APPLICATION OF SCRIPTED INSTRUCTION TO
DICHOTOMOUS MUSIC INTERVAL
DISCRIMINATION

by

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ABSTRACT

The purpose of this project was to develop scripted lessons with immediate feedback to improve the accurate identification of note intervals among amateur college musicians. Four lessons were designed to focus on the discernment of musical interval pairs encountered in western music and taught in first semester college music theory courses. Two lessons incorporated familiar song references to aid interval identification. Eighteen volunteer non-music majors watched the four lessons presented live and via prerecorded video. Students scored high on all tests, demonstrating that they were able to accurately discriminate music intervals presented in the lessons. Recommendations for future lesson design and script testing are discussed.
DEDICATION

This dissertation is dedicated to my uncle and best friend, Joseph McDonald, who has been by my side, with encouragement and support, every step of the way.
LIST OF ABBREVIATIONS AND SYMBOLS

\( F \)  
Fisher’s \( F \) ratio: A ratio of two variances

\( M \)  
Mean: the sum of a set of measurements divided by the number of measurements in the set

\( p \)  
Probability associated with the occurrence under the null hypothesis of a value as extreme as or more extreme than the observed value

\( SD \)  
Standard deviation
ACKNOWLEDGEMENTS

This dissertation would not have been possible without the guidance and encouragement of several individuals who in one way or another provided me with their valuable assistance in this important period of my life. This is a great opportunity to express my respect to my advisor, Dr. Carl Hancock, along with Dean Robert Olin, who awarded me this research assistantship, which has been immensely helpful to me. I am also pleased to thank additional members of my committee: Dr. Hank Lazer, Dr. Andrea Cevasco, and my long-time friend and mentor Dan Drill, for their encouraging words, thoughtful criticism, and time and attention during busy semesters. I, too, would like to thank Dr. Kenneth Ozzello for his moral support, despite being newly appointed.

I would like to acknowledge the influence of Dr. Marvin Johnson, who nominated me for my previous theory assistantships, along with Dr. Thomas Robinson and Dr. Stephen Peles, my supervisors during the positions. I am grateful for their support and guidance. In addition, I owe a great deal to all the students from my dictation classes, who, through their own comments and questions, have encouraged, supported, and enlightened me.

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INTRODUCTION

Pitch intervals are the fundamental building blocks for understanding and making sense of the sounds heard in western music. The process of ear training begins with learning to reproduce and identify musical intervals, a process similar to learning to associate the sounds of the alphabet before constructing written words and sentences. One must first learn to hear musical intervals before understanding more complex sounds, such as the ones covered in college-level musicianship classes.

A series of four interval-identification lessons were designed to prime the aural skills and musicianship of incoming music majors for the demands of college freshman music theory and musicianship courses. Intended for use outside the classroom through prerecorded video presentation, programmed-learning techniques were incorporated. The history and effectiveness of program-learning suggests that the availability of scripted materials with elements of corrective immediate feedback minimizes time dedicated to basic drill during class instruction, permitting additional time dedicated to tasks effectively learned through direct teacher-student, and is as effective as live instruction interaction (Pressey, 1926).

In general, the designed lessons seem to aid in the accumulation of experiences in successful music interval identification, providing a foundation for the development of fundamental ear-training and dictation skills expected from freshman music majors. Availability of music interval training prior to enrolled instruction in music theory classes may be the next step in ensuring successful mastery of music theory skills during the first year in college.
SCRIPT CREATION

Four scripts were created to meet the expectations for the project. Each script was designed as a brief ten-minute lesson on a specific interval pairing. The ten-minute lesson cap was selected to accommodate the attention span of adults in lecture settings (Johnstone & Percival, 1976). Each lesson was formatted to begin with a discussion of the examined intervals, opportunities to experience the intervals, listening transfers to known songs, and practice with identification questions paired with immediate corrective feedback. Each practice session contained seven examples. To test student retention and learning, a ten-item interval test without immediate feedback followed each lesson. The four lessons presented intervals in order of increasing difficulty; beginning with the discernment of whole and half-steps and concluding with the sound of the major third and minor sixth.

