introduces the notion of global awareness before beginning to sight-read. He suggests that the student be aware of metric considerations and then key signatures. He then encourages the singer to be aware of any other signs placed in the piece of music, i.e. repetition signs. He concludes the chapter with a variety of strategies that the sight-reader should try to adapt into his/her arsenal of skills.

The final chapter deals with more complex reading skills. Karpinski (2000) introduces the concept of chromaticism and the variety of approaches to introducing the aural skill to young musicians. He then moves into a discussion of modulation. He introduces a variety of considerations. Such considerations include the change of tonic but no change in pitch collection, change of pitch collection but no change in tonic,

change in both pitch collection and tonic, common-tone modulations, gradual modulations, unprepared modulations, and typical key relationships.

The final pages of the book consider changes in clef, transposition, and score reading. These skills are of particular benefit to the young conductor. The final topic addressed by the author is the reading of Schenkerian graphs. While little space is given to the topic, readers are exhorted to delve further into the Schenkerian approach to develop their inner ear.

To begin to understand the process by which musicians begin to develop formal knowledge about the field of music, one must examine literature of learning theories. The first of the learning theories to be examined is the behavioral school. The behavioral school will be followed by the cognitive-developmental school. The constructivists will follow. The last of the learning theories to be examined will be theories unique to music.

Learning Theories

Behavioral

The first focus of learning theories to be examined is that of the behavioral school. The theory of operant conditioning, developed by Skinner, influenced music educators who sought to develop instructional theories based on behaviorist models. Most of this literature focuses on the role of praise and verbal correction as related to musical discrimination, attitude, and performance (Duke & Henninger, 1998; Madsen & Duke,

1985; and Taylor, 1997). The use of music itself as reinforcement has been studied by Greer (1981) and Madsen (1981).

The behaviorist model has significantly impacted the use of programmed instruction and computer aided instruction, or CAI. The teaching machine can provide stimuli to elicit the desired response. Such stimuli might manifest itself as digestible bits of information that can elicit responses in the form of accessible questions and can then provide feedback, or reinforcement, through additional information. Initially computer assisted instruction programs were linearly constructed so that all students went through the same process, but at varying speeds. Later programs were branched, thus allowing students to skip unnecessary drill. Reviews of CAI and programmed instruction that demonstrate the behavioral principles in music education have been conducted by Higgins (1992) and Orman (1998).

Four theories of motor learning, as applied to music learning, have been researched in varying degrees. Closed-loop theory, open-loop or motor program theory, schema or mental knowledge theory are all approaches to understanding that have been reviewed by LaBerge (1981) and Sidnell (1981). Gabrielsson (1999) reviewed the Bernstein approach in 1999. Mental practice in music learning has been the focus by Ross (1985) and Coffman (1990). Both focus on the positive effect of combined mental and physical practice as found in the writings of Tolman (1932) and Kohler (1929, 1969). DeLorenzo's (1989) work took as its focus the concern of creative thinking from a problem-solving/problem-finding perspective. DeLorenzo's research was focused on the role of musical creativity.

Hemispheric dominance, cognitive style, and field dependence/independence in music education have been extensively researched since the 1970's. After reviewing studies examining musical information processing and left-brain or right-brain dominance, Baumgarte and Franklin (1981) concluded that a number of factors determine where music is processed in the brain. They concluded that the process is neither completely left-brain nor completely right-brain. Hemispheric dominance and learning styles in music education were the focus of research conducted by Zalanowski (1990).

An extensive historical overview of brain hemisphere research and its subsequent applications in music cognitive studies was provided by Scheid and Eccles (1975). Strong (1992) conducted research as it related to disabled students' learning. His research examined hemispheric laterality. Marin and Perry (1999) examined cerebral hemispheric dominance and/or roles. Barry (1992) and Ellis and McCoy (1990) reviewed studies examining field dependence/independence and cognitive style in music performance.

Information theory served as the foundation for musical understanding theory in the research of Leonard B. Meyer. Krumhansl (1990) examined the application of information theory in the context of developing a hierarchical model of musical cognition. Coffman (1990) examined the application of information theory in the context of measuring musical originality and creativity. Cutietta and Booth (1996) examined the categorization of musical information in memory. This research re-examined the ideas posited by Miller (1956) concerning the notion of "chunking."

The application of "connectionism" and neuroscientific processes to the study of music learning has been the focus of the work of Fiske (1984, 1995, and 1997). Others

working in this area include Bharucha (1999), Leng, Shaw, and Wright (1990), and Rauscher (1999).

Constructivist

Another focus of learning theories is the constructivist approach. The application of the constructivist approach suggests that the constructs of learning have only recently found their way into the mainstream of American music education. Rideout (1997) and Rideout and Paul (2000) examined the usefulness of social constructivism and situated learning as constructs for the study of music learning. Whitaker (1996) applied Dewey's idea of reflective thinking. Younker and Smith (1996) applied Dewey's emphasis of process over product to the study of music composition.

Learning Theories Unique to Music

There are researchers who have developed some learning theories which are unique to the field of music. Most notably is the work of Edwin Gordon. Gordon (1971, 1977b, 1997) began his research in the 1960's. Gordon (1971, 1977b, 1997) sought to extricate the basic key word vocabulary of music. The focus of Gordon's research was on the aural, rather than the theoretical, aspects of music. Instead of focusing on the written music, Gordon (1971, 1977b, 1997) identified aural pitch and rhythmic patterns as the basic vocabulary of music. He arranged these key words by identifying the most basic

patterns. He taught them first and then followed them with increasingly more complex patterns.

Gordon (1971, 1977b, 1997) also drew parallels between the development of the spoken language and the development of a musical language. Gordon's learning theory involved audiation, or the process of thinking musically. For Gordon (1971, 1977b, 1997), the process of audiation involved the mental process of hearing the music in one's head. This internal hearing of music occurred without the physical sounds of the music striking the eardrum. Gordon (1971, 1977b, 1997) believed that children developmentally prepare to audiate by experiencing acculturation, imitation, and assimilation. He believed that learning occurs by drilling and practicing predetermined, cumulative, and sequential pitch and rhythmic patterns.

Another researcher whose work is unique to the field of music is Jeanne Bamberger. Bamberger (1991) believed that it was important to study musical behavior as it occurred in a social context. Bamberger (1982) observed and questioned young children about their musical knowledge. She was mostly concerned with how young children reproduced music. She defined the understanding and learning of music. She contended that the learning and understanding of music was best described as perceptual problem solving. Bamberger believed that perception and cognition are intertwined. For Bamberger (1991), music is best described as generative, a term borrowed from linguistics. It was her contention that individuals organize sound/time phenomena as they occur. Bamberger believes that to deepen musical understanding, one must examine what is already known and reflect on what is being heard.

Cognitive

A very important focus of learning theories may be found in the cognitive school of thought. The most prevalent use of cognitive theory in music education has been the application of Gestalt psychology to explain the processing of music information. Similarity, proximity, and closure have given way to music perception, development, and cognition. Wang and Sogin (1990) and Karma (1985) have addressed Gestalt organizational principles and the exposition of hierarchical concepts in music.

The influence of the linguistic theories of Chomsky has served as the inspiration for the formulation of a generative theory of musical grammar as articulated in the work of Lehrdahl and Jackendoff (1983). According to Lehrdahl and Jackendoff, a person receives acoustic information which in turn triggers mental operations. These mental operations impose order onto the input. Sufficient exposure to music will allow for musical understanding to occur through enculturation.

Attempts to describe the musical development of children with research employing cognitive theories have received the greatest amount of attention. Such research efforts have included Funk and Whiteside (1981), Hargreaves (1986), Hargreaves and Zimmerman (1992), Scott-Kassner (1992), and Zimmerman (1986). According to these researchers, Piaget's theories have impacted at least three areas of musical learning: developmental stages, development of symbolic functions, and the concept of conservation. Zimmerman (1986) is generally acknowledged as the leader in the research of conservation.

Swanwick and Tillman (1986) drew from Piaget and Bruner to create a spiral model of creative musical development. The spiral model consists of four stages: mastery during which children develop a sense of and respond to sounds, imitation during which children include the use of sounds to represent events or objects, imaginative play during which children combine sounds creatively, and metacognition during which adolescents reflect on their own thinking about and experience with music.

The work of Bruner had a profound effect on the work Eunice Boardman Meske. According to Meske (2001) earning is "the result of an interactive enterprise where all dimensions of the *whole learner* (action, cognition, and emotion) function simultaneously and synergistically. Such a view recognizes that learning is a product of the interaction of action, cognition, and emotion" (Meske, 2001). Meske (2001) stresses that music learning is a construction of music meaning and will occur only when experienced in a holistic fashion.

The ideas of Bruner and Hebb have been utilized in music education since the 1970's. Andrews and Deihl first reviewed the ideas in 1970. Research on concept learning has focused on student vocabularies summarized by Flowers (2000) and Chen-Hafteck (1999). Cutietta (1985) worked with the development of musical concepts by using the hypothesis-testing model of Bruner. Booth and Cutietta (1991) utilized Tulving's (1972) theory to explore the possibility that musical cognition can be divided into episodic and semantic memory. The theory of expectancy in music suggests that previous musical experiences and information shape how new experiences and information are perceived. This has been explored in the work of Carlsen (1987) and Adachi and Carlsen in (1995). Concerning the development of musical style concepts in

music appreciation texts, Thorisson (1997) compared the utility of prototype versus exemplar theory.

One researcher whose cognitive theory is not unique to music, but whose work has had a profound effect on our understanding of the acquisition musical knowledge, is Dr. Howard Gardner of Harvard University. Gardner has proposed the theory of multiple intelligences (Gardner, 1983). In his theory, Gardner proposed the existence of multiple intelligences in the human population rather than the traditional view of a single human intelligence. Gardner has suggested the existence of seven intelligences: the linguistic and logical-mathematical intelligences that are highly valued in today's society and educational community; musical intelligence; spatial intelligence; bodily-kinesthetic intelligence; and two forms of personal intelligence, intrapersonal and interpersonal (Gardner, 1983). Gardner focuses not only on problem-solving abilities within each domain, but also on the ability to create products as evidence of understanding and learning.

Working at Project Zero alongside Dr. Gardner was Lyle Davidson and Larry Scripp. These two researchers, along with others, helped Dr. Gardner to formulate his idea of the musical intelligence. The works of Piaget and Bruner had a profound effect on the work of Gardner and the work coming from Project Zero.

From Gardner's curiosity about the development of a child's artistic intelligence came the research efforts of Davidson and Scripp (1988, 1992) and Upitis (1990, 1992). Davidson and Scripp (1988a, 1988b, 1988c, 1988d) have investigated the development of notational language used by children. They have also investigated the development of

sight-singing skills in undergraduate musicians. This research and the resulting matrix have served as the basis of this study.

Q-Methodology

Q-methodology was designed and developed by British physicist-psychologist William Stephenson and is most frequently associated with quantitative analysis due to its involvement with factor analysis (Brown, 1980). Aside from the statistical procedures used in Q-methodology, this research tool provides a way to reveal the subjectivity involved in any situation (Brown, 1980; McKeown & Thomas, 1988). Q-methodology is an efficient method of studying personal opinions, viewpoints, perceptions, and attitudes (Stephens, 1985). Q-technique is useful when the researcher is interested in obtaining information about types of individuals with regard to certain variables (Carr, 1989; McKeown & Thomas, 1988).

In Q-methodology, the relationships among people are more important than the relationships among variables (Carr, 1989). Subjects are involved in a quantitative approach toward examining human subjectivity, which employs factor analysis to determine similar perception clusters. The clusterings of the participants is based on variables such as attitudes, preferences, or thinking behavior (Brown, 1980; Carr, 1989; McKeown & Thomas, 1988). The ability to cluster participants according to preferences made the choice of Q-methodology ideal for studying the perceptions of musicians in regard to their use of music theory and aural skills in sight-singing a new piece of music.

Respondents are asked to self-define the statements in the Q-sort. They are asked to make judgments about the likelihood that they would adopt the perceptions described in each of the Q-sort items. Typically, subjective perceptions are unprovable; however, with the use of Q-technique, the subjectivity can be observed and studied with reliability (Brown, 1980; McKeown & Thomas, 1988). This method allows the researcher to ask the individual his/her perceptions of himself/herself. This made for an obvious choice in asking musicians their perceptions of how they use skills developed in the classroom.

Q-technique involves a sorting procedure and the correlation of responses of the individuals to the Q-sorts. The concern is with the sampling stimuli, not the participants (Brown, 1980; Carr, 1989; McKeown & Thomas, 1988). Q-methodology is designed to test theories on small sets of individuals carefully chosen for their known or presumed possession of some significant characteristic or set of characteristics (Brown, 1980; Carr, 1989; McKeown & Thomas, 1988).

Sample size in a Q-study is varied depending upon the purpose of the Q-method study. Some Q-sorts employ but one participant who is asked to sort items from various perspectives. Participants in a Q-study may be chosen specifically for the study or randomly selected from a designated population.

Q-methodology allows an intense study of subjective perspectives of a particular group for the purpose of understanding human behavior (McKeown & Thomas, 1988). Davidson and Scripp (1988a-d) developed a position that the behavior of collegiate musicians in sight-singing could yield information about the level of understanding possessed by the individual musician.

The research demonstrated that many undergraduate music students come into a collegiate music program with some sophisticated musical skills but with little true understanding of music. The researchers found that 25% of first semester freshmen will be unable to sight read any melodies with fewer than five measures wrong and 75% will be unable to sight read anything beyond simple diatonic stepwise melodies with fewer than five errors (Davidson & Scripp, 1988a-d).

Most of these students had an average of six years of intensive private study before entering the conservatory setting. For the researchers this demonstrated that there is little transfer of musical knowledge into the broader musical context (Davidson and Scripp, 1988). The use of Q-methodology in this study will allow for research into the perceptions held by the musicians as to how they believe they are using the skills developed in the music theory and aural skills classroom.

An example of the use of a Q-methodology to intensely study music is the dissertation by Betty Hanley (1989). Hanley's dissertation was designed to examine educators' attitudes toward various philosophies of music education. Hanley used Q-methodology to examine teachers' perceptions of gender issues as related to music composition. Working within the Canadian music education system, Hanley used the Grade 12 music composition examination results. In Hanley's research, she found that boys were perceived by teachers to be more successful at composition than girls. She also raised a concern that linking computer assisted instruction to composition might further alienate girls from the world of composition.

Summary

This chapter examined current literature reflecting the teaching of music theory and aural skills. Michael Rogers highlighted the paradoxes found in the teaching of music theory and aural skills. Gary Karpinski (2000) examined the teaching of aural skills at the collegiate level. He offered specific suggestions for improving teaching and for improving student learning. Karpinski (2000) specifically examined aural skills acquisition from a cognitive perspective.

This chapter examined the various perspectives in the field of music cognition. Research was examined that represented the behaviorist and the constructivist schools of thought whose researchers have contributed to our understanding of music learning. Learning theories unique to music were also examined. The work of Gordon and Bamberger represents the learning theories unique to music. The cognitive school researchers who have contributed to the discussion of music understanding were examined.

Finally, this chapter also examined literature from the area of Q-methodology. Aside from the articles concerning the development of Q-research, the work of Betty Hanley (1989) nwas examined. Hanley (1989) used Q-methodology in her research on the perceptions of educators toward philosophies of music education. Chapter III will examine the methodology utilized in this study.

CHAPTER III

Methodology

The purpose of this study was to describe the ways that musicians perceive the role of music theory and aural skills in their professional performing lives, particularly in the context of sight-singing music. The study is an attempt to describe the varied ways that musicians use the skills they have learned in the undergraduate collegiate music program as applied to sight-singing.

It is important to understand how musicians perceive that they use the music theory and aural skills they have worked so long to develop. This is because the curriculum comprises the core of a musician's collegiate program requirements when studying music as a major. If the musician is not fully aware of how he or she is utilizing these skills, then the time spent studying may not be used to its fullest potential. This chapter describes the methodology that served as the basis for this study, the procedures used to secure the data, and a detailed account of the subjects, instruments, procedures, and data analysis.

In accordance with federal guidelines and the policy set by the regents of Oklahoma State University, a required review of a study involving human subjects must be approved in order to ensure that the rights and welfare of the subjects involved in the

study are protected. This study was submitted to the Institutional Review Board (IRB) on May 25, 2004, and was approved in July, 2004 (see Appendix G).

Q-Methodology

Q-methodology was designed and developed by British physicist-psychologist William Stephenson. The methodology is often associated with quantitative analysis due to its use of factor analysis (Brown, 1980). Aside from the statistical procedures used in Q-methodology, this research method provides a way to reveal the subjectivity involved in any situation (Brown, 1980; McKeown & Thomas, 1988), thereby fulfilling a qualitative approach to the description of perceptions. Q-methodology is an efficient method of studying personal opinions, viewpoints, beliefs, and attitudes (Stephens, 1985). Q-technique is useful when the researcher is interested in obtaining information about clusterings, or types, of individuals with regard to certain variables (Carr, 1989; McKeown & Thomas, 1988).

