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thesis entitled

AN INVESTIGATION OF THE EFFECTS OF AURAL MODELS ON THE DEVELOPMENT OF BEGINNING INSTRUMENTALIST'S TONE PRODUCTION AND STYLISTIC UNDERSTANDING

presented by

Peter Owen Conniff

has been accepted towards fulfillment of the requirements for

MM degree in Music Education

Cynthia Taggart
Major professor

Date 8/23/99

An Investigation of the Effects of Aural Models on the Development of Beginning Instrumentalist's Tone Production and Stylistic Understanding

By

Peter Owen Conniff

A THESIS

Submitted to

Michigan State University

in partial fulfillment of the requirements

for the degree of

MASTER OF MUSIC EDUCATION

School of Music

1999

ABSTRACT

An Investigation of the Effects of Aural Models
on the Development of Beginning Instrumentalist's
Tone Production and Stylistic Understanding

By

Peter Owen Conniff

The purpose of this study was to investigate the effects of aural models on the development of elementary students' performance skills. There are two specific problems. First, will students develop a more characteristic tone on their instrument if, during home practice, they listen to an aural model of a professional playing the same instrument that they are studying, and second, will students develop a better sense of phrasing (style) if, during home practice, they listen to an aural model of a professional playing the same instrument that they are studying?

The study was a treatment/control group design. The fifth-grade students (N=56) were randomly assigned to the treatment or control group. The treatment group received a home listening tape of professional instrumentalists playing songs on the same instruments that they were studying. They were to listen to the tape as part of their practice routine. At the conclusion of 12 weeks, the tone quality and phrasing ability of students in both groups were evaluated using rating scales designed for each dimension.

The researcher found no significant differences between the treatment and control groups' scores. However, this finding does not agree with the body of research on modeling.

ACKNOWLEDGMENTS

My appreciation is expressed to Dr. Cynthia Taggart, committee chairperson, for her guidance, support, and encouragement throughout my degree program and during the process of completing this thesis.

I would like to express my thanks to my committee members Dr. John Kratus, and Dr. Gordon Sly for their input toward the preparation of this project and writing of this document. Many thanks to Katherine Berry for her counsel, help and participation in implementing this study.

TABLE OF CONTENTS

LIST OF TABLES

TABLE PAGE

LIST OF FIGURES

FIGURES PAGE

CHAPTER I

INTRODUCTION

Modeling

Teachers have traditionally used many means of conveying information to their students. Among these are lecturing, explanation, and demonstration or modeling. Of these three, modeling has been shown through research to be the most effective (Anderson, 1981; Brand, 1977; Davidson, 1989; Dickey, 1989; Fortney, 1992; Gonzo and Froseth, 1976; McCarthy, 1974; Moore, 1976; Poupolo, 1970; Rosenthal, 1984; Rosenthal et. al. 1988; Sang, 1987; Zucher, 1975). A model, defined by Webster's New World Dictionary (1984), is "a person or thing considered as a standard of excellence to be imitated." Modeling, then, is the act of presenting that standard of excellence through demonstration. Leonard and House (1941 pp. 236-37) stress that students must have an [aural] concept of their performance goal to guide their efforts during individual practice. In other words, students need to have a model.

In relation to instrumental music education, the aural concept students need is the sound of the particular instrument he or she is studying. In this case, the standard of excellence is considered to be a musician that can play an instrument with excellent quality sound and style.

Music Preference and Modeling

Baker (1980) and Peery and Peery (1986) have looked at how the models that young children have during music instruction can affect their preference for different musical styles. Peery & Peery (1986) found that preschool-aged children exposed to classical music consistently over time showed an increased preference for that type of music over popular music. They also

found that preference for classical music from pre- to post-testing atrophied with students who were not exposed consistently.

Baker (1980) worked with third and fourth grade students in the classroom setting to see if their preference for lullabies and capstan chanteys would be affected by appropriate and inappropriate models. He found that those students who were taught the songs with an appropriate style (lullabies sung soft and slow and capstan chanteys sung fast and loud) preferred to listen and perform the songs with that style, while the students who were taught with an inappropriate song style (lullabies sung fast and loud and capstan chanteys sung soft and slow) preferred to listen and perform the songs with that style. Peery & Peery and Baker's research support the idea that children will accept what is taught to them as correct and appropriate. If that is true, and music teachers want children to perform with an appropriate sound on their instruments, a model that demonstrates a correct and appropriate sound should be used to teach young musicians. If an inappropriate model is used, music educators may be teaching students to prefer that inappropriate sound and, later, not know why they are not playing with a better sound or sense of style.

Modeling and Student Performance

If teacher modeling can affect student musical preferences, could they also affect student performance? Several researchers have investigated modeling to determine if it is a superior method to the more conventional lecture and drill style teaching with college aged students (Brand, 1977; Davidson, 1989; Rosenthal, 1984; Rosenthal et. al. 1988), middle and high school aged students (Dickey, 1989; McCarthy, 1974), and elementary aged students (Anderson, 1981; Fortney, 1992; Gonzo and Froseth, 1976; Moore, 1976; Poupolo, 1970; Sang, 1987; Zucher, 1975).

With college aged students, achievement success was seen as a direct result of teacher modeling. In a descriptive study by Davidson (1989), a master teacher in China was observed teaching a lesson. Davidson notes that after the master teacher modeled musical gestures, the student played more musically. Davidson stresses that the important factor in the student's success was the master teacher's ability to present a high quality model. Brand (1977) examined college professor's teaching methods used in college level classroom-management classes. He found that when teacher management behaviors and techniques were modeled instead of taught through verbal lecture, students showed more effective management skills in actual teaching situations.

Rosenthal (1984) was concerned with models presented aurally through an audio cassette-tape recording. She designed an experimental study in which college students were presented with a performance task. They were given a short amount of time to learn an unfamiliar piece of music. Available to the student for guidance was a model communicated with varying types of lecture/performance combinations in the form of an audio cassette-tape recording. Each group in the study had a different combination of lecture and performing on their cassette tape recording. Rosenthal found the group that performed the best had the model only tape. This suggests that even though a teacher is not present, an aural model alone can facilitate student performance. Rosenthal et. al. (1988) continued research with the effectiveness of using an aural model during practice by comparing it to silent practice, free practice, and singing. Of the four ways of practicing the unfamiliar material, the students in the modeling group performed better than the students in the other three groups. This finding supports the above

study that aural models can help student performance and suggests further that it is more effective than other forms of practicing.

On the middle school level McCarthy (1974) observed traditional instruction methods used by many band directors and found that, "The instructional procedures in [instrumental] classes typically involve brief periods of lecture/explanation/demonstration by the instructor, followed by extensive simultaneous drill for all students on the identical exercise." Most of the above procedures involve the students in an activity that does not give them the opportunity to hear what they should sound like. Even though they may have heard the model at the beginning of the class, there needs to be continual presentation of the model to guide student efforts. Dickey's (1989) findings support the work of McCarthy. He found improved melodic and rhythmic discrimination skills with eighth grade instrumental students after a treatment that involved teacher modeling and student imitation.