Whole-steps and Half-steps

The objective of the first lesson script was to teach the accurate discernment of intervals performed as whole and half-steps—the most basic intervals in western music. See Appendix A. This lesson provides a brief overview of whole-steps and half-steps followed by a practice session and a series of examples in the form of a test. The practice and test sections were based upon interval identification with only the examined intervals played in the examples. Each example was played with the pitches together (i.e., harmonically) and apart (i.e., melodically). The student was instructed to determine whether the tones were a whole or a half-step apart.
**Diminished and Perfect Fifths**

The objective of the second scripted lesson was to develop students’ ability to discriminate the sound of the tri-tone from the sound of the perfect fifth. See Appendix B. This lesson script references experiences gained in the first script and introduces the application of familiar songs to provide aural cues for identifying intervals. Each example was played harmonically and melodically. The student was instructed to determine whether the tones were an augmented fifth or a perfect fifth apart for the practice and test.

**Major Sixth and Major Seventh**

The objective of the third lesson was to help students discern the sound of the major third with the minor sixth. Similar to the previous scripts, the lesson begins with an overview of the intervals, followed by listening examples and a series of relevant intervals or songs. See Appendix C. The practice and test sections were based upon interval identification with only the examined intervals played in the examples. Each example was played harmonically and melodically. For the practice and test, students were instructed to determine whether the tones were a major sixth and major seventh apart.

**Major Third and Minor Sixth**

The fourth lesson was designed to facilitate identification of the sound produced by the major third and minor sixth by college students. See Appendix D. Identical to the previous lessons, experiences hearing and discerning the new intervals were followed by practice examples with feedback and a test. Each example was played harmonically and melodically. For the test and practice examples, students were instructed to determine whether the tones were a major third or a minor sixth apart.
VIDEO CREATION

To determine the effectiveness of the scripts when converted into an electronic format, the whole-step and half-step script and the major sixth and major seventh script were taught by the researcher and video recorded. Each video was captured as a series of short video segments divided into logical breaks found in the script’s text; filming brief sections aided the analysis and selection of the best performances “takes” for constructing the final video.

A Sony “Handycam” Full HD Camera, AVCHD Model Number HDR-TD10, was used to capture the videos of the researcher executing Script 1 and 3. Videos were filmed at the University of Alabama, Moody Music Building, room 256 on three different dates.

The process of recording the first video took approximately four hours and the second video took approximately two hours. The takes were then viewed, edited, and compiled using Handbrake and iMovie software on an Apple iMac computer. Final versions of the videos were exported to QuickTime movie files.
SCRIPT TESTING

To test the effectiveness of the four lesson scripts, a simple project was designed to see whether students with no training in music theory were able to successfully pass the test for each script, thereby meeting the instructional objectives for each lesson. Moreover, considering that the scripts were intended as supplemental instruction to a regular music theory course, two lessons were video recorded and used to determine if the scripts could be effectively migrated to a digital storage format without losing instructional effectiveness. An application to the University of Alabama, Institutional Review Board was filed and approval obtained to test the effectiveness of the scripts using students from the University of Alabama. See Appendix E.

Eighteen undergraduate students not majoring in music, were recruited from three University of Alabama concert band classes. Each student was screened to ensure they had received no prior instruction with ear-training and were between the ages of 19-21. The following procedures were used to solicit the student volunteers.

Concert and Symphonic Band Recruiting

In order to recruit student volunteers, emails were sent to the instructors of three regularly scheduled concert band classes. The emails requested five minutes of their allotted class time in order to inform students of the project and invite them to participate. After receiving permission, university students enrolled in these concert band classes were solicited. Students in the concert and symphonic bands were distributed recruitment posters describing the project, time commitment, purpose, and requirements for participation. The following script was read aloud:
Hello everyone, thank you for your time today. I am Carla Stovall, a Ph.D. student here at the University of Alabama. As part of my dissertation, I am testing the effectiveness of a video-based ear-training program on non-music major musicians. To participate you must be at least 19 years old, must not be a music-major, and must be available on April sixth at 7:30 p.m. If you are interested in participating there is a sign-up sheet on the table near the door. The total time requested of you is one 60-minute setting in which you will learn about musical intervals. Participation is completely voluntary and will not affect your grade in this class. If you are interested in participating, there is a sign-up sheet at the front of the classroom. You may sign-up today, or you may sign-up when you arrive to participate.

