

AN ABSTRACT OF THE THESIS OF

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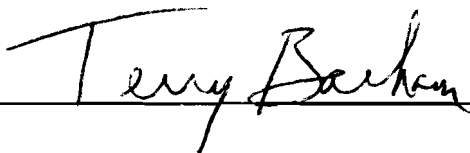
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Title: A Study of the Effectiveness of Movement and Imagery

Techniques for Choral Warm-ups as Demonstrated in Adams'

Videotape, Daily Workout for a Beautiful Voice

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This initial study investigated the effectiveness of the use of mental imagery and movement by choral singers in rehearsal. The purpose of the study was to determine whether improvement in tone quality would be evidenced following regular use of seven warm-up exercises involving movement and imagery from Charlotte Adams' videotape, Daily Workout for a Beautiful Voice. The exercises were taught to a nineteen-member university women's choir and employed exclusively for warm-ups for four weeks. Pre- and posttest recordings were made of the chorus singing three choral selections. The recordings were evaluated by experienced judges and by members of a university choral techniques class using a Likert rating scale on choral tone developed by the researcher. Responses were subjected to Chi Square and Fisher Exact Probability tests. No significant differences in choral tone were found between pretests and posttests. It was determined that reference to the exercises by the director during rehearsal of the songs made

no significant difference in choral tone. Also studied was the ability of the members of the choral techniques class to evaluate the tests based on their area of emphasis: vocal or instrumental. No significant differences were found. Recommendations for further study include the expansion of the test period to a semester and the employment of matched control and test groups.

A Study of the Effectiveness of
Movement and Imagery Techniques
for Choral Warm-ups as Demonstrated in
Adams' Videotape, Daily Workout for a Beautiful Voice

A Thesis

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CHAPTER I

Introduction

Choral directors have developed a variety of techniques and procedures to create quality choral sound. Among those techniques are the use of mental imagery and physical movement, sometimes together, more often separately. Imagery has been used over the centuries in the teaching of singing in order to help singers to develop multiple coordinations and create connections which involve muscles not under conscious control. It is also common for choral directors and teachers of singing to have their students perform physical routines in order to relax, energize, and provide for good posture and breath support. Movement is sometimes used to teach rhythms.

The employment of the combination of imagery and movement appears to be less common. However, several noted authorities in the choral field advocate the combination of the two. Dickson (1992) states,

The more sensitive the students become to their bodies, the more acute their awareness that their bodies are both the medium and the message. And through a heightened sense of imagination, they not only receive but also react to their personal kinesthetic and sensory experiences. . . . The physical leads to the cognitive when students, by way of feeling first, begin to recognize the potential expressivity of musical ideas (p. 18).

Although Dickson and others advocate the combination of movement and imagery as a rehearsal technique for choirs, little research has been published on the effectiveness of either procedure. Some studies exist on the use of movement, especially to test for the development of rhythmic ability (e.g., Moore, 1992; Apfelstadt, 1984). However, little research exists on mental imagery. Cleveland (1989) says,

In spite of the tremendous amount of current research into various uses of mental imagery, little of it is in the discipline of singing and vocal pedagogy, a discipline that has consistently and historically used mental imaging techniques to achieve its objectives. The need for serious vocal research endeavors in the field of mental imaging is great (p. 41).

There appears to be little research that has directly tested the combining of imagery and movement in choral rehearsals. Holt (1991) and C. McCoy (1986) tested movement in situations which involved the use of imagery by participants, but the imagery aspect was not tested.

The intent of the author was to conduct an initial study of this current practice which is advocated and practiced but has not been tested.

Charlotte Adams, of Cherry Creek High School in Denver, is among the choral authorities who employ a combination of imagery and movement in choral rehearsals. In 1991 a videotape was produced in which she presents vocal warm-up exercises combining visualization and movement. The choral

singers themselves move or gesture while using their imaginations to visualize concepts to aid in singing.

The purpose of the current study was to determine whether improvement in tone quality would be evidenced following the regular use of seven warm-up exercises from the Adams videotape, Daily Workout for a Beautiful Voice. The warm-up techniques involve the singing of vocal exercises by choral singers on selected syllables while simultaneously employing physical gestures or movements and mental images.

The study involved exercises from three of the five categories into which the Adams exercises are grouped: Resonance, Breath Support and Lifted Soft Palate. Exercises from these three areas were chosen because they would affect tone quality, the concept to be investigated in the current study.

The test group was Treble Clef, a women's choir directed by the author. Pretest and posttest recordings were made of the group singing three choral selections: *Marienwurmchen* and *I Hear A Harp* by Johannes Brahms, and *Orpheus With His Lute* by Ralph Vaughan Williams. *Marienwurmchen* was sung in English and hereafter will be referred to by its English title, *Ladybug*. Following the pretest the Adams exercises were introduced and used exclusively at rehearsals for a period of four weeks.

Three null hypotheses were developed for the study:

Null Hypothesis #1

There will be no significant difference between the pretest and posttest ratings of the performances of the three choral selections.

Null Hypothesis #2

There will be no significant difference between the ratings given by choral techniques students whose area of concentration is voice and those whose area of concentration is instrumental.

Null Hypothesis #3

Posttest ratings of "Ladybug" will not be significantly lower than those for the other two selections.

Following the test period copies of pre- and posttest recordings were made and then evaluated by six expert judges and by the choral techniques class at a mid-size midwestern university. Results were then compiled and analyzed.

CHAPTER II

Review of Related Literature

Over the years choral directors have used a variety of techniques with their choirs in order to achieve the desired results. Although the use of verbal imagery by the conductor is generally accepted, the use of deliberate mental imaging or of physical movement or gesture by choral singers in rehearsal is less commonplace. Movement has been used in elementary school music teaching, especially for learning rhythm. It has not been so routinely used as a learning tool with choral groups. However, interest appears to be growing in these and other techniques which involve a body-mind connection.

This discussion will be divided into four parts. The first will deal with ideas about the use of movement and/or imagery in music in nonchoral circumstances, and the second with experimental research conducted on movement and/or imagery in music in nonchoral circumstances. The third section will focus on ideas about the use of movement specifically combined with mental imagery by choral singers. The chapter will conclude with a review of experimental research on the use of movement and/or imagery in choral rehearsals and performances.

Movement and/or Mental Imagery
in Nonchoral Music Performance

A number of authorities have written about mental imagery and/or physical movement associated with music. Cleveland (1989) supports the use of mental imagery in voice teaching. Since different images seem to work for different students, it is important for the teacher to have a large stock of images to suggest. Furthermore, the images should be concrete in order to be easily visualized. Although there are a number of journals which deal with research on imagery, few studies have been applied to music. Cleveland cites only one, the Halpern study, which examines how people remember familiar songs. Cleveland describes the study as supporting "the premise that auditory imagery is not only a strong subjective experience, but is also partly amenable to quantification" (Cleveland, 1989, p.42). He states, "the need for serious vocal research endeavors in the field of mental imaging is great" (p. 41).

Croom-Hatch (1992) advocates auditory mental imagery in the form of audiation as a means to help pianists perform from memory. Although psychologists have long debated the existence and function of mental imagery, she cites several authors who maintain that imagery thinking exists along with verbal symbolism. By focusing attention on the sound image of the music rather than on the physical movements necessary

to play it, memorization problems can be overcome.

Although, as she states, "our ability to consciously get in touch with the brain's motor programming is very minimal" (p. 17), she cites Barbara Brown's words on imagery in Supermind: The Ultimate Energy. Brown (1980) says, "Mental images direct and activate the nerves to make the body work, and work in exactly the way the imagination dictates" (p. 245). Thus, images can be used to produce the desired movement.

Spencer (1989) stresses the need for voice students to combine mental imagery not with movement but with knowledge of anatomy. She cites problems with the use of such common terms as "chest" or "head" voice or "singing from the diaphragm" as mental images which can lead the singer astray. Unless the singer understands how the voice works, unwanted tensions may be applied to areas of the body which actually have no active participation in the creation of the singing voice. She believes imagery "is a powerful tool" (p. 28), but should be used only in conjunction with knowledge about the workings of the voice.

Lyne (1979) uses some of the principles of Francois Delsarte in his discussion of use of the body by choral conductors. Expression can be indicated with all parts of the body. The face is most expressive, followed by the hand. Even the individual fingers of the hand have certain connotations. He cites the thumb as the most powerful

finger, the expression of vitality being judged by its distance from the palm. Shoulders, elbow, wrist and leg are also indicators of affect. Lyne emphasizes that the physical stance and facial expression of the conductor can influence choral tone. He advocates improving communication with singers by being consciously aware of the use of the body.

Several persons have written about the use of movement and/or mental imagery as an aid to performance. Edwin (1990) suggests body-mind techniques to relax singers for performance. He maintains that the best results will be achieved by giving attention to both physical and emotional aspects of singing. In a separate article (1992) Edwin advocates the use of singing exercises which enhance body awareness, serving to make students aware of tension or insecurity as expressed in their body language. He emphasizes the success of songs performed with body language appropriate to the particular selection.

Ristad (1982) prefers movement over intellectualization in order to free musicians from performance problems. She says "there are many musicians who are so distant from their physical bodies that they need the drama of actual movement to reconnect them" (p. 26). She sees movement as more important than verbalization:

If we are tied to the verbal concept and never verify it with the wisdom of our bodies, we may fool ourselves

into thinking the music sounds right because the words sound right. But words and music are not the same (p.26).

She advocates mental imagery in the form of imagining performance: "In getting a kinesthetic feel in your muscles before you play, you automatically drop some of the extra muscle involvement that gets in your way. You begin to differentiate, to use only the muscles actually needed for the task" (p.121).

In recent years several educators and/or musicians have advocated holistic teaching, though that label is not always used. In holistic teaching and learning, attention is paid to the whole person, not just one aspect. Paul Linden has been involved in the field of "somatic education" for a number of years. Linden (1992) maintains that to improve performance difficulties, attention must be paid to the whole person; the body, mind and spirit cannot be separated. This is the essence of holistic teaching and learning. Linden says that what we do with our bodies is observable; therefore a first step in overcoming interferences which affect performance is to develop body awareness. He describes a number of exercises which one can do to develop sensitivity and power, two qualities he sees as essential to successful performance. Exercises for sensitivity deal with "softening" the abdominal area and chest for "relaxed alertness" (p. 28). Exercises for power

deal largely with pelvic rotation or alignment and lower body support for accessing "creative life energy" (p. 30).

Lincer (cited in Kella, 1982), professor of viola and chamber music at Julliard School of Music in New York for many years, stresses the interrelation of the senses in his teaching. Lincer also sees the development of creativity as a chief goal in teaching. Kella quotes him:

In music, creativity begins where words end. The more intellectual we are about actually performing music, the farther we can get from our most intimate feelings. And it is these feelings which give music its meaning, its structure, and its power (Kella, 1982, p.38)

Lincer advocates breathing exercises to slow body rhythms and promote a relaxed noncompetitive state of mind and body. While in a relaxed state the individual uses verbal imagery in the form of affirmations, repeated phrases which promote self-confidence. Such exercises allow the student to become more imaginative and creative. Because of his conviction about a body-mind connection, Lincer advocates using mental imagery techniques to create the proper body movement. He also emphasizes the simultaneous combining of images from various senses such as hearing and touch. This results in improved concentration and focus while performing (Kella, 1982).

Bollenbach (1986), while not a musician, advocates imagery and movement to music as ways to enhance comprehension in general. She suggests holistic learning by "teaching to intuition", which will promote true

comprehension (p. 89). Among elements included in such teaching are verbal descriptions to elicit imagery, and movement to develop a feel for concepts through sensory-motor activity. She advocates involvement in music and dance as a means for enhancing such learning: "Agility and rhythmical coordination to music carry over into daily movements and increase the probability of inner-directed comprehension" (p. 91)

Music theater is an area in which movement and singing are bound together. Boardman (1992), in writing about musical theater training, cites several sources which discuss movement and/or imagery. Kristin Linklater, in her book, Freeing the Natural Voice (1976), describes correct breathing as being achieved by controlling the involuntary muscles involved with thoughts and emotions. Linklater says, "the ultimate controls for the breath are thoughts and feelings" (p. 34).

Boardman (1992) advocates at least a year of study of Dalcroze Eurhythmics for any music theater singer. Swiss music educator Emile Jaques-Dalcroze developed a method of music education which has been called "an education in music and through music . . ." (Rosenstrauch, 1973, p. 9). The method includes three areas: ear training, improvisation, and eurhythmics. Eurhythmics has received the most attention since it is the one area which is unique to the method. Jaques-Dalcroze devised specific physical movements

or "rhythmic gymnastics" designed to develop not only one's musical ability, but the whole person:

The aim of rhythmic gymnastics is to develop mind and feeling in everything connected with art and life. Its study is all the more indispensable to the musician since music without rhythm is lifeless, whereas rhythm and movement are essential factors of every form of art, and are indispensable to every thoroughly cultured human being (Jaques-Dalcroze, 1930, p. 102).