In Q-methodology, the relationships among people are more important than the relationships among variables (Carr, 1989). Subjects are involved in a quantitative approach to examining human subjectivity. This approach utilizes factor analysis to determine similar perception clusters. The clustering's of the participants is based on variables such as attitudes, preferences, or thinking behavior (Brown, 1980; Carr, 1989; McKeown & Thomas, 1988).

In this study, participants were clustered based on their responses to statements taken from observable behaviors. The observable behaviors were reported in research

conducted by Davidson and Scripp (Davidson, Scripp, & Meyaard, 1988d). The researchers divided the observable behaviors into three levels of awareness. Each level represented how one was using various skills developed in the aural skills classroom.

Respondents are asked to respond to the statements in the Q-sort. They are asked to make judgments about whether the statements reflect their own personal perceptions or attitudes. The respondents are reacting to the statements described in each of the Q-sort items. Typically, subjective perceptions are not able to be objectively proven. With the use of Q-technique, subjectivity can be observed and studied with reliability (Brown, 1980; McKeown & Thomas, 1988).

Q-technique utilizes a sorting procedure. The sorting procedure allows for the correlation of responses of the individuals to the Q-sorts. The focus of the procedure is with the sampling stimuli, not the participants involved in the study (Brown, 1980; Carr, 1989; McKeown & Thomas, 1988). In this study, the sampling stimuli were descriptions of cognitive responses to sight-singing music.

Therefore, Q-methodology is designed to test assumptions made about small sets of individuals who are chosen for their known or assumed possession of some significant characteristic or set of characteristics (Brown, 1980; Carr, 1989; McKeown & Thomas, 1988). In this study, the students, faculty, and professional musicians were considered to be those who would have the greater understanding of the sampling stimuli, or Q-statements.

Q-methodology enables the researcher to intensely study the subjective perspectives of a particular group. The study allows for the purpose of better understanding human behavior (McKeown & Thomas, 1988). There is an example of this

intense study as applied to a musician's environment. The dissertation by Hanley (1987) examined music educators' attitudes toward various philosophies of music education.

Participants P-Set

Sample size varies depending upon the purpose of the Q-study. Some Q-sorts ask only one participant to sort items from various perspectives. Participants in a Q-study are either chosen specifically for the study or randomly selected from a designated population.

The P-set (participants) for this study was a total of 46 musicians. The musicians were divided according to where they were in their careers. There were 16 professional musicians. There were 17 music educators working in institutions of higher education and teaching music theory and aural skills. There were 13 students who have completed or were working on the music theory and aural skills sequence.

The 16 professional musicians represent musicians who are currently practicing professional conductors, composers, arrangers, or performers. Both instrumentalists and vocalists are represented in this group. The 17 professional music educators have a variety of teaching experience including common education, secondary education, and higher education. For the purpose of this study, they are currently teaching in higher education. Both instrumentalists and vocalists are represented in this group. The 13 students are comprised of undergraduate and graduate students and are both instrumental and vocal majors.

The study utilized music students, educators, and professional musicians who are, or hope to be, composers, arrangers, conductors, and performers, so as to bring the richness of perceptions. This study sought to elicit the perceptions about how musicians utilize the skills and subject matter in which they have immersed themselves in the collegiate setting. The choice of these particular groups of people was to strive for the greatest difference in perceptions about the various cognitive skills involved in sight-singing music.

Research Instruments

A demographic survey and Q-sort statements were developed for this study. Their purpose was to better understand the perceptions of the students, instructors, and professional musicians toward their use of skills developed in the music theory and aural skills classrooms. Each participant received the following materials:

1. Informed Consent Form, one for the researcher and one for each participant (see Appendix B),
2. The Q-set, which included the Q-sort items, condition of instruction, and record sheet (see Appendix C),
3. Demographic questionnaire (see Appendix D).

Q-Sort Development

A concourse, or possible responses to a given condition of instruction, may be developed in a variety of ways. McKeown and Thomas (1988) posit that the concourse may be derived from naturalistic, quasi-naturalistic, ready-made responses or a combination of these approaches. For this study, the concourse, or the set of perception statements representing the main effect of the study (Brown, 1980), was developed from research conducted at the New England Conservatory of Music by Davidson and Scripp (1988a-d).

In this study 36 ready-made statements were developed from the research of Davidson and Scripp (1988a-d). The research conducted by the team was on the behaviors exhibited by undergraduate music majors when sight-singing. The research was subsequently published in the *Journal of Music Theory Pedagogy* as set of articles titled "Sight-singing at New England Conservatory of Music." In the research, the team divided the observable behaviors into three levels. According to the researchers, each level represented a musician who had developed a deeper and more intense understanding of musical knowledge.

For this study the observable behaviors were turned into perception statements. The statements represented perceptions from each level of understanding as articulated by Davidson and Scripp (1988a-d). The statements were typed onto cards and were given to each of the participants. The items reflected diverse perceptions about how one uses skills developed to sight-sing a new piece of music.

The statements to be sorted in this research project were taken from the third article of the set. This article, subtitled “Sight-singing Ability: A Quantitative and Qualitative Point of View,” suggested that there were three broad characterizations, or levels, of sight-singing ability. For the purpose of a Q-sort, the characteristics were turned into perception statements that would represent a perception of a musician. The statements utilize the language of musicians who might be studying music.

Table 1

Q-Sort Statements

1. *When I sight-read, I read from note to note.
2. **When I sight-read, I am able to invert simple intervals (fifths & fourths, octaves & unisons), so that they fit within my vocal range.
3. ***When I sight-read, I can easily transpose registers and intervals so they better fit my range. When I read clef changes, I am able to sight-read the note names, not from the visual display of the melody.
4. *When I sight-read ensemble music, I never look at other students, I barely look at the conductor, and I only focus on my part so that I do not make mistakes.
5. **When I sight-read ensemble music, I seldom look at other students and only then I look at others who are reading my part.
6. ***When I sight-read ensemble music, I frequently look at other students and they are usually people singing a different part.
7. *Before I sight-read a melody, I usually sing my scale up & down out loud.
8. **Before I sight-read a melody, I usually sing out loud my scale up & down, the tonic triad and perhaps a few other triads.

Table 1 (continued)

9. ***Before I sight-read a melody, I usually sing internally my scale up & down, the tonic triad and perhaps a few other triads. I then sing the melody in my mind. When I finish, I sit back & acknowledge to the instructor that I am ready.
10. *When I am asked to identify a particular pitch that is played on the piano, I sing the solfege until I find the pitch and then sing the name out loud.
11. **When I am asked to identify a particular pitch that is played on the piano, I sing the solfege until I find the pitch and then I sing or say the name out loud.
12. ***When I am asked to identify a particular pitch that is played on the piano, I sing the solfege internally until I find the pitch and then I say the name out loud.
13. *When I am working on a sight-reading exercise I have a mental image of the sound of tonic and dominant. I have to return to them during class to tune, but I do fine with singing the intervals 7 to 1; 2 to 1; and 6 to 5.
14. **When I am working on a sight-reading exercise I find that I have expanded my tonal reference to include other pitches than the tonic and dominant. I do not need to stop and tune to reestablish my reference notes.
15. ***When I am working on a sight-reading exercise I find that I have expanded my tonal reference to include all 12 chromatic pitches. I do not need to stop and re-tune once class has begun. If the class is working on score reading we function like an orchestra.
16. *When I am given a beginning note that is part of the non-tonic triad, I will sight-read the melody in the wrong scale reference.
17. **When I am given a beginning note that is part of the non-tonic triad, I will notice it as a miscue & then sight-read the melody in the right scale reference.

Table 1 (continued)

18. ***When I am given a beginning note that is part of the non-tonic triad, I will recognize its context and then sight-read the melody in the right scale reference.
19. *I rely on the scale given to me. If I must sight-read in a different key, I must be given a new scale so that I can re-tune. I could never perform a melody that lies outside of a given scale. I rely on the scale given to me.
20. **I rely on the scale given to me. If I must sight-read in a different key, or the melody implies another key, I need a new scale, or my reading is unstable. I am likely to keep a given note as tonic, even if its function within the scale has changed.
21. ***I am able to construct any tonic and key reference. If I must sight-read in a different key, or the melody implies another key, I am able to negotiate highly chromatic melodic contexts and maintain their orientation to changed keys.
22. *I simply cannot sight-read modulations. I begin to make mistakes and my pitch begins to suffer.
23. **I am comfortable in sight-reading modulations to closely related keys. I can sing tonic in the home key and tonic in the new key. The closer the modulation the better my performance will be.
24. ***I am comfortable sight-reading any modulation. Chromatic tonal and atonal contexts do not bother me at all.
25. *As I sight-read I am able to stay in tune with the scale only by referencing the tonic or maybe the dominant pitch.
26. **As I sight-read I am able to stay in tune with all pitches of the scale, but if I must move to a new scale my intonation will suffer.

Table 1 (continued)

27. ***As I sight-read I am able to keep my sense of intonation in a variety of melodic and harmonic contexts. Distant keys do not bother me. I am able to maintain my tuning by adjusting to specific tonal contexts.
28. *When I am sight-singing one mistake will lead me to a total breakdown in performance. If I do respond to my mistake, I seldom recover.
29. **When I am sight-singing I can rely on my sense of tonic or dominant if I make a mistake to recover my sense of tonality. I am able to compensate by skipping notes or filling in leaps if I need to recover my tonality.
30. ***When I am sight-singing mistakes rarely bother me. I can recover the flow of the melody or I will simply ignore my mistake altogether.
31. *When I am sight-singing the last thing on my mind is an expressive performance. I will fly through a ritard or diminuendo and I simply forget any sense of dynamics.
32. **If I am comfortable with the key and melodic contour when I am sight-singing, then I will be able to observe some expressive markings, especially if I am reminded.
33. ***When I am sight-singing I am also able to integrate expressive markings or add some appropriate ones into my performance. I am expressive in all contexts of performance.
34. *Before I begin to sight-sing if my instructor were to ask me to comment on the structure or identify possible places where I might make mistakes, I must look at the piece note for note in order to answer the question.

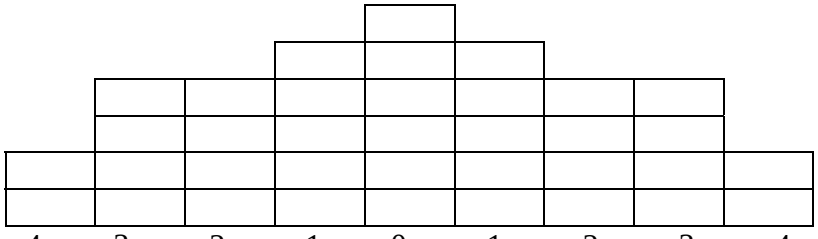
Table 1 (continued)

35. **Before I begin to sight-sing if my instructor were to ask me to comment on the structure or identify possible places where I might make mistakes, I am able to quickly find tonic and dominant of the common scales. I will scan the piece quickly and make comparisons to other pieces that I have just sung.
36. ***Before I begin to sight-sing if my instructor was to ask me to comment on the structure or identify possible places where I might make mistakes, I am able to make comparisons to other pieces and I appreciate structural cues and can use them in performance.

* = Level I; **= Level II; ***= Level III

Table 2

Array Description



Q-items that were most like the participants' perceptions about their use of theory and aural skills in sight-singing were placed in Column 9 and received the most positive analysis number. Items that were most unlike their perceptions about their use of theory and aural skills in sight-singing were placed in Column 1 and received the most negative analysis number. Table 2 provides a visual description of the number of statements placed in each column, the analysis number for each column, and the numerical identifier for each column.

Instrument Procedure

The data collection occurred in October and November of 2004. Thirteen collegiate music majors, 17 music educators, and 16 professional musicians were invited to participate in the research (see Appendix A). Each participant was met and participated in the research on an individual basis. Music majors at Northern Oklahoma College, the University of Central Oklahoma, and Oklahoma State University were invited to participate. The researcher was familiar with various faculty members at the institutions and the faculty contacted the students and offered them the opportunity to participate. The faculty were contacted by the researcher and invited to participate. The professional musicians were also contacted by the researcher and were invited to participate.

Each participant was given an envelope containing a set of 36 cards onto which had been typed an identifying number and a statement of perception concerning sight-singing. The Q-items were sorted according to the Researcher's Script (see Appendix E). The participants were instructed to sort the cards into three piles representing perceptions most like, neutral, and most unlike the respondent.

The items were then placed onto a form board having nine columns with numeric values of 1 to 9 (see Table 2). The form board was structured in such a way as to display a range which resembles a quasi-normal flattened bell curve. The form board's first and ninth columns represented the extreme values of the respondent's perceptions concerning sight-singing music (see Table 2).

Administration of the Q-sorts was conducted by the researcher who followed a script so as to insure consistent instructions (see Appendix E). The respondents were first

instructed to read through all 36 statements. This request was made so that they would have an understanding of the range of perceptions.

The participants were then asked to sort the 36 items into three piles. The placement into three piles was determined in the following manner: those statements that were most like their perceptions about how they utilize theory and aural skills in sight-singing were placed into the first pile on the right, those least like their perceptions about how they utilize theory and aural skills in sight-singing were placed into the second pile on the left, and the remainder, which represented neutral perceptions about how they utilize theory and aural skills in sight-singing, were placed into the third pile directly in front of the respondent.

Participants were then instructed to select the two items which were most like their perceptions about their use of theory and aural skills in sight-singing a new piece of music. After selecting the two items, they were to place them on the form board into Column 9. Next, they were instructed to place the two statements which were least like their use of theory and aural skills in sight-singing a new piece of music. After selecting the two items, they were to place them on the form board into Column 1. Finally, they were instructed to sort the remainder of the items alternately until all 36 items were placed on the form board. Participants were then instructed to write the number corresponding to each Q-item on the data sheet (see Appendix F).

Demographic Survey

After the participant performed the Q-sort, he/she was then given the opportunity to complete a post survey questionnaire. The demographic questionnaire (see Appendix D) helped to reveal how long the participant had studied music and what role the participant felt he/she contributed to the performance of music, i.e. conductor, composer, or performer.

The questionnaire finished by asking the participants to describe their thoughts about the sorting procedure. These responses provided the researcher with additional insight into the participants' perceptions and aided in the interpretation of the data (Brown, 1993). The data from the Q-sort was then entered into a computer program for later data analysis.

All interviews and sorts were kept under lock and key so as to protect the confidentiality of the respondent. After the research is finished and the results are compiled, the interviews and sorts will be destroyed upon publication of the research.

Data Analysis

After data was collected it was entered into PQMethod 2.11, a computer program by Peter Schmolck (2002) and adapted from Mainframe-Program QMethod by John Atkinson (1992) at Kent State University. This program was designed specifically for statistical analysis of Q-sort data. The data undergoes a series of three sequential

statistical procedures: correlation, Q-factor analysis, and the computation of factor scores. PQMethod allows the researcher to perform the analysis in an efficient manner.

PQMethod requires a series of steps that will allow the researcher to move from individual raw data to finding intercorrelations among sorts, allowing for final analysis. The first step is to enter the text of the 36 Q-sort statements into a file called STATES.

The next step is to edit a file called QENTER. In this step the researcher enters the data directly from the sorts collected. After each individual sort is entered, the researcher creates the correlation matrix and can perform factor analysis.

The data in this research was examined using QPCA, or the Principal Component Analysis feature of PQMethod. Principal Component Analysis first computed the correlation matrix created by QENTER and then computed the untreated factor matrix file (Schmolck, 2002). QPCA computes and outputs all Eigenvalues and corresponding percentage figures. The size of the Eigenvalues was important in helping to determine the number of factors to keep for rotation.

Rotation may be performed judgmentally or analytically. PQMethod allows for analytical rotation using QVARIMAX. QVARIMAX takes the unrotated matrix file created by QPCA and asks for the number of factors to be rotated (Schmolck, 2002). For this study, two, three, and four factor varimax rotations were performed with the data. Factor loadings were automatically flagged with an X by the program. The default setting in PCMethod calculates significant loads if more than half of the common variance can be explained by that factor and significance is determined by $p<.05$ (Schmolck, 2002).

The final step in analysis involves taking the factor scores, or factor arrays, and computing and reporting them in various tables so that respective factors may serve as

idealized, or prototype, sorts (Schmolck, 2002). The variety of tables on factor loadings, statement factor scores, discriminating statements for each of the factors, and consensus statements served to aid the researcher in interpreting the factors. The post-sort demographic survey and follow-up questions were also used to interpret the factors.

Summary

This chapter explained how the research of Davidson and Scripp (1988a-d) was used for concourse development. Their research concerning observable characteristics of students when sight-singing was changed into statements of perception. Q-methodology was discussed as the methodology of choice in discovering the subjective perceptions held by students, educators, and professional musicians. These perceptions were concerning how they use the knowledge developed in the music theory and aural skills classroom in sight-singing a new piece of music. The research instruments, administration of the Q-sorts, and data analysis via PQMethod were explained. Chapter IV will discuss the analysis and interpretation of the data gathered in this research project.