I stood in the front of the room to answer questions and to direct students to provide their names and email addresses if there were interested in participating. Additional information was provided as needed.

**Campus Band Recruiting**

Students enrolled in the University of Alabama campus band were contacted by the instructor of record and invited to participate in the study during a regularly scheduled class meeting. Participants were given the option of participating in the study or working on their regularly scheduled end of semester project.

**Testing Procedure**

All students arrived as a single group at a predesignated time in room 258 of Moody Music Building at the University of Alabama. Upon arrival, the students met outside the room at a registration table where they received information sheets and answer forms. In addition, a box containing an array of three-digit numbers was placed on the registration table. From this box, students blindly selected a number. During the study, each student and all their materials were identified by these numbers. Upon entering, students were directed to take a seat in the room which was arranged with thirty desks, in six rows, with five desks per row. The room was
additionally equipped with a computer connected to a projector, and a piano located at the front of the classroom.

Instructions were read aloud while students followed along on a printed version. After the instructions were presented, students were allowed to ask any questions they had.

Following is an approximated copy of the welcoming statement:

Welcome and thank you for participating in my study. During this 60-minute session, you are going to participate in four lessons on musical intervals; two will be on video, and two will be live. At the end of each lesson, you will take a brief quiz and then a test. During the test you will hear ten musical intervals and be asked to correctly identify them. Do not be concerned if you do not know what an interval is. This will be explained shortly.

Before we begin, please take out your cell phones and turn them off. During the next hour, give your complete attention to the lessons you are observing. Again, thank you so much for participating. Are there any questions before we begin?

I answered any questions, and began the four scripted lessons. The whole-step and half-step script as well as the major sixth and major seventh script were video recorded and presented on a projected screen in the room. I presented the diminished fifths and perfect fifths script along with the major third and minor sixth script. At the end of the final script, students were thanked for their time and asked to place their score sheets in a stack at the front of the room.

**Analysis of Tests**

I evaluated all student tests and recorded the number of correct answers, yielding four scores per student. A one-way analysis of variance was conducted to evaluate the four scripted teaching lessons and students’ accurate identification of musical intervals. Results showed that the students’ means scores for each lesson were not significantly different, $F(3, 68) = 1.26, p = .297$. The overall average score across all scripts was 9.49, $(SD = 0.90)$. See Table 1 for average scores for individual scripts. Scores were high for all four teaching scripts and most scores were nearly perfect.
Table 1

*Average Student Scores for Teaching Scripts*

<table>
<thead>
<tr>
<th>Teaching script</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole-step and half-step</td>
<td>9.17</td>
<td>1.20</td>
</tr>
<tr>
<td>Augmented fifths and perfect fifths</td>
<td>9.67</td>
<td>0.16</td>
</tr>
<tr>
<td>Major sixth and major seventh</td>
<td>9.67</td>
<td>0.18</td>
</tr>
<tr>
<td>Major third and minor sixth</td>
<td>9.44</td>
<td>0.20</td>
</tr>
</tbody>
</table>
CONCLUSION

The purpose of this project was to develop scripted music lessons with immediate feedback to improve the accurate identification of note intervals among college amateur musicians. Four lessons were designed to focus on the discernment of musical interval pairs encountered in western music and taught in first semester college music theory courses. To test whether the scripts were effective, the lessons were taught to 18 undergraduate non-music majors. Two scripted lessons were presented live and the other two were presented as prerecorded video files to test the potential for developing supplemental materials for a music theory textbook. Each lesson focused on the accurate identification of two specific music intervals. After each lesson, students’ ability to accurately label paired music intervals was tested. Results indicated that whether live or video-recorded, participants accurately identified the musical intervals presented in pairs. The findings also indicated that the use of melody references in the first two lessons had no effect on participants’ discernment of musical intervals. The scripts seemed effective in teaching interval discrimination for all participants in the testing phase.