Boardman (1992) suggests several exercises to help students with the combination of singing and movement: e. g., walking in the rhythm of the song; walking against the rhythm; focusing physical attention elsewhere by touching apparel or textures around the room. She says, "The student can also allow emotions evoked by mental images of the words to be the motor for movements" (p.12). Conversely, movements can produce emotions to help with characterization. Movement and mental imagery combined can also help with singing: "To become more aware of the shape of a melody, a student can visualize it swirling and gliding through space, and then follow its contours with one hand while moving through the room" (p.12)

Balk (1977) stresses movement as a means of creating energy and promoting relaxation for the actor-singer. He says, "All human energies interrelate . . . and there is an inevitable relationship between the release of physical and emotional energies and the release of vocal energy. Our attention to the emotional and physical energies will often aid the vocal process as well" (p.52). Balk sees the need

to identify tensions and explore ways to eliminate them in order to release energy. He suggests the focus of mental attention on a specific circumstance rather than a general concept like happiness in order to "ignite the creative energies" (p. 84).

Improvisation is suggested by Balk as a means to overcome self-consciousness:

The primary challenge in exercising the skills of music-theater is to find tasks that are specific and that allow us to concentrate on process rather than product, to find tasks that exercise the skills inadvertently, to find ways of approaching our goals that allow their achievement without thinking about those goals (p. 108).

Balk recommends combining motion and sound in "games." For example, members of the group take turns creating a sound and then adding a physical motion to accompany it, in order to promote "free creative play with the body and the voice" (p. 117).

To play with sound and motion (the basic materials of communication), to approach the state of Homo Ludens--man the player--is to touch the origin of all artistic effort. It is the source to which artists must constantly return for the refreshment and the remembrance of what it is they are engaged in: creative play. The world works its will upon us all by discipline, regimentation, and rules, and nowhere in the arts more effectively than in the training of singers. Although they have learned to play music, they should also have learned to play with music. As they begin to explore the possibilities of playing with language, they also begin to learn about the relationship of music to language, and about music itself as a means of wordless communication (Balk, p. 116).

Balk contends that the student must learn to "think and communicate with the body, the gestures, the face, the emotions, and the voice" (p. 123). He lists a number of "movement catalysts," words which describe movements (i.e. "ambling, tossing, rubbing, slinking, etc.). He describes gestures as fulfilling one of three functions: "indicating, reacting, and describing" (p.127). Balk also includes a vocabulary of attitudes which can be practiced by students.

Implosion is a technique suggested by Balk which combines energy and mental imagery. He defines it as "converting the external energy of an action, physical or vocal, into psychological, internal energy" (p. 203). Implosion can be practiced by, for example, singing a phrase accompanied by physical movement. The singer then extends the physical movement while keeping the vocal sound the same. The physical movement is then reduced or imploded while the vocal sound remains the same. Finally the action is internalized: no movement is displayed. The thought of movement creates energy for the performer.

Experimental Research in Movement and/or Mental Imagery in Nonchoral Music Performance

The general literature on movement and imagery cited thus far has dealt solely with ideas; little research on the subject has been published to date. Moore (1992) studied foot tapping as a means of keeping the pulse. His

conclusion was that it is not the external bodily movement that helps the performer keep the pulse, but the attention paid to one's internal pulse. The external manifestation of the pulse is limited by the lack of precision with which bodily movements can be controlled. Moore's conclusion is that tapping the foot does not help keep the beat.

Walker (1981) conducted several experiments related to the visual imaging of musical sounds or dimensions. In testing children ages 7-15, he found that even young children associated a visual shape with a musical event such as a crescendo or an upward pitch movement. He therefore maintains that there is a second symbolization system to represent sound which is different in function and more psychologically based than the system of notation.

Buell and Funk have studied conducting. Buell (1990) studied nonverbal behavior such as body movement, facial expression and arm/hand movement as one aspect of successful instrumental conducting. Funk (1982) maintains that one way in which choral conductors help students to develop aesthetic sensitivity is through the use of verbal imagery. He found such images as metaphors, similes, personification and rhetorical questions used by choral conductors to be effective.

Apfelstadt (1984) and Crumpler (cited in C. McCoy, 1986) studied the use of eurhythmics to enhance the pitch and melodic discrimination of young children. Both found

that children receiving instruction involving kinesthetic activity performed better than the control group in pitch pattern singing, but there was no difference in pitch discrimination.

Coy (1989) showed that the use of multisensory instruction contributed to the success of middle school students in their efforts to learn jazz improvisation over a period of six weeks. The experiment utilized combinations of body movements, clapping, snapping, etc. and verbal syllabic call and response patterns.

The Combination of Movement and Mental Imagery
by Choral Singers

A limited number of authorities address the use of the combination of mental imagery and movement for the choral singer. Dickson (1992) discusses both choral conductors and choral singers. He recognizes eurhythmics or kinesthetics as a viable means of preparing choral conductors. Dickson finds it unfortunate that such methods have been used only with children. He speaks of holistic teaching:

By conceiving music through the methodology of kinesthetics . . . , students are sensitized to the shaping of music in relationship to their body responses. . . . A holistic approach to the teaching of conducting, one which incorporates instruction in kinesthetics, eurhythmics, dance, and poetry, will develop the intuition and experience needed to effect a balance between the technical and expressive levels of music making (p. 15).

Dickson (1992) refers to Bella Lewitzky's view that the kinesthetic sense is a legitimate way of learning. Lewitzky, in an interview with McClung (1975), says that teachers "inhibit the kinesthetic sense, which is just like the sense of sight or sound or touch in that it's a learning mechanism" (p. 6). Dickson recommends a three-stage approach to teaching student conductors. The first stage uses concepts of E. D. Alperson in which students become aware of body responses to music by responding physically while listening to music and then discussing reactions:

The more sensitive the students become to their bodies, the more acute their awareness that their bodies are both the medium and the message. And through a heightened sense of imagination, they not only receive but also react to their personal kinesthetic and sensory experiences (Dickson, p. 18).

Stage II of Dickson's approach deals with the conceptualization of music and the use of gesture. Dickson says, "At this level the body begins to teach the brain how to visualize the music" (p. 18). Gestures are then employed to shape the music.

Stage III involves using these techniques with singers in the choral rehearsal, combining motion and imagery and requiring singers' participation:

I have become convinced . . . that the process by which I conceptualize the music and incorporate motion and gesture is the same process that my singers must experience. In order for them to feel the music as I feel it, they must be involved in kinesthetic activity. . . . If singers indeed respond to the physical motions of the conductor, how much greater their response if they are allowed to participate in the motion. This is

especially true of singers because the instrument is part of the body (p. 19).

Dickson advocates having singers use motion in a variety of ways. Singers dance to establish the character of a piece and use gestures for good vocal technique, e.g., making a spinning motion with the finger to keep breath moving, or "pulling taffy" to counteract the tendency to decay on a long note. He suggests combining imagery with motion by asking singers to imagine the seven dwarfs heading home from work and to move as the dwarfs would move. Such a combination of action and imagery results in releasing energy. Singers also can be asked to create a motion to help with a specific problem.

Several other authorities specifically advocate the use of movement and mental imagery by choral singers. Apfelstadt (1985) maintains that relaxed energy is necessary for good singing and that the use of movement in choral warm-ups can release tension from the body. In addition to its usefulness as a relaxation and energizing device, movement also can help in such areas as tuning and awareness of musical flow or "the forwardness of sound" (p. 39). By moving to the beat, for example, the singers are better able to internalize the concepts toward which the conductor is working. In spite of possible drawbacks such as the planning involved and the initial discomfort of the singers

with the process, Apfelstadt stresses the overwhelming value of using movement in the choral rehearsal.

Burkholder (1985) limits her discussion to facial expression. She stresses the importance of the message which a group can send to an audience through facial expression. Burkholder lists and discusses several factors which can inhibit facial expression, including "fear of personal extension" and "lack of ability to identify with the text" (p.23). She explains a method for helping students identify with the text and also suggests a number of exercises to help students express moods through facial expression.

DePugh (1990) reports on choral warm-up techniques suggested by Paul Brandvik at the Kansas American Choral Directors Association Summer Convention in 1990. Brandvik's suggestions involve the combination of mental imagery and movement for choral singers and include: (1) "drink in a bucket of air" and then sing in that position; (2) demonstrate crescendo and decrescendo with the hands; (3) indicate the shape of a vocal line with the body - lean into the high point of the phrase (p. 10). Such warm-ups prepare the body and mind to sing and teach choral technique and creation of healthy vocal sound.

Brinson (1988) suggests the use of motion to "internalize the music" and the use of facial expressions to "aid in musical involvement" (p. 19). Shrock (1990) reports

that Bartle advocates moving "arms smoothly to help . . . sing with line" and "moving feet up and down to keep a steady pulse" (p. 13).

Thomas (1991) uses movement and imagery in the rehearsing of music to achieve precision or particular effects. He suggests playing the notes on the hand, moving a finger on every note for precision, or making a circle with the little finger while imagining a tennis ball inside the mouth to create a good "oo" vowel.

For forward vowel sound, J. McCoy (1992) recommends placing hands palms down on the cheekbones and feeling all vowels above the hands. In order to avoid slurring words together, he suggests imagining inserting a sheet of paper vertically between the words. He has singers "put a crystal vase on a high shelf" in order not to overemphasize a last syllable.

German choral conductor Wilhelm Ehmann has written extensively on the use of imagery and/or movement by choral singers. He frequently worked with amateur choirs and believed that their approach to singing differs significantly from that of the professional singer (Ehmann & Haasemann, 1981). Ehmann advocates vocal exercises related to everyday life rather than using professional vocal technique and terminology:

The more amateur the choir, the more difficult it may be to introduce voice training exercises. . . One must often avoid being too specific about vocal technique,

thereby allowing for the power of the singer's creative imagination.

The challenge then is to improve tone production, artistic sensibilities and musical understanding without losing spontaneity, to release the choir from pedantic note learning and free it for singing. The dull rehearsal must be transformed into an exciting musical event. . . it is work and play all in one (Ehmann & Haasemann, 1981, p. viii).

Ehmann recommends "choral voice building" in order to interest singers and to help them reach their vocal potential (Ehmann & Haasemann, 1981, p. x). He offers numerous suggestions for games and images coupled with physical movements in order to achieve these ends. A chief goal is to create body awareness so that body-mind coordination can take place. Many of the exercises and games are specifically aimed at good breathing and relaxation as well as vowel formation and stylistic concerns. For example, when singers are afraid of high notes, he suggests the singers make "an inviting gesture to the side or to the front or to bend slightly at the knees as if the floor had given way" (p. 44). If singers are too strident on an emphatic passage he says,

It may be quite helpful for everyone to make a few quick "rabbit paw" motions, with relaxed upper arms, raising forearms in an angle close to the body, and hands hanging down completely limp like grape bunches from a vine.

As a contrasting example the same passage could be sung while maintaining a tense, rigid arm and balled fist. The music will immediately become rigid and dull, and the notes, instead of blending, will clash with each other. Only after a relaxed position like the "rabbit paw gesture" will the tone again begin to blend into a resonant, resilient sound (Ehmann, 1968, p. 82).

Experimental Research on the Use of
Movement and/or Mental Imagery
in Choral Rehearsals and Performances

The previously cited authorities advocate the use of movement and mental imagery by choral singers. However, little testing of the validity of these ideas has been published. Miller (cited in Holt, 1991) studied the use of Laban movement theory by choral conducting students. Jordan (cited in Holt, 1991) and Holt (1991) have researched the use of the Laban techniques by singers in the choral rehearsal.

Laban developed a theory and vocabulary of movement for dance. His vocabulary included four "Effort Elements": Flow, Weight, Time and Space. Flow represents bodily tension; its extremes are free and bound. Weight is the sensation of force or pressure; its extremes are light and heavy. Time has to do with duration; its extremes are sustained and quick. Space represents focus and can be direct or indirect.

Jordan (cited in Holt, 1991) studied the use of these techniques on rhythmic discrimination and performance by high school students. Holt (1991) experimented with the use of Laban techniques by high school students and its effects on style. Through the use of two treatment groups (Laban-instructed and non-Laban-instructed), she determined that those students who were versed in Laban's Effort Elements of

Weight, Flow, Time and Space produced performances which were rated higher than the control group in the five areas of tone quality, intonation, rhythmic accuracy, balance/blend and expression.

C. McCoy (1986) studied the effect of the use of movement and vocal response by choral singers on performance proficiency, meter discrimination ability, and attitude. She used two high school advanced choral groups (one control and one experimental group) and two less-advanced groups (one control and one experimental group). All groups were administered tests to measure performance proficiency, meter discrimination ability, and attitude toward participation in a vocal ensemble before and after the test period. The experimental groups used movement in rehearsals along with vocal response while the control groups used only vocal response. The results showed that the use of movement favorably affected only the advanced ensemble and only in the performance areas of tempo and balance/blend and in the area of attitude.

Although C. McCoy (1986) does not mention mental imagery, some of the movement techniques used by the test groups in her study do employ a mental image along with a physical movement. For example, in order to help singers sing phrases with "intensity and direction," C. McCoy's exercise is described as follows:

Singers imagine that they are standing on one end of a very large rubber band and are holding the other end in

their hands. The rubber band, in its relaxed state, reaches up to waist level. The singers slowly stretch the rubber band until it is stretched over the head. Then it is slowly relaxed in a controlled fashion so that it does not snap back (p. 104).