On the elementary level, Anderson (1981) looked at the use of modeling without verbal guidance in home practice sessions of sixth grade beginning band students. Dependant variables in this study were pitch reading, rhythm reading, tempo accuracy, and intonation accuracy. He found no significant differences between treatment and control groups for any of the dependant variables. His results did not support the research of the above mentioned studies, but did continue to develop the methodology for conducting such a study. Fortney (1992) also researched the affects of modeling without verbal instruction in a practice situation with different results. A design closer to that of Rosenthal (1988) was used. Each student was given a short amount of time to practice an unfamiliar piece of music and then asked to perform it for the researcher. He found that when a student listens to the selection to be played, the resulting performance is better than if

a student is allowed free practice, is asked to silently analyze the music, or is asked to sight read a selection without practice before the performance of the piece.

Fortney's (1992) findings support the earlier work of Poupolo (1970). Poupolo gave students in his experimental group a cassette tape that directed them through a practice session. The session included some verbal instruction followed by performances of the exercises to be learned. The student was to listen to the model and make an attempt to play the exercise. Students in the control group conducted self-guided practice sessions. Poupolo found that the students with the programmed practice sessions that included many aural model presentations scored better than students who conducted self guided practice. Zucher (1975) continued the work of Poupolo with programed practice sessions. He added sections in the programed tape for students to play along with the models to develop the students error detection during performance. As with Poupolo's study, Zucher also found that higher performance scores were attained by students using the programed practice tapes.

The studies discussed above are concerned with models presented by a video- or audio-tape recording. During band rehearsal or private lesson time, an instructor often will provide a live model for the students. This requires that the teacher has some performance skill on each instrument he/she is attempting to model. Looking more closely at what skills the teachers possess, Sang (1987) rated first year teachers on their ability to play secondary instruments and compared these ratings to the performance scores of their students after one year of instruction. There was a significant correlation between the teacher ratings and the student performance scores, suggesting

that the higher quality a model teachers are able to present, the higher performance skills their students are able to achieve.

Summary

Every student in music classes possesses a music aptitude that may or may not be realized in that student's current level of achievement. This puts more of the responsibility on the educator to develop better ways to attend to the learning needs of students. It is not acceptable for a teacher to blame a student's lack of musical "talent" for poor achievement. Research has shown that the experience and ability of the teacher affect the achievement of a student. Also, a teacher's ability to present a quality model in the classroom may be the key to a student's success.

One problem instrumental music teachers face is the number of models they need to be able to present. Many teachers are not prepared to model effectively on every instrument that students are learning. One possible solution to this dilemma might be to have students routinely listening to excellent models via tape recordings of professional players. This might provide the good models needed to develop a concept of quality playing that, when combined with the usual and necessary verbal lecture and explanation during classroom experiences, could nurture excellent instrumentalists. Current research should be concerned with finding ways to present these models in the practical educational setting. If educators do not embrace this challenge, their student's preference for musically appropriate playing might be compromised, and students might never realize the outstanding musical achievement their teachers aspire to facilitate.

Purpose and Problems

The purpose of this study was to investigate the effects of aural models on the development of elementary students' performance skills. The problems of this study are as follows:

1) Will students develop a more characteristic tone on their instrument if, during home practice, they listen to an aural model of a professional playing the same instrument that they are studying?

2) Will students develop a better sense of phrasing (style) if, during home practice, they listen to an aural model of a professional playing the same instrument that they are studying?

CHAPTER II

RELATED LITERATURE

Introduction

Presenting tape recorded models in the educational setting is not a new idea. Researchers have investigated the effects of tape-recorded models on performance skills such as rhythm and pitch accuracy, phrasing and articulation, dynamics and tempo (Rosenthal, 1984; Rosenthal et. al., 1988; Poupolo, 1970; Zucher, 1975; Fortney, 1992) This chapter includes discussion of these related studies.

Use of Modeling with Advanced Instrumentalists

Rosenthal (1984) was concerned with instruction that involved both verbal and musical models. The purpose of this study was to compare the success of musical and verbal models, used alone and in combination during practice sessions, on musicians' performance. Verbal models were termed "guides" throughout the study.

The subjects in this study consisted of 44 graduate and upper level undergraduate students studying a woodwind or brass instrument. The students were randomly assigned to one of four treatment groups. Each group's treatment consisted of a different combination of verbal guides and musical models; the groups were Guided Model, Model Only, Guide Only, and Practice Only, in which no verbal guide or musical model was presented.

The subjects were asked to tape record themselves performing an unfamiliar etude after a 10 minute practice session. During the practice session, the Practice Only group, acting as the control, was instructed to practice simply the etude with no outside guidance or no model for the full 10 minutes. The Guide Only group received a cassette tape with a verbal explanation of the etude, the Model Only group received a cassette tape with

the etude performed three times by a professional violinist, and the Guided Model received a cassette tape with combined verbal explanation and performed excerpts of the etude. After listening to the cassette tape, the students had three minutes to practice before recording the etude. Two independent judges rated each subject's performances by comparing the recordings to a score of the etude. The judges evaluated pitches, rhythms, articulation/phrasing, dynamics, and tempo.

The results of the study showed significant differences for all dependent variables except articulation/phrasing. The highest scores were achieved by the Model Only group, followed by the Guided Model group, and the lowest scores were achieved by the Practice Only and Guide Only groups.

Rosenthal concluded that different modeling conditions can affect subjects' performance. Rosenthal noted that, although the Guided Model was designed to be most effective, as it attempted to highlight the critical areas of the piece, the guide may have actually hindered the student's ability to perform accurately the etude. The study shows that pure modeling, without any added verbal explanation, is most effective in music instruction over a short period of time and that verbal explanation alone is no better than unguided practice. Rosenthal suggests that if verbal explanation must be used, it should be used in conjunction with modeling.

Rosenthal clearly showed the short term benefits to using an unguided model of the material being studied by the student. Three questions arise for future research from the results of this study. First, this study used advanced college level musicians as subjects. Would the same results be gained by using a population of elementary-aged beginning band students? Second, Rosenthal addressed pitches, rhythms, articulation/phrasing, dynamics, and tempo but not tone quality. Would the use of recorded models have an effect on

students' tone quality as well? Third, Rosenthal's models were meant to present exactly what the student was required to perform at the end of the treatment period. Would a student, who listened to a model presenting the proper tone quality of the student's particular instrument and phrasing of the same type, be able to generalize what they have learned aurally to new music?

Rosenthal, Evans, Greenwalt, and Wilson (1988) conducted a study comparing different practice conditions including modeling. The purpose of this study was to determine the relative effectiveness of silent practice, modeling, singing, and free practice in helping music students to master a musical selection quickly. The subjects for this study were sixty graduate and upper-level undergraduate woodwind and brass majors attending a college of music. Each subject was randomly assigned to one of five treatment groups and worked with the researchers individually throughout the study.