High student scores across all lesson types were possibly due to the use of analogies or “character descriptions,” embedded in the instruction, to describe the various musical intervals—a teaching technique used across all four teaching scripts. Examination of the score sheets indicated that many students took notes by labeling their score sheets with the character descriptions introduced during the instructional period of the live and video recorded lessons.
Examples of these characterizations include the “screamer” as a clue for half-steps and major sevenths, and the “mysterious” sound of the tritone. The use of interval characterizations effectively aided the use of song references and nullified effects of live versus recorded instruction.

**Recommendations**

As previously noted, it seems very important that future videos use characterizations and analogies when teaching interval discriminations. During the teaching of the scripts, clear reactions were seen from the students as intervals were characterized or described using analogies. The value of these analogies can be found in the score sheets and notes taken by the students during testing of the scripts. A test similar to this one might include a condition where analogies are not used in the instruction sequence. Additionally, in the future, the order of lessons might be changed so that the lessons without melody references appear randomly, rather than in the two introductory lessons. This would prevent students from learning the song reference technique in the beginning and applying it to the final lessons. Furthermore, a future examination might include a testing of all the covered music intervals, to determine if participants learned to discriminate these intervals from one another.
REFERENCES


APPENDIX A

WHOLE-STEP AND HALF-STEP SCRIPT

1. In the first lesson, we’ll be looking at the intervals of whole-steps and half-steps. Whole-steps and half-steps are a great place to begin training your ears for several reasons. You have a 50/50 chance of getting each example correct, and these two types of intervals sound very different when played together. Two notes played together are defined as harmony.

2. For example, here are some whole-steps played together, harmonically. Notice that whole-steps clash “a little.”

3. Play C and D. Play F and G. Play A and B.

4. And, here are some examples of half-steps played together. Notice that the half-steps clash much more!

5. Play C and C#. Play F and F#. Play A and A#.

6. These two intervals, a whole-step and a half-step, sound quite different, and I will discuss this more a little further into the lesson. Now, let’s take a few minutes to study whole-steps. Music intervals consist of two notes that are a certain distance apart. As we just heard, the notes of an interval can be played together.

7. Play C and D together (harmonically).

8. The two notes of an interval can also be played separately. We call this melodically, like in a melody.


10. Every time we do a practice session, or a quiz, I will play each interval twice – once together and once separately.

11. Play C and D once together, once separately, and once together.

12. That is a whole-step, so you would check the box for whole-step on your answer key. You don’t have to worry about whether it is melodic, separate, or harmonic, together. These are just the two ways I will play each example, and it can be helpful to hear intervals both ways. In music, an example of a melodic (or separate) whole-step, is like the beginning of a scale.

13. Play C scale. Play the C to D.

14. That’s a whole-step. The first two notes of a scale are a whole-step apart from each other. In the C scale, C and D are a whole-step apart.