CHAPTER IV

Analysis and Interpretation

The purpose of this study was to describe the perceptions of musicians toward their experience of the academic study of music. The study sought to describe their perceptions concerning the role of music theory and aural skills in their professional performing life. The specific research questions investigated in this study were as follows:

1. What perceptions do musicians have about learning how to sight-sing a new piece of music using the skills acquired in the music theory and aural skills classroom?
2. How might the role of the musician (student, faculty, or professional performer) assist in describing the perceptions identified?
3. In what ways did Davidson and Scripp's (198a-d) theory assist in understanding the perceptions held by the musicians who participated in the study?

Thirty-six statements selected to represent the research conducted by Davidson and Scripp (1988a-d) served as the theoretical basis that guided this study. The Q-statements were sorted by the participants in this study according to their subjective perceptions about how they view the role of music theory and aural skills in their

performing lives. This chapter describes the characteristics of the participants and the findings of the study, describes the factors as revealed by the PQMethod analysis, and interprets the factors in response to the research question.

Participants completed one Q-sort each according to their personal perceptions about the role of music theory and aural skills in their performing lives. The participants yielded 46 sorts. The sorts were analyzed and interpreted according to the research questions for the study.

Findings

The Q-sorts (N=46) were correlated and a principal components factor analysis was performed. A varimax rotation was performed on the resulting factors. PQMethod served as the computer software program to perform the analysis. The purpose was to maximize the purity of saturation on one or more of the extracted factors by as many of the sorts as possible. Trial varimax rotation was performed on 2, 3, and 4 factor solutions in an attempt to maximize the explained variance of the factors.

The three-factor solution was retained. It was determined to be the best solution as it accounted for 57% of all variance with only four of the 46 variables failing to define a single factor. Table III demonstrates 25 of the 46 sorts significantly defined Factor One (32% of the variance), eight sorts were significantly defined Factor Two (11% of the variance), and nine sorts significantly defined Factor Three (14% of the variance). The remaining four sorts were confounded and did not define any factor.

Table 3

Factor Matrix with an X Indicating a Defining Sort

QSORT	Factor One	Factor Two	Factor Three
1MSVP	0.5596	0.3359	0.4638
2FSVP	-0.1434	0.7461X	0.1773
3FSVCP	0.6395X	-0.0240	0.1335
4FSVPCNP	0.0020	-0.0331	0.4889X
5FSrVPC	0.1559	0.1478	0.1785
6MSVTbCP	0.6238X	0.1847	-0.1681
7FSVP	-0.6877X	0.3814	-0.2319
8FSVP	0.3444	0.1878	0.3087
9MSTrP	0.7360X	0.0764	-0.0031
10MSrVBt	0.8996X	0.0155	0.0837
11FMVClP	0.7254X	-0.1613	0.3268
12MSrSxV	0.7192X	-0.4142	0.2900
13MMVCNP	0.3240	0.2080	0.6654X
14MMClPC	0.5168	0.5774X	-0.1565
15MMPiBt	0.6278X	0.1406	0.2635
16FMPiP2	0.7566X	0.4212	-0.0121
17MDOrP	0.7466X	0.1205	0.4977
18MDVH	0.5988X	-0.1186	0.0872
19MDFrC	0.7678X	-0.1148	0.2693
20MDTrPC	0.4952	0.1444	0.6090X
21FMVPCN	0.5237X	0.3901	0.3391
22FMPiCN	0.0698	0.6863X	-0.1608
23FDPiVC	0.6273X	0.1926	0.2686
24FDVTCN	0.4334	-0.0002	0.6255X
25MDVCNP	0.7505X	0.0937	0.2307
26MDTrCN	0.6370X	-0.1869	0.4648
27MMViCN	0.6295X	-0.3274	0.5116
28FMPiP	0.7297X	-0.3289	0.3728
29MDPiCP	0.6157X	0.0988	0.1165
30MDOrP	-0.0699	0.7043X	0.3243
31MDVPiP	0.8173X	-0.0833	0.2618
32FMClP3	0.4414	0.2054	0.4455
33FDViP	0.2159	-0.2855	0.8235X
34FMVP	-0.1829	0.6342X	-0.2061
35FMPiCN	-0.0117	0.3198	0.4773X
36FMOrCP	0.2665	0.0206	0.7777X
37FMHpPC	0.7835X	0.1620	0.1704
38MMPiCN	0.7211X	-0.3349	0.2857
39MMVP	0.2368	0.5253X	0.4511
40FMVPC	0.4599	-0.1246	0.5480X
41MMPiCN	-0.0945	0.2010	0.6059X
42MMPiCN	0.8493X	0.1697	0.0144
43MMBsCN	0.7545X	-0.3279	0.2026
44FMVP	-0.1195	0.6336X	0.1707
45FDVP	0.3226	0.5213X	0.3187
46MDVCNP	0.5549X	-0.1570	0.3450
Number of Defining Sorts	25	8	9
% Explained Variance	32	11	14

Factor Interpretation

Research Question One

What perceptions do musicians have about learning how to sight-sing a new piece of music using the skills acquired in the music theory and aural skills classroom?

In Q-method, the response to the research question requires a detailed and in-depth examination of each of the three factors. Information used to interpret the factors includes the factor arrays produced by ordering the statements according to z-scores and examination of the distinguishing statements for each of the factors. Other information used to aid in interpretation includes the demographic survey and post-sort question. The factors were interpreted and named Demonstrative Musician with Expression in Sight-Singing for Factor One, Physical Musician with Expression in Sight-Singing for Factor Two, and Reserved Musician with Expression in Sight-Singing for Factor Three.

Factor One: Demonstrative Musician with Expression in Sight-Singing

Table 4

Factor One Demographics

Gender		Education		Performing		Role	
Students							
M	4	Sophomores	4	Instrumental	2	Performer	4
F	3	Seniors	2	Vocalist	5	Conductor	1
		Masters	1			Composer	2
Educators							
M	8	Masters	3	Instrumental	7	Performer	4
F	3	Doctorates	8	Vocalist	4	Conductor	4
						Composer	3
Professional							
M	5	Masters	6	Instrumental	6	Performer	2
F	2	Doctorates	1	Vocalist	1	Conductor	4
						Composer	1

Factor One demographics. Of the 46 sorts collected, 25 loaded on Factor One. The 25 sorts were divided among the students, educators, and professional musicians. Seven of the 25 sorts were student music majors. Three female students loaded on Factor One. Two of these students were sophomore voice music majors. The other female student was a voice major in graduate school. Two of these students self-identified as performers while the other self-identified as a composer. Four male students loaded on Factor One. Two of these students were sophomore music majors. One was an instrumental music major and one was a voice major. Two of the four males were senior music majors, again one was an instrumental music major and one was a voice major.

Two of the males self-identified as performers, one self-identified as a conductor, and the other self-identified as a composer.

Of the 25 sorts loading on Factor One, 11 were educators in higher education with teaching duties in music theory and aural skills. Three of the educators were female. Two of the females held master's degrees, one held an instrumental degree and the other a degree in vocal music. Both educators self-identified as performers. The third female educator held a doctorate in instrumental music. This educator self-identified as a conductor. Eight of the 11 educator sorts were male. One male held a master's degree in instrumental music. Seven of the males held doctorates. Four of these males held instrumental degrees and the other three held degrees in vocal music. Two of these males self-identified as performers, three self-identified as composers, and the last three self-identified as conductors.

Another seven sorts loading on Factor One were professional musicians. Two of the seven were professional females holding master's degrees in instrumental music and self-identifying as performers. Of the five professional males, four held master's degrees in instrumental music and self-identified as conductors. The other professional male held a doctoral degree in vocal music and self-identified as a conductor.

A description of common perceptions held by those loading on Factor One follows. The description includes supporting Q-statements, their factor array placement, and the z scores. The factor array, or model Q-sort, presents the continuum of perceptions held by the participants. The array reflects the scores from -4, or most unlike, to 4, or most like, the perceptions held by the participants.

Factor One description – Demonstrative musician with expression in sight-singing. The central perception of Factor One is that when sight-singing, the musicians have developed a strong perception that they possess a keenly developed sense of tonal identity. The musicians believe so very strongly in their abilities that mistakes do not shake their confidence, and they are quite comfortable sight-singing in an ensemble setting. The musicians are also very confident in their abilities to be expressive.

Those whose perceptions loaded onto Factor One – *Demonstrative Musician with Expression in Sight-singing* – begin by describing the role of mistakes in the act of sight-singing. The following statements were distinguishing statements for Factor One. ($P < .05$; Asterisk (*) Indicates Significance at $P < .01$)

- 28. When I am sight-singing one mistake will lead me to a total breakdown in performance. If I do respond to my mistake, I seldom recover. (array, -4, z-score, -2.02*)
- 30. When I am sight-singing mistakes rarely bother me. I can recover the flow of the melody or I will simply ignore my mistake altogether. (3, 1.35*)

The strong perception of how the musician views himself/herself in the act of sight-reading and the role of mistakes in that process is clearly defined by the significance, array position, and z-score. The perception of the Factor One musician is that mistakes occur but do not significantly impact the sight-singing process. Clearly for these musicians, the theoretical knowledge is easily applied to new settings, and the musician can quickly adapt to the new challenges. Their perceptions about the role of mistakes are also illustrated in another statement held important by the Factor One musician.

- 36. Before I begin to sight-sing if my instructor was to ask me to comment on the structure or identify possible places where I might make mistakes, I am able to make comparisons to other pieces and I appreciate structural cues and can use them in performance. (2, 1.06)

Another sharp contrast in the perceptions held by the Factor One musician center around his/her confidence in negotiating modulations, or the changing of key in a piece of music. The Factor One musician has developed a strong sense of confidence in negotiating this new tonal reference and does not need to be given new tonal assistance but rather innately hears where the composer is taking the new composition and is able to make the necessary adjustments.

- 19. I rely on the scale given to me. If I must sight-read in a different key, I must be given a new scale so that I can re-tune. I could never perform a melody that lies outside of a given scale. I rely on the scale given to me. (-3, -1.40*)
- 21. I am able to construct any tonic and key reference. If I must sight-read in a different key, or the melody implies another key, I am able to negotiate highly chromatic melodic contexts and maintain their orientation to changed keys. (2, 0.87*)

These two examples of contrasting perceptions were important because of the strength of the reaction on the part of the musicians who loaded on this factor. The musician felt that the one statement was truly reflective of his/her musical ability and the opposite statement truly did not reflect his/her perceptions about himself/herself at all.

The following statement also reflects on the confidence of the Factor One musician in his/her ability to function in a highly complex musical setting.

- 15. When I am working on a sight-reading exercise I find that I have expanded my tonal reference to include all 12 chromatic pitches. I do not need to stop and re-tune once class has begun. If the class is working on score reading we function like an orchestra. (1, 0.45*)

This statement reflects the confident perception of the Factor Once musician to feel comfortable in a setting of sight-singing music of a more complex tonal nature. The musician no longer feels threatened by complex modulations and is able to move comfortably from one tonal center to the next. The perception is further illustrated by another statement held significant to the Factor One musician. The statement is a perception that the Factor One musician absolutely does not feel reflects his/her own personally held perceptions about his/her sight-singing abilities.

- 20. I rely on the scale given to me. If I must sight-read in a different key, or the melody implies another key, I need a new scale, or my reading is unstable. I am likely to keep a given note as tonic, even if its function within the scale has changed. (-3, -1.26)

A pair of contrasting statements involving the musical principle of musicianship was also important to the Factor One musician. An important component to musicians is the ability to be expressive in performance. It is important to develop in beginning musicians the ability to be expressive, even in new settings. The Factor One musician is quite confident in the ability to be expressive when sight-singing a new piece of music. The following statements illustrate the confidence held by the Factor One musician.

- 31. When I am sight-singing the last thing on my mind is an expressive performance. I will fly through a ritard or diminuendo and I simply forget any sense of dynamics. (-4, -1.57*)
- 33. When I am sight-singing I am also able to integrate expressive markings or add some appropriate ones into my performance. I am expressive in all contexts of performance. (4, 1.45)

The Factor One musician is comfortable with his/her highly developed reading abilities, so much so that he/she is able to not only utilize the expressive markings given by the composer, but is also able to bring his/her own musicianship to the performance. So strong is the confidence exuded by this musician that he/she is able to add appropriate expression to his/her performance.

Two other observations are of particular importance to the Factor One musician. These statements involve musical knowledge of a more complex nature. The following statements are important to the Factor One musician and involve how the musician feels about the process of acquiring tonality.

- 8. Before I sight-read a melody, I usually sing out loud my scale up and down, the tonic triad and perhaps a few other triads. (-1, -0.62)
- 9. Before I sight-read a melody, I usually sing internally my scale up and down, the tonic triad and perhaps a few other triads. I then sing the melody in my mind. When I finish, I sit back and acknowledge to the instructor that I am ready. (0, 0.09*)

The Factor One musician internalizes tonality. This is a subtle advancement in musical knowledge when the musician internalizes the tonal process. The musician no

longer relies on the external process of creating the sense of tonality but is able to hear the tonality in the mind's ear.

The Factor One musician believes that he/she is quite confident in sight-singing ensemble music or music involving harmony. The process of moving from sight-singing melody alone to adding harmony is a necessary advancement in the development of musical knowledge as the musician is becoming keenly aware of implied vertical structures in the music. The Factor One musician is not only able to negotiate sight-singing harmony, but is also able to be aware of those around, even those who are not sight-singing the same harmonic part.

- 5. When I sight-read ensemble music, I seldom look at other students and only then I look at others who are reading my part. (-1, -0.59)
- 6. When I sight-read ensemble music, I frequently look at other students and they are usually people singing a different part. (0, 0.25*)

Another important observation concerning the Factor One musician is the strong development of his/her sight-singing abilities to the point that he/she is able to see the music in its context and not read the music from note to note. The ability to read ahead is vital to the musician so that he/she may adapt to upcoming changes. The confident Factor One musician absolutely does not believe that he/she reads from note to note.

- 1. When I sight-read, I read from note to note. (-2, -1.22*)

Factor Two: Physical Musician with Expression in Sight-Singing

Table 5

Factor Two Demographics

Gender		Education		Performing		Role	
Students							
M	0	Sophomores	1	Instrumental	0	Performer	1
F	1	Seniors	0	Vocalist	1	Conductor	0
		Masters	0			Composer	0
Educators							
M	2	Masters	2	Instrumental	3	Performer	3
F	1	Doctorates	1	Vocalist	0	Conductor	0
						Composer	0
Professional							
M	1	Masters	3	Instrumental	0	Performer	4
F	3	Doctorates	1	Vocalist	4	Conductor	0
						Composer	0

Factor two demographics. Of the 46 sorts collected, eight defined Factor Two. The eight sorts were comprised of students, educators, and professional musicians. One of the eight sorts was a collegiate music major. The collegiate music major was a sophomore female student majoring in vocal music. The student self-identified as a performer.

Of the eight sorts defining Factor Two, three were educators in higher education with teaching duties in music theory and aural skills. One of the educators was female. The female held a master's degree in instrumental music and self-identified as a performer. Two of the three educator sorts were male. One male held a master's degree in

instrumental music and the other held a doctorate in instrumental music. Both of these males self-identified as performers.

Another four sorts loading on Factor Two were professional musicians. Three of the four were professional females, two holding master's degrees in vocal music and self-identifying as performers. The other professional female held a doctorate in vocal music and self-identified as a performer. The one professional male loading on Factor Two held a master's degree in vocal music and self-identified as a performer.

A description of common perceptions held by those loading on Factor Two follows. The description includes supporting Q-statements, their factor array placement, and the z scores. The factor array, or model Q-sort, presents the continuum of perceptions held by the participants. The array reflects the scores from -4, or most unlike, to 4, or most like, the perceptions held by the participants.

Factor two description – Physical musician with expression in sight-singing. The central perception held by the Factor Two musician is that when sight-singing he/she must have internalized a strong sense of tonality. The musician must feel that he/she has developed a strong, stable tonal reference. Stability of tonality is of central concern to the Factor Two musician.

- 7. Before I sight-read a melody, I usually sing my scale up and down out loud. (4, 1.98*)
- 9. Before I sight-read a melody, I usually sing internally my scale up and down, the tonic triad and perhaps a few other triads. I then sing the melody in

my mind. When I finish, I sit back and acknowledge to the instructor that I am ready. (4, 1.63*)

- 8. Before I sight-read a melody, I usually sing out loud my scale up and down, the tonic triad and perhaps a few other triads. (3, 1.56*)

These statements reflect a musician whose primary focus as he/she begins to sight-sing is the need to ground oneself firmly into a tonal structure. The musician audibly sings the tonality by scale degrees, then by principle harmonic tonality, and then repeats the process again internally. All of this must be done before beginning to sight-sing.