Singers stretch the rubber band until the high point of the phrase is reached. Loud phrases involve stretching over the head, while soft phrases stretch the rubber band only to chest height.

Weaver (cited in C. McCoy, 1986) developed a plan for using eurhythmics in the choral ensemble. However, results of the experiment were evaluated only by Weaver, who judged their use to have brought about improvement in performance.

Jordan, Holt and Weaver have studied movement in choral rehearsals, but not necessarily imagery. C. McCoy (1986) employs imagery but does not study imagery. As she says,

Only sketchy experimental evidence exists to support the idea that the learning of music concepts other than rhythm concepts can be enhanced by the use of movement. Movement may be of help to students as they acquire pitch concepts. However, not enough research exists from which conclusions can be safely drawn (p. 92).

This chapter has focused on four areas related to the concept of movement and/or imagery in music: ideas on its use in music in nonchoral circumstances, experimental research on its use in music in nonchoral circumstances, ideas on the use of the combination of movement and imagery by choral singers, and research on movement and/or imagery in choral rehearsals and performances. Several authorities have studied movement in choral situations, but it appears

to the author that research on the combination of mental imaging and movement in choral rehearsals is virtually nonexistent.

CHAPTER III

Method

Materials

In 1991 Charlene Archibeque, Director of Choral Activities at San Jose State University, produced a video tape featuring Charlotte Adams, director of Girls 21 at Cherry Creek High School in a Denver suburb. In the video Daily Workout for a Beautiful Voice, Adams outlines exercises to be used in vocal warm-ups of choral groups, and Girls 21 chorus demonstrates. Three techniques are employed:

- (1) Visualization: Formulate a mental picture to accompany each exercise;
- (2) Movement: Motions and gestures enhance the sound;
- (3) Reinforcement: Encourage individuality and praise proper vocalization (Adams, 1991).

These techniques are used to accomplish "quality vocal production." In such production the tone is described as "steady with firm breath support, controlled with a relaxed open throat, full with warm vowel placement" (Adams). The video is used as the basis for this study.

Adams' vocal exercises are grouped into five categories, three of which were employed for the study: Resonance, Breath Support and Lifted Soft Palate. Range and Agility were not included. Adams suggests using two or

three exercises from each group on a daily basis. Each group of exercises ends with a relaxation exercise which should always be included. The exercises employ vowels and consonants chosen to enhance progress in that particular category. A gesture or movement and a mental image accompany each exercise.

Seven exercises from the first three groups were chosen for the study (see Appendix A). They are identified by the syllables sung in each. Group I exercises develop resonance. Adams explains that the "th" in "Tho-Ay-Ah" places the tone in the mask and "engages the breath stream" (Adams). With the circular motion next to the head the student imagines the placement of the tone in the mask. The gesture also helps to lift the soft palate and implies a spinning quality in the sound. As her students perform the exercises, Adams coaches them with directions such as "Start on top of the pitch" or "Lift your eyebrows" (Adams). The upward arm motions serve the added function of keeping the rib cage high and expanded. With "Bee-Bee-Bee", Adams coaches with phrases such as "Spin the sound" and "Relax your jaw" (Adams).

"Nee-Yah" is the relaxation exercise for Group I. The light staccato nature of the exercise serves to connect resonance with the breath stream. Elbows are extended for the thumb movement, which simulates pushing up on the eye teeth and serves to raise the soft palate. The extended

elbows help to maintain good posture and allow for maximum lung expansion. For higher pitches, bouncing an imaginary beach ball at waist level is suggested instead of pushing on eye teeth in order to encourage deeper breathing. Gentle head movements relax the neck and shoulders.

Group II exercises focus on breath support. For "Ee-Oh", students return to a circular motion beside the head, this time arching it outward as the pattern descends. This exercise also focuses on unification of vowels. As Adams explains, the "ee" provides "ping" and the "oh" provides "roundness" (Adams). "Blah-Blah-Blah" is the relaxation exercise for Group II. It relaxes the upper body while improving posture and lung expansion. Students are told to puff their cheeks out and to raise their eyebrows and their cheekbones in addition to the indicated tossing beach ball motion.

Group III exercises are designed for lifted soft palate. For "Lah-Beh-Dah-Meh-Nee-Poh-Too-Lah-Beh", an imaginary Oreo cookie is held vertically inside the mouth, or a Hershey's Kiss is held on the tongue in order to raise the soft palate. While the exercise is sung, the fingers stroke along the temples in order to visualize the sound in the mask. The relaxation exercise for Group III is "Double-bubble." Students imagine themselves as proper British persons, therefore putting some "ah" in the "uh" sound. The use of "b" helps the face to relax.

Subjects

The purpose of the current study was to test whether an improvement in vocal tone quality could be discerned following the use of seven exercises as choral warm-ups with Treble Clef, an SSA women's chorus at a mid-size midwestern university. The choir is an elective, nonaudition group of predominantly nonmusic majors. Included in the chorus of nineteen were six first sopranos, eight second sopranos, and five altos. The group was directed by the author. The chosen exercises were used as warm-ups at each of the biweekly rehearsals of Treble Clef for a period of four weeks (eight rehearsals). Recordings of the group were made prior to the 4-week period and at the end of the period.

Procedure

Three selections from the choir's repertoire were picked for the pre- and posttest recordings: *Ladybug* and *I Hear A Harp* by Johannes Brahms, and *Orpheus With His Lute* by Ralph Vaughan Williams. All selections included piano accompaniment; *I Hear A Harp*, originally for harp and horn accompaniment, was accompanied on piano.

The pretest selections were recorded on Ampex 407 reel-to-reel audio tape with a Teac 3300S stereo reel-to-reel recorder using two Shure SM 53 microphones. The members of the choir stood in a single curved line on the stage in a specified order which had been determined by a voice-

matching exercise earlier in the semester and unrelated to the study project. Following the taping, the Adams warm-ups were introduced and used exclusively for warm-ups at the beginning of each rehearsal for four weeks.

During rehearsals of *I Hear A Harp* and *Orpheus With His Lute* over the four-week period, direct references to the warm-up exercises were made. A script was prepared and used prior to the rehearsal of *I Hear A Harp* and *Orpheus With His Lute* (see Appendix B). A log was kept to monitor how closely the script was followed (see Appendix C). Entries were made following each rehearsal of the three pieces indicating what changes were made in the script during the actual presentation. Rehearsals of *Ladybug* included no conscious reference to the warm-up exercises.

A posttest recording of *Orpheus With His Lute*, *Ladybug*, and *I Hear A Harp* was made at the beginning of the ninth rehearsal following performance of the warm-up exercises. Pretest conditions were duplicated.

Following the posttest recording, the six selections (three pretest selections and three posttest selections) were copied in random order from the master tape onto six cassette tapes.

Six experienced choral directors, four from high schools and two from colleges, were selected to judge the pre- and posttest recordings. These judges had served as choral directors in some capacity for a combined total of

139 years. Three had taught on the college level for an average of five years. All listed voice as their area of concentration while in school, though three listed additional areas of concentration. These judges had served as adjudicators at workshops and festivals for an average of 13 years. Each judge was sent a cassette tape, rating sheets for each of the six selections, and specific written instructions (see Appendix E). Judges also completed a questionnaire designed to provide information about their backgrounds and expertise in the music field (see Appendix D).

The judges were asked to rate the performances on the basis of tone quality and resonance using a Likert rating scale for each performance of each selection (see Table 1). Five statements can be considered positive ("warm," "relaxed and free," "blended," "resonant," and "vowels are unified"), and five statements can be called negative ("thin," "lacks focus," "shrill," "breathy" and "harsh"). Two terms ("bright" and "dark") do not carry a positive or negative connotation in themselves. Judges were not asked to compare pre- and posttest recordings, but to rate each rendition on its own merits.

Six members of a senior level choral techniques class also were asked to rate the taped performances using the same scale. The class was taught at the same midwestern university where the testing took place. Members of the

Table 1

Example of Likert Rating Sheet

SELECTION #1
ORPHEUS WITH HIS LUTE

Please listen to Selection #1, "Orpheus With His Lute." Then circle the number which most closely corresponds to your opinion about the statement to the left.

	Strongly Disagree	Disagree Somewhat	Don't Know	Agree Somewhat	Strongly Agree
Tone is bright.	5	4	3	2	1
Tone is dark.	5	4	3	2	1
Tone is thin.	5	4	3	2	1
Tone is warm.	5	4	3	2	1
Tone lacks focus.	5	4	3	2	1
Tone is relaxed and free.	5	4	3	2	1
Tone is blended.	5	4	3	2	1
Tone is shrill.	5	4	3	2	1
Tone is resonant.	5	4	3	2	1
Tone is breathy.	5	4	3	2	1
Tone is harsh.	5	4	3	2	1
Vowels are unified.	5	4	3	2	1

Please add any comments you wish:

class were music education majors, with either vocal or instrumental emphasis. The students listened to a cassette tape over the classroom playback system. The students also completed a form on which they indicated their primary area of emphasis, vocal or instrumental (see Appendix G).

Results of their questionnaires were analyzed to ascertain whether or not differences were more readily observed by students with vocal emphasis than by students with instrumental emphasis.

CHAPTER IV

Results

Because of the small number of evaluators (12), rating sheet responses of the judges and the choral techniques students were combined. A Chi Square test was performed on each statement rated by the listeners (see Table 1), comparing pre- and posttest ratings, and testing at the .05 level of confidence. No significant differences are reported. A Fisher Exact Probability Test was performed on both judges' responses and on students' responses. For the Fisher test, responses to each statement were grouped into two categories: Agree and Disagree. "Don't Know" answers were ignored. The tests revealed no significant differences between pretest and posttest ratings at the .05 level of confidence. Therefore Null Hypothesis #1 is accepted.

Means were calculated for responses to each statement on each rating sheet (see Tables 2-5). Ratings of 1 and 2 indicated agreement with the given statement; ratings of 4 and 5 indicate disagreement with a given statement. Thus, improvement in tone quality would be indicated by a lower number in response to a positive statement like "Tone is resonant," and a higher number in response to a negative statement like "Tone is thin." Although not statistically

Table 2

Means of Ratings

Statements	Orpheus		Harp		Ladybug	
	Pre	Post	Pre	Post	Pre	Post
Bright	3.50	3.17	2.25	2.0	3.67	3.0
Dark	2.92	3.17	3.47	3.92	2.83	2.75
Thin	3.75	3.58	3.67	2.92	4.0	3.83
Warm	2.42	2.42	3.33	3.47	2.25	2.42
Lacks Focus	3.75	3.25	2.82	2.17	3.67	3.50
Relaxed & Free	2.82	2.77	3.50	3.47	2.25	2.31
Blended	3.33	3.25	3.83	4.33	2.25	2.77
Shrill	3.50	3.08	2.17	1.75	3.75	3.50
Resonant	2.50	2.50	2.73	3.17	2.42	2.08
Breathy	3.67	3.92	4.0	3.67	4.17	4.42
Harsh	3.58	3.08	2.33	2.33	3.83	3.75
Vowels Unified	3.17	2.73	----	----	2.67	2.75
Vowels Unif. W'in			3.15	3.09		
Vowels Unif. B'twn			3.50	3.58		

Table 3

Comparison of Means of RatingsOrpheus With His Lute

Statements	Judges		Students	
	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>
Bright	3.50	3.0	3.50	3.33
Dark	2.67	3.0	3.17	3.33
Thin	4.0	3.67	3.57	3.17
Warm	2.50	2.83	2.33	2.0
Lacks Focus	2.33	3.0	3.17	3.17
Relaxed & Free	2.50	3.33	3.20	2.29
Blended	3.67	3.83	3.0	2.67
Shrill	3.67	2.67	3.33	3.50
Resonant	2.33	2.83	2.67	2.17
Breathy	4.17	4.0	3.17	3.83
Harsh	3.0	2.67	4.0	3.50
Vowels Unified	3.0	2.83	3.33	2.17

Table 4

Comparison of Means of RatingsLadybug

Statements	Judges		Students	
	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>
Bright	3.50	2.67	3.83	3.33
Dark	2.50	3.33	3.50	2.17
Thin	4.17	3.67	3.83	4.0
Warm	2.50	3.0	2.0	1.83
Lacks Focus	3.50	3.0	3.83	4.0
Relaxed & Free	2.17	2.57	2.17	2.0
Blended	2.83	3.29	1.67	2.17
Shrill	3.67	2.67	3.83	4.33
Resonant	2.50	2.33	2.33	1.83
Breathy	4.33	4.33	4.0	4.50
Harsh	3.33	3.17	4.33	4.33
Vowels Unified	3.0	3.17	2.33	2.33

Table 5

Comparison of Means of RatingsI Hear A Harp

Statements	Judges		Students	
	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>
Bright	2.33	2.33	2.17	1.67
Dark	3.0	3.67	3.83	4.17
Thin	3.83	3.50	3.50	2.33
Warm	3.50	3.50	3.17	3.33
Lacks Focus	2.17	2.33	3.60	2.0
Relaxed & Free	3.83	3.50	3.17	3.33
Blended	4.33	4.50	3.33	4.17
Shrill	1.83	1.67	2.50	1.83
Resonant	2.67	3.33	2.33	3.0
Breathy	4.0	3.50	4.0	3.83
Harsh	2.0	1.83	2.67	2.83
Vwls Unif. Within	3.57	3.33	2.67	2.50
Vwls Unif. Between	3.67	3.83	3.33	3.33

significant, variances in means showed several trends. Variances between pre- and posttest ratings for each selection ranged from 0 to 1.0 for judges, 0 to 1.17 for students, and 0 to .75 for the combined totals (see Table 2).