15. Play C scale. Play C and D, played separately as the 1st two notes of the C scale.

16. That’s a whole-step. In the F scale, F and G are a whole-step apart.

17. Play F scale. Play F and G played separately as 1st two notes of the F scale.

18. That’s a whole-step. In the G scale, G and A are a whole-step apart.


20. That’s a whole-step. So, when it sounds like the 1st two notes of a scale – it’s a whole-step. A melodic whole-step also sounds like the beginning of Happy Birthday.
21. Play *Happy Birthday* example two times.
22. So, when we take the short quiz at the end of this lesson, if the example sounds like the
    beginning of a scale
23. Play example.
24. Or like the beginning of *Happy Birthday*,
25. Play example.
26. Then it is a whole-step, and you will check the whole-step box on your answer sheet.
    Again, the beginning of a scale, and *Happy Birthday* are both whole-steps.
27. Play the beginning of scale, and *Happy Birthday*.
28. Now, let’s discuss half-steps. The notes C and D are a whole-step apart, and whole-steps
    have one note in between them. This is the whole-step C to D.
29. Play C then D.
30. And there is another note, C#, in between the C and D.
31. Play C, then C#.
32. Half-steps are directly beside each other on the piano keyboard.
33. Play C to C# separately.
34. An example of a half-step is C and C#. This is C and C# played separately.
35. Play example.
36. This is C and C# played together.
37. Play example.
38. A half-step played separately, melodically, sounds like the theme to *Jaws*.
39. Play *Jaws* example.
40. So, whenever you hear this…
41. Play C to C# separately, F and F# separately, A and A# separately
42. Then you’ll mark half-step on your answer sheet. Because if it sounds like *Jaws* it’s a
    half-step.
43. A harmonic half-step really clashes and has a sort of “scary” sound.
44. Play C and C# together. Play F and F# together.
45. I like to call the interval of a half-step a “screamer”, because if you scream when hear it,
    it really fits with the half-step sound. Imagine screaming as I play these examples.
46. Play several examples.
47. Just like in movies, half-steps are often played when something scary has just occurred,
    like when the bad guy turns the corner and finds the trembling innocent victim. If you try
    to “scream” to yourself when you hear a whole-step, you will immediately feel that this
    does not fit. Imagine screaming as I play these examples.
48. Play several examples.
49. Seemingly silly trick, but it works!
50. A harmonic whole-step sounds like the beginning of “chopsticks.”
51. Play example.
52. It clashes a little, but doesn’t sound “scary” like a half-step.
53. Now we will practice some whole-steps and half-steps. The practice contains seven
    examples. I will play each practice example two times – together and separately. Then,
    there will be a 10-second pause before continuing. Just listen to each example and decide
    if you believe it is a whole-step or a half-step. Then mark the box you think it is on your
    answer sheet.
54. Play half-step, together then separately.
Now we will take a test on some Whole-Steps and Half-Steps. The test contains 10 examples. Just like during the practice session, I will play each practice example 2 times— together and separately. Then, there will be a ten-second pause before continuing. Just listen to each example and decide if you believe it is a whole-step or a half-step. Then mark the “correct” box on your answer sheet.

75. Play whole-step, together then separately.
76. 10 seconds
77. Play whole-step, together then separately.
78. 10 seconds
79. Play half-step, together then separately.
80. 10 seconds
81. Play whole-step, together then separately.
82. 10 seconds
83. Play half-step, together then separately.
84. 10 seconds
85. Play whole-step, together then separately.
86. 10 seconds
87. Play half-step, together then separately.
88. 10 seconds
89. Play whole-step, together then separately.
90. 10 seconds
91. Play half-step, together then separately.
92. 10 seconds
93. Play whole-step, together then separately.
94. 10 seconds
95. Play half-step, together then separately.
96. 10 seconds
APPENDIX B

DIMINISHED FIFTHS AND PERFECT FIFTHS SCRIPT

1. This lesson introduces two new intervals: tritones, and perfect fifths. Now, in lesson one we saw that whole and half-steps are very close together. But, the intervals introduced in this lesson are not too close together, or very far apart.
2. The largest interval, that you will hear, is the octave. Notice that the two notes sound far apart.
3. Play example.
4. The interval that’s closest together is the half-step.
5. But, a tritone is exactly in the middle of an octave, and the perfect fifth is a half-step above it.
6. Play example.
7. So, these new intervals sound “in the middle” because they are in the middle of an octave. They sound neither far apart, nor close together.
8. Perfect fifths sound somewhat open; but the tritone sounds much different in comparison.
9. While perfect fifths sound very open and still, tritones sound mysterious.
10. Play example.
11. Some say a tritone “clashes” like a half-step. However, in the grand scheme of intervals, tritones sound open like perfect fifths; but what’s different about the tritone is the strongly mysterious sound. The perfect fifth does not possess this mysterious quality.
12. Played melodically, a perfect fifth sounds like the beginning of Twinkle Twinkle Little Star.
13. Play example.
14. A melodically played tritone sounds like the beginning of Maria from the West Side Story, or like the beginning of The Simpsons.
15. Play example.
16. Now we will practice the intervals discussed in lesson. The practice contains 7 examples. I will play each practice example 2 times – together and separately. Then, there will be a 10-second pause before continuing. Just listen to each example and decide if you believe it is a tritone, or a Perfect fifths apart. Then mark the appropriate box on your answer sheet.
17. Play tritone, together then separately.
18. 10 seconds
19. Tritone
20. Play perfect fifth, together then separately.
21. 10 seconds
22. Perfect fifth
23. Play tritone, together then separately.
24. 10 seconds
25. Tritone
26. Play perfect fifth, together then separately.
27. 10 seconds
28. Perfect-fifth
29. Play perfect fifth, together then separately.
30. 10 seconds
31. Perfect fifth
32. Play perfect fifth, together then separately.
33. 10 seconds
34. Perfect fifth
35. Play tritone, together then separately.
36. 10 seconds
37. Tritone
38. Now we will take a test on the intervals discussed in lesson. The test contains 10 examples. Just like during the practice session, I will play each practice example 2 times— together and separately. Then, there will be a ten-second pause before continuing. Just listen to each example and determine if the tones are a tritone, or a Perfect fifths apart. Then mark the “correct” box on your answer sheet.
39. Play perfect fifth, together then separately.
40. 10 seconds
41. Play perfect fifth, together then separately.
42. 10 seconds
43. Play tritone, together then separately.
44. 10 seconds
45. Play perfect fifth, together then separately.
46. 10 seconds
47. Play tritone, together then separately.
48. 10 seconds
49. Play perfect fifth, together then separately.
50. 10 seconds
51. Play perfect fifth, together then separately.
52. 10 seconds
53. Play perfect fifth, together then separately.
54. 10 seconds
55. Play tritone, together then separately.
56. 10 seconds
57. Play perfect fifth, together then separately.
58. 10 seconds
APPENDIX C