When each subject entered the research room, he or she was presented with an etude and given appropriate instructions on how to practice, depending on his/her assignment to a treatment group. Members of the modeling group were instructed to listen to a recording of the etude while they watched the score. The singing group members were instructed to learn the etude by singing it through in a full voice using a keyboard to find pitches as necessary. The silent analysis group members were instructed to visually study the music for 3 minutes. The free practice group members were instructed to continually play through the etude for 3 minutes. Finally, members of the control group were given an unrelated etude to practice for the 3 minutes. At the end of the practice session the subjects were asked to tape record themselves sight reading the experimental etude to the best of their ability. Each recorded performance was evaluated in terms of note, rhythm, and articulation accuracy on a beat by beat basis, in terms of phrasing

or dynamics on a right or wrong basis, and in terms of tempo on the basis of the number of seconds student performance time deviated from the model's performance time.

The results indicated significant differences in performance of rhythm, phrasing, dynamics, and tempo and indicated non-significant results in performance of notes and articulation. The subjects in the modeling group attained the highest scores in all areas except rhythm. Rosenthal et. al. concluded the most important finding to be that, for quick learning, simply hearing the model without practice was just as effective as practicing without hearing the model.

Rosenthal et. al. have shown modeling to be a effective way to convey musical information to college-aged student over a short period of time. Three questions arise after the review of this study. First, would a practice session that includes listening to a model in addition to the opportunity for practice increase the quality of the recorded performance? Second, would a practice condition that includes listening to a recorded model over several practice sessions benefit the student to a greater degree than a one-time, three minute practice session? And third, would the same results have been seen if the subjects had been elementary-aged students?

There is research that has shown modeling to be beneficial for elementary-aged students. Studies by Poupolo, 1970; Zucher, 1972; and Fortney, 1992 that focus on modeling and younger musicians are discussed below.

Use of Modeling with Younger Instrumentalists

Poupolo (1970) was concerned about the lack of guidance students receive during individual practice time. This study investigated how programmed instruction using cassette tapes would increase the efficiency of the individual practice session. The two objectives most relevant to the present study were 1) to develop self-instructional practice material on recorded tape from assigned lesson material and 2) to test the feasibility of structured practice with this new material to aid learning of concepts and developing skills for performance on a musical instrument. Poupolo set out to invalidate many null hypotheses. Most relevant to the present study was the null hypothesis that structured practice with recorded tapes of programmed material would not produce a significant difference in performance achievement.

The subjects for this study were 52 fifth-grade beginning trumpet and cornet students from six elementary schools. The sample was all boys taught by the same teacher; factors of gender and instructor influence were not involved in the analysis. Subjects were pre-tested in terms of music achievement, social status, and IQ, then randomly assigned to either the experimental or control group. The effects of social status and IQ on the results of this study were included in null hypotheses but are not relevant to the present study. Therefore, they will not be discussed here. For the next ten weeks, subjects participated in the band program, but each group had different practice instructions. Subjects in the experimental group practiced each day for the next ten weeks with practice tapes that guided each practice session. The practice tapes included a model performance of the weekly material, opportunities for student response, reinforcement listening, and verbal instructions and reminders. Piano accompaniments were used during model

performance, student response, and reinforcement listening sections of the practice tape. The control group practiced the same material as the experimental group but without the practice tapes. Instead, their practice session was self-directed and lasted as long as the experimental group sessions. At the conclusion of the ten weeks, both groups were post-tested using the Watkins-Farnum Performance Scale. This is a series of sight reading exercises that get progressively more difficulty. One point is awarded for each measure of the exercise played correctly. The measure is considered correct if all the following factors are performed without error: the factors are pitch, tempo, length of note, expression, slurs, rests, pauses, and repeats. Any error negates the point for that measure.

The results indicated that programmed practice produced superior performance to non-programmed practice. Also, subjects in the programmed-practice group who pre-tested with above-average music achievement showed significantly better performance achievement than those who pre-tested with below-average music achievement. Subjects in the non-programmed practice group showed no significant difference in performance achievement between subjects who pre-tested with above- and below-average music achievement. Poupolo (1970) concluded that programmed practice can improve the performance of all elementary students, regardless of their current music achievement. He also found this type of guided practice, with every step of the session cued verbally and the music to be learned presented with an aural model, to be a more efficient way to improve the performance of young musicians.

After review of this study, two issues are noted by the researcher. First, by using elementary-aged students who are just beginning their instrumental instruction, Puopolo increases the meaning of his results for public school

music educators. However, Poupolo's sample included only boys studying brass instruments which does not reflect a normal and diverse public school population. Would the same results be found, then, using a diverse population of students including girls and boys studying woodwind and brass instruments? Second, cassette tapes are used to provide performance models for individual practice. They also present the material being studied by the students with verbal instructions to guide their practice. Could practice tapes with no verbal directions, as used by Rosenthal et. al. (1988), and material not being studied by the student improve the performance of elementary-aged students? In other words, can students generalize the musical information on the tapes to the selections they are working on in band.

Zucher (1975) continued the work of Poupolo (1970) by looking at programmed instruction in relation to students' abilities to detect errors and adjust during simultaneous feedback instead of during confirmation feedback. Simultaneous feedback occurs when the student plays the tune along with a recorded model and is required to aurally check his or her performance with the model. In confirmation feedback, the student listens to the model after he or she has performed the tune to determine if there were any mistakes. The purpose of this study was to compare model-supported practice (similar to Poupolo's programmed practice sessions) and traditional self-directed practice in terms of gross pitch discrimination (exceeding +/- 100 cents), tempo stability, pitch matching, fingering and slide position errors, rhythm errors, and time spent in practice.

The subjects for this study were 43 beginning fourth- fifth- and sixth-grade trumpet, horn, trombone and baritone students enrolled in their public school band programs. Each subject was randomly assigned to an experimental or control group during the first week of the study. Every

following week, the groups rotated treatments. This rotation allowed both weekly and cumulative measurements to be included in the results. The study ran for 6 weeks.

Students had a 15 minute lesson each week to test the mastery of the previous week's material, make corrections on that material, collect the tapes and books from the previous week, assign new material, and give out practice tapes and books for new material. Students were held accountable for their practice time by two methods. First, fifteen students were randomly selected to tape record a few of their practice sessions, and second, all students noted their practice times on a practice chart. The accuracy of the chart was verified by a parent signature. A reward system was used to promote honesty in practice time reporting and attendance at the scheduled lessons. One token was given for attending, another for bringing everything they needed, and another for having a complete and verified practice record. Three tokens resulted in their being given a bag of candy at the end of the lesson.

The results of the study showed that model-supportive practice is more effective than traditional practice in relation to gross-pitch discrimination, pitch matching, rhythmic accuracy, and time spent in practice. Through the analysis of the data, Zucher concluded that achievement was not affected by the amount of time spent practicing. He suspected that many students increased their practice time because the length of the tape was longer than their normal practice session. Still, it was the increased quality of practice time due to the practice tapes that influenced the improvements shown in the results rather than the increased quantity.