The judges indicated improvement from pretest to posttest on two items for *Orpheus With His Lute*: "lacks focus" and "vowels are unified" (see Table 3); one item for *Ladybug* -- "Resonant" (see Table 4); and two items for *I Hear A Harp*: "lacks focus" and "vowels are unified within sections" (see Table 5).

Students registered improvement on 7 items for *Orpheus With His Lute*: "warm," "relaxed," "blended," "shrill," "resonant," "breathy," and "vowels are unified" (see Table 3); 7 items for *Ladybug*: "thin," "warm," "lacks focus," "relaxed," "shrill," "resonant," and "breathy" (see Table 4); and 2 items for *I Hear A Harp*: "harsh," and "vowels are unified within sections" (see Table 5).

Means were calculated on combined data from judges and students. Four items for *Orpheus With His Lute* showed improvement: "relaxed," "blended," "breathy," and "vowels are unified"; two for *Ladybug*: "resonant" and "breathy" (see Figure 1), and two for *I Hear A Harp*: "relaxed and free," and "unified within sections" (see Table 2).

Lack of improvement was indicated on the remaining statements for each of the three selections (see Tables 2-

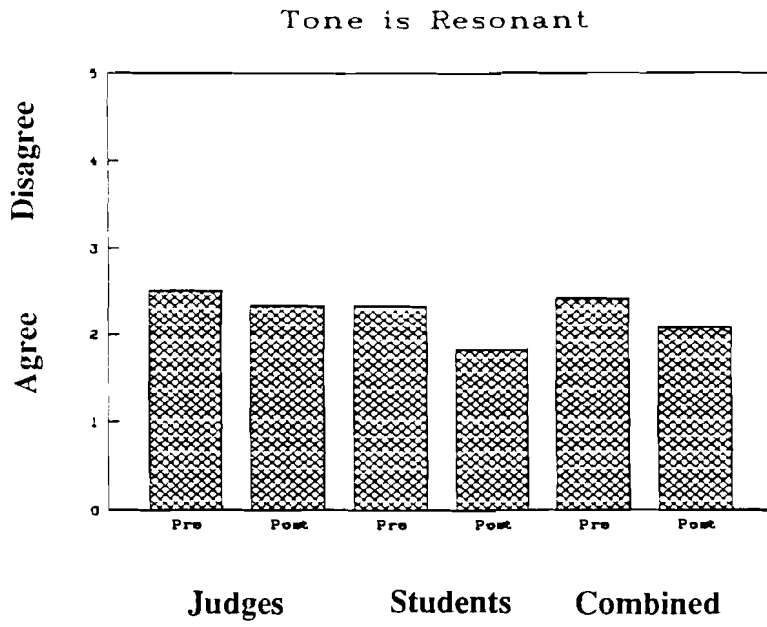


Figure 1. A quality rated improved by both judges and students.

5). *Orpheus With His Lute* lacked improvement on 6 items, *Ladybug* on 8 items, and *I Hear A Harp* on 9 items.

Students and judges disagreed with each other on a number of statements on the rating scales. Graphs are pictured for each occurrence of a variance in means of 1.0 or more between judges and students (see Figures 2-8). Judges and students either gave opposite responses in terms of improvement heard in the posttest recordings, or their responses did not coincide in terms of amount of agreement or disagreement with a given statement. There was consistent lack of agreement on two statements: "Tone is blended", and "Tone is harsh." For the statement, "Tone is blended," the two groups agreed on the direction of change on two selections from pretest to posttest. The judges disagreed more strongly with the statement "Tone is blended" for all three selections. For the statement, "Tone is harsh," both judges and students rated pre- and posttest recordings as close, but the students consistently rated the chorus as less harsh.

Of the 74 items on the rating sheets (12 items to answer on each of 4 sheets and 13 items on 2 sheets), the means for 28 items (38% of judges' responses), fell between 2.51 and 3.49, which would constitute the middle of the rating scale. Means between 2.51 and 3.49 on students'

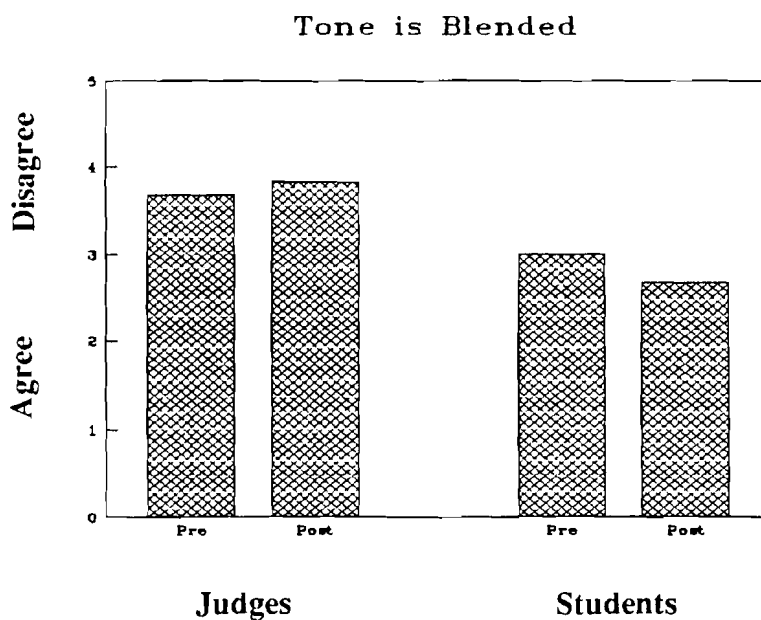
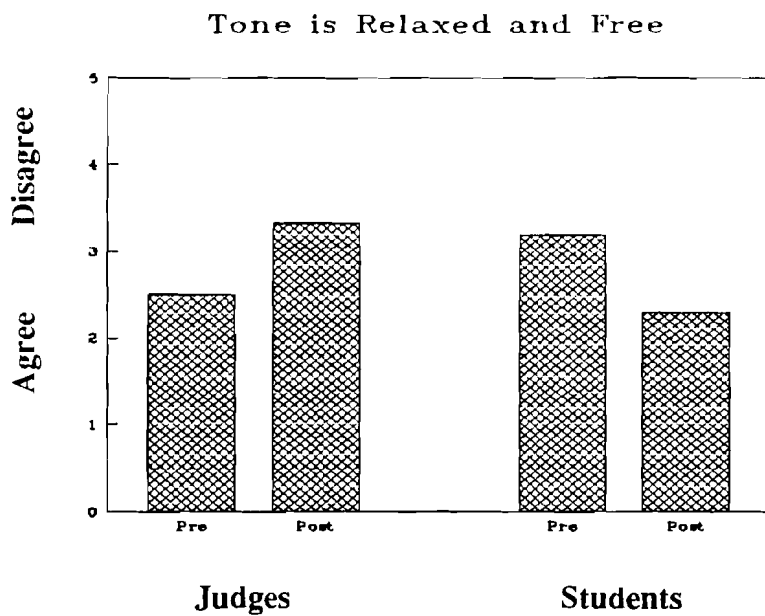


Figure 2. Means of ratings of judges and students for *Orpheus With His Lute*.

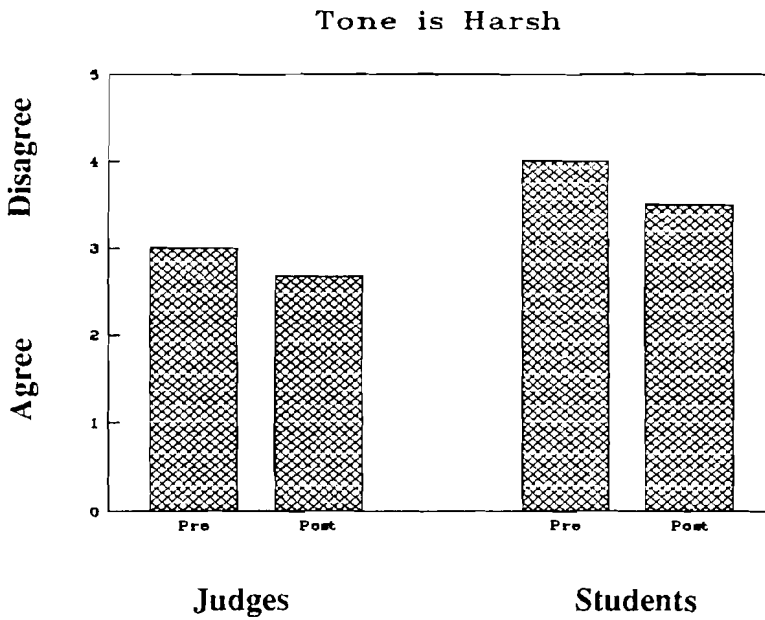
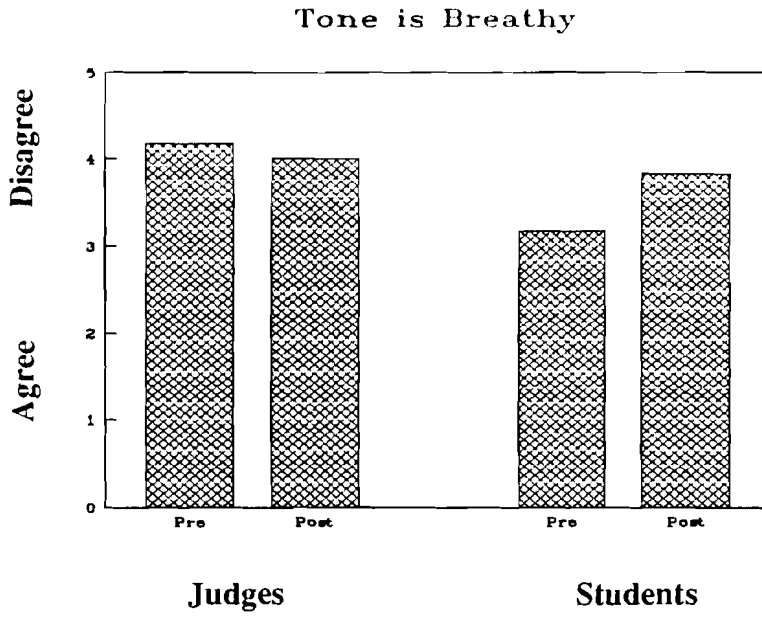


Figure 3. Means of ratings of judges and students for *Orpheus With His Lute*.

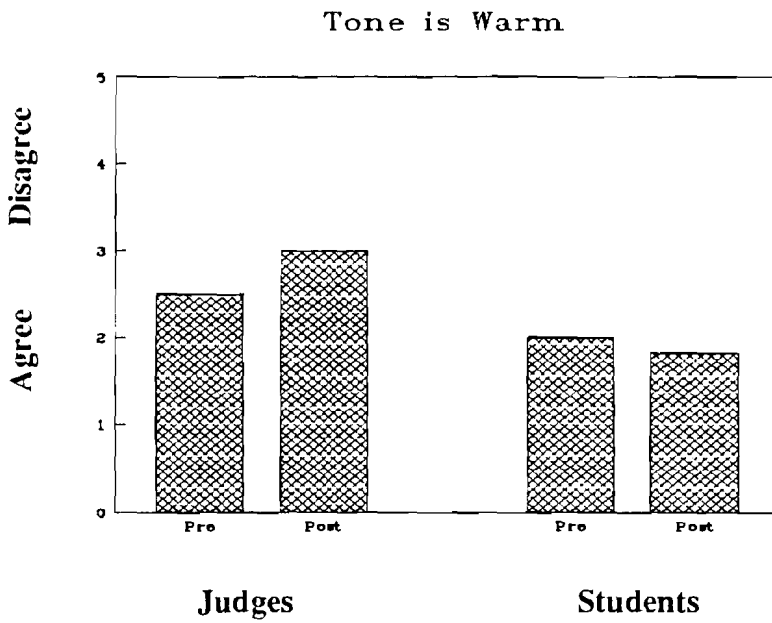
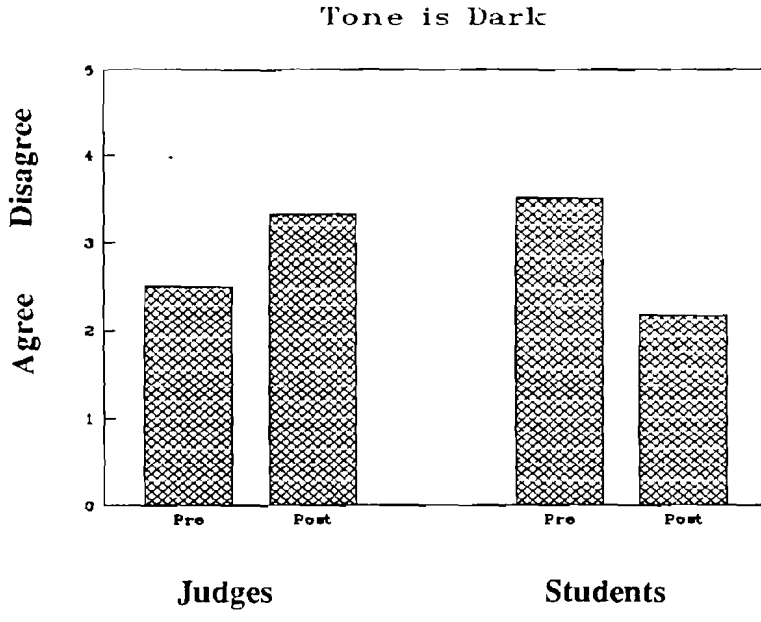


Figure 4. Means of ratings of judges and students for *Ladybug*.