Another reflection of the perceptions held by the Factor Two musician is to continually reflect on the principles of tonality before sight-singing. The musician feels a strong need to reflect on the importance of the tonic and dominant tones for tuning purposes. The musician comfortable with tonal reference has a certain fluidity within the musical context. The strong perceptions associated with a need to constantly reinforce the tonal reference are reflected in the following statements held by the Factor Two musician.

- 15. When I am working on a sight-reading exercise I find that I have expanded my tonal reference to include all 12 chromatic pitches. I do not need to stop and re-tune once class has begun. If the class is working on score reading we function like an orchestra. (-4, -1.79*)
- 14. When I am working on a sight-reading exercise I find that I have expanded my tonal reference to include other pitches than the tonic and dominant. I do not need to stop and tune to reestablish my reference notes. (0, 0.01*)

- 13. When I am working on a sight-reading exercise I have a mental image of the sound of tonic and dominant. I have to return to them during class to tune, but I do fine with singing the intervals 7 to 1; 2 to 1; and 6 to 5. (3, 1.20*)

Another series of statements reflects the need of the Factor Two musician for strong tonal reference. In this pair of statements the desire for reinforcement of tonal stability is manifested in the desire to revisit the tuning process while singing scalular pieces.

- 27. As I sight-read I am able to keep my sense of intonation in a variety of melodic and harmonic contexts. Distant keys do not bother me. I am able to maintain my tuning by adjusting to specific tonal contexts. (-2, -0.74*)
- 26. As I sight-read I am able to stay in tune with all pitches of the scale, but if I must move to a new scale my intonation will suffer. (-1, -0.45)
- 25. As I sight-read I am able to stay in tune with the scale only by referencing the tonic or maybe the dominant pitch. (2, 1.09*)

The Factor Two musician is not comfortable with sight-singing complicated modulations. The process of moving from one key center to another and the process of reading notes now written in a new context appear to unsettle the Factor Two musician. The following statements reflect this discomfort.

- 20. I rely on the scale given to me. If I must sight-read in a different key, or the melody implies another key, I need a new scale, or my reading is unstable. I am likely to keep a given note as tonic, even if its function within the scale has changed. (1, 0.40*)

- 19. I rely on the scale given to me. If I must sight-read in a different key, I must be given a new scale so that I can re-tune. I could never perform a melody that lies outside of a given scale. I rely on the scale given to me. (0, -0.17)
- 21. I am able to construct any tonic & key reference. If I must sight-read in a different key, or the melody implies another key, I am able to negotiate highly chromatic melodic contexts and maintain their orientation to changed keys. (-4, -2.08*)

The Factor Two musician understands the modulatory process and can be successful in performance. The musician believes in his/her abilities to negotiate the process of modulation but expresses perceptions concerning the type of modulations that he/she is comfortable in sight-singing. The Factor Two musician is more comfortable with sight-singing modulations to closely related keys. These modulations involve fewer chromatic alterations. It would appear that the musician understands the process of modulation and how to hear that modulation, but more complicated modulatory processes present uncomfortable challenges. This perception is borne out by the following set of contrasting statements.

- 22. I simply cannot sight-read modulations. I begin to make mistakes and my pitch begins to suffer. (-1, -0.39*)
- 23. I am comfortable in sight-reading modulations to closely related keys. I can sing tonic in the home key and tonic in the new key. The closer the modulation the better my performance will be. (1, 0.16)

- 24. I am comfortable sight-reading any modulation. Chromatic tonal and atonal contexts do not bother me at all. (-3, -1.62*)

It would appear that some of the uncomfortable feelings experienced by the Factor Two musician might stem from the reading process itself. The Factor Two musician does not appear to have a strong positive perception of himself/herself in the reading process. The following statements reflect strong perceptions of feeling discomfort in adapting his/her musical knowledge to fit new contexts:

- 3. When I sight-read, I can easily transpose registers and intervals so they better fit my range. When I read clef changes, I am able to sight-read the note names, not from the visual display of the melody. (-3, -1.29*)
- 2. When I sight-read, I am able to invert simple intervals (fifths and fourths, octaves and unisons), so that they fit within my vocal range. (0, -0.12*)
- 1. When I sight-read, I read from note to note. (2, 0.94)

The next series of statements are very closely related in content. The Factor Two musician does not respond positively to the content found in the series of statements. The content is very discriminatory in the hearing and identifying of pitches in the proper musical context. The Factor Two musician is conflicted about his/her perceptions about his/her ability to identify such musical contexts.

- 17. When I am given a beginning note that is part of the non-tonic triad, I will notice it as a miscue and then sight-read the melody in the right scale reference. (-2, -0.69*)

- 18. When I am given a beginning note that is part of the non-tonic triad, I will recognize its context and then sight-read the melody in the right scale reference. (-2, -0.68*)
- 16. When I am given a beginning note that is part of the non-tonic triad, I will sight-read the melody in the wrong scale reference. (0, -0.03*)

The Factor Two musician believes in his/her abilities to find possible areas that might present problems as he/she attempts to sight-sing. He/she is able to recognize passages similar to previous performances. Structural clues, however, are not something that the Factor Two musician will use in performance. Again there seems to be a slight hesitation on the part of the musician to feel really confident in his/her abilities and to trust that he/she can use those abilities in a performance setting. The following statements reflect that hesitation on the part of the Factor Two musician:

- 34. Before I begin to sight-sing if my instructor were to ask me to comment on the structure or identify possible places where I might make mistakes, I am able to quickly find tonic and dominant of the common scales. I will scan the piece quickly and make comparisons to other pieces that I have just sung. (1, 0.37*)
- 36. Before I begin to sight-sing if my instructor was to ask me to comment on the structure or identify possible places where I might make mistakes, I am able to make comparisons to other pieces and I appreciate structural cues and can use them in performance. (0, -0.13*)

The Factor Two musician might express the need to be surrounded by other musicians who are singing the exact same voice part when sight-singing ensemble music.

While the reason for this perception is not clear, the musician holds a strong perception about his/her reluctance to interact with other musicians who are singing different vocal parts when sight-singing ensemble music. One Factor Two musician commented in the demographic survey that he/she experienced mental pressure in the sight-singing performance. The mental pressure created a sense of anxiety for that musician. The following statements represent the perceptions of the Factor Two musician when sight-singing ensemble music:

- 6. When I sight-read ensemble music, I frequently look at other students and they are usually people singing a different part. (-1, -0.34*)
- 5. When I sight-read ensemble music, I seldom look at other students and only then I look at others who are reading my part. (0, -0.10)

The Factor Two musician does not view himself/herself as incapable of negotiating errors in sight-singing. It would be inaccurate to suggest that he/she does not see himself/herself as a competent musician. It would also be inaccurate to suggest that he/she does not feel confident in being expressive in a sight-singing performance. The Factor Two musician responded positively to his/her ability to sight-sing with expression. He/she also responded negatively to the perception that one mistake would render him/her incapable of continuing to be successful in the sight-singing endeavor.

- 33. When I am sight-singing I am also able to integrate expressive markings or add some appropriate ones into my performance. I am expressive in all contexts of performance. (2, 1.05)
- 28. When I am sight-singing one mistake will lead me to a total breakdown in performance. If I do respond to my mistake, I seldom recover. (-3, -1.03)

Factor Three: Reserved Musician with Expression in Sight-Singing

Table 6

Factor Three Demographics

Gender		Education		Performing		Role	
Students							
M	1	Sophomores	1	Instrumental	0	Performer	0
F	1	Seniors	0	Vocalist	2	Conductor	2
		Masters	1			Composer	0
Educators							
M	1	Masters	0	Instrumental	2	Performer	2
F	2	Doctorates	3	Vocalist	1	Conductor	1
						Composer	0
Professional							
M	1	Masters	4	Instrumental	3	Performer	3
F	3	Doctorates	0	Vocalist	1	Conductor	1
						Composer	0

Factor three demographics. Of the 46 sorts collected, nine loaded on Factor Three. The nine sorts were divided among the students, educators, and professional musicians. Two of the nine sorts were students pursuing music degrees. One undergraduate music major was a sophomore female majoring in vocal music. She self-identified as a conductor. The other student loading on Factor Three was a male working on a master's degree in vocal music. He also self-identified as a conductor.

Of the nine sorts loading on Factor Three, three were educators currently teaching in higher education and having teaching duties in music theory and aural skills. Two of the educators were females and held doctoral degrees. One had a focus in instrumental music and the other in vocal music. One self-identified as a performer and the other as a

conductor. The last of the three educator sorts was a male. This educator held a doctorate in instrumental music and self-identified as a performer.

The final four sorts loading on Factor Three were professional musicians. Three of the four were professional females holding master's degrees. Two held degrees in instrumental music. Of these two musicians, one self-identified as a conductor and the other self-identified as a composer. The other held a degree in vocal music and self-identified as a performer. The one professional male loading on Factor Three held a master's degree in instrumental music and self-identified as a conductor.

A description of common perceptions held by those loading on Factor Three follows. The description includes supporting Q-statements, their factor array placement, and the z scores. The factor array, or model Q-sort, presents the continuum of perceptions held by the participants. The array reflects the scores from -4, or most unlike, to 4, or most like, the perceptions held by the participants.

Factor three description – Reserved musician with expression in sight-singing. The central perception of Factor Three musician is that when sight-singing he/she is reserved and totally focused inward so as to prevent mistakes. The Factor Three musician has developed a perception in his/her ability to ascertain structural clues so as to aid him/her in the sight-singing process. The Factor Three musician also believes in his/her ability to express himself/herself musically as he/she sight-sings.

Those whose perceptions loaded onto Factor Three – *Reserved Musician with Expression in Sight-singing* – began by describing the role of mistakes in the act of sight-

singing. The following statements were distinguishing statements for Factor Three musician. (P < .05; Asterisk (*) Indicates Significance at P < .01)

The Factor Three musician first discussed his/her perceptions of how he/she believed he/she behaved in a group setting. The Factor Three musician was very intent on maintaining focus and avoiding mistakes. This first very strong perception gives an insight into the Reserved musician.

- 6. When I sight-read ensemble music, I frequently look at other students and they are usually people singing a different part. (-4, -1.86*)
- 5. When I sight-read ensemble music, I seldom look at other students and only then I look at others who are reading my part. (2, 1.11*)
- 4. When I sight-read ensemble music, I never look at other students, I barely look at the conductor, and I only focus on my part so that I do not make mistakes. (4, 1.43*)

The Factor Three musician prepares to sight-sing in a manner suggesting that he/she is not quite comfortable in tuning himself/herself internally. His/her perceptions reflect a need to hear himself/herself audibly express what he/she is hearing internally. The following statements reflect this perception:

- 9. Before I sight-read a melody, I usually sing internally my scale up and down, the tonic triad and perhaps a few other triads. I then sing the melody in my mind. When I finish, I sit back and acknowledge to the instructor that I am ready. (-1, -0.44*)
- 8. Before I sight-read a melody, I usually sing out loud my scale up and down, the tonic triad and perhaps a few other triads. (0, -0.17)

The following statements written by the researcher reflect a weakness in the wording of the statements. The Factor Three musician has a very strong perception as to how he/she identifies pitches played randomly at the piano. It is unclear if the musician is reacting to the use of solfege or to how he/she is identifying pitches.

- 10. When I am asked to identify a particular pitch that is played on the piano, I sing the solfege until I find the pitch and then sing the name out loud. (-4, -1.54*)
- 11. When I am asked to identify a particular pitch that is played on the piano, I sing the solfege until I find the pitch and then I sing or say the name out loud. (-3, -1.43*)
- 12. When I am asked to identify a particular pitch that is played on the piano, I sing the solfege internally until I find the pitch and then I say the name out loud.-3 -1.33*

The Factor Three musician is comfortable sight-singing chromatic passages while maintaining an inner sense of tonal stability. His/her reaction to the statements does not reflect a strong perception concerning stability, but a significant loading did occur.

- 20. I rely on the scale given to me. If I must sight-read in a different key, or the melody implies another key, I need a new scale, or my reading is unstable. I am likely to keep a given note as tonic, even if its function within the scale has changed. (-2, -0.83)
- 19. I rely on the scale given to me. If I must sight-read in a different key, I must be given a new scale so that I can re-tune. I could never perform a

melody that lies outside of a given scale. I rely on the scale given to me. (-2, -0.73)

- 21. I am able to construct any tonic and key reference. If I must sight-read in a different key, or the melody implies another key, I am able to negotiate highly chromatic melodic contexts and maintain their orientation to changed keys. (0, 0.20*)

Perhaps the hesitancy in expressing a strong, positive perception to the previous set of statements can best be explained by the following reaction. The Factor Three musician is most comfortable sight-singing modulations to closely related keys. Distant keys require the use of more chromatic alterations and therefore are more highly chromatic passages.

- 23. I am comfortable in sight-reading modulations to closely related keys. I can sing tonic in the home key and tonic in the new key. The closer the modulation the better my performance will be. (3, 1.25*)
- 24. I am comfortable sight-reading any modulation. Chromatic tonal and atonal contexts do not bother me at all. (0, 0.03)

Finally, the Factor Three musician expresses a certain level of doubt in his/her ability to maintain tonal stability. The Factor Three musician expressed a negative reaction to having all 12 chromatic pitches at his/her disposal while sight-singing. His/her reaction suggests that he/she might need to pause and hear the tonality expressed audibly before continuing to negotiate these highly chromatic passages.

- 15. When I am working on a sight-reading exercise I find that I have expanded my tonal reference to include all 12 chromatic pitches. I do not need

to stop and re-tune once class has begun. If the class is working on score reading we function like an orchestra. (-1, -0.47*)

Even though the Factor Three musician is concerned about highly chromatic passages, this musician is confident in his/her abilities to recover when mistakes are made. The strong, confident response expresses a perception in his/her abilities to persevere in spite of obstacles.

- 28. When I am sight-singing one mistake will lead me to a total breakdown in performance. If I do respond to my mistake, I seldom recover. (-3, -1.51)

The Factor Three musician responded in a positive fashion to the use of structural cues when sight-singing. The musician is able to make comparisons to previous pieces and use that knowledge to be successful in new performances.

- 36. Before I begin to sight-sing if my instructor was to ask me to comment on the structure or identify possible places where I might make mistakes, I am able to make comparisons to other pieces and I appreciate structural cues and can use them in performance. (1, 0.67)
- 35. Before I begin to sight-sing if my instructor were to ask me to comment on the structure or identify possible places where I might make mistakes, I am able to quickly find tonic and dominant of the common scales. I will scan the piece quickly and make comparisons to other pieces that I have just sung. (1, 0.30)

The Factor Three musician is cognizant of being a musician charged with expressing the composer's intent. The musician responded confidently about his/her ability to be expressive even while engaged in sight-singing.

- 33. When I am sight-singing I am also able to integrate expressive markings or add some appropriate ones into my performance. I am expressive in all contexts of performance. (1, 0.46)

The final, very strong, positive response reflects an area of concern. The Factor Three musician expressed a very strong perception that he/she is predominately visual in the sight-singing process. This presents difficulties for the Factor Three musician as new demands are required of him/her. The goal of an aural skills class is to develop musicians who perform from an internal image of the sound of the melody. The Factor Three musician expressed a perception about himself/herself that he/she has not achieved that aim.

- 1. When I sight-read, I read from note to note. (4, 1.54)

Research Question Two

How might the role of the musician (student, faculty, or professional performer) assist in describing the perceptions identified?

Factor One: Demonstrative Musician with Expression in Sight-Singing

Table 7

Factor One Demographics

Gender		Education		Performing		Role	
Students							
M	4	Sophomores	4	Instrumental	2	Performer	4
F	3	Seniors	2	Vocalist	5	Conductor	1
		Masters	1			Composer	2
Educators							
M	8	Masters	3	Instrumental	7	Performer	4
F	3	Doctorates	8	Vocalist	4	Conductor	4
						Composer	3
Professional							
M	5	Masters	6	Instrumental	6	Performer	2
F	2	Doctorates	1	Vocalist	1	Conductor	4
						Composer	1

Factor One demographics. Of the forty-six sorts collected, twenty-five loaded on Factor One. The twenty-five sorts were comprised of students, educators, and professional musicians. Seven of the twenty-five sorts were collegiate music majors; eleven were educators working in higher education and having teaching duties in music theory and aural skills. The other seven sorts loading on Factor One were professional musicians currently working in a professional capacity.

The Demonstrative Musician's demographics were spread evenly across the continuum. (see Tables 5 through 7) In the post-sort survey most of the musicians reported a degree of satisfaction with the courses taken in music theory and aural skills. When one of the musicians did not like the collegiate courses, he/she expressed

frustration at the pace of the course. “The course was too slow at my undergrad institution.”

Many of the Demonstrative Musicians reported that they “heard” the music in their mind’s ear. “When I am sight-singing, it is mostly internally done within my mind.” “I hear music before I sing it.” “I hear the score in my mind.” “Sight-singing has been a skill that comes naturally.” “I just do it.”