These findings support the present study because they show that presenting a quality model in an individual practice session is an effective way to improve a student's performance achievement. Three issues are noted

here by the researcher. Zucher showed that students have the capability to discriminate and adjust for pitch differences in their playing as compared to the tape recorded model. Could students exhibit the same aural discrimination with respect to tone quality and phrasing? Second, the use of only brass players for the population is a limiting factor in this study's results. Although it is broader than that of Poupolo, who used only trumpet and cornet students, future studies could utilize a population more representative of public school band programs. And third, the study lasted 6 weeks. Would the benefits increase if the treatments were used for a longer period of time?

Fortney (1992) was also concerned with modeling as a teaching technique for elementary instrumental students. The purpose of his study was to determine the relative effectiveness of modeling and silent analysis on the performance ability of advanced elementary school instrumentalists.

The subjects in his study were 40 second-year, elementary-school instrumentalists enrolled in the band program. They were randomly assigned to one of four groups: Modeling, silent analysis, free practice, and control. All students were asked to sight read an unfamiliar etude as a pretest measure. The researcher continued with the following procedure.

The subjects in the modeling group were instructed to listen to a tape recording of the etude, practice for two minutes, and then record themselves performing the etude. The subjects in the silent analysis group were instructed to rehearse the etude mentally for two minutes while looking at the score and then record their performance. The subjects in the free practice group were instructed to practice the etude on their instruments for two minutes and then record their performance. The subjects in the control group practiced an unrelated etude for two minutes and then were asked to sight read the etude. The recordings were scored by giving one point for each

accurately played measure. The dependent variables were pitch, rhythm, and articulation. Sound quality, interpretation, and dynamics were not examined. If any of the variables in a given measure were played incorrectly no point was awarded for that measure.

The results were based on the gain scores from pre- to post-test. The modeling groups showed the greatest gains, followed, in descending order, by the silent analysis, free practice, and control groups. The modeling group scores were the only scores that showed a significant difference from the control group scores. Therefore, he concludes that modeling was the most effective practice method. He suggested that modeling should be used by band instructors to help make their students' practice sessions more meaningful and productive.

Fortney's study is similar to the Rosenthal (1984) and Rosenthal et. al. (1988) studies in that both use tape recorded models during a one time practice session. He showed that the results shown in college-aged students can be seen in elementary-aged students. Would these results be the same if a practice condition similar to Fortney's was used by students over a longer period of time? Fortney was concerned with pitch, rhythm, and articulation, and did not focus on tone quality or phrasing. Would the same practice conditions produce the same results with respect to tone quality and phrasing and, if positive, would those results be magnified if the practice conditions were used over a longer period of time?

Summary

These studies show that modeling is an effective method of teaching instrumental music to students. Rosenthal (1984) was concerned with the effects of models and verbal guides, alone and in combination, on student performance. Performances were scored in relation to accuracy of notes,

rhythms, articulation, phrasing, dynamics and tempo. Using the same dependent variables, Rosenthal et. al. (1988) studied how a practice condition using modeling compared to the practice conditions of silent analysis, free practice and singing. Poupolo (1970) was concerned with programmed practice during home practice sessions. He developed a practice tape that included verbal instruction guiding each step of the practice session interspersed with models of each exercise. Students were evaluated on their ability to sight read with accurate pitch, rhythm, expression, and to follow music symbols such as repeats and slurs. Zucher (1975) was also concerned with guided home practice tapes on which the entire session was verbally directed with aural models of the exercises to be learned. He evaluated his students rhythm accuracy and, unlike the other researchers mentioned here, on gross pitch discrimination, pitch matching, and time spent in practice. Fortney (1992) returns to similar questions posed by Rosenthal et. al. (1988) and compared the practice conditions of modeling, silent analysis, free practice, with a control group whose members sight read their performances. None of these researchers looked at the effects of modeling on tone quality development.

In all five of these studies, slightly different populations were used. Rosenthal (1984) used 44 subjects. Male and female college students learning woodwind and brass instruments were included in the study. They were studying at the graduate and advanced-undergraduate level. Rosenthal et. al. (1988) used the same type of population except that the number included in the study was increased to 60. Poupolo (1970) included fifth-grade trumpet and cornet players just beginning their instrumental instruction. All of the 52 subjects were boys. Zucher (1975), like Poupolo (1970), used only brass students but included both girls and boys. He also expanded the grade-level range of the students to fifth- and sixth-graders. Fortney (1992) had a reduced

number of subjects having only 40 and, unlike Poupolo (1970) and Zucher (1975), he included both woodwind and brass instrumentalists. Departing from both Poupolo(1971) and Zucher (1975), Fortney (1992) used students in their second year of study. None of these researchers used a first year population that included both boys and girls who were learning both woodwind and brass instruments. This population seems most similar to one a normal public-school band program might have, lending to the generalizability of results.

Each of these researchers designed a study using varying practice conditions. Rosenthal (1984) had her subjects practice for 10 minutes using the prescribed practice treatment before the performance was recorded. The subjects were scored on the performance of the music they had practiced. Rosenthal et. al. (1988) again used a one time practice session but reduced the time allotted to 3 minutes before a performance was recorded. The students were scored on the performed of the music that they had practiced. Fortney (1992) also used a short, one-time practice session before the performance was recorded. He further reduced the length of the practice session to 2 minutes. Again the students were scored on the performance of the music that they had practiced. Zucher (1975) used a much longer treatment of six weeks. Students in the experimental group used the tapes during home practice and were scored weekly on the performance of that weeks material. Poupolo (1970) also used an extended treatment period of ten weeks. The students practiced material to be learned in class but were tested on different music that was sight-read by the student. None of the researchers except Poupolo (1970) tested their subjects on how well the students transferred their knowledge to new musical situations.

From an investigation of this literature, it is apparent that modeling is an effective way to teach instrumental music to students at all levels of development. There has been some evidence that the learning is generalized to new musical situations (Poupolo, 1970). A review of this literature also shows that the effects of modeling on the variable of tone quality has been overlooked. It is the intent of this study to investigate the effects of modeling on the development of beginning instrumentalists tone quality.

CHAPTER III

METHOD

This chapter presents a description of the research setting, the subjects participating in the study, the research design, the procedures, and the method used to collect and analyze data.

Subjects and Setting

Subjects that participated in this study were 65, fifth-grade beginning band students in their first year of instruction. All of the students were caucasian and were of diverse socioeconomic status. The sample included boys and girls studying woodwind and brass instruments. The woodwind instruments being studied were flute, saxophone, and clarinet. The brass instruments being studied were trumpet, trombone, french horn, and baritone. The students began instruction in September and worked for five months with their band teacher before the study began in February.