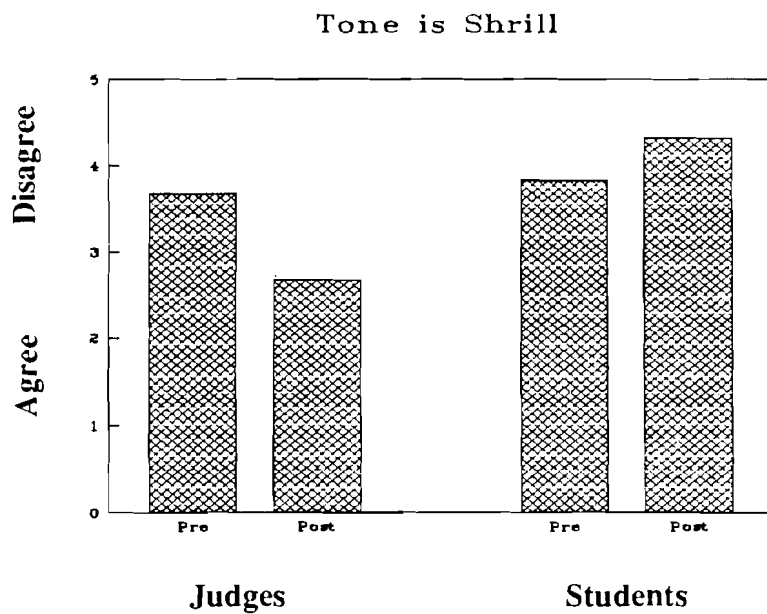
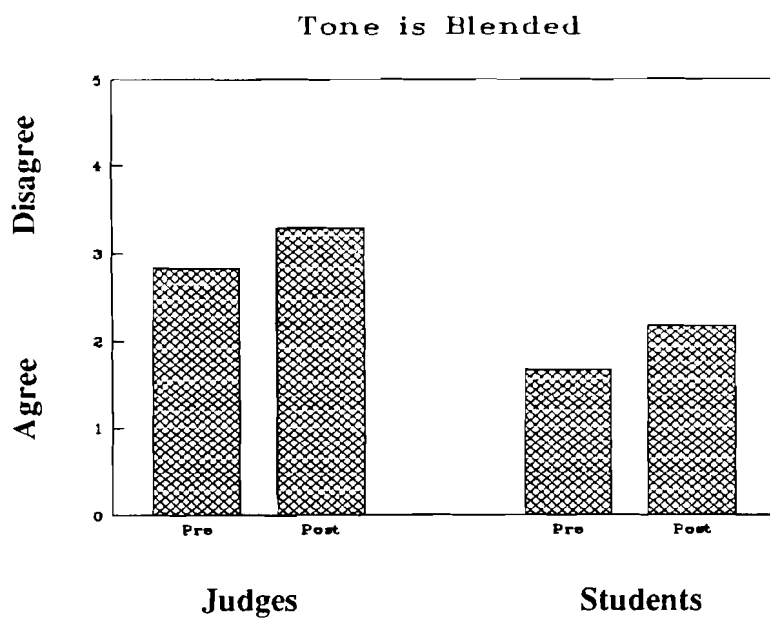


Figure 5. Means of ratings of judges and students for *Ladybug*.

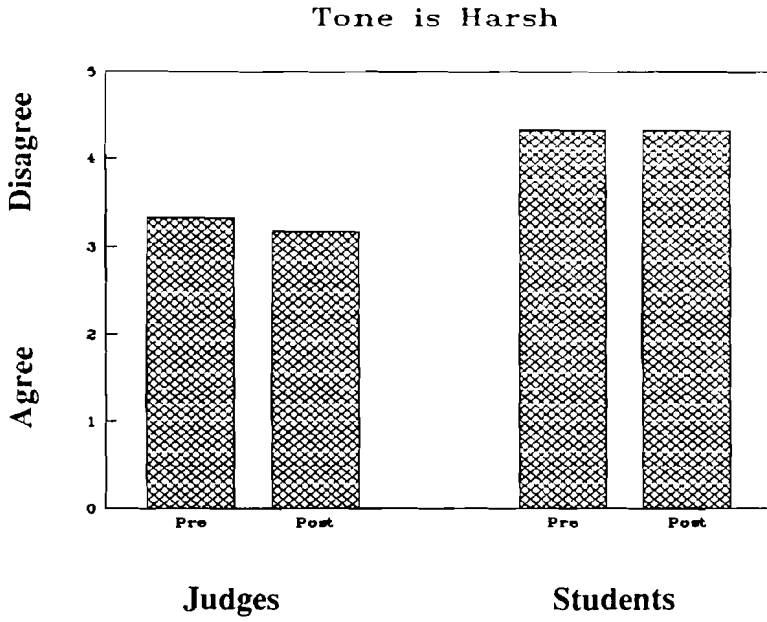


Figure 6. Means of ratings of judges and students for *Ladybug*.

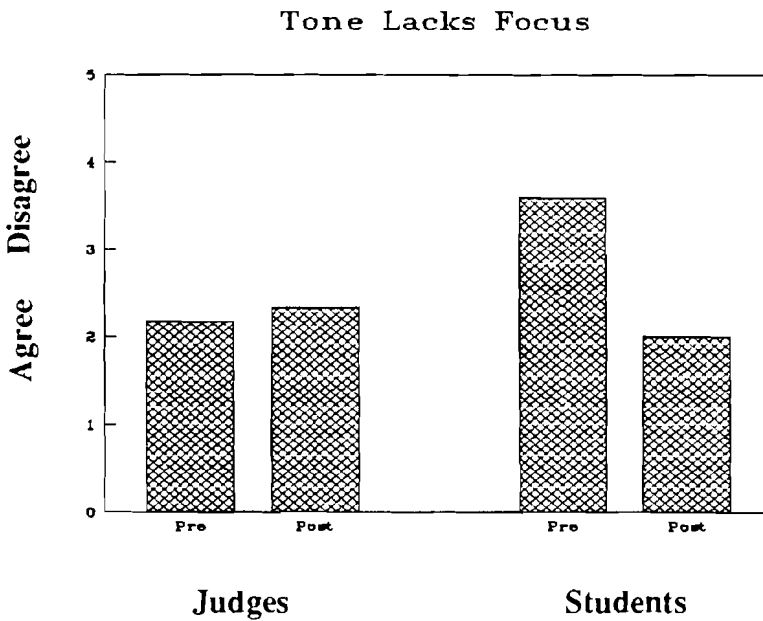
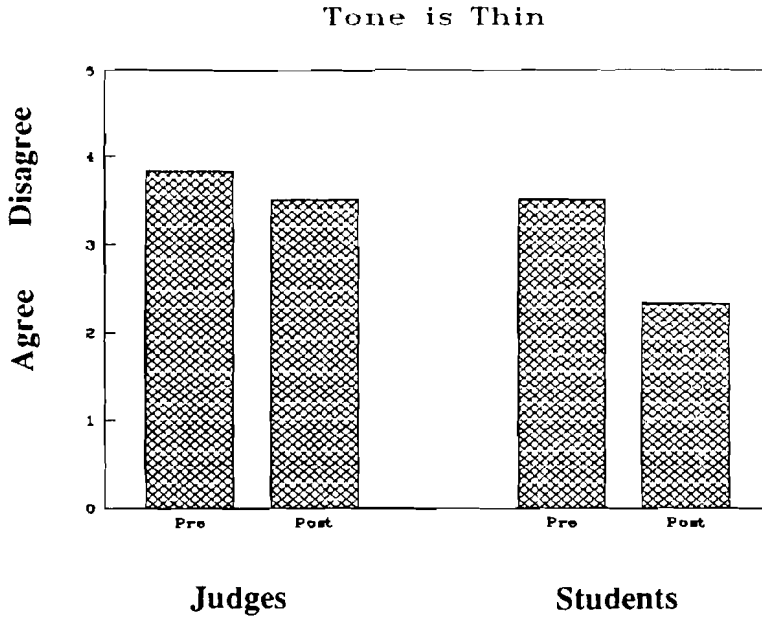


Figure 7. Means of ratings of judges and students for *I Hear A Harp*.

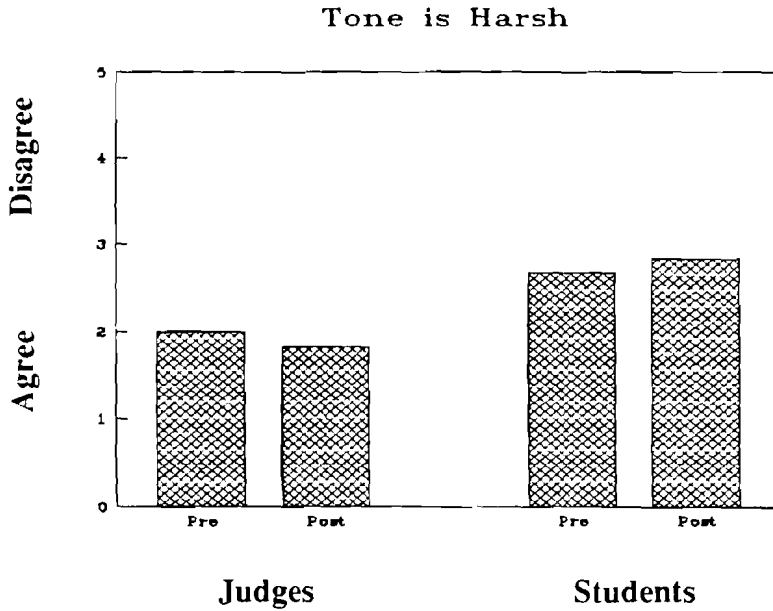
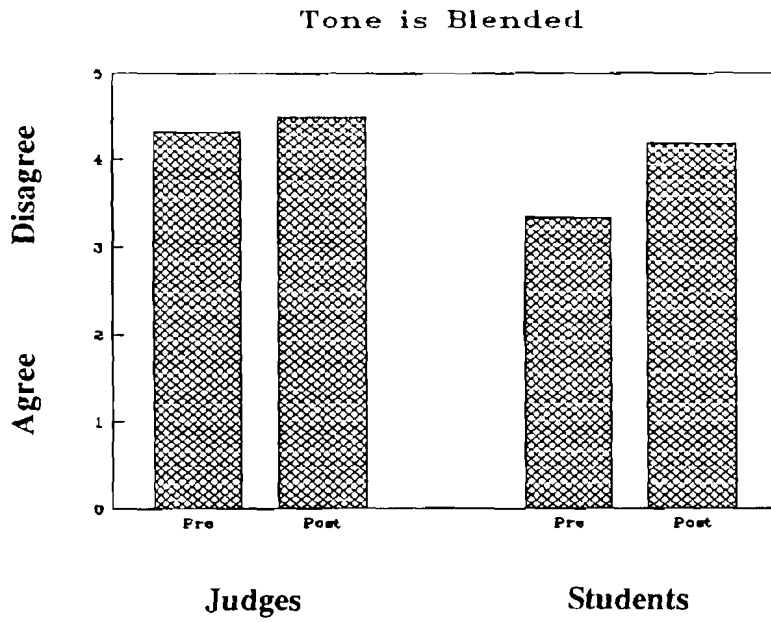


Figure 8. Means of ratings of judges and students for *I Hear A Harp*.

sheets numbered 25, or 34% of students' responses (see Tables 2-5). Responses actually marked 3, or "Don't Know" on the rating sheets, numbered only 15 out of 432 responses on judges sheets and 9 of 433 on students' sheets (see Appendix H).

Null Hypothesis #2 stated: There will be no significant difference between the ratings given by choral techniques students whose area of concentration is voice and those whose area of concentration is instrumental. To test this hypothesis, students' responses were separated by vocal emphasis and instrumental emphasis and subjected to the Fisher Test. At a level of confidence of .05, no significant differences were found. Therefore Null Hypothesis #2 is accepted.

Vocal students' responses were closer to judges' responses than those of instrumental students, but not to a statistically significant degree (see Tables 6-8). Vocal student responses fell within .16 or .17 of judges' responses on 23 of 74 responses (31% of responses). Instrumental students gave 11 responses out of 74 within .16 or .17 of judges responses (15% of responses). Vocal students' responses differed from judges' responses by 1.0 or more on 13 of the 74 statements (18%), whereas instrumental students' responses differed by 1.0 or more on 33 items (44%).