MAJOR SIXTH AND MAJOR SEVENTH SCRIPT

1. This lesson introduces two new intervals: major sixths and major sevenths. Now, you have seen that whole and half-steps are very close together.
2. Play example.
3. This is a whole-step, and this is a half-step.
4. Play example.
5. Hear how close together they sound?
6. And tritones and perfect fifths are in the middle.
7. Play example.
8. This is a perfect fifth, and this is a tritone, which sounds mysterious and is exactly in the middle.
9. But, the intervals introduced in this lesson are not too close together, like whole and half-steps,
10. Play a whole-step and a half-step.
11. nor in the middle, like perfect fifths and tritones.
12. Play perfect fifth and tritone.
13. The new intervals, major sixths and major sevenths, are wider intervals.
14. Play example.
15. This is a major sixth, and this is a major seventh.
16. Play examples.
17. Hear how they are further apart than the other intervals we have covered?
18. Here is a whole-step, half-step, perfect fifth, and tritone.
19. Play example.
20. And here are the wider major sixth and major seventh.
21. In fact, the major seventh is the widest interval we will cover.
22. A major sixth is a little wider than a perfect fifth.
23. Play a perfect fifth then a major sixth.
24. Harmonically played, a major sixth sounds very bright.
25. Play a major sixth.
26. It definitely does not sound mysterious like a tritone.
27. Play a tritone.
28. So, although the major sixth is close to being in the middle of the octave, it sounds slightly wider and brighter than a perfect fifth.
29. Play a perfect fifth, then a major sixth.
30. Again, listen to the bright sound of the major sixth, in comparison to the very open perfect fifth.
31. So, these new intervals sound “slightly wider” because they getting closer to an octave. They sound more far apart, than close together.
32. A major seventh is another interval I call a “screamer,” because it clashes and sounds “scary” like the half-steps we discussed in video 1.
34. If you scream when you hear a major seventh, it really fits.
35. Play G and F#. Play D and C#.
36. Just like in movies, major sevenths are also played when something scary occurs.
37. If you try to “scream” to yourself when you hear a major sixth, you will immediately feel that this does not fit.
38. Play C and A together and scream in your head.
39. Seemingly silly trick, but it works!
40. Now we will practice the intervals discussed in lesson. The practice contains 7 examples. I will play each practice example 2 times – together and separately. Then, there will be a 10-second pause before continuing. Just listen to each example and decide if you believe it is a major sixth, or a major seventh apart. Then mark the appropriate box on your answer sheet.
41. Play major seventh, together then separately.
42. 10 seconds
43. Major seventh
44. Play major sixth, together then separately.
45. 10 seconds
46. Major sixth
47. Play major sixth, together then separately.
48. 10 seconds
49. Major sixth
50. Play major seventh, together then separately.
51. 10 seconds
52. Major seventh
53. Play major sixth, together then separately.
54. 10 seconds
55. Major sixth
56. Play major seventh, together then separately.
57. 10 seconds
58. Major seventh
59. Play major sixth, together then separately.
60. 10 seconds
61. Major sixth
62. Now we will take a test on the intervals discussed in lesson. The test contains 10 examples. Just like during the practice session, I will play each practice example 2 times – together and separately. Then, there will be a ten-second pause before continuing. Just listen to each example and determine if the tones are a tritone, or a Perfect fifths apart.
Then mark the “correct” box on your answer sheet
63. Play major seventh, together then separately.
64. 10 seconds
65. Play major seventh, together then separately.
66. 10 seconds
67. Play major sixth, together then separately.
68. 10 seconds
69. Play major seventh, together then separately.
70. 10 seconds
71. Play major sixth, together then separately.
72. 10 seconds
73. Play major sixth, together then separately.
74. 10 seconds
75. Play major seventh, together then separately.
76. 10 seconds
77. Play major sixth, together then separately.
78. 10 seconds
79. Play major seventh, together then separately.
80. 10 seconds
81. Play major seventh, together then separately.
82. 10 seconds
APPENDIX D