Students' regular band experience consisted of two 30-minute rehearsals a week. Each 30 minutes was divided into sectional work and full ensemble work. The band was divided into a brass and percussion group and a woodwind group for the first part of rehearsal and brought together for the remainder of the rehearsal. The students were expected to practice at home in traditional, self-directed sessions. Practice charts and rewards were not used to reinforce good practice habits.

Procedure

This study was approved by the University Committee on Reasearch Involving Human Subjects at Michigan State University (see Appendix A). Letters of invitation to participate in the study were sent home to each student (see Appendix B). The letter described the study and identified the

reasearcher as a graduate student pursuing a master's degree in music education at Michigan State University. Each student in the study returned a letter signed by a parent showing consent for each child's participation.

The researcher introduced the study to the subjects during band class on a day previously agreed upon by the teacher and researcher. On that day, the researcher introduced himself as a student at Michigan State University who is pursuing a master's degree in music education. The researcher told the students that he is conducting an experiment to find out what method of home practice can help students like themselves improve more quickly on their instruments.

All the subjects were randomly assigned a number and then assigned, by number, to the experimental or control group. Students who took private lessons were not included in the study. Their extra guidence may have resulted in higher performance scores that would be attributable to their private instruction and not the study's treatment. To establish group equality, a pre-test was given. "Ba Ba Black Sheep" and "This Old Man" were selected from the Yamaha Band Student Book (Feldstein and O'Reilly, 1988), as the students had been rehearsing them in band rehearsals. Each student was pre-tested by the researcher in a small study room that was prepared with a tape recorder, microphone, stand, and chair. When the students arrived with their instruments and books, they were instructed to turn to the appropriate pages and study the selection. When the tape was started, the student stated his or her number and played the selection. At the conclusion of each performance, the tape was stopped and the student was thanked for his or her efforts.

The audio-taped performances were rated by two independent judges who were knowledgeable in tone qualities of each instrument. The judges were graduate students attending Michigan State University. One was the

researcher who was studying saxophone and music education and the other was studying trombone and wind conducting. If the initial ratings for the treatment and control groups were not statistically comparable, then the analysis would have been adjusted using an analysis of covariance to compensate for that difference. However, the results of the pre-test analysis showed no significant differences between treatment and control groups for tone quality or phrasing, so an analysis of covariance was not necessary.

All subjects participated in their regular band programs directed by their band teachers during the 12 weeks of the study. The subjects in the treatment group received listening tapes in addition to their regular band experience. The listening tapes were to be incorporated in the daily practice routine of the subjects. The subjects were instructed to warm up their instrument, listen to the selections on the tape, and then begin their regular practice session. The listening tapes included folk songs played by professional musicians on the same instruments as the students. For example, the flute players' tape had selections played by a professional flutist and the saxophone players' tape had selections played by a professional saxophonist. The folk songs were in major and minor tonalities and in duple and triple meters. The selections were taken from the individual instrument tapes used with the *Jump Right In: The Instrumental Curriculum*. Each week the students had two to three examples to listen to as part of their practice routine. At the end of the week, the students exchanged the tapes for another tape containing the next assigned listening examples.

Practice records were included on the tape jackets. Seven lines provided represented a line for each day of the week. The students were to record the date they practiced, the amount of time spent practicing, and if they listened to the tape. A parent's signature was required on the last line of the

tape's jacket to verify that the infomation was accurately noted. At the end of each week when the subjects exchanged their tapes, they received a colorful pencil if they had returned the tape, recorded their practice time, and had a parent sign the practice record. Practice records were only given to the treatment group students since they were being used to insure the use of the listening tapes during their already established home pratice routine.

After the 12 weeks of the study were completed, the students were post-tested using "Cherries Ripe" from the student's Yamaha Band Method book (Feldstein and O'Reilly 1988). Subjects were given this piece two weeks before the post-test so that they would have ample time to prepare. Having a prepared piece helped to ensure that the study was measuring the student's ability to produce a quality tone and play with musically appropriate phrasing, not the student's ability to sight read. Some students may have a good sound and stylistic sense when playing prepared music but not when sight reading, especially at this age and experience level.

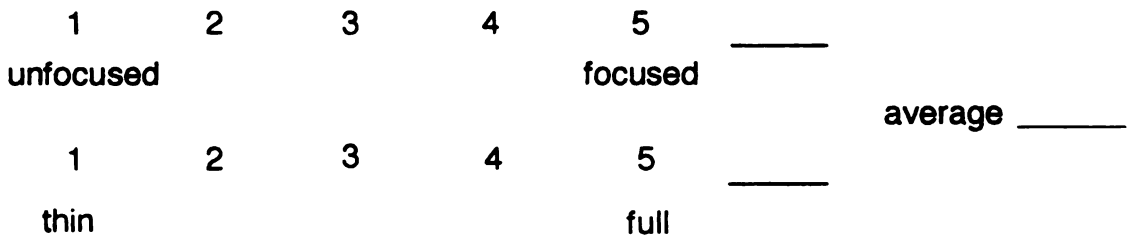
The students tape recorded their performance of this prepared piece in the same manner as the pre-test. Due to a questionable interjudge reliability when the pre-test rating scales were used, they were altered for use with the post-test performances. The interjudge reliability was improved with these new rating scales. Both sets of rating scales are found in appendices C, D, and E, and the post-test rating scales are described in the next section. Two judges, different from those who rated the pre-test performances, rated the post-test tapes using the new tone quality and phrasing rating-scales. Both judges were graduate students at Michigan State University. One was studying clarinet performance and the other was studying saxophone and music education. The researcher then analyzed the scores for significant differences.

Rating scales

The post-test rating scale for tone quality, which was designed by the researcher, was based on a five-point Lickert scale. Robinson and Middleton (1975) state that the production of a good tone is based on a student's aural memory of a good tone. They go on the say that tone is the synthesis of embouchure and breath support. Kohut (1973) concurs by saying that there is no doubt that both embouchure and breath support are essential to good tone quality. So, as students learn to make sounds on their instruments they must master these two skills. First, they must learn to focus the embouchure to control the vibration of either their lips for brass players or the reed for woodwind players. Flute players focus their embouchure to control the shape and size of the air stream. Second, they must learn to support the sound with the appropriate amount of air for their instrument and the particular note to be played. The rating scale then was designed to reflect the fact that both skills play a part in tone development.