The comments made by the Demonstrative Musicians were not confined to any one particular gender, education level, principal performing identity, or principal musical role identity. The Demonstrative Musician was confident in his/her abilities and was confident in his/her classroom experiences.

Factor Two: Physical Musician with Expression in Sight-Singing

Table 8

Factor Two Demographics

	Gender		Education		Performing		Role	
Students								
	M	0	Sophomores	1	Instrumental	0	Performer	1
	F	1	Seniors	0	Vocalist	1	Conductor	0
			Masters	0			Composer	0
Educators								
	M	2	Masters	2	Instrumental	3	Performer	3
	F	1	Doctorates	1	Vocalist	0	Conductor	0
							Composer	0
Professional								
	M	1	Masters	3	Instrumental	0	Performer	4
	F	3	Doctorates	1	Vocalist	4	Conductor	0
							Composer	0

Factor two demographics. Of the forty-six sorts collected, eight defined as Factor Two musicians. The eight sorts were comprised of students, educators, and professional musicians. One of the eight sorts was an undergraduate music major; three were educators teaching in higher education with teaching assignments in music theory and aural skills. The final four sorts loading on Factor Two were professional musicians who were actively pursuing professional music careers in the performing arena.

The Physical Musician's demographics were spread evenly across all demographics surveyed, save one (see Tables 5 through 7). All of the Physical Musicians self-identified as performers. No Physical Musician identified as a conductor or composer.

All Physical Musicians rated their experience with undergraduate music theory and aural skills courses as low to average. No Physical Musician expressed a love of either music theory or aural skills. One musician commented on the role of nerves when sight-singing. "If there is little or no pressure, I do fairly well, but if pressured, panic takes over."

Factor Three: Reserved Musician with Expression in Sight-Singing

Table 9

Factor Three Demographics

Gender		Education		Performing		Role	
Students							
M	1	Sophomores	1	Instrumental	0	Performer	0
F	1	Seniors	0	Vocalist	2	Conductor	2
		Masters	1			Composer	0
Educators							
M	1	Masters	0	Instrumental	2	Performer	2
F	2	Doctorates	3	Vocalist	1	Conductor	1
						Composer	0
Professional							
M	1	Masters	4	Instrumental	3	Performer	3
F	3	Doctorates	0	Vocalist	1	Conductor	1
						Composer	0

Factor three demographics. Of the forty-six sorts collected, nine loaded on Factor Three. The nine sorts were divided among the students, educators, and professional musicians. Two of the nine sorts were student music majors and three were educators working in higher education with teaching duties in music theory and aural skills. The final four sorts loading on Factor Three were professional musicians actively pursuing professional performing careers.

The Reserved Musician's demographics were spread evenly across all demographics surveyed, again, save one (see Tables 5 through 7). All of the Reserved Musicians self-identified as either performers or conductors, but no one self-identified as a composer.

All Reserved Musicians reported that they had an average to enjoyable time in the music theory and aural skills classroom. All Reserved Musicians were either instrumentalists or had a strong instrumental background. Several of the Reserved Musicians commented about always being able to read music, but not necessarily wanting to sing the music. “I cannot remember not knowing how to read music. Therefore, I just read without analyzing.” “I play more than I sing.” “Music is like breathing. It’s difficult to compartmentalize something which feels so natural to me.” “I would first notice and make mental notes in a score before sight-singing.” “When sight-singing, I play the pitches I my head before singing them.”

Research Question Three

> *In what ways did Davidson and Scripp’s theory assist in understanding the perceptions held by the musicians who participated in the study?*

Factor One: Demonstrative Musician with Expression in Sight-Singing

The Demonstrative Musician was defined by eight statements representing the third, or highest level of musical understanding, according to Davidson and Scripp. The third level has “a stable ensemble of attributes that emerge with apparent independence and that are finally knit together into a flexible multi-dimensional base that students exhibit as “knowing in action” (Davidson & Scripp, 1988d).

The following statements reflect this third level and are ranked according to z score. Each statement received a positive score, meaning that the participants defined by Factor One chose these statements as perceptions that they could identify as being part of themselves.

- 33. When I am sight-singing I am also able to integrate expressive markings or add some appropriate ones into my performance. I am expressive in all contexts of performance. (4, 1.45, Level III, Beyond Notation)
- 30. When I am sight-singing mistakes rarely bother me. I can recover the flow of the melody or I will simply ignore my mistake altogether. (3, 1.35*, Level III, Degree of Stability)
- 36. Before I begin to sight-sing if my instructor was to ask me to comment on the structure or identify possible places where I might make mistakes, I am able to make comparisons to other pieces and I appreciate structural cues and can use them in performance. (2, 1.06, Level III, Beyond Notation)
- 21. I am able to construct any tonic and key reference. If I must sight-read in a different key, or the melody implies another key, I am able to negotiate highly chromatic melodic contexts and maintain their orientation to changed keys. (2, 0.87*, Level III, Degree of Stability)
- 24. I am comfortable sight-reading any modulation. Chromatic tonal and atonal contexts do not bother me at all. (1, 0.52, Level III, Degree of Stability)
- 15. When I am working on a sight-reading exercise I find that I have expanded my tonal reference to include all 12 chromatic pitches. I do not need to stop and re-tune once class has begun. If the class is working on score

reading we function like an orchestra. (1, 0.45*, Level III, Degree of Internalization)

- 6. When I sight-read ensemble music, I frequently look at other students and they are usually people singing a different part. (0, 0.25*, Level III, Focus of Attention)
- 9. Before I sight-read a melody, I usually sing internally my scale up and down, the tonic triad and perhaps a few other triads. I then sing the melody in my mind. When I finish, I sit back and acknowledge to the instructor that I am ready. (0, 0.09*, Level III, Degree of Internalization)

The Demonstrative musician did not have any third level statements that received negative scores. Of a possible twelve third level statements, the Demonstrative Musician was defined by eight. This factor received the largest number of third level statements.

The Demonstrative musician responded positively to one statement representing the second, or median level of understanding. There were three second level statements to which the musician responded negatively. The following statements represent the second level of understanding according to Davidson and Scripp (1988a-d):

- 23. I am comfortable in sight-reading modulations to closely keys. I can sing tonic in the home key and tonic in the new key. The closer the modulation the better my performance will be. (1, 0.63, Level II, Degree of Stability)
- 5. When I sight-read ensemble music, I seldom look at other students and only then I look at others who are reading my part. (-1, -0.59, Level II, Focus of Attention)

- 8. Before I sight-read a melody, I usually sing out loud my scale up and down, the tonic triad and perhaps a few other triads. (-1, -0.62, Level II, Degree of Internalization)
- 20. I rely on the scale given to me. If I must sight-read in a different key, or the melody implies another key, I need a new scale, or my reading is unstable. I am likely to keep a give note as tonic, even if its function within the scale has changed. (-3, -1.26, Level II, Degree of Stability)

The Demonstrative musician did not respond positively to any first, or beginning level of understanding. This musician did not perceive that any of the statements were reflective of his/her understanding of music theory and aural skills. The following statements were responded to negatively by the Demonstrative musician.

- 1. When I sight-read, I read from note to note. (-2, -1.22*, Level I, Focus of Attention)
- 19. I rely on the scale given to me. If I must sight-read in a different key, I must be given a new scale so that I can re-tune. I could never perform a melody that lies outside of a given scale. I rely on the scale given to me. (-3 -1.40*, Level I, Degree of Stability)
- 31. When I am sight-singing the last thing on my mind is an expressive performance. I will fly through a ritard or diminuendo and I simply forget any sense of dynamics. (-4, -1.57*, Level I, Beyond Notation)
- 28. When I am sight-singing one mistake will lead me to a total breakdown in performance. If I do respond to my mistake, I seldom recover. (-4, -2.02*, Level I, Degree of Stability)

Factor Two: Physical Musician with Expression in Sight-Singing

The Physical Musician was defined by two positive statements and eight negative statements representing the third, or highest level of musical understanding, according to Davidson and Scripp. The following statements reflect this third level and are ranked according to z score. Each statement receiving a positive score meant the participants defined by Factor Two chose these statements as perceptions that they could identify as being part of themselves.

- 9. Before I sight-read a melody, I usually sing internally my scale up and down, the tonic triad and perhaps a few other triads. I then sing the melody in my mind. When I finish, I sit back and acknowledge to the instructor that I am ready. (4, 1.63*, Level III, Degree of Internalization)
- 33. When I am sight-singing I am also able to integrate expressive markings or add some appropriate ones into my performance. I am expressive in all contexts of performance. (2, 1.05, Level III, Beyond Notation)

The following statements received a negative score, meaning that the participants defined by Factor Two chose these statements as perceptions that they could not identify as being part of themselves.

- 36. Before I begin to sight-sing if my instructor was to ask me to comment on the structure or identify possible places where I might make mistakes, I am able to make comparisons to other pieces and I appreciate structural cues and can use them in performance. (0, -0.13*, Level III, Beyond Notation)

- 6. When I sight-read ensemble music, I frequently look at other students and they are usually people singing a different part. (-1, -0.34*, Level III, Focus of Attention)
- 18. When I am given a beginning note that is part of the non-tonic triad, I will recognize its context and then sight-read the melody in the right scale reference. (-2, -0.68*, Level III, Degree of Stability)
- 27. As I sight-read I am able to keep my sense of intonation in a variety of melodic and harmonic contexts. Distant keys do not bother me. I am able to maintain my tuning by adjusting to specific tonal contexts. (-2, -0.74*, Level III, Degree of Stability)
- 3. When I sight-read, I can easily transpose registers and intervals so they better fit my range. When I read clef changes, I am able to sight-read the note names, not from the visual display of the melody. (-3, -1.29*, Level III, Focus of Attention)
- 24. I am comfortable sight-reading any modulation. Chromatic tonal and atonal contexts do not bother me at all. (-3, -1.62*, Level III, Degree of Stability)
- 15. When I am working on a sight-reading exercise I find that I have expanded my tonal reference to include all 12 chromatic pitches. I do not need to stop and re-tune once class has begun. If the class is working on score reading we function like an orchestra. (-4, -1.79*, Level III, Degree of Internalization)

- 21. I am able to construct any tonic & key reference. If I must sight-read in a different key, or the melody implies another key, I am able to negotiate highly chromatic melodic contexts and maintain their orientation to changed keys. (-4, -2.08*, Level III, Degree of Stability)

The Physical Musician was defined by positive responses to six second level statements and negative responses to two second level statements. The second level is characterized “by larger chunks and by unstable relations among several attributes” (Davidson & Scripp, 1988d). The following second level statements were utilized by the Physical Musician.

- 8. Before I sight-read a melody, I usually sing out loud my scale up and down, the tonic triad and perhaps a few other triads. (3, 1.56*, Level II, Degree of Internalization)
- 20. I rely on the scale given to me. If I must sight-read in a different key, or the melody implies another key, I need a new scale, or my reading is unstable. I am likely to keep a given note as tonic, even if its function within the scale has changed. (1, 0.40*, Level II, Degree of Stability)
- 23. I am comfortable in sight-reading modulations to closely related keys. I can sing tonic in the home key and tonic in the new key. The closer the modulation the better my performance will be. (1, 0.16, Level II, Degree of Stability)
- 14. When I am working on a sight-reading exercise I find that I have expanded my tonal reference to include other pitches than the tonic and dominant. I do not need to stop and tune to reestablish my reference notes. (0, 0.01*, Level II, Degree of Internalization)

- 5. When I sight-read ensemble music, I seldom look at other students and only then I look at others who are reading my part. (0, -0.10, Level II, Focus of Attention)
- 2. When I sight-read, I am able to invert simple intervals (fifths and fourths, octaves and unisons), so they fit within my vocal range. (0, -0.12*, Level II, Focus of Attention)
- 26. As I sight-read I am able to stay in tune with all pitches of the scale, but if I must move to a new scale my intonation will suffer. (-1, -0.45, Level II, Degree of Stability)
- 17. When I am given a beginning note that is part of the non-tonic triad, I will notice it as a miscue and then sight-read the melody in the right scale reference. (-2, -0.69*, Level II, Degree of Stability)

The Physical Musician was defined by positive responses to five first level statements and four negative responses to first level statements. According to Davidson and Scripp (1988d), the first level is characterized by "a focus on a single attribute" (Davidson & Scripp, 1988d). The following first level responses gained the attention of the Physical Musician.

- 7. Before I sight-read a melody, I usually sing my scale up and down out loud. (4, 1.98*, Level I, Degree of Internalization)
- 13. When I am working on a sight-reading exercise I have a mental image of the sound of tonic and dominant. I have to return to them during class to tune, but I do fine with singing the intervals 7 to 1; 2 to 1; and 6 to 5. (3, 1.20*, Level I, Degree of Internalization)

- 25. As I sight-read I am able to stay in tune with the scale only by referencing the tonic ore maybe the dominant pitch. (2, 1.09*, Level I, Degree of Stability)
- 1. When I sight-read, I read from note to note. (2, 0.94, Level I, Focus of Attention)
- 34. Before I begin to sight-sing if my instructor were to ask me to comment on the structure or identify possible places where I might make mistakes, I must look at the piece note for note in order to answer the question. (1, 0.37*, Level I, Beyond Notation)
- 16. When I am given a beginning note that is part of the non-tonic triad, I will sight-read the melody in the wrong scale reference. (0, -0.03*, Level I, Degree of Stability)
- 19. I rely on the scale given to me. If I must sight-read in a different key, I must be given a new scale so that I can re-tune. I could never perform a melody that lies outside of a given scale. I rely on the scale given to me. (0, -0.17, Level I, Degree of Stability)
- 22. I simply cannot sight-read modulations. I begin to make mistakes and my pitch begins to suffer. (-1, -0.39*, Level I, Degree of Stability)
- 28. When I am sight-singing one mistake will lead me to a total breakdown in performance. If I do respond to my mistake, I seldom recover. (-3, -1.03, Level I, Degree of Stability)

According to the theory presented by Davidson and Scripp (1988d), this musician is progressing in the development of a web of understanding but has not yet fully

developed the web. Several of the Physical Musicians have advanced degrees. The musicians have indicated a certain level of discomfort with the sight-singing process but are functioning as performers. No Physical Musician identified as a composer or conductor (see Table 8).

Factor Three: Reserved Musician with Expression in Sight-Singing

The Reserved Musician was defined by four positive statements and four negative statements at the third, or highest level of musical understanding, according to Davidson and Scripp (1988d). The following statements were selected by the participants as representing their perceptions of themselves. These statements are third level responses and are ranked according to z score. Each statement received a positive score, meaning that the participants defined by Factor Three chose these statements as perceptions that they could identify as being part of themselves.

- 36. Before I begin to sight-sing if my instructor was to ask me to comment on the structure or identify possible places where I might make mistakes, I am able to make comparisons to other pieces and I appreciate structural cues and can use them in performance. (1, 0.67, Level III, Beyond Notation)
- 33. When I am sight-singing I am also able to integrate expressive markings or add some appropriate ones into my performance. I am expressive in all contexts of performance. (1, 0.46, Level III, Beyond Notation)
- 21. I am able to construct any tonic and key reference. If I must sight-read in a different key, or the melody implies another key, I am able to negotiate highly

chromatic melodic contexts and maintain their orientation to changed keys. (0, 0.20*, Level III, Degree of Stability)

- 24. I am comfortable sight-reading any modulation. Chromatic tonal and atonal contexts do not bother me at all. (0, 0.03, Level III, Degree of Stability)

The following third level statements received a negative score, meaning that the participants defined by Factor Three chose these statements as perceptions that they could not identify as being part of themselves.

- 9. Before I sight-read a melody, I usually sing internally my scale up and down, the tonic triad and perhaps a few other triads. I then sing the melody in my mind. When I finish, I sit back and acknowledge to the instructor that I am ready. (-1, -0.44*, Level III, Degree of Internalization)
- 15. When I am working on a sight-reading exercise I find that I have expanded my tonal reference to include all 12 chromatic pitches. I do not need to stop and re-tune once class has begun. If the class is working on score reading we function like an orchestra. (-1, -0.47*, Level III, Degree of Internalization)
- 12. When I am asked to identify a particular pitch that is played on the piano, I sing the solfege internally until I find the pitch and then I say the name out loud. (-3 -1.33*, Level III, Degree of Internalization)
- 6. When I sight-read ensemble music, I frequently look at other students and they are usually people singing a different part. (-4, -1.86*, Level III, Focus of Attention)

Statement Six helped to identify this particular musician. It was revealing that this musician did not feel comfortable interacting with other musicians in sight-singing ensemble music. This musician prefered to sight-sing alone or with others singing the same part.

The Reserved Musician was defined by four positive responses to second level statements and two negative responses. The following statements helped to shape the understanding of the Reserved Musician.