MAJOR THIRD AND MINOR SIXTH SCRIPT

1. This lesson introduces two new intervals: major thirds and minor sixths. Now, you have heard that whole and half-steps are very close together; and tritones, and perfect fifths are in the middle. The new interval of a major third is more narrow than a perfect fifth.

2. Play example.

3. A major third sounds like the beginning of an arpeggio, because an arpeggio consists of scale degrees 1, 3, and 5.

4. Play example.

5. And, a minor sixth is a little wider than a perfect fifth.

6. Play example.

7. Although it is close to being in the middle of the octave, it sounds slightly wider than a perfect fifth.

8. Play example.

9. So, these new intervals sound “slightly wider” or “slightly narrower” than the perfect fifth which we have already studied. They sound neither too far apart, nor too close together.

10. Now we will practice the intervals discussed in lesson. The practice contains 7 examples. I will play each practice example 2 times – together and separately. Then, there will be a 10-second pause before continuing. Just listen to each example and decide if you believe it is a major third, or a minor sixth apart. Then mark the appropriate box on your answer sheet.

11. Play minor sixth, together then separately.

12. 10 seconds

13. Minor sixth

14. Play major third, together then separately.

15. 10 seconds

16. Major third

17. Play minor sixth, together then separately.

18. 10 seconds

19. Minor sixth

20. Play minor sixth, together then separately.

21. 10 seconds

22. Minor sixth

23. Play major third, together then separately.

24. 10 seconds

25. Major third

26. Play major third, together then separately.

27. 10 seconds
28. Major third
29. Play minor sixth, together then separately.
30. 10 seconds
31. Minor sixth
32. Now we will take a test on the intervals discussed in lesson. The test contains 10 examples. Just like during the practice session, I will play each practice example 2 times— together and separately. Then, there will be a ten-second pause before continuing. Just listen to each example and determine if the tones are a major third, or a minor sixth apart. Then mark the “correct” box on your answer sheet
33. Play major third, together then separately.
34. 10 seconds
35. Play major third, together then separately.
36. 10 seconds
37. Play minor sixth, together then separately.
38. 10 seconds
39. Play major third, together then separately.
40. 10 seconds
41. Play minor sixth, together then separately.
42. 10 seconds
43. Play minor sixth, together then separately.
44. 10 seconds
45. Play major third, together then separately.
46. 10 seconds
47. Play minor sixth, together then separately.
48. 10 seconds
49. Play major third, together then separately.
50. 10 seconds
51. Play minor sixth, together then separately.
52. 10 seconds
APPENDIX E

INSTITUTIONAL REVIEW BOARD DOCUMENTS

Approval

February 28, 2012

Carla Stovall
School of Music
Box 870366

Re: IRB: EX-12-CM-013, The Effect of Intensive, Prerecorded Ear Training Instruction on College Students' Interval Identification Skills

Dear Ms. Stovall:

The University of Alabama Institutional Review Board has granted approval for your proposed research.

Your application has been given exempt approval according to 45 CFR part 46.101(b) (1) as outlined below:

(1) Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods

This approval expires on February 27, 2013. If the study continues beyond that date, you must complete the IRB Renewal Application. If you modify the application, please complete the Modification of an Approved Protocol Form. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants. When the study closes, please complete the Request for Study Closure form.