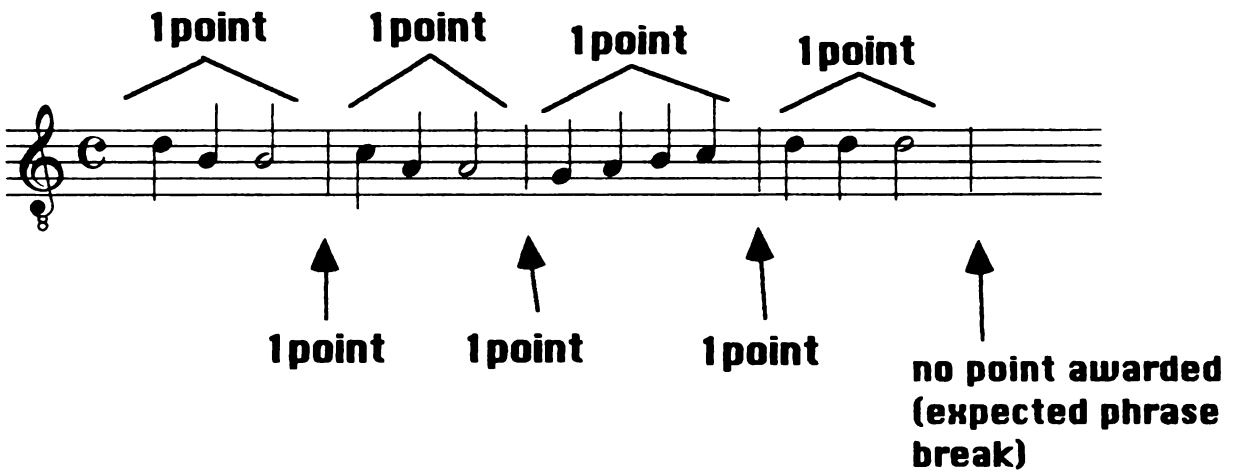
Embouchure development or focus and breath support or fullness were rated separately on a scale of 1 to 5. A "1" represented an unfocused sound on the focus portion of the scale or an unsupported (thin) sound on the fullness portion of the scale. A rating of "5" represented a focused sound on the focus portion of the scale and a well-supported (full) sound on the fullness portion of the scale. The focus score and the fullness score were then averaged to attain a final tone quality rating.

Figure 3.1 Tone Quality Rating Scale



The phrasing ability of the subjects was determined by listening for how they connected their notes into phrases to create complete musical statements. If the student played the selection in 4 bar phrases, as was appropriate for the post-test selection, they were judged to have a good sense of phrasing. More specifically, phrasing sense was judged by awarding a point for each phrasing opportunity in the selection. One point was awarded for each measure that was played in a musically appropriate manner. This means there were no breaks in tempo and the notes were connected enough to present a single musical idea. Another point was awarded for each barline that was included in the subject's phrase. Every barline was not included in the scoring, because there are the standard phrasing points at which the subject is expected to breath or pause. For the post-test selection, there were 28 possible points. Shown below is one of four lines of the post-test music with point labels to show where the judges listened for connected musical ideas.

Figure 3.2 Point assignments for first phrase of post-test selection



The judges used a tally sheet and a score of "Cherries Ripe" as they judged each recording (see appendix E for tally sheet).

The judges were trained before each rating session. Five recorded performances were chosen at random from the performance tapes collected by the researcher. Each example was listened to, rated separately, and then talked about to arrive at consensus on how to use the rating scales. When all felt comfortable with how the rating scales were to be interpreted, the judging session began.

Analysis of the Data

When all the data had been collected, the interjudge reliability was determined between the two judges for each of the rating scales. Intercorrelations between rating scales were determined. A two-tailed T-test was used to analyse the data from each rating scale to determine if there was a significant difference between treatment and control groups. If the scores for the treatment group were significantly higher in phrasing, tone quality or both, it would show that listening to a tape recorded model as a regular part of

practice is more effective than practicing with no recorded model in helping students develop tone quality, phrasing or both.

Chapter IV

RESULTS

This investigation is concerned with whether a practice situation that includes listening to tape-recorded models improves a beginning instrumentalist's tone quality and melodic phrasing as compared to students who do not practice with such listening tapes.

The following statistics were calculated using the collected data: 1) interjudge reliability of judges ratings for the tone quality and phrasing rating scales, 2) means and standard deviations of the rating scale raw scores from the treatment and control groups and, 3) t-tests to look for significant differences between treatment and control group mean scores on phrasing and tone quality.

Interjudge reliability results

Post-test interjudge reliability between the two independent judges was determined for each rating scale (phrasing and tone quality) using the Pearson R correlation. For the tone quality rating scale, reliability was found to be .787 and for the phrasing rating scale, reliability was found to be .778. This represents a satisfactory amount of agreement between the judges' ratings. The intercorrelation between the phrasing and tone quality dimensions was .55. The judges scores were combined for the following calculations.

Means and Standard Deviations

Table 4.1 shows the mean scores and standard deviations for the treatment group and the control group for both tonal and phrasing dimensions of the study. For the tone quality dimension, the treatment group's mean score is 6.13 and the control group's mean score is 6.29. The standard deviation for the treatment group is 1.98 and the standard deviation for the control group is 2.15. For the phrasing dimension, the treatment

group's mean score is 27 and the control group's mean score is 27.43. The standard deviation for the treatment group scores is 9.54 and the standard deviation for the control group scores is 12.51.

Table 4.1

	tone quality		phrasing	
	mean	std deviation	mean	std deviation
control n=28	6.29	2.16	27.43	12.51
treatment n=28	6.13	1.98	27.00	9.54

Results for tone quality

A two-tailed t-test was used to determine if there was a significant difference between treatment and control mean scores for the tone quality rating scale. The mean difference is .16 with 54 degrees of freedom (DF). The t-value is .29 with a p-value of .77. Since the p-value is not less than .05, the established level of confidence, the results are not statistically significant. Table 4.2 shows the t-test results for the tone quality mean scores.

Table 4.2

Results of t-test on tone quality mean scores

Mean Difference	DF	t-value	p-value
.16	54	.29	.77

Results for phrasing

A two-tailed t-test was used to determine if there was a significant difference between treatment and control mean scores for the phrasing rating scale. The difference in the treatment and control mean scores was .43 with 54

degrees of freedom (DF). The t-value was .14 with a p-value .89. Since the p-value is not less than .05, the established level of confidence, the results are not statistically significant. Table 4.3 shows the t- test results for the phrasing mean scores.

Table 4.3

Results of t-test on phrasing mean scores

Mean Difference	DF	t-value	p-value
.43	54	.14	.89

Interpretation of results

The results show no significant difference between the scores of the treatment and control groups in relation to tone quality or phrasing development. The mean scores for control group were even slightly higher than the mean scores for the treatment group. This outcome may have been due to several factors.

The beginning of the study fell several months into the student's instruction. This may have allowed poor playing habits and a poor aural concept of tone and phrasing to develop before the study began. These poor playing habits and/or aural concepts may have resulted in 12 weeks being an inadequate amount of time for observable improvement to manifest itself. Students would need to unlearn those poor playing habits and aural concepts and replace them with new ones.

At the time of the study, the band program had no established system holding students accountable for their home practice habits. It was assumed, though, that the students were practicing to some degree, so there would be only a need to monitor the treatment group's use of the listening tapes. The

failure of a significant difference in the treatment group scores may have been due to a lack of practice all together. The students who were self-motivated enough to practice and did, may have been concentrated in the control group, resulting in the group's higher mean scores.