- 23. I am comfortable in sight-reading modulations to closely related keys. I can sing tonic in the home key and tonic in the new key. The closer the modulation the better my performance will be. (3, 1.25*, Level II, Degree of Stability)
- 5. When I sight-read ensemble music, I seldom look at other students and only then I look at others who are reading my part. (2, 1.11*, Level II, Focus of Attention)
- 35. Before I begin to sight-sing if my instructor were to ask me to comment on the structure or identify possible places where I might make mistakes, I am able to quickly find tonic and dominant of the common scales. I will scan the piece quickly and make comparisons to other pieces that I have just sung. (1, 0.30, Level II, Beyond Notation)
- 8. Before I sight-read a melody, I usually sing out loud my scale up and down, the tonic triad and perhaps a few other triads. (0, -0.17, Level II, Degree of Internalization)

- 20. I rely on the scale given to me. If I must sight-read in a different key, or the melody implies another key, I need a new scale, or my reading is unstable. I am likely to keep a given note as tonic, even if its function within the scale has changed. (-2, -0.83, Level II, Degree of Stability)
- 11. When I am asked to identify a particular pitch that is played on the piano, I sing the solfege until I find the pitch and then I sing or say the name out loud. (-3, -1.43*, Level II, Degree of Internalization)

The Reserved Musician responded positively to two first level statements and negatively to three first level statements. The following statements were chosen by the Reserved Musician to represent their perceptions:

- 1. When I sight-read, I read from note to note. (4, 1.54, Level I, Focus of Attention)
- 4. When I sight-read ensemble music, I never look at other students, I barely look at the conductor, and I only focus on my part so that I do not make mistakes. (4, 1.43*, Level I, Focus of Attention)
- 19. I rely on the scale given to me. If I must sight-read in a different key, I must be given a new scale so that I can re-tune. I could never perform a melody that lies outside of a given scale. I rely on the scale given to me. (-2, -0.73, Level I, Degree of Stability)
- 28. When I am sight-singing one mistake will lead me to a total breakdown in performance. If I do respond to my mistake, I seldom recover. (-3, -1.51, Level I, Degree of Stability)

- 10. When I am asked to identify a particular pitch that is played on the piano, I sing the solfege until I find the pitch and then sing the name out loud. (-4, -1.54*, Level I, Degree of Internalization)

According to the theory presented by Davidson and Scripp (1988d), this musician was also progressing toward developing a web of understanding but has not yet fully developed the web. Several of the Reserved Musicians have advanced degrees. The musicians have indicated a certain level of discomfort with the sight-singing process but are functioning as performers or conductors. No Reserved Musician identified as a composere (see Table 8). This musician appreciated the structure of a piece of music and was more comfortable with chromaticism than most musicians.

Table 10

Factor Demographics by Gender

Category	Factor One	Factor Two	Factor Three
Students			
Male	4	0	1
Female	3	1	1
Educators			
Male	8	2	1
Female	3	1	2
Professional			
Male	5	1	1
Female	2	3	3

Table 11

Factor Demographics by Education Level

Category	Factor One	Factor Two	Factor Three
Students			
Sophomores	4	1	1
Seniors	2	0	0
Masters	1	0	1
Educators			
Masters	3	2	0
Doctorates	8	1	3
Professionals			
Masters	6	3	4
Doctorates	1	1	0

Table 12

Factor Demographics by Principle Performing Identity

Category	Factor One	Factor Two	Factor Three
Students			
Instrumental	2	0	0
Vocalist	5	1	2
Educators			
Instrumental	7	3	2
Vocalist	4	0	1
Professionals			
Instrumental	6	0	3
Vocalist	1	4	1

Table 13

Factor Demographics by Principle Role Identity

Category	Factor One	Factor Two	Factor Three
Students			
Performer	4	1	0
Conductor	1	0	2
Composer	2	0	0
Educators			
Performer	4	3	2
Conductor	4	0	1
Composer	3	0	0
Professionals			
Performer	2	4	3
Conductor	4	0	1
Composer	1	0	0

CHAPTER V

Summary, Conclusions, and Recommendations

The purpose of this study was to describe the perceptions of musicians toward their experience of the academic study of music and the role of music theory and aural skills in their professional performing life, specifically in sight-singing music. This chapter summarizes the study and discusses possible implications for theory, practice, and further research.

Summary of the Study

This study examined the subjective perceptions of students, educators, and professional musicians about the role of music theory and aural skills in their performing lives. Thirteen students pursing various degrees in higher education, 17 educators at institutions of higher education with teaching duties in music theory and aural skills, and 16 professional musicians with active careers in performance volunteered to participate in this study. All participants were either currently pursuing a degree in music or had received a degree in music. The participants agreed to complete a single Q-sort and a demographic questionnaire.

Q-methodology provided the researcher with a means to examine musicians' perceptions about the role of music theory and aural skills in their performing lives. In this study 36 statements representing perceptions from three levels of musical understanding as articulated by Davidson and Scripp (1988) were used for sorting purposes.

Three specific research questions guided this study:

1. What perceptions do musicians have about learning to sight-sing a new piece of music using the skills acquired in the music theory and aural skills classroom?
2. How might the role of the musician (student, faculty, or professional performer) assist in describing the perceptions identified?
3. In what ways did Davidson and Scripp's theory assist in understanding the perceptions held by the musicians who participated in the study?

The statistical procedures used to analyze the data included correlation of Q-sorts, Q-factor analysis, and the computation of factor scores. Trial varimax rotations were performed on 2, 3, and 4 factor solutions in an attempt to maximize the explained variance of the factors. The three-factor solution was judged the best statistical and theoretical solution upon which to calculate z-scores for items on each factor. The three factors that emerged were examined and named according to the pattern of perception held by the participants loading on that factor.

Factor One – *Demonstrative Musician with Expression in Sight-Singing* – described a Demonstrative performer, conductor, or composer. The Factor One musician reflected perceptions of someone who was quite confident in his/her abilities to sight-

sing. The musician also believed strongly that he/she had developed the skills to respond in the classroom setting to such a degree that would allow him/her to sight-sing any piece of music placed in front of him/her. Such was the development of the skills that the musician perceived himself/herself not to be intimidated by the complexity of the piece. Most importantly the musician was still able to bring a certain sense of musicality to the performance.

Factor Two – *Physical Musician with Expression in Sight-Singing* – described a musician preoccupied with the need to constantly audibly reinforce the tonal center. The statements that were of most importance to the Factor Two musician were those statements reflecting the tuning process and how the tuning process impacted complex tonal relationships. The Factor Two musician was not the Demonstrative performer, but rather was the contemplative musical thinker. The perceptions held by the Factor Two musician were not strongly contrasting but were a little more subtle in difference.

Factor Three – *Reserved Musician with Expression in Sight-Singing* – described a musician who was very intently focused upon his/her own vocal production when sight-singing. These musicians clearly chose to ignore others involved in the ensemble sight-singing process unless the other musicians were singing the same part. The Factor Three musician was more comfortable with less complex melodies and was more comfortable with modulations occurring between closely related keys.

Conclusions

This study examined the perceptions of a group of musicians who are currently involved in a collegiate course sequence of music theory and aural skills or have completed a sequence. The study included all ranges of musical roles from performers and conductors to composers and educators. The study indicated certain challenges to the web of understanding as articulated by Davidson and Scripp (1988).

No single factor loaded on all twelve statements representing a true web of understanding of music. Factor One musicians represented the most developed understanding, according to the theory. They loaded onto eight of the twelve level three statements in a positive manner. The Factor Two musicians loaded onto ten of the level three statements. However, only two of the statements elicited a positive response, leaving eight responses in the negative. The Factor Three musician, like the Factor One musician, loaded onto eight level three statements. However, unlike the Factor One musician, four statements received positive perceptions and four received negative perceptions.

When comparing the musicians, the Factor One and Factor Two musicians were alike in very few areas of development. They were most strikingly different in their perceptions concerning the stability of tonality. The Factor One musician held the perception of strong stability while the Factor Two musician held the perception of weaker stability of tonality.

When comparing the Factor One and Factor Three musicians, both musicians held the perception of strong tonal stability and strong creativity. They are strikingly different

in their perceptions of focus and internalization. The Factor One musician held a strong perception of his/her ability to have focus and a developed internalization of tonality. The Factor Three musician did not share the same perceptions. He/she has a weaker perception of his/her focus and internalization process.

Implications

On March 10, 2005, the National Commission on Accountability in Higher Education, chaired by former Oklahoma governor Frank Keating and former U.S. Secretary of Education Richard Riley, issued a press release calling for efforts to "put more emphasis on successful student learning" and stating that better accountability is a "national imperative" National Commission on Accountability (2005).

As the national dialogue has moved through the educational system, from common education to higher education, the call for accountability has been deafening. The problem is who will determine what are appropriate and accurate measures of student learning and how do we implement these measures. As we move into a culture that seems to equate learning with standardized test scores, true authentic learning presents educators with real challenges.

Implications for Theory

In the music classroom, concepts, terms, and definitions are most often taught verbally. Our current educational system places a high value on verbal and written

language. How connections are made in this venue rather than through composition and performance is unclear (Davidson, 1990).

This study examined the perceptions of musicians situated in performance. The statements reflected a network of understanding (Davidson & Scripp, 1992). The researchers believed that the students moved from one level of understanding to another, achieving qualitatively different levels of understanding. The levels also reflected production in performance, perception in performance, and reflection in performance. The interweaving of knowledge leads to a mature understanding of the discipline. This is important for musicians, but it is equally important to any discipline.

When the interweaving of knowledge does not occur, we graduate musicians who cannot perceive, critique, or revise their performances, or who may not be able to coordinate their skills if their skills do exist (Davidson & Scripp, 1992). This study indicated that among some musicians certain gaps exist in understanding. Even greater cooperation is necessary between those working in the fields of music psychology and music theory. This cooperation is necessary to help students achieve the fullest understanding of the discipline possible. Such cooperation will also aid in the advance of musical cognitive skills development.

Implications for Practice

The necessity to develop educators within the field of music who are cognizant of the need to connect skill with cognition is paramount. The focus of most programs of

study is on the development of skill. Little work is given on the relationships that exist between skill and cognitive development.

The development of educators who are cognizant of the relationship that exist between skill and cognition is important to the development of future performers. Educators need to begin working to develop both among the very youngest musicians. As the young musician progresses, each educator at each level must be aware of developmental benchmarks and work to help the student reach and surpass those established goals.

It should never be accepted practice that collegiate educators simply expect new students to have superior performance skills, but be unable to demonstrate musical knowledge in any other venue. It should also never be accepted practice that collegiate educators allow graduates to have a lack of comprehensive cognitive skill development.

Areas for Future Research

The present study was restricted to a small number of musicians representing a variety of training experiences. The present study cut across all performance roles. Participants were performers, vocal and instrumental, conductors of both vocal and instrumental ensembles, composers, and educators focusing on both vocal and instrumental music.

Replicating this study and focusing on an even more diverse population might provide a more comprehensive evaluation of what occurs in the individual groups. This intense focus might provide a more comprehensive picture of the struggles particular to

one performance area. The scope of this study did not allow for different issues encountered by vocalists and instrumentalists.

Replicating this study and focusing on the different approaches found in the conservatory setting versus the liberal arts setting of collegiate music education might further explain the struggles experienced by various groups of musicians. The researcher in this study did not allow for differences in educational experience and settings. The researcher did not allow for the variety of possible pedagogies experienced by the developing musicians. There were participants in this study who were trained in a conservatory setting, while others were trained in a liberal arts setting. Some were trained in one pedagogy while others experienced different pedagogies. Perhaps the educational environment has an impact on the individual musician.

Replicating this study and focusing on the chosen area of concentration might further explain the struggles experienced by musicians. This study included those who are majoring in, or majored in, performance, composition, conducting, and history and criticism. Perhaps various majors do not recognize the importance of cognitive skill development. Further studies might reveal why certain musicians do not perceive the need to develop certain cognitive skills.

Concluding Comments

This study began with the goal to understand how musicians perceive that they use the skills developed in the music theory and aural skills classroom when sight-singing a new piece of music. The goal was theoretically based on the three levels of

understanding as articulated by Davidson and Scripp (1988). Q-methodology was applied to ascertain the individual musician's perceptions. This seemed to be a simple goal, but instead it opened Pandora 's Box. The goal was far more complicated than the scope of one simplistic research project. The methodology exposed the raw human emotions attached to something very powerful and very personal - the role of music in one's life.

Very gifted musicians agreed to participate in this research project. Three perceptions emerged from the data. Factor One - *Demonstrative Musician with Expression in Sight-Singing* – reflected a musician confident in his/her skill development and ability to apply the knowledge learned to new situations. The musician was also cognizant of the role of creativity present in the art form and wished to make known that human expression in music was of great importance to him/her.

Factor Two - *Physical Musician with Expression in Sight-Singing* – reflected a musician apprehensive about his/her abilities to maintain stable tonality in the process of sight-singing. This apprehension could lead to a complete cessation of activity if the musician allowed nerves to take over his/her psyche. The musician was also cognizant of the role of creativity and expressivity in the art form. The characteristic of musical expression was also very important to this musician.

Factor Three - *Reserved Musician with Expression in Sight-Singing* – reflected a musician comfortable in his/her own skin but preferring to be focused and alone, if possible, during the sight-singing process. The musician was appreciative of musical structure and form and the role this element plays in musical knowledge. This musician was also cognizant of the role of creativity and the expressive nature of the art form. This characteristic was of equal importance to this musician.

The three perceptions shared a common value of creativity and expression. The musicians valued and celebrated the role of expression in the human experience. This value is of primary importance to all musicians and to all who engage in any art form. Each of the three perceptions provides a unique look into the mind of the musician. Q-methodology allowed the researcher to delve more deeply into the perceptions held by various individuals. The research also highlighted the urgency for dialogue between those working in the field of music psychology and those working in music theory and aural skills. We do not need to develop one perception of how one uses the skills developed in the classroom, but we need to develop a comprehensive approach to fostering those skills and evaluating the development of those skills.

REFERENCES

Adachi, M. & Carlsen, J. C. (1995). Measuring melodic expectancies with children. *Bulletin for the Council of Research in Music Education,* 127, 1-7.

Aiello, R. & Sloboda, J. (1994). *Musical perceptions.* New York: Oxford University Press.

Altenmuller, E. O. (2001). How many music centers are in the brain? *Annals of the New York Academy of Sciences,* 930.

Altenmuller, E. O. (2004). Music in your head. *Scientific American, 14,* 24-31.

Andrews, F. M. & Deihl, N. D. (1970). Development of a technique for identifying elementary school children's musical concepts. *Journal of Research in Music Education, 18,* 214-222.

Ashley, R. D. (1989). *Redesigning the content and sequence of instruction in music theory.* Washington, DC: U.S. Dept. of Education.

Bamberger, J. (1982). Revisting children's drawings of simple rhythms: A function for reflection-in-action. In S. Strauss (Ed.*), U-shaped behavioral growth.* New York: Academic Press, 191-226.

Bamberger, J. (1991). *The mind behind the musical ear: How children develop musical intelligence.* Cambridge, MA: Harvard University Press.

Bamberger, J. (2000). *Developing music intuitions: A project-based introduction to making and understanding music.* New York: Oxford University Press.

Barry, N. H. (1992). The effects of practice strategies, individual differences in cognitive style, and gender upon technical accuracy and musicality of student instrumental performance. *Psychology of music, 20,* 112-123.

Baumgarte, R. & Franklin, E. (1981). Lateralization of components of melodic stimuli: Musicians versus nonmusicians. *Journal of Research in Music Education, 29,* 199-208.

Beach, D. (1989). The analytic process: A practical demonstration. *Journal of Music Theory Pedagogy, 3,* 25-46.

Benjamin, T. (1989). Teaching theory as composition. *Journal of Music Theory Pedagogy, 3,* 189-203.

Bennighof, J. (1989). A selected bibliography of source materials for current music-theoretical systems. *Journal of Music Theory Pedagogy, 3,* 47-93.

Best, H. M. (1992). Music curricula. *Arts Education Policy Review, 94,* 2-7.

Bharucha, J. J. (1999). Neural nets, temporal composites, and tonality. In D. Deutsch (Ed.), *Psychology of music.* New York: Academic Press, 413-441.

Boardman, E. (2001). Generating a theory of music instruction. *Music Educators Journal, 88,* 45-53.

Booth, G. D. & Cutietta, R. A. (1991). The applicability of verbal processing strategiews to recall of familiar songs. *Journal of Research in Music Education, 39,* 121-131.

Brown, S. (1980). *Political subjectivity: Applications of Q-methodology in political science.* New Haven, CT: Yale University Press.

Butler, D. (1992). *The musician's guide to perception and cognition.* New York: Schirmer Books.

Caldwell, J. (1989). Using Bloom's taxonomy to develop an approach to analysis. *Journal of Music Theory Pedagogy, 3,* 223-232.

Carlsen, J. C. (1987). Framework for research: An international perspective. *Bulletin for the Council of Research in Music Education, 90,* 15-24.