Table 6

Comparison of Means of Ratings of Instrumental and Vocal
Students

Orpheus With His Lute

Statements	Judges		Instrum. Students		Vocal Students	
	Pre	Post	Pre	Post	Pre	Post
Bright	3.50	3.0	3.67	3.67	3.33	3.0
Dark	2.67	3.0	3.67	2.33	3.33	3.0
Thin	4.0	3.67	4.33	3.67	3.0	3.33
Warm	2.50	3.83	2.0	2.0	2.67	2.0
Lacks Focus	2.33	3.0	3.67	4.33	2.67	2.67
Relaxed & Free	2.50	3.33	2.0	2.0	4.0	2.67
Blended	3.67	3.83	2.67	2.67	3.33	2.67
Shrill	3.67	2.67	4.0	4.33	2.67	2.67
Resonant	2.33	2.83	2.67	2.33	2.67	2.0
Breathy	4.17	4.0	3.67	3.67	2.67	4.0
Harsh	3.0	2.67	4.33	4.33	3.67	2.67
Vowels Unified	3.0	2.83	3.33	1.67	3.33	2.67

Table 7

Comparison of Means of Ratings of Instrumental and VocalStudentsI Hear A Harp

Statements	Judges		Instrum. Students		Vocal Students	
	Pre	Post	Pre	Post	Pre	Post
Bright	2.33	2.33	2.33	1.33	2.0	2.0
Dark	3.0	3.67	2.33	4.0	2.0	4.33
Thin	3.83	3.50	3.33	2.0	3.67	2.67
Warm	3.50	3.50	3.0	2.67	3.33	4.0
Lacks Focus	2.17	2.33	3.0	2.33	4.0	1.67
Relaxed & Free	3.83	3.50	2.67	3.33	3.67	3.33
Blended	4.33	4.50	2.67	4.0	4.0	4.33
Shrill	1.83	1.67	3.0	1.67	2.0	2.0
Resonant	2.67	3.33	2.67	3.33	2.0	2.67
Breathy	4.0	3.50	4.0	4.33	4.0	3.33
Harsh	2.0	1.83	3.33	3.0	2.0	2.67
Vwls Unif. Within	3.57	3.33	2.0	1.67	3.33	3.33
Vwls Unif. Between	3.67	3.83	2.67	2.67	4.0	4.0

Table 8

Comparison of Means of Ratings of Instrumental and VocalStudentsLadybug

Statements	Judges		Instrum. Students		Vocal Students	
	Pre	Post	Pre	Post	Pre	Post
	Bright	3.50	2.67	3.67	4.0	4.0
Dark	2.50	3.33	2.67	1.67	3.67	2.67
Thin	4.17	3.67	4.67	4.67	3.0	3.33
Warm	2.50	3.0	1.33	1.0	2.67	2.67
Lacks Focus	3.50	3.0	4.33	4.0	3.33	4.0
Relaxed & Free	2.17	2.57	1.67	2.0	2.67	2.0
Blended	2.83	3.29	1.33	1.67	2.0	2.67
Shrill	3.67	2.67	4.33	4.67	3.33	4.0
Resonant	2.50	2.33	2.0	1.67	2.67	2.0
Breathy	4.33	4.33	4.67	5.0	3.33	4.0
Harsh	3.33	3.17	4.67	4.67	4.0	4.0
Vowels Unified	3.0	3.17	2.0	2.0	2.67	2.67

Null Hypothesis #3 is accepted because posttest ratings of *Ladybug* were not lower than those for the other two selections (see Table 9). *Ladybug*, the selection rehearsed without reference to Adams' warm-ups, had posttest ratings within .25 of those of *Orpheus With His Lute* on five of the twelve statements, whereas no rating of *Ladybug* was closer than .58 to *I Hear A Harp*. The two ratings dealing with unified vowels on *I Hear A Harp* were averaged for this comparison. One rating of *I Hear A Harp* was within .25 of *Orpheus With His Lute* ("Tone is breathy"), but there was a difference of 1.0 or more between *I Hear A Harp* and *Orpheus With His Lute* ratings on four items. There were 9 differences of 1.0 or more between *I Hear A Harp* and *Ladybug*. There were no differences of 1.0 or more between *Orpheus With His Lute* and *Ladybug* (see Figures 9-11).

Table 9

Means of Posttest Ratings

	<u>Orpheus</u>	<u>Harp</u>	<u>Ladybug</u>
Tone is Bright.	3.17	2.0	3.0
Tone is Dark.	3.17	3.92	2.75
Tone is Thin.	3.58	2.92	3.83
Tone is Warm.	2.42	3.47	2.42
Tone Lacks Focus.	3.25	2.17	3.50
Tone is Relaxed & Free.	2.77	3.47	2.31
Tone is Blended.	3.25	4.33	2.77
Tone is Shrill.	3.08	1.75	3.50
Tone is Resonant.	2.50	3.17	2.08
Tone is Breathy.	3.92	3.67	4.42
Tone is Harsh.	3.08	2.33	3.75
Vowels are unified.	2.73	3.33	2.75

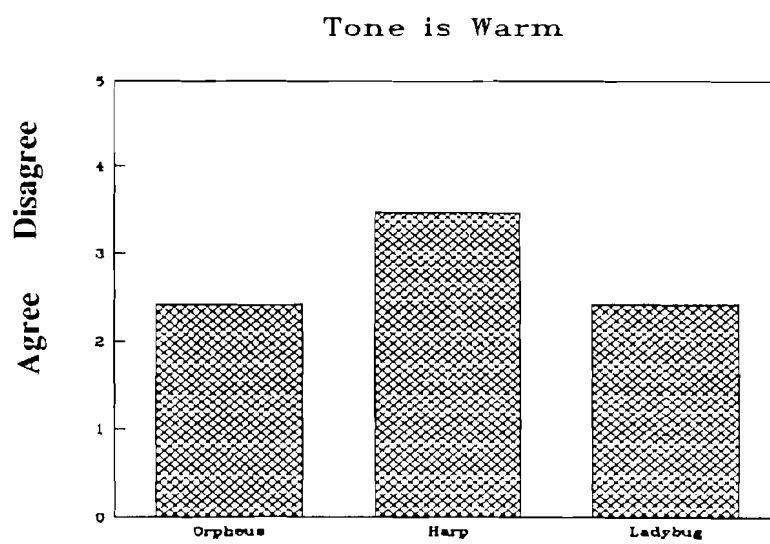
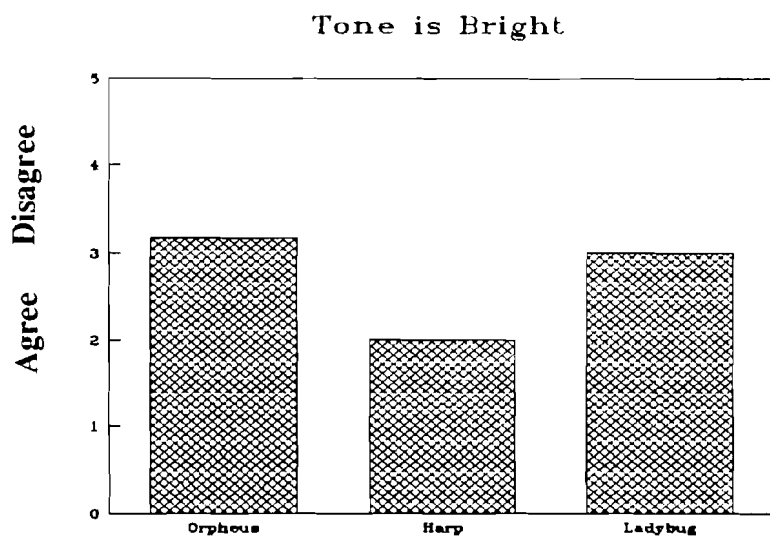


Figure 9. Posttest ratings.

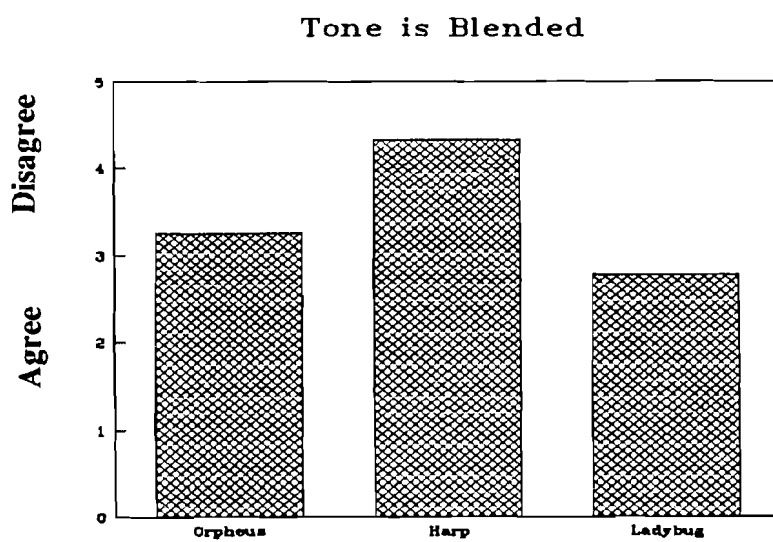
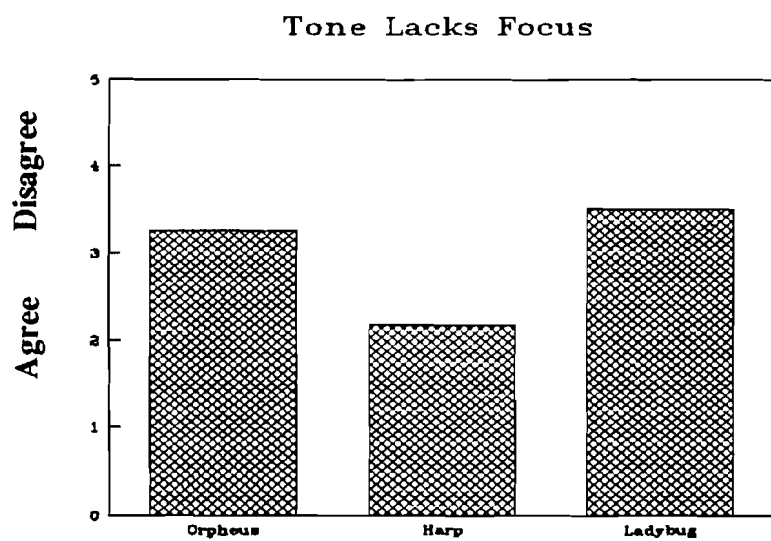


Figure 10. Posttest ratings.

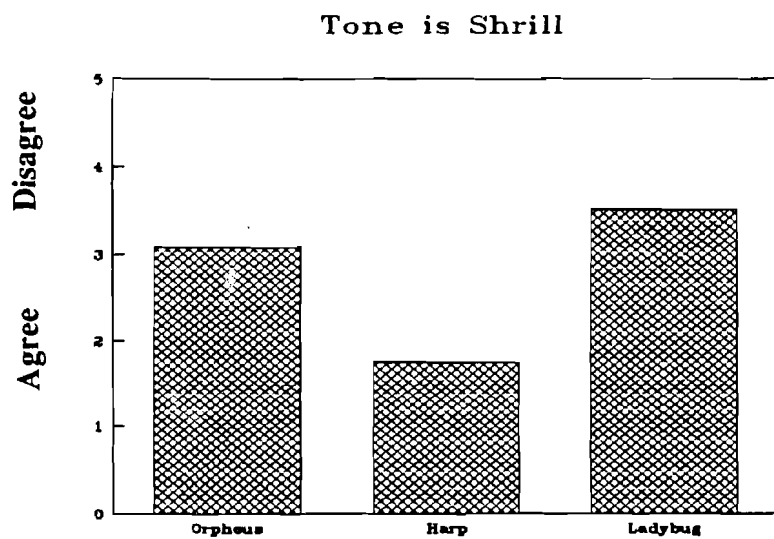


Figure 11. Posttest ratings.

CHAPTER V
Discussion

No significant differences were found to reject the three null hypotheses. A number of factors might have contributed to these outcomes.

First, the length of the test period was four weeks, which encompassed eight rehearsals. The period of time from first introduction of the exercises to the posttest was only 24 days. Adams states, "You must be consistent in doing these exercises every day. The progress will be steady and continuous" (Adams). It appears to the author that the period of four weeks, especially when encompassing only two rehearsals per week, is too short to allow for significant improvement.

Second, the quality of the recording proved to be a factor in the rating process. Distortion occurred on the master tape, a problem which was not evident until cassettes were produced from the master. According to Dr. James South (1993), "Women's voices are notoriously difficult to record without distortion. Distortion occurs even when the meters appear to indicate a reasonable recording level." In addition, one strong first soprano voice stood out from the others. Five of the six judges and two of the six choral techniques students remarked about the first soprano voice

which overshadowed the rest of the group or about distortion on the tape. Three judges stated that evaluation of the sound was difficult for these two reasons.

The director observed at the time of the posttest recording that the performance level of the test group was lower than at most rehearsals. ("It was a bad day.") Although this was a subjective observation, if true, it is not surprising that the evaluation did not show significant improvement on the posttest.

Variables abounded in the study. Had the hypotheses been rejected, it is possible that the Adams warm-ups would not have been the cause for the improvement. Although the specified Adams warm-ups were the only exercises used at the beginning of each rehearsal, other choral techniques were employed by the director during the course of the eight rehearsals.