Based on the practicing assumption, practice records and incentives were only used with the treatment group. This was to insure that the students added the listening tape to their home practice session routine. The reward of a pencil for practicing and returning the tape may not have been incentive enough to spark a desire to practice. In fact many of the tapes were returned with few or no practice sessions recorded. As a result, it was difficult to assess whether students were just not practicing or forgetting to notate their practice times.

It is possible that the students may have experienced nervousness during the performance of their post-test selections, causing them to perform poorly. All effort was made by the researcher to ease the nerves through encouragement and warm up opportunities. Still, the demands made by the school schedule may have caused the researcher and teacher to hurry students through the process, affecting student nerves, concentration and performance accuracy.

It is possible that the students did not have access to a quality tape player. When asked by the researcher and teacher if they had access to a tape player, all treatment group students indicated that they did. However, the tape-players owned by the students may have been of poor quality. This would present a poor example of tone quality and possibly hide the subtleties of phrasing that quality equipment would reveal.

Although music aptitude was not considered as a variable in this study, high aptitude students may have absorbed the information from their teacher

more quickly, making faster gains than the lower aptitude students. It is possible that high aptitude students were concentrated in the control group causing the group's higher mean scores. Aptitude was not measured at the beginning of the study so no data exists for review on this matter.

At the beginning stages of learning to play an instrument, students are learning many things at once; among other things, they have to learn how to blow, to finger, and to read music. It is possible that this study was measuring the students ability to read music rather than the student's ability to play musically with a good sound. The task of reading the notation may have gotten in the way of the student's audiation of the tune and production of the desired tone quality. Stopping to decode a note on the staff could definately get in the way of performing a flowing phrase.

It is possibile that the student's embouchure and diaphramatic control are simply not developed enough to show in performance what he/she may have gained aurally. A year or more may be required for the student to have control enough over these faculties to express what they can audiate.

The interjudge reliability was deemed acceptable, yet it was still somewhat lower than interjudge reliabilities found in previous studies. It is possible that the judge preparation could have been longer and more in-depth. Due to the limited availability of the selected judges, time was short. The judges practiced and discussed answers on 5 practice examples before beginning their independent judging. This may have led to greater subjectivity in scoring. This subjectivity in scoring could have affected the agreement between judges scores reducing the interjudge reliability.

The study relied heavily on the teaching of the band director, since the it was designed to test a practice supplement to regular instrumental instruction. The students were reminded by the researcher to be thinking of

what they had learned in their lessons and band classes while they practiced. In order to produce tone and phrasing like they heard on the tape, they had to employ learning and skills gained from their teachers during band classes. If the instruction that the tapes were supposed to be aiding was poor or inconsistent, the students may not have been gaining the skills needed to achieve the desired tone or phrasing. This was a concern of the researcher during the study. There were two teachers involved in the instruction process. The brass and the woodwind teachers did not teach with the same level of excellence and attention with respect to posture, hand position, embouchure formation and breath support. It appeared that the woodwind teacher was not as well liked as the other teacher. This lack of rapport may have affected the motivation of the students to work hard, affecting their practicing habits and, as a result, the results of the study suffered. The two teachers did not get along, and both had conflicts with the administration of the elementary school. The inner struggle of the music department may have contributed to an atmosphere non-conducive to such a study that relyed so heavily on a successful band program.

Though the results showed nothing of significance, factors such as practice habits, timing of the study, music aptitude, grouping of the students, lack of quality play back devices, judging subjectivity, and a tense learning environment may have played a role in these results. However, it is also possible that spending time listening to musical examples that are not being currently studied and performed by outstanding models as part of a practice routine may have no effect on the tone quality and phrasing of beginning instrumentalists.

CHAPTER V

SUMMARY, CONCLUSIONS, RECOMMENDATIONS, AND IMPLICATIONS

The purpose of this study was to investigate the effects of aural models on the development of elementary student's performance skills. There are two specific problems of this study. First, will students develop a more characteristic tone on their instrument if, during home practice, they listen to an aural model of a professional playing the same instrument they are studying? Second, will students develop a better sense of phrasing (style) if, during home practice, they listen to an aural model of a professional playing the same instrument that they are studying?

Summary

The study was set up in an treatment/control group design. Approximately 56 fifth-grade instrumentalists from a rural Michigan elementary school participated in the study. Only students who were studying wind instruments were included in the study. The students were taught by their instrumental teacher in their regular band program throughout the 12 weeks of the study, because the study was looking at the effectiveness of materials that would supplement the regular band experience of a student. Each student was randomly assigned to one of the two groups, treatment or control, and a pre-test was given to establish equality of the groups.

Students in the treatment group were given an audio cassette tape of professionals playing folk songs on the same instruments they were learning. Each week, a new tape was exchanged for the previous week's tape. Each tape consisted of two or three listening examples that the students were to listen to

at the beginning of their home practice sessions. The control group carried out non-supplemented home practice sessions. To encourage students in the treatment group to use the listening tapes, a practice record was included with each tape. The student recorded the date, the amount of time practiced, and if they listened to the tape. Upon exchanging the tape, the student was rewarded with a colorful pencil if they listened and practiced.

At the end of the 12 weeks, a piece from the students band method book was chosen by the researcher and the teacher to serve as a post-test. Each student individually performed the post-test selection for the researcher, and the performances were audio-taped.

The post-test performances were rated using two separate rating scales by two independent judges, neither of whom were the researcher. The tone quality scale had two elements, focus of sound and fullness, that were scored separately and then averaged. The phrasing scale consisted of a tally of points. A point was awarded for each phrasing opportunity; a phrase opportunity could be performed within a measure or over a barline excluding the barline at the end of every four measures. The judges were trained by the researcher before rating the actual performances. This was to ensure that they listened with the same understanding of the elements being measured.

After the student post-test performances were rated, the data was analyzed for reliability between the two judges and significant differences between the treatment and control groups. The means and standard deviations were also calculated for the post-test scores for the treatment and control groups.

Conclusions

The following conclusions can be considered valid for only the population in this study. The treatment and control groups showed no

significant difference between one another in their development of tone quality or phrasing. These results are in direct conflict with the body of research on modeling. Modeling has been shown effective in improving performance skills by Rosenthal et. al. (1988) and Poupolo (1970) in specific relation to phrasing or expression and in other performance areas such as intonation, rhythmic accuracy, pitch accuracy, and tempo by Rosenthal (1984), Zucher (1975), and Fortney (1992). Since tone quality development was not addressed by the above research, and this study found no significant results, more research needs to be done in this area to support or negate the results of this study. It may be that the material on home practice tapes needs to be material that the student is studying and playing to have any positive effect on tone quality and phrasing development.

Recommendations for Future Research

The following recommendations based on this experiment are concerned with the need to improve the procedures used in this study. Also included are suggestions for further studies on the effects of aural models on the performance skills of phrasing and tone quality.

The fact that the results of this study conflict with other research points to the need for additional research. The study should be replicated with a more effective practice incentive and accountability system. Getting the students to practice what is assigned is essential to discovering possible effects of a modeling treatment. It is also recommended that a school system be chosen that has an established system of student practice accountability in place.