Should you need to submit any further correspondence regarding this application, please include the assigned IRB application number.

Good luck with your research.

Caroline V. Myers, MSA, CIM
Director & Research Compliance Officer
Office of Research Compliance
The University of Alabama

130 Box Administration Building
Box 870112
Tuscaloosa, Alabama 35487-0112
(205) 348-3641
fax: (205) 348-2189
www.research.ua.edu
Recruitment poster

Department of Music
University of Alabama

PARTICIPANTS NEEDED FOR RESEARCH IN MUSICAL INTERVAL IDENTIFICATION

We are looking for volunteers to take part in a study examining the influence of a series of video versus live music theory lessons on the accurate identification of musical intervals in non-music majors.

As a participant in this study, you will be asked to observe four ten-minute lessons on music intervals, during one 60-minute group session. Each lesson will be focused on the accurate identification of two specific music intervals, and participants will take a brief, anonymous test on the presented information after each lesson. There will be no risk to you for participating in this study. The tests will be used only to examine the effectiveness of the video lessons, and will not affect any of your grades in your current classes.

Your participation would involve one session, which is approximately 60 minutes in duration.

For more information about this study, or to volunteer for this study, please contact:
Carla Stovall
University of Alabama School of Music
at 205-317-5419 or Email: cstovall@bama.ua.edu

This study has been reviewed by, and received ethics clearance through, the Office for Research Compliance at the University of Alabama.

UA IRB Approved Document
Approval date: 2/2/12
Expiration date: 2/1/13
Letter of Consent

LETTER OF CONSENT FOR RESEARCH PARTICIPATION

Dear Students:

I am a Ph.D. student at The University of Alabama conducting a research study to examine the influence of a series of video versus live music theory lessons on the accurate identification of musical intervals in non-music majors. The total time requested of participants in the study is one 60-minute session on March 13th at 4:00 p.m., in room 181 in the Moody Music building.

You are being asked to participate in this study, which will involve observing four ten-minute lessons on music intervals. Each lesson will be focused on the accurate identification of two specific music intervals, and participants will take a brief test on the presented information after each lesson. There will be no risk to you for participating in this study. The tests will only be used to examine the effectiveness of the video lessons, and will not affect any of your grades in your current classes.

Your participation in this study is voluntary. If you choose not to participate or to withdraw from the study at any time, there will be no penalty; it will not affect you in any way. The results of the research study may be published, but your name will not be used, nor will anyone be able to identify you.

Although there may be no direct benefit to you, the possible benefit of your participation is learning to correctly and easily identify various music intervals.

If you have any questions concerning the research study, please contact me at (205)317-5419 or Dr. Carl Hancock at (205)348-6335.

Sincerely,

Carla Stovall

Place your initials by the following if true:

My college major is not in music: _____

I have not formally studied music theory or music intervals at the college level: _____
If you have questions about your rights as a person taking part in a research study, make suggestions or file complaints and concerns, you may call Ms. Tanya Myles, the Research Compliance Officer of the University at (205)-348-8461 or toll-free at 1-877-820-3066. You may also ask questions, make suggestions, or file complaints and concerns through the IRB Outreach Website at http://osp.ua.edu/site/PRCO_Welcome.html. You may email us at participantoutreach@bama.ua.edu

I consent to participating in the above study.

Signature ______________________

Date ______________________
APPENDIX H

ANSWER SHEETS & KEYS

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<td><strong>Practice</strong></td>
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<tr>
<td>Half-Step</td>
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<td>Tritone</td>
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<tr>
<td>Perfect fifth</td>
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| Test              |   | Test              |   |
| Whole-Step        |   | Perfect fourth    |   |
| Half-Step         |   | Tritone           |   |
| Perfect fifth     |   |                   |   |
| 1                 | X | 1                 | X |
| 2                 | X | 2                 | X |
| 3                 | X | 3                 | X |
| 4                 | X | 4                 | X |
| 5                 | X | 5                 | X |
| 6                 | X | 6                 | X |
| 7                 | X | 7                 | X |
| 8                 | X | 8                 | X |
| 9                 | X | 9                 | X |
| 10                | X | 10                | X |
### SCRIPT 3

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