Because the means of more than one-third of all 74 responses fell between 2.51 and 3.49, the "Don't Know" category, it appears that frequently the evaluators did not reach consensus. With only 24 of 866 responses marked 3 or "Don't Know" on the rating sheets, evaluators clearly disagreed or clearly agreed on items, i.e., they marked 4-5 or 1-2.

The subjectivity of the descriptive terms employed in the study is a likely cause for the dramatic division of ratings. As Richard Miller (1977) says,

Even in the most rigidly controlled scientific investigations on vocal function, most conclusions must ultimately be based upon subjective evaluation of the "quality" of the sound, ranging from such categories as "best to poorest quality," or described by such non-scientific terms as "metallic," "pinched," "mellow," "soft," "ringing," etc. Any aspect of singing which has to do with vocal timbre finally must be assessed by descriptions which remain somewhat subjective (p. xvi).

The subjectivity of aural judgment may come into play.

Judgments on what is pleasing or good vary. What one evaluator might hear as "shrill," another may simply call "bright." What one may describe as lacking focus, another may hear positively as "warm."

The evaluations of the choral techniques class were generally more positively oriented than the judges' evaluations. This may be attributed to the more discriminating ears of the judges. However, even the judges had different ideas about what constitutes good choral sound. As noted above, their responses indicated that they did not always agree with each other.

The listening situation was a variable which could have contributed to the students' ratings. Students listened to the six recorded selections in a class situation, monitored by the researcher. No discussion followed the listening period. No control was possible on the type of equipment nor the time frame utilized by the judges.

One finding of this study was that vocal students' responses were closer to judges' than those of the instrumental students. It could be suggested that vocal

majors may have more pre-service experience with critical listening and appraisal of choral tone.

The purpose of Hypothesis #3 was to test whether referring to the Adams warm-ups during rehearsal of the selections would make a difference in outcome. The intent was to make reference to the warm-ups during rehearsal of *Orpheus With His Lute* and *I Hear A Harp*, but not during rehearsal of *Ladybug*. However, as indicated in Appendix C, each of the test selections was rehearsed only once during the test period. The test period comprised eight 50-minute rehearsals in 24 days, during which time it was necessary to rehearse a number of selections in addition to the test selections. This situation hardly provided a frequent enough trial to produce valid results.

Although not statistically significant, a difference is evident between the selections. *Orpheus With His Lute* and *Ladybug* received similar posttest ratings, whereas *I Hear A Harp* was consistently rated lower than the other two selections (see Figures 9-11). Though Brahms composed two pieces used in the study, *I Hear A Harp* is not stylistically similar to the folksong, *Ladybug*. *I Hear A Harp* is of a more dramatic, romantic, effusive character with an emotive text, whereas *Ladybug* could be characterized as wistful and *Orpheus With His Lute* as serene. The performance of *I Hear A Harp* tended to have more dynamic contrast. The greater dynamic variation proved detrimental to the study because

the recording problem was exacerbated by the first soprano who appeared to sing more loudly and operatically on *I Hear A Harp*, making it difficult for the evaluators to hear changes in the singing of the rest of the group.

Also, in the random ordering of the six performances on the cassette tapes, *I Hear A Harp* was the only one of the three selections for which evaluators heard the posttest prior to the pretest. Random order was: *Orpheus With His Lute* pretest, *I Hear A Harp* posttest, *Ladybug* pretest, *Orpheus With His Lute* posttest, *Ladybug* posttest, and *I Hear A Harp* pretest. It is possible that the natural tendency of listeners was to rate the second hearing of a selection higher than the first, which, in the case of *I Hear A Harp*, was the pretest.

The most likely reason for *I Hear A Harp* having consistently lower ratings was that, as observed by the director on the day of the posttest recording, the performance level of the group was lower than at rehearsals. The "bad day" phenomenon became evident on this, the most difficult and dramatic of the three selections. *I Hear A Harp*, the only non-unison selection, exhibited a greater degree of complexity for the listener and the performer.

Recommendations for Further Study

For further studies of this type, several changes are recommended.

An expert technician, using state of the art digital recording equipment, should be employed to make recordings required for the study. Difficulties with recording, e.g., tape distortion, balance problems, etc., can be eliminated by careful sound checks prior to recording.

The length of the test period should allow sufficient time for progress to be evident. A period of at least one school semester, or four to five months, is recommended.

It is recommended that two matched groups, a test and a control be employed. As an alternative procedure, it might be advisable to have a control group and two test groups. With one test group, the exercises would be presented as warm-ups and not referred to during rehearsals. For the other test group, the warm-ups could be modified and used as techniques for rehearsing songs, as in Appendix B.

Future researchers should explore the possibility of measuring performance acoustically with state-of-the-art technology. Pretests and posttests could be performed to determine optimal frequencies and distribution of partials for certain vowels which affect tone quality. In this way the researcher could ascertain changes in choral tone quality. However, the problem of determining whether a

given harmonic distribution would be termed pleasing, acceptable, or good, would still exist.

A more exact rating form could be designed, one which would include clearly defined descriptors. However, experienced choral directors tend to have developed set opinions of what constitutes an acceptable sound. Terms could be defined for the judges, but might not be utilized by them in the evaluative process.

Future researchers should recruit a larger number of evaluators. The total responses should be great enough to allow for adequate statistical testing.

This initial study has provided groundwork for further studies of the use of movement and imagery by choral singers. Testing in a field situation is always difficult because of the great number of variables present. McCoy (1986) emphasizes such difficulties in conducting research with "intact" choral ensembles (p. 62). Such factors may account for the evident lack of research into movement and imagery in choral rehearsals.

A number of choral directors are employing movement and imagery with their singers. This study provides a first step in discovering whether or not the combination of these two techniques is a significant tool in developing quality choral performance.

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Appendix A

Adams Warm-up Exercises Used in the Study

Vocal Workout Exercises

I. 1. Resonance, air flow

(Circular hand movement by ear, arm extension up)

SA
thoh ay ah

• Recommended starting pitch
•• Highest pitch of exercise

TB
thoh ay ah

I. 2b. Resonance, relaxation of facial muscles

(Index finger draws circles in middle of forehead or above head)

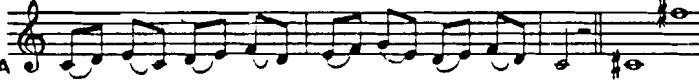
SA
bee bee bee bee bee bee bee bee


TB
bee bee bee bee bee bee bee bee

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III. 8. Unification of vowel sounds, resonance, extended phrasing
(Candy kiss, oreo cookie)

SA 
lah_ beh_ dah_ meh_ nee_ poh_ too_ lah_ beh

TB 
lah_ beh_ dah_ meh_ nee_ poh_ too_ lah_ beh

III. 9. RELAXATION
(Puff out cheeks)

SA 
dou-ble bub-ble dou-ble bub-ble gum

TB 
dou-ble bub-ble dou-ble bub-ble gum

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Appendix BScript for Orpheus and His Lute

April 20, 1993

1. First let's mark cut-offs. Get your pencils. (Mark breaths.)

2. Now let's sing it on "loh". Remember in the warm-ups the "lah beh dah meh nee poh"--sing that "oh", with the vertical Oreo cookie or the Hershey's kiss in your mouth. (Sing through song. Fix notes.)

3. Now would you sing the words, but take your hand and make that circle beside your head and have it arch out at the end of each phrase? Some of the phrases are uneven in length, but just keep the circle going. What we want is a sense of the melody constantly flowing, going forward, going somewhere.

Script for I Hear A Harp

April 27, 1993

1. Let's remind ourselves about the "ee-oh" exercise. Sing a little of that and make the arching forward circles. (Sing exercise.)
2. Now would you sing *I Hear A Harp* on "ee-oh"? Start on "ee" and change syllables with every note. And make circles. Put your finger in Page 4 so you can flip with one hand and keep making the circles as we turn the page.

Listen to each other and match your "ee" and "oh" vowels.

Lots of space.

Very legato.

Think arch.

3. Now sing on the words, but keep the feel of the "ee-oh" sound and the arching phrases.

Appendix CRehearsal Log

4/20/93

Orpheus With His Lute

I followed the script exactly, except that instead of telling the choir the reason for making the circle gesture, I asked why they thought we were doing that. Suzie answered, "Flow." I said, "Yes--that sense of the flowing of the melody, it's always going forward, it's going somewhere."

4/27/93

Warmup Exercises

In doing the exercises, I forgot "ee-oh" and inserted it after "Lah Beh Dah," so it was out of sequence on this one day.

I Hear A Harp

I followed the script exactly.

Ladybug

No script. I gave them dynamics, and we sang through it.

4/29/93

The Posttest Recording

Ladybug

Prior to taping I mentioned dynamics only.

Orpheus With His Lute

Prior to taping I reviewed "Lah Beh Dah." I mentioned flow and cutoffs.

I Hear A Harp

Prior to taping I reminded the group of singing the song on "ee-oh." During the taping I held up my hand like a vertical Oreo.

Appendix D

EVALUATOR QUESTIONNAIRE

Please complete the following statements:

I have been a choral director in some capacity for _____ years.

I taught (have taught) music in the public schools for _____ years.

I taught (have taught) music on the college level for _____ years.

I taught (have taught) private voice for _____ years.

I was (have been) a church choir director for _____ years.

I have served as a guest choral clinician and/or adjudicator at workshops and festivals for _____ years.

My area of concentration while in school was (i.e. voice, piano, instrument) _____.

Appendix EInformation letter

1718 Belmont Court
Emporia, KS 66801
May 8, 1993

Dear ,

Thank you for agreeing to be an evaluator for my Masters thesis project.

Enclosed you will find a cassette tape, a brief questionnaire, and six Likert rating scale sheets. Also enclosed is a return address label and return postage totalling \$1.21.

Please complete the questionnaire.

On the tape you will find, in random order, six choral selections, two renditions each of three songs: "Ladybug" by Brahms, "Orpheus With His Lute" by Vaughan Williams, and "I Hear A Harp" by Brahms.

There is a Likert scale sheet for each of the six selections. The sheets are arranged in the same order as the selections appear on the tape. The same statements appear on each rating sheet, except that there are two statements about unified vowels for each rendition of "I Hear A Harp."

You will be rating aspects of tone quality. Please look over the scale to become familiar with the statements which you will use for evaluating the recordings. Please listen to each rendition only once. Listen to Selection #1. Then complete the evaluation sheet for Selection #1. Next listen to Selection #2 one time only and complete the evaluation sheet for it, and so on through all six selections. It is not your job to compare renditions of the same song, but merely to evaluate each on its own.

When you have completed the listening and the sheets, please place the sheets and the tape in the envelope, affix the new address label and stamps, and place in the mail to me.

Again, thank you for your help. If you have questions, please feel free to call me at (316) 343-2645.

Sincerely,

Meredith Bechtel

Appendix FSelection Rating SheetsSELECTION #1
ORPHEUS WITH HIS LUTE

Please listen to Selection #1, "Orpheus With His Lute." Then circle the number which most closely corresponds to your opinion about the statement to the left.

	Strongly Disagree	Disagree Somewhat	Don't Know	Agree Somewhat	Strongly Agree
Tone is bright.	5	4	3	2	1
Tone is dark.	5	4	3	2	1
Tone is thin.	5	4	3	2	1
Tone is warm.	5	4	3	2	1
Tone lacks focus.	5	4	3	2	1
Tone is relaxed and free.	5	4	3	2	1
Tone is blended.	5	4	3	2	1
Tone is shrill.	5	4	3	2	1
Tone is resonant.	5	4	3	2	1
Tone is breathy.	5	4	3	2	1
Tone is harsh.	5	4	3	2	1
Vowels are unified.	5	4	3	2	1

Please add any comments you wish:

SELECTION #2
I HEAR A HARP

Please listen to Selection #2, "I Hear A Harp." Then circle the number which most closely corresponds to your opinion about the statement to the left.

	Strongly Disagree	Disagree Somewhat	Don't Know	Agree Somewhat	Strongly Agree
Tone is bright.	5	4	3	2	1
Tone is dark.	5	4	3	2	1
Tone is thin.	5	4	3	2	1
Tone is warm.	5	4	3	2	1
Tone lacks focus.	5	4	3	2	1
Tone is relaxed and free.	5	4	3	2	1
Tone is blended.	5	4	3	2	1
Tone is shrill.	5	4	3	2	1
Tone is resonant.	5	4	3	2	1
Tone is breathy.	5	4	3	2	1
Tone is harsh.	5	4	3	2	1
Vowels are unified within sections.	5	4	3	2	1
Vowels are unified between sections.	5	4	3	2	1

Please add any comments you wish:

SELECTION #3
LADYBUG

Please listen to Selection #3, "Ladybug." Then circle the number which most closely corresponds to your opinion about the statement to the left.