Carr, S. C. (1989). *The use and interpretation of Q-technique factor analysis.* Paper presented at the Annual Meeting of the Southwest Educational Research Association in Houston, TX. (ERIC Document Reproduction Service No. ED 306 297).

Chang, H. & Trehub, S. (1977). Auditory processing of relational information by young infants. *Journal of Experimental Psychology, 24,* 324-331.

Chen-Hafteck, L. (1999). Discussing text-melody relationship in children's song-learning and singing: A Cantonese-speaking perspective. *Psychology of Music, 27,* 55-70.

Coffman, D. D. (1990). Effects of mental practice, physical practice and knowledge of results on piano performance. *Journal of Research in Music Education,* 38, 187-196.

Cogswell, A. (2003). Do we teach them "backside to the front"? *The American Music Teacher, 52,* 39-40.

Colwell, R. (Ed.) (1992). *Handbook of research on music teaching and learning.* New York: Schirmer Books.

Colwell, R. & Richardson, C. (Ed.) (2002). *The new handbook of research on music teaching and learning.* Oxford: University Press.

Cook, N. (1990). *Music, imagination, and culture.* Oxford: Clarendon Press.

Cross, I. (1998). Music analysis and music perception. *Music Analysis, 17,* 1-15.

Cutietta, R. A. (1985). An analysis of musical hypotheses created by the 11-16 year-old recall of familiar learner. *Bulletin for the Council of Research in Music Education, 84,* 1-11.

Cutietta, R. A. (1989). The applicability of verbal processing strategies to songs. *Journal of Research in Music Education, 39,* 121-131.

Cutietta, R. A. & Booth, G.D. (1996). The influence of meter, mode, interval type, and contour in repeated melodic free recall. *The Psychology of Music, 24,* 222-236.

Damschroder, D.A. (1989). Flexibility in the theory classroom: Strategies for the management of diversity. *Journal of Music Theory Pedagogy, 3,* 177-187.

Dannenberg, R. B. (1993). Music representation issues, techniques, and systems. *Computer Music Journal, 17,* 20-30.

Davidson, L. (1990). Tools and environments for musical creativity. *Music Educators Journal, 76,* 47-51.

Davidson, L. (1989). Observing a Yang Ch'in lesson: Learning by modeling and metaphor. *Journal of Aesthetic Education, 23,* 85-99.

Davidson, L. & Scripp, L. (1988a). Sight-singing at New England Conservatory of Music. *Journal of Music Theory Pedagogy, 2,* 3-9.

Davidson, L. & Scripp, L. (1988b). A developmental view of sight-singing. Journal of *Music Theory Pedagogy, 2,* 10-23.

Davidson, L. & Scripp, L., (1992). Surveying the Coordinates of Cognitive Skills in Music. In R. Colwell (Ed.), *Handbook of Research on Music Teaching and Learning,* 392-413.

Davidson, L., Scripp, L. & Meyaard, J. (1988d). Sight-singing ability: A quantitative and qualitative point of view. *Journal of Music Theory Pedagogy, 2,* 10-23.

Davidson, L., Scripp, L. & Fletcher, A. (1995). Enhancing sight-singing skills through reflective writing: A new approach to the undergraduate theory curriculum. *Journal of Music Theory Pedagogy*, *9,* 1-30.

Deliege, I., & Sloboda, J. (1996). *Musical beginnings: Origins and development of musical competence.* New York: Oxford University Press.

DeLorenzo, L. C. (1989). A field study of sixth-grade students' creative music problem-solving processes. *Journal of Research in Music Education, 37,* 188-200.

Dowling, W. J. & Harwood, D. L., (1986*). Music cognition.* New York: Academic Press, Inc.

Duke, R. A. & Henninger, J.C. (1998). Effects of verbal corrections on student attitude and performance. *Journal of Research in Music Education, 46,* 482-495.

Elliott, D. J. (1993). Musicing, listening, and musical understanding. *Contributions to Music Education, 20,* 64-83.

Ellis, M.C., & McCoy, C.W. (1990). Field dependence/independence in college non-music majors and their ability to discern form in music. Journal of Research in Music Education, 38, 302-310.

Ellis, M. C. & McCoy, C. W. (1990). Field dependence/independence in college non-music majors and their ability to discern form in music. *Journal of Research in Music Education, 38,* 302-310.

Eschman, K. (1965). *Teaching music theory.* Boston: E.C. Schirmer Music Company.

Fiske, H. E. (1984). Music cognition: Serial processes or parallel processes. *Bulletin for the Council of Research in Music Education, 80,* 13-26.

Fiske, H. E. (1995). A connectionist model of musical learning. *Bulletin for the Council of Research in Music Education, 10,* 20-24.

Fiske, H. E. (1997). Categorical perception of musical patterns: How different is "different." *Bulletin for the Council of Research in Music Education, 10,* 20-24.

Flowers, P. J. (2000). The match between music excerpts and written descriptions by fifth and sixth graders. *Journal of Research in Music Education, 48,* 262-277.

Funk, J. & Whiteside, J. (1981). Developmental theory and the psychology of music. *Psychology of Music, 9,* 44-53.

Gabrielsson, A. (1999). The performance of music. In D. Deutsch (Ed.), *Psychology of music.* New York: Academic Press, 501-602.

Gardner, H. (1983). *Frames of mind.* New York: Basic Books.

Gardner, H. (1994). *Intelligence reframed: Multiple intelligences for the twenty-first century.* New York: Basic Books.

Gordon, E. (1971). *The psychology of music teaching.* Englewood Cliffs, NJ: Prentice-Hall.

Gordon, E. (1997a). In dialogue: Edwin Gordon responds to "Evaluating Theory from a Critical Thinking Perspective," by Paul G. Woodford and "Is Edwin Gordon's Learning Theory a Cognitive One?" by Ann Stokes. *Philosophy of Music Education Review, 5,* 57-58.

Gordon, E. (1977b). *Learning sequences in music: Skill, content, and patterns.* Chicago: GIA.

Greer, R. D. (1981). An operant approach to motivation and affect: Ten years of research in music learning. In J.A. Mason (Ed.), *Documentary report of the Ann Arbor Symposium.* Reston, VA: Music Educators National Conference.

Hanley, B. (1989). Educators' attitudes to philosophies of music education. Canadian *Music Educator: Research Edition, 30.*

Hargreaves, D. J. (1986). *The developmental psychology of music.* Cambridge: Cambridge University Press.

Hargreaves, D. J. & Zimmerman, M. P. (1992). Developmental theories of music learning. In R. Colwell (Ed.), *Handbook of Research on Music Teaching and Learning*, 377-391.

Harrison, C. S., Asmus, E. P., & Serpe, R. T. (1994). Effects of musical aptitude, academic ability, music experience, and motivation on aural skills. *Journal of Research in Music Education, 42*, 131-144.

Higgins, W. (1992). Technology. In R. Colwell (Ed.), *Handbook of Research on Music Teaching and Learning*, 480-497.

Houlahan, M. & Tacka, P. (1998). Continuing the dialogue: The potential of relative solmization for the music theory curriculum at the college level, Reader's comments. *Journal of Music Theory Pedagogy, 12*, 221-225.

Jones, M. R. & Holleran, S. (1992). *Cognitive bases of musical communication.* Washington, DC: American Psychological Association.

Karma, K. (1985). Components of auditive structuring: Towards a theory of musical aptitude. *Bulletin for the Council of Research in Music Education, 82*, 1-13.

Karpinski, G. (2000). *Aural skills acquisition.* Oxford: Oxford University Press.

Karpinski, G. (1990). A model for music perception and its implications in melodic dictation. *Journal of Music Theory Pedagogy, 4,* 191-229.

Kay, A. (2000). What is effective music education? *Teaching Music, 8,* 50-53.

Kendall, R. A. & Carterette, E. C. (1990). The communication of musical expression. *Musical Perception, 8,* 129-164.

Killam, R., Hooper, P., Miesak, E., Pappas, M., Roberson, K., & Whiteman, L. (1987). Survey and results: Most-used theory texts in U.S. colleges and universities. *Proceedings of Texas Music Educators Association,* 1-26.

Klonoski, E. (1999). MusicCog/99: A workshop symposium in music cognition, a review. *Journal of Music Theory Pedagogy, 13,* 89-94.

Kohler, W. (1929). *Gestalt psychology.* New York: Liveright.

Kohler, W. (1969). *The task of Gestalt psychology.* Princeton, NJ: Princeton University Press.

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

LaBerge, D. (1981). Perceptual and motor schemas in the performance of musical pitch. In J.A. Mason (Ed.), *Documentary report of the Ann Arbor Symposium,* 68-76.

Labuta, J. A. & Smith, D. A. (1997). *Music education: historical contexts and perspectives.* Upper Saddle River, NJ: Prentice Hall.

Leng, X., Shaw, G. L., & Wright, E. L. (1990). Coding of musical structure and the trion model of the cortex. *Music Perception, 8,* 49-62.

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

Levarie, S. & Levy, E. (1980). *Tone: A study in musical acoustics.* Westport, CT: Greenwood Press.

Lewin, D. (1991). Some problems and resources of music theory. *Journal of Music Theory Pedagogy, 5,* 111-132.

Lingenfelter, P. (2005). Commission says better accountability a national imperative for higher education, cites low college completion rate. *National Commission of Accountability in Higher Education.*

Livingston, C. & Ackman, J. (2003). Changing trends in preparing students for college level theory. *The American Music Teacher, 53,* 26-28.

Madsen, C. K. (1998). A passion for research. *Teaching Music, 6,* 38-40.

Madsen, C. K. (1998). A passion for research. *Teaching Music, 6,* 38-40.

Madsen, C. K. & Duke, R. A. (1985). Perception of approval/disapproval in music education. *Bulletin of the Council for Research in Music Education, 85,* 119-130.

Marin, O. S. & Perry, D. W. (1999). Neurological aspects of music perception and performance. In D. Deutsch (Ed.), *Psychology of music.* New York: Academic Press.

Marvin, E. W. (1995). Research on tonal perception and memory: What implications for music theory pedagogy? *Journal of Music Theory Pedagogy, 9,* 31-70.

Mathes, J. (1999). Conference report: society for music perception and cognition, a review. *Journal of Music Theory Pedagogy, 13,* 95-103.

McKeown, B. & Thomas, D. (1988). *Q-Methodology.* Newbury Park: Sage Publications.

Menchaca, L. A. (1998). What it takes to be a music major. *Teaching Music, 5,* 41-42.

Meske-Boardman, E. (2001). Generating a theory of music instruction. *Music Educators Journal, 88,* 45-53.

Miller, G. A. (1956). The magical number seven, plus or minus two: Some limits on our capacity for processing information. *Psychological Review, 63,* 81-97.

Murphy, B. (1999). The evaluation and design of an undergraduate music theory placement exam. *Journal of Music Theory Pedagogy, 13,* 41-64.

Narmour, E. (1991). The top-down and bottom-up systems of musical implication: Building on Meyer's theory of emotional syntax. *Music Perception, 9,* 1-26.

National Association of Schools of Music. (2002). *National Association of Schools of Music 2003-2004 Handbook.* Reston, NJ: NASM.

Orman, E. K. (1998). Effect of interactive multimedia computing on young saxophonists' achievement and attitude. *Journal of Research in Music Education, 46,* 62-74.

Palmer, C. (1996). Anatomy of a performance: sources of musical expression. *Music Perception, 13,* 433-453.

Radocy, R. E. & Boyle, J. D. (1988) 2nd edit. *Psychological foundations of musical behavior.* Springfield, IL: Charles C Thomas Books.

Rauscher, F. H. (1999). Music exposure and the development of spatial intelligence in children. *Bulletin for the Council of Research in Music Education, 142,* 35-47.

Reahm D. E. (1986). Developing critical thinking through rehearsal techniques. *Music Educators Journal, 74,* 29-31.

Reimer, B. (2003) 3rd edit. *A philosophy of music education.* Upper Saddle River, NJ: Prentice Hall.

Rideout, R. R. (2002). Psychology and music education since 1950. *Music Educators Journal, 89,* 33-37.

Rideout, R. R. & Paul, S. J. (Eds.) (2000). *On the sociology of music education: vol. 2. Papers from the music education symposium at the University of Oklahoma.* Amherst: University of Massachusetts Press.

Rideout, R. R. (2002). Psychology and music education since 1950. *Music Educators Journal, 89,* 33-37.

Riggins, H. L. & Proctor, G. (1989). A Schenker pedagogy. *Journal of Music Theory Pedagogy, 3,* 1-24.

Rogers, M. R. (1984). *Teaching approaches in music theory: An overview of pedagogical philosophies.* Carbondale, IL: Southern Illinois University Press.

Rojcewicz, P. M. (1998). Noetic learning through music and the arts: A view from the conservatory. *Current Musicology, 65,* 97-116.

Ross, S. L. (1985). The effectiveness of mental practice in improving the performance of college trombonists. *Journal of Research in Music Education, 33,* 221-230.

Schmolck, P. (2002). *PQ Method Manual.* Munich, GE: University Press.

Schmuckler, M. A. (1989). Expectation in music: Investigation of melodic and harmonic processes. *Music Perception, 7,* 109-135 & 116-125.

Serafine, M. L. (1988). *Music as cognition: The development of thought in sound.* New York: Columbia University Press.

Scott-Kassner, C. (1992). Research on music in early childhood. In R. Colwell (Ed.), *Handbook of Research on Music Teaching and Learning,* 633-650.

Scripp, L. & Davidson, L. (1988c). Framing the dimensions of sight-singing: Teaching towards musical development. *Journal of Music Theory Pedagogy, 2,* 24-50.

Scheid, P. & Eccles, J.C. (1975). Music and speech: Artistic functions of the human brain. *Psychology of Music, 3,* 21-35.

Schott, S. (2004). One day at a time: Sightreaders Anonymous, An approach to developing music literacy. *Common Times, 23,* 2-3.

Shuter-Dyson, R., & Gabriel, C. (1981) 2nd edit. *The psychology of musical ability.* New York: Methuen.

Sidnell, R. G. (1981a). Motor learning in music education. In J.A. Mason (Ed.), *Documentary report of the Ann Arbor Symposium,* 28-34.

Sloboda, J. (1988). *Generative processes in music: The psychology of performance, improvisation, and composition.* Oxford: Clarendon Press.

Smith, T. A. (1999). Predictive validity of the "Ready or Not" system for the assessment of students needing remediation in music theory. *Journal of Music Theory Pedagogy, 13,* 1-25.

Stephens, D. (1985). Q-methodology in communication science: An introduction. *Communication Quarterly, 33,* 198-208.

Strong, A. D. (1992). The relationship between hemispheric laterality and perception of musical and verbal stimuli in normal and learning disabled subjects. *Psychology of Music, 20,* 138-153.

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

Swanwick, K. (1994). *Musical knowledge: Intuition, analysis and music education.* New York: Routledge.

Swanwick, K. & Tillman, J. (1986). The sequence of musical development: A study of children's composition. *British Journal of Music Education, 3,* 305-339.

Taube, H. (1999). Automatic tonal analysis: Toward the implementation of a music theory workbench. *Computer Music Journal, 23,* 18-32.

Taylor, O. (1997). Student interpretations of teacher verbal praise in selected seventh- and eighth-grade choral classes. *Journal of Research in Music Education, 45,* 536-546.

Thorisson, T. (1997). Effects of prototype and exemplar learning and four musical dimensions of the formation of musical style concepts. *Bulletin for the Council of Research in Music Education, 133,* 136-142.

Tolman, E. C. (1932). *Purposive behavior in animals and men.* New York: Century.

Trotter, R. (1990). Suggestions for teaching a course in music listening. *Journal of Music Theory Pedagogy, 4,* 51-62.

Tulving, E. (1972). Episodic and semantic memory. In E. Tulving & W. Donaldson (Eds.), Organization of memory. New York: Academic Press, 381-403.

Upitis, R. (1990). *This too is music.* Portsmouth, NH: Heinemann.

Upitis, R. (1992). *Can I play you my song?* Portsmouth, NH: Heinemann.

Wang, C. C. & Sogin, D. W. (1990). The recognition of melodic fragments as components of tonal patterns. *Psychology of Music, 18,* 140-149.

Whitaker, N. L. (1996). A theoretical model of the musical problem solving and decision making of performers, arrangers, conductors, and composers. *Bulletin for the Council of Research in Music Education, 128,* 1-14.

White, J. D. (1981). *Guidelines for college teaching of music theory.* Metuchen, NJ: The Scarecrow Press, Inc.

Winold, A. (1993). Music analysis: Purposes, paradigms, and problems. *Journal of Music Theory Pedagogy, 7,* 29-40.

Wiske, M. S. (1998). *Teaching for understanding: Linking research with practice.* San Francisco, CA: Jossey-Bass.

Younker, B. A. & Smith, W. H. (1996). Comparing and modeling musical thought processes of expert and novice composers. *Bulletin for the Council of Research in Music Education, 128,* 25-36.