Since the study began well into the school year, the lack of practice accountability may have fostered poor practice habits in this circumstance. Because of this, it is recommended that this study be replicated starting at the

beginning of the school year. This way, the practice ethic and the use of the tapes can be taught from the start, helping to gain valid results.

Students may have been hindered in their tone quality and phrasing development due to their struggle with notational issues. Stopping to decode notes on the staff will certainly interupt breath support and relax the embouchure affecting the students' tone quality and flow needed for good phrasing. It is recommended that this study be replicated using rote songs without notation as the pre- and post-test selections. The students could possibly be taught one or two songs by ear prior to the pre-test and then divided into the treatment and control groups. By the end of the study they would have many songs that they can play by ear in their repertoire. The effects of a supplimental tape may be easier to observe, since students would not be working to read notation.

This study's results did not negate the findings of studies that showed the effectiveness of home practice tapes where studied material is modeled. This study could also be replicated using performances by excellent models of the material being learned by the student. This would be a more direct model of the tone quality and phrasing desired by the teacher and possibly transfer with greater impact to other music they might perform.

Music aptitude was not considered in this study. It would be interesting to see whether exposure to aural models would affect students with high aptitude differently than those with low or medium music aptitude. Such a study could also take into consideration the students current skill level upon starting the study.

Replication of the studies presented in chapter four would be recommended. This would bring the current body of research up to date and keep strengthening the findings of the past 30 years.

It would be interesting to conduct a study concerning aural concepts of music that students use to learn songs on their instruments. If students were required to be able to sing their songs accurately before they could play them on their instruments, would they play them better and be able to deal with reading notation more easily?

Implications

Existing literature supports that modeling positively affects the development of performance skills in beginning instrumentalists. Although the present study does not support this literature, it is possible that further research focusing on tone quality and phrasing will find supporting results. Teachers should experiment formally and informally with new ways to convey musical information through the use of aural models. By doing this, new ideas can inspire new questions. These new questions can lead to new studies that would add to the body of knowledge available to music educators who seek to improve their student's learning.

APPENDICES

Appendix A

HUMAN SUBJECTS FORM

MICHIGAN STATE
UNIVERSITY

February 13, 1997

TO: Cynthia Taggart Dr
204 Music Bldg.

RE: IRB#: 97-035
TITLE: AN INVESTIGATION OF THE EFFECTS OF AURAL MODELS OF THE DEVELOPMENT OF BEGINNING INSTRUMENTALIST'S TONE PRODUCTION AND STYLISTIC CONCEPT
REVISION REQUESTED: N/A
CATEGORY: 1-A
APPROVAL DATE: 02/10/97

The University Committee on Research Involving Human Subjects'(UCRIHS) review of this project is complete. I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS approved this project and any revisions listed above.

RENEWAL: UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Investigators planning to continue a project beyond one year must use the green renewal form (enclosed with the original approval letter or when a project is renewed) to seek updated certification. There is a maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for complete review.

REVISIONS: UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. If this is done at the time of renewal, please use the green renewal form. To revise an approved protocol at any other time during the year, send your written request to the UCRIHS Chair, requesting revised approval and referencing the project's IRB # and title. Include in your request a description of the change and any revised instruments, consent forms or advertisements that are applicable.

PROBLEMS/ CHANGES: Should either of the following arise during the course of the work, investigators must notify UCRIHS promptly: (1) problems (unexpected side effects, complaints, etc.) involving human subjects or (2) changes in the research environment or new information indicating greater risk to the human subjects than existed when the protocol was previously reviewed and approved.

If we can be of any future help, please do not hesitate to contact us at (517)355-2180 or FAX (517)432-1171.

Sincerely,

David E. Wright, Ph.D.
UCRIHS Chair

DEW:bed

cc: Peter O. Conniff

OFFICE OF
RESEARCH AND GRADUATE STUDIES

University Committee on Research Involving Human Subjects (UCRIHS)

Michigan State University
246 Administration Building
East Lansing, Michigan
48824-1046

517/355-2180
FAX 517/432-1171

Appendix B

CONSENT LETTER SENT TO PARENTS

Monday, January 27, 1997

Dear Parents,

I am a graduate student at Michigan State University pursuing a master's degree in music education. In partial fulfillment of this degree, I have chosen to do a research study involving beginning instrumental students. Your school was selected to participate in this study. The following is a description of the study and a consent form giving permission for your child to participate in the study. Participation will not in any way affect the student's band grade and is strictly voluntary.

The study will take the form of an experimental design and last for 12 weeks. This means that there will be two groups of students, both receiving regular band instruction but the home practice technique will be different. The second group will borrow a different listening tape each week to be used during home practice. The results of the study will show if this addition to the home practice routine will improve students playing in the areas of tone quality and stylistic understanding.

The student performances will be rated by two judges twice during the study. The identity of student's performances will remain confidential. If there is no objection to your child's participation in the study, please sign the consent form below and return the bottom portion to Ms. Berry by Friday, January 23, 1997. Keep the top half of this letter for your information. Thank you for your support.

Sincerely,

Peter Conniff

Consent form

[ ] **Yes,** I give permission for my child to participate in the study

[ ] **No,** I do not give permission for my child to participate in the study

Parent or Guardian Signature: _____Date

Appendix C
PRE-TEST RATING SCALES

PRE-TEST RATING SCALE FOR TONE QUALITY

1 produces a sound
2 produces discrete pitches
3 thin , unfocused sound
4 full , but unfocused sound
5 full, focused sound

PRE-TEST RATING SCALE FOR PHRASING

1 Mostly plays note to note with no smooth connections
2 Mostly connects notes in one measure phrases
3 Mostly connects notes in two measure phrases
4 Mostly connects notes in three measure phrases
5 Mostly connects notes in four measure phrases

Appendix D
POST-TEST RATING SCALE SHEET

1)	focus	1	2	3	4	5	
							average _____
	fullness	1	2	3	4	5	
2)	focus	1	2	3	4	5	
							average _____
	fullness	1	2	3	4	5	
3)	focus	1	2	3	4	5	
							average _____
	fullness	1	2	3	4	5	
5)	focus	1	2	3	4	5	
							average _____
	fullness	1	2	3	4	5	
6)	focus	1	2	3	4	5	
							average _____
	fullness	1	2	3	4	5	
7)	focus	1	2	3	4	5	
							average _____
	fullness	1	2	3	4	5	
8)	focus	1	2	3	4	5	
							average _____
	fullness	1	2	3	4	5	
9)	focus	1	2	3	4	5	
							average _____
	fullness	1	2	3	4	5	
10)	focus	1	2	3	4	5	
							average _____
	fullness	1	2	3	4	5	
11)	focus	1	2	3	4	5	
							average _____
	fullness	1	2	3	4	5	

Appendix E
POST-TEST PHRASING TALLY SHEET

1

2

3

5

6

7

8

9

10

11

12

13

LIST OF REFERENCES

LIST OF REFERENCES

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