	Strongly Disagree	Disagree Somewhat	Don't Know	Agree Somewhat	Strongly Agree
Tone is bright.	5	4	3	2	1
Tone is dark.	5	4	3	2	1
Tone is thin.	5	4	3	2	1
Tone is warm.	5	4	3	2	1
Tone lacks focus.	5	4	3	2	1
Tone is relaxed and free.	5	4	3	2	1
Tone is blended.	5	4	3	2	1
Tone is shrill.	5	4	3	2	1
Tone is resonant.	5	4	3	2	1
Tone is breathy.	5	4	3	2	1
Tone is harsh.	5	4	3	2	1
Vowels are unified.	5	4	3	2	1

Please add any comments you wish:

SELECTION #4
ORPHEUS WITH HIS LUTE

Please listen to Selection #4, "Orpheus With His Lute." Then circle the number which most closely corresponds to your opinion about the statement to the left.

	Strongly Disagree	Disagree Somewhat	Don't Know	Agree Somewhat	Strongly Agree
Tone is bright.	5	4	3	2	1
Tone is dark.	5	4	3	2	1
Tone is thin.	5	4	3	2	1
Tone is warm.	5	4	3	2	1
Tone lacks focus.	5	4	3	2	1
Tone is relaxed and free.	5	4	3	2	1
Tone is blended.	5	4	3	2	1
Tone is shrill.	5	4	3	2	1
Tone is resonant.	5	4	3	2	1
Tone is breathy.	5	4	3	2	1
Tone is harsh.	5	4	3	2	1
Vowels are unified.	5	4	3	2	1

Please add any comments you wish:

SELECTION #5
LADYBUG

Please listen to Selection #5, "Ladybug." Then circle the number which most closely corresponds to your opinion about the statement to the left.

	Strongly Disagree	Disagree Somewhat	Don't Know	Agree Somewhat	Strongly Agree
Tone is bright.	5	4	3	2	1
Tone is dark.	5	4	3	2	1
Tone is thin.	5	4	3	2	1
Tone is warm.	5	4	3	2	1
Tone lacks focus.	5	4	3	2	1
Tone is relaxed and free.	5	4	3	2	1
Tone is blended.	5	4	3	2	1
Tone is shrill.	5	4	3	2	1
Tone is resonant.	5	4	3	2	1
Tone is breathy.	5	4	3	2	1
Tone is harsh.	5	4	3	2	1
Vowels are unified.	5	4	3	2	1

Please add any comments you wish:

SELECTION #6
I HEAR A HARP

Please listen to Selection #6, "I Hear A Harp." Then circle the number which most closely corresponds to your opinion about the statement to the left.

	Strongly Disagree	Disagree Somewhat	Don't Know	Agree Somewhat	Strongly Agree
Tone is bright.	5	4	3	2	1
Tone is dark.	5	4	3	2	1
Tone is thin.	5	4	3	2	1
Tone is warm.	5	4	3	2	1
Tone lacks focus.	5	4	3	2	1
Tone is relaxed and free.	5	4	3	2	1
Tone is blended.	5	4	3	2	1
Tone is shrill.	5	4	3	2	1
Tone is resonant.	5	4	3	2	1
Tone is breathy.	5	4	3	2	1
Tone is harsh.	5	4	3	2	1
Vowels are unified within sections.	5	4	3	2	1
Vowels are unified between sections.	5	4	3	2	1

Please add any comments you wish:

Appendix G

CHORAL TECHNIQUES CLASS QUESTIONNAIRE

1. My sex is (circle one): Female Male

 2. My year in school is (circle one): Fr Soph Jr Sr

 3. My area of concentration is (circle one): Vocal Instrumental

 4. If Instrumental, my major instrument is_____.

 5. I play piano well enough to accompany soloists or groups
(circle one): Yes No

 6. I have conducted a choir on a regular basis for 3 months or
more (circle one): Yes No

 7. I attended the Treble Clef Concert on May 2, 1993 (circle one):
 Yes No

 8. I am aware of the purpose and/or details of this project
(circle one): Yes No

 9. If Yes, please specify what you are aware of:_____
-
-
-

Appendix HChoral Techniques Class ResponsesSELECTION #1
ORPHEUS WITH HIS LUTE - Pretest

	Strongly Disagree	Disagree Somewhat	Don't Know	Agree Somewhat	Strongly Agree
Tone is bright.	1	3	0	2	0
Tone is dark.	1	2	0	3	0
Tone is thin.	1	4	0	2	0
Tone is warm.	0	1	0	5	0
Tone lacks focus.	1	2	0	3	0
Tone is relaxed and free.	0	3	0	2	0
Tone is blended.	0	3	0	3	0
Tone is shrill.	2	1	0	3	0
Tone is resonant.	0	2	0	4	0
Tone is breathy.	1	2	0	3	0
Tone is harsh.	2	2	2	0	0
Vowels are unified.	0	4	0	2	0

Choral Techniques Class Responses

SELECTION #2
I HEAR A HARP - Posttest

	Strongly Disagree	Disagree Somewhat	Don't Know	Agree Somewhat	Strongly Agree
Tone is bright.	0	0	0	4	2
Tone is dark.	1	5	0	0	0
Tone is thin.	0	1	0	5	0
Tone is warm.	0	4	0	2	0
Tone lacks focus.	0	1	0	3	2
Tone is relaxed and free.	1	2	1	2	0
Tone is blended.	1	5	0	0	0
Tone is shrill.	0	0	0	5	1
Tone is resonant.	0	3	0	3	0
Tone is breathy.	1	4	0	1	0
Tone is harsh.	1	1	0	4	0
Vowels are unified within sections.	0	2	0	3	1
Vowels are unified between sections.	0	4	1	0	1

Choral Techniques Class ResponsesSELECTION #3
LADYBUG - Pretest

	Strongly Disagree	Disagree Somewhat	Don't Know	Agree Somewhat	Strongly Agree
Tone is bright.	1	4	0	1	0
Tone is dark.	1	2	0	3	0
Tone is thin.	3	1	0	2	0
Tone is warm.	0	1	0	3	2
Tone lacks focus.	1	4	0	1	0
Tone is relaxed and free.	0	1	0	4	1
Tone is blended.	0	0	0	4	2
Tone is shrill.	2	2	1	1	0
Tone is resonant.	0	1	0	5	0
Tone is breathy.	2	3	0	1	0
Tone is harsh.	2	4	0	0	0
Vowels are unified.	0	1	0	5	0

Choral Techniques Class Responses

SELECTION #4
 ORPHEUS WITH HIS LUTE - Posttest

	Strongly Disagree	Disagree Somewhat	Don't Know	Agree Somewhat	Strongly Agree
Tone is bright.	2	1	0	3	0
Tone is dark.	1	3	0	1	1
Tone is thin.	1	3	0	2	0
Tone is warm.	0	1	0	3	2
Tone lacks focus.	1	3	0	2	0
Tone is relaxed and free.	0	2	0	3	2
Tone is blended.	0	2	0	4	0
Tone is shrill.	1	3	0	2	0
Tone is resonant.	0	1	0	4	1
Tone is breathy.	1	4	0	1	0
Tone is harsh.	1	3	0	2	0
Vowels are unified.	0	1	0	4	1

Choral Techniques Class ResponsesSELECTION #5
LADYBUG - Posttest

	Strongly Disagree	Disagree Somewhat	Don't Know	Agree Somewhat	Strongly Agree
Tone is bright.	0	4	0	2	0
Tone is dark.	0	1	0	4	1
Tone is thin.	2	3	0	1	0
Tone is warm.	0	1	0	2	3
Tone lacks focus.	0	6	0	0	0
Tone is relaxed and free.	0	0	0	6	0
Tone is blended.	0	1	0	4	1
Tone is shrill.	2	4	0	0	0
Tone is resonant.	0	0	0	5	1
Tone is breathy.	3	3	0	0	0
Tone is harsh.	2	4	0	0	0
Vowels are unified.	0	1	0	5	0

Choral Techniques Class Responses

SELECTION #6
I HEAR A HARP - Pretest

	Strongly Disagree	Disagree Somewhat	Don't Know	Agree Somewhat	Strongly Agree
Tone is bright.	0	1	0	4	1
Tone is dark.	2	2	1	1	0
Tone is thin.	2	1	1	2	0
Tone is warm.	1	2	0	3	0
Tone lacks focus.	0	4	0	1	0
Tone is relaxed and free.	1	2	0	3	0
Tone is blended.	0	4	0	2	0
Tone is shrill.	0	2	0	3	1
Tone is resonant.	0	1	0	5	0
Tone is breathy.	1	4	1	0	0
Tone is harsh.	1	1	0	3	1
Vowels are unified within sections.	0	2	1	2	1
Vowels are unified between sections.	0	4	0	2	0

Judges' Responses

SELECTION #1
 ORPHEUS WITH HIS LUTE - Pretest

	Strongly Disagree	Disagree Somewhat	Don't Know	Agree Somewhat	Strongly Agree
Tone is bright.	1	3	0	2	0
Tone is dark.	0	2	0	4	0
Tone is thin.	2	3	0	1	0
Tone is warm.	0	2	0	3	1
Tone lacks focus.	0	2	0	2	2
Tone is relaxed and free.	0	2	0	3	1
Tone is blended.	2	2	0	2	0
Tone is shrill.	2	2	0	2	0
Tone is resonant.	0	1	0	5	0
Tone is breathy.	1	5	0	0	0
Tone is harsh.	2	1	0	2	1
Vowels are unified.	0	3	0	3	0

Judges' Responses

SELECTION #2
I HEAR A HARP - Posttest

	Strongly Disagree	Disagree Somewhat	Don't Know	Agree Somewhat	Strongly Agree
Tone is bright.	0	1	0	5	0
Tone is dark.	0	5	0	1	0
Tone is thin.	1	3	0	2	0
Tone is warm.	0	4	1	1	0
Tone lacks focus.	0	2	0	2	2
Tone is relaxed and free.	0	4	1	1	0
Tone is blended.	3	3	0	0	0
Tone is shrill.	0	0	0	4	2
Tone is resonant.	0	4	0	2	0
Tone is breathy.	0	4	1	1	0
Tone is harsh.	0	0	0	5	1
Vowels are unified within sections.	0	3	2	1	0
Vowels are unified between sections.	0	5	1	0	0

Judges' Responses

SELECTION #3
LADYBUG - Pretest

	Strongly Disagree	Disagree Somewhat	Don't Know	Agree Somewhat	Strongly Agree
Tone is bright.	0	4	1	1	0
Tone is dark.	0	1	1	4	0
Tone is thin.	1	5	0	0	0
Tone is warm.	0	2	0	3	1
Tone lacks focus.	1	3	0	2	0
Tone is relaxed and free.	0	1	1	3	1
Tone is blended.	0	2	1	3	0
Tone is shrill.	1	3	1	1	0
Tone is resonant.	0	1	1	4	0
Tone is breathy.	2	4	0	0	0
Tone is harsh.	2	1	0	3	0
Vowels are unified.	0	3	0	3	0

Judges' Responses

SELECTION #4
 ORPHEUS WITH HIS LUTE - Posttest

	Strongly Disagree	Disagree Somewhat	Don't Know	Agree Somewhat	Strongly Agree
Tone is bright.	0	3	0	3	0
Tone is dark.	0	3	0	3	0
Tone is thin.	0	5	0	1	0
Tone is warm.	0	2	1	3	0
Tone lacks focus.	0	3	0	3	0
Tone is relaxed and free.	0	4	0	2	0
Tone is blended.	1	4	0	1	0
Tone is shrill.	0	2	0	4	0
Tone is resonant.	0	2	1	3	0
Tone is breathy.	0	5	0	0	0
Tone is harsh.	0	2	0	4	0
Vowels are unified.	1	2	0	2	0

Judges' ResponsesSELECTION #5
LADYBUG - Posttest

	Strongly Disagree	Disagree Somewhat	Don't Know	Agree Somewhat	Strongly Agree
Tone is bright.	0	2	0	4	0
Tone is dark.	1	2	1	2	0
Tone is thin.	0	5	0	1	0
Tone is warm.	0	3	0	3	0
Tone lacks focus.	0	3	0	3	0
Tone is relaxed and free.	0	2	0	5	0
Tone is blended.	1	3	0	3	0
Tone is shrill.	0	2	0	4	0
Tone is resonant.	0	1	0	5	0
Tone is breathy.	2	4	0	0	0
Tone is harsh.	1	2	0	3	0
Vowels are unified.	1	2	0	3	0

Judges' Responses

SELECTION #6
I HEAR A HARP - Pretest

	Strongly Disagree	Disagree Somewhat	Don't Know	Agree Somewhat	Strongly Agree
Tone is bright.	0	2	0	2	2
Tone is dark.	1	2	0	2	1
Tone is thin.	2	3	0	0	1
Tone is warm.	2	1	1	2	0
Tone lacks focus.	0	2	0	1	3
Tone is relaxed and free.	2	2	1	1	0
Tone is blended.	4	1	0	1	0
Tone is shrill.	0	1	0	2	3
Tone is resonant.	0	2	0	4	0
Tone is breathy.	0	5	0	0	0
Tone is harsh.	0	1	0	3	2
Vowels are unified within sections.	3	1	0	3	0
Vowels are unified between sections.	3	0	1	2	0

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Meredith L. Bechtel

Signature of Author

August 6, 1993

Date

A Study of the Effectiveness of
Title of Thesis

Movement and Imagery Techniques for

Choral Warm-ups as Demonstrated in

Adams' Videotape, Daily Workout for a

Beautiful Voice

Ray Lopez

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