Zalanowski, A. H. (1990). Music appreciation and hemispheric orientation: Visual versus verbal involvement. *Journal of Research in Music Education, 38,* 197-205.

Zatorre, R. J. & Krumhansl, C. L. (2002). Mental modes and musical minds. *Science, 298,* 2138-2139.

Zimmerman, M. P. (1986). Music development in middle childhood: A summary of selected research studies. *Bulletin for the Council of Research in Music Education, 86,* 18-35.

Appendix A

Solicitation Letter

Dear Fellow Musician,

You are invited to participate in a research study!

The purpose of the study is to describe what musicians believe about the academic study of music. Individuals who agree to participate in this study will rank order 36 statements (in a sorting procedure) and then complete a short survey describing general demographic characteristics, a process that takes no more than 30 minutes.

The knowledge gained as a result of this study may improve our understanding of how the academic study of music is conceptualized and, consequently, improve academic instruction for all music students.

For more information, please meet me at:

Time:

Date:

Place:

Appendix B

Participant Consent Form

Dear Fellow Musician,

You are invited to participate in a research study! The purpose of the study is to describe what musicians believe about the academic study of music. Individuals who agree to participate in this study will sort 36 statements and complete a short survey describing general demographic characteristics, a process that takes no more than 30 minutes. The knowledge gained as a result of this study may improve our understanding of how the academic study of music is conceptualized and, consequently, improve academic instruction for all music students.

If you agree to participate, your responses will be kept confidential, and your name will not be used in reports, nor will it be associated with any information. Only data analysis information as a group will be kept beyond the conclusion of this study; all other materials will be destroyed. You have the option of stopping the process at any time you wish. You are also free to withdraw your consent and end your participation in the project at any time.

Questions about this research project can be directed to me, Rick Edgington, 1220 E Grand Ave, Tonkawa, OK 74653, (580) 628-6221, redgingt@north-ok.edu; Diane Montgomery, montgom@okstate.edu; or IRB Executive Secretary, Institutional Review Board, 203 Whitehurst, Oklahoma State University, Stillwater, OK 74078, (405) 744-5700.

A copy of this information is provided and is yours to keep.

If you agree to participate, please read and sign the statement below:

I have read and fully understand this consent form. I sign it freely and voluntarily. A copy has been given to me.

Date:_____ Time:_____ (am/pm)

Name (printed):_____

Signature:_____

I certify that I have personally explained all elements of this form to the participant before requesting her/him to sign it.

Signed:_____
Rick Edgington, Researcher

Appendix C

Q-Sort Statements

1. When I sight-read, I read from note to note.
2. When I sight-read, I am able to invert simple intervals (fifths & fourths, octaves & unisons), so that they fit within my vocal range.
3. When I sight-read, I can easily transpose registers and intervals so they better fit my range. When I read clef changes, I am able to sight-read the note names, not from the visual display of the melody.
4. When I sight-read ensemble music, I never look at other students, I barely look at the conductor, and I only focus on my part so that I do not make mistakes.
5. When I sight-read ensemble music, I seldom look at other students and only then I look at others who are reading my part.
6. When I sight-read ensemble music, I frequently look at other students and they are usually people singing a different part.
7. Before I sight-read a melody, I usually sing my scale up & down out loud.
8. Before I sight-read a melody, I usually sing out loud my scale up & down, the tonic triad and perhaps a few other triads.
9. Before I sight-read a melody, I usually sing internally my scale up & down, the tonic triad and perhaps a few other triads. I then sing the melody in my mind. When I finish, I sit back & acknowledge to the instructor that I am ready.
10. When I am asked to identify a particular pitch that is played on the piano, I sing the solfege until I find the pitch and then sing the name out loud.
11. When I am asked to identify a particular pitch that is played on the piano, I sing the solfege until I find the pitch and then I sing or say the name out loud.
12. When I am asked to identify a particular pitch that is played on the piano, I sing the solfege internally until I find the pitch and then I say the name out loud.
13. When I am working on a sight-reading exercise I have a mental image of the sound of tonic and dominant. I have to return to them during class to tune, but I do fine with singing the intervals 7 to 1; 2 to 1; and 6 to 5.
14. When I am working on a sight-reading exercise I find that I have expanded my tonal reference to include other pitches than the tonic and dominant. I do not need to stop and tune to reestablish my reference notes.
15. When I am working on a sight-reading exercise I find that I have expanded my tonal reference to include all 12 chromatic pitches. I do not need to stop and re-tune once class has begun. If the class is working on score reading we function like an orchestra.
16. When I am given a beginning note that is part of the non-tonic triad, I will sight-read the melody in the wrong scale reference.
17. When I am given a beginning note that is part of the non-tonic triad, I will notice it as a miscue & then sight-read the melody in the right scale reference.
18. When I am given a beginning note that is part of the non-tonic triad, I will recognize its context and then sight-read the melody in the right scale reference.
19. I rely on the scale given to me. If I must sight-read in a different key, I must be given a new scale so that I can re-tune. I could never perform a melody that lies outside of a given scale. I rely on the scale given to me.

20. I rely on the scale given to me. If I must sight-read in a different key, or the melody implies another key, I need a new scale, or my reading is unstable. I am likely to keep a given note as tonic, even if its function within the scale has changed.
21. I am able to construct any tonic and key reference. If I must sight-read in a different key, or the melody implies another key, I am able to negotiate highly chromatic melodic contexts and maintain their orientation to changed keys.
22. I simply cannot sight-read modulations. I begin to make mistakes and my pitch begins to suffer.
23. I am comfortable in sight-reading modulations to closely related keys. I can sing tonic in the home key and tonic in the new key. The closer the modulation the better my performance will be.
24. I am comfortable sight-reading any modulation. Chromatic tonal and atonal contexts do not bother me at all.
25. As I sight-read I am able to stay in tune with the scale only by referencing the tonic or maybe the dominant pitch.
26. As I sight-read I am able to stay in tune with all pitches of the scale, but if I must move to a new scale my intonation will suffer.
27. As I sight-read I am able to keep my sense of intonation in a variety of melodic and harmonic contexts. Distant keys do not bother me. I am able to maintain my tuning by adjusting to specific tonal contexts.
28. When I am sight-singing one mistake will lead me to a total breakdown in performance. If I do respond to my mistake, I seldom recover.
29. When I am sight-singing I can rely on my sense of tonic or dominant if I make a mistake to recover my sense of tonality. I am able to compensate by skipping notes or filling in leaps if I need to recover my tonality.
30. When I am sight-singing mistakes rarely bother me. I can recover the flow of the melody or I will simply ignore my mistake altogether.
31. When I am sight-singing the last thing on my mind is an expressive performance. I will fly through a ritard or diminuendo and I simply forget any sense of dynamics.
32. If I am comfortable with the key and melodic contour when I am sight-singing, then I will be able to observe some expressive markings, especially if I am reminded.
33. When I am sight-singing I am also able to integrate expressive markings or add some appropriate ones into my performance. I am expressive in all contexts of performance.
34. Before I begin to sight-sing if my instructor were to ask me to comment on the structure or identify possible places where I might make mistakes, I must look at the piece note for note in order to answer the question.
35. Before I begin to sight-sing if my instructor were to ask me to comment on the structure or identify possible places where I might make mistakes, I am able to quickly find tonic and dominant of the common scales. I will scan the piece quickly and make comparisons to other pieces that I have just sung.
36. Before I begin to sight-sing if my instructor was to ask me to comment on the structure or identify possible places where I might make mistakes, I am able to make comparisons to other pieces and I appreciate structural cues and can use them in performance.

Appendix D

Demographic Survey

Please check on in each category.

1. Gender ( ) Female ( ) Male

2. Your age ( ) 15-19 ( ) 20-24 ( ) 25-29 ( ) 30-34
( ) 35-39 ( ) 40-44 ( ) 45-49 ( ) 50-54
( ) 55-59 ( ) 60-64 ( ) 65-69 ( ) 70-74

3. Educational Level (check highest level completed) ( ) 1st yr college ( ) 2nd yr college
( ) 3rd yr college ( ) 4th yr college
( ) Bachelors ( ) Masters ( ) Doctoral

4. Music Background: ( ) I took music lessons as a child.
( ) I take music lessons now.

5. Check each course taken or taught & rate your response:

	Hated				Loved
( ) Theory/Harmony I	1	2	3	4	5
( ) Ear Training I	1	2	3	4	5
( ) Theory/Harmony II	1	2	3	4	5
( ) Ear Training II	1	2	3	4	5
( ) Theory/Harmony III	1	2	3	4	5
( ) Ear Training III	1	2	3	4	5
( ) Theory/Harmony IV	1	2	3	4	5
( ) Ear Training IV	1	2	3	4	5

6. What is your major performing instrument?

7. Do you consider yourself to be a conductor, a performer, or a composer? (Include all that apply to you.)

8. What else would you like to say about your completed Q-sort or the way you study music?

If you would be willing to discuss your sorts further, please give me your:

Phone #_____ and the best time to call_____. You may remain anonymous.

Appendix E

Researcher's Script

Step 1: Here is an envelope containing 36 cards. You will need to read through the cards & sort them into 3 piles based on this question, "**What best describes your approach to sight-reading a new piece of music?"** After you read each card, place it into one of three piles so that those cards that are **most like your perceptions about yourself in sight-reading a new piece of music** are placed into a pile on your right. We will call this the *most like* pile. Those cards that are **most unlike your perceptions about yourself in sight-reading a new piece of music** are placed into a pile on your left. We will call this the *most unlike* pile. Those cards that are **neither like nor unlike your perceptions about yourself in sight-reading a new piece of music** can be placed in a third pile directly in from of you. We will call this the *neutral pile*. Here are your cards. Please sort them into the most like, most unlike, and neutral piles.

Step 2: Now that you have 3 piles of cards, start with the pile to your right, the most like pile and select the 2 cards from this pile that are **most like your perceptions about yourself in sight-reading a new piece of music**. Place them in the 2 spaces at the far right of the sheet in front of you in column 11. The order of the cards within the column, that is, the vertical positioning of the cards, does not matter.

Step 3: Next, from the pile to your left, the most unlike pile, select the 2 cards that are **most unlike your perceptions about yourself in sight-reading a new piece of music**. Place them in the 2 spaces at the far left of the sheet in front of you in column 1.

Step 4: Now, go back to the most like pile on your right. Select 3 cards from those remaining that are **most like your perceptions about yourself in sight-reading a new piece of music**. Place them into the 3 open spaces in column 10.

Step 5: Next, return to the most unlike pile on your left and select the 3 cards from those remaining that are **most unlike your perceptions about yourself in sight-reading a new piece of music**. Place them into the 3 open spaces in column 2.

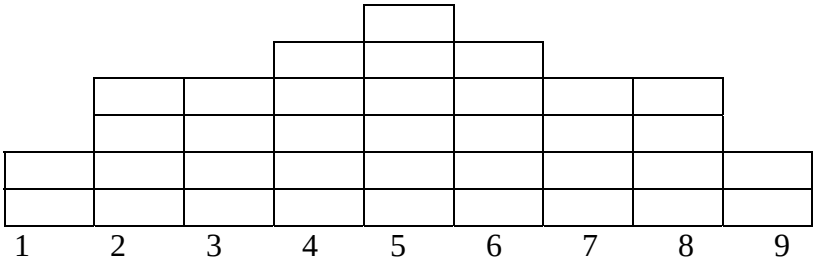
Step 6: Now continue placing cards onto the sheet in this same manner until all of the cards have been placed into all of the spaces. Once you have placed all the cards from either the **most like or most unlike pile**, begin to place cards from the middle pile into the appropriate spaces.

Step 7: Now that you have filled all available spaces, feel free to rearrange the cards until the sheet best represents your perceptions.

Step 8: Record the number of the statements on the record sheet. Finally, please fill in the demographic survey.

Appendix F

Data Sheet



Appendix G

Institutional Review Board Approval

Oklahoma State University Institutional Review Board

Date: Tuesday, August 31, 2004

IRB Application No ED055

Proposal Title: The Opinions of Musicians Toward Their Use of Cognitive Skills in Reading Music at Sight

Reviewed and
Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved **Protocol Expires: 8/30/2005**

Principal
Investigator(s):

Rick Edgington
PO Box 151
Tonkawa, OK 74653

Diane Montgomery
424 Willard
Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

[X] The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact me in 415 Whitehurst (phone: 405-744-1676, colson@okstate.edu).

Sincerely,

Carol Olson

Carol Olson, Chair
Institutional Review Board

Oklahoma State University
Institutional Review Board

Protocol Expires: 3/3/2004

Date: Tuesday, March 04, 2003 IRB Application No ED0387

Proposal Title: THE PERCEPTIONS OF MUSICIANS TOWARD THE ACADEMIC STUDY OF MUSIC

Principal Investigator(s):

Rick Edgington
PO Box 151
Tonkawa, OK 74653

Diane Montgomery
424 Willard
Stillwater, OK 74078

Reviewed and Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

Dear PI :

Your IRB application referenced above has been approved for one calendar year. Please make note of the expiration date indicated above. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved projects are subject to monitoring by the IRB. If you have questions about the IRB procedures or need any assistance from the Board, please contact Sharon Bacher, the Executive Secretary to the IRB, in 415 Whitehurst (phone: 405-744-5700, sbacher@okstate.edu).

Sincerely,

Carol Olson

Carol Olson, Chair
Institutional Review Board

VITA

Rick Alan Edgington

Candidate for the Degree of

Doctor of Education

Thesis: THE PERCEPTIONS OF MUSICIANS TOWARD THEIR USE OF COGNITIVE SKILLS IN READING MUSIC AT SIGHT: Q-METHODOLOGICAL STUDY

Major Field of Study: Higher Education

Biographical:

Personal Data: Born in Clayton, New Mexico, on June 8, 1963, the son of Alan and Sue Edgington.

Education: May, 1981 – Acquired a high school diploma from Boise City High School. May, 1984 – Acquired an Associate of Arts degree with a double emphasis in music and social science from Northern Oklahoma College at Tonkawa, Oklahoma. May, 1986 - Acquired a Bachelors of Music Education with emphasis in Choral Music degree at the Wichita State University at Wichita, Kansas. August, 1988 - Acquired a Masters of Music Education with an emphasis in Voice Performance degree at the Wichita State University at Wichita, Kansas. Completed the requirements for the Doctorate of Education degree with a major in Higher Education at Oklahoma State University in July, 2005.

Experience: Registrar and Director of Admissions at Northern Oklahoma College from 2004 to present; Full-time instructor, Fine Arts, and Director of choral activities at Northern Oklahoma College from 1988-2004; Employed and volunteer as cantor, section leader, and assistant at St. Mary's Catholic Church of Ponca City, Oklahoma, 1983 to present; TANF (Temporary Assistance to Needy Families) supervisor and grant writer of a welfare to work project, Project *Achieve*, for the State Regents for Higher Education from 1997-1998; Instrumental music director and social science instructor, K-12 at Deer Creek-Lamont Public Schools from 1986 to 1988.

Professional Memberships: Music Educators National Conference; Oklahoma Music Educators Association; American Choral Directors Association; Oklahoma Choral Directors Association.

Name: Rickie Alan Edgington Date of Degree: July, 2005

Institution: Oklahoma State University Location: Stillwater, Oklahoma

Title of Study: THE PERCEPTIONS OF MUSICIANS TOWARD THEIR USE OF COGNITIVE SKILLS IN READING MUSIC AT SIGHT: Q-METHODOLOGICAL STUDY

Pages in Study: 132 Candidate for the Degree of Doctor of Education

Major Field: Higher Education

Scope and Method of Study: The purpose of this study was to describe the perceptions of musicians toward their experience of the academic study of music. The study describes the views of the student, faculty, and professional musicians concerning the role of music theory and aural skills in their performing life, specifically in sight-singing music. Participants in the study consisted of 13 collegiate music majors at a variety of levels of education, 17 music educators who were currently, or had experience teaching music theory and aural skills, and 16 professional musicians who viewed themselves as performers, conductors, or composers, or a combination of the three. Q-Methodology was utilized to elicit the perceptions of the musicians. Each participant completed a Q-sort under the following condition of instruction: "What best describes your approach to sight-reading a new piece of music?" Upon completion of the Q-sort each respondent completed a demographic survey.

Findings and Conclusions: The statistical procedures used to analyze the data included correlation of Q-sorts, Q-factor analysis, and the computation of factor scores. Trial varimax rotations were performed on 2, 3, and 4 factor solutions in an attempt to maximize the explained variance of the factors. The three-factor solution was judged the best statistical and theoretical solution upon which to calculate z-scores for items on each factor. The three factors that emerged were examined and named according to the pattern of perception held by the participants loading on that factor. This study indicated that certain gaps exist in understanding among some musicians. Even greater cooperation is necessary between those working in the fields of music psychology and music theory. This cooperation is necessary to achieve the fullest understanding possible of the advance of musical cognitive skills development.

Advisor's Approval: Dr. Diane Montgomery