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ABSTRACT

This study examines college course work, instrumental speciality activities, and artistic activities associated with music majors' and non-music majors' musical independence. A second purpose is to examine whether or not these experiences and activities influence musical independence. Postsecondary musical experiences and activities have been divided into three primary areas: (1) college coursework, focusing on the roles of private teacher and band director; (2) performance activities; and, (3) artistic fundamental skills. The study covers the years 1992-1995 and surveyed 276 instrumental music majors participating in the bands at Ball State University, Florida State University, and Wichita State University. The research examined the relationship between Colwell's Music Achievement Test 3 (MAT3), and Colwell's Music Achievement Test 4 (MAT4) and five specific areas including: (1) General Demographic; (2) College Course Work; (3) High School Music Activities; (4) College Music Activities (Performance Activities); and (5) Musicianship (Artistic Fundamental Skills). The Instrumental College Survey-2 (ICS-2) as well as MAT3 and MAT4 were administered to participants. Extensive charts and graphs accompany the text. (EH)

THE FORGOTTEN AND UNINFORMED COLLEGE BAND STUDENT: A COMPARISON OF ACTIVITIES, EXPERIENCES, AND MUSICAL INDEPENDENCE AMONG NON-MUSIC MAJORS AND MUSIC MAJORS

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I. Introduction

Little is known or understood about the relationships between the college activities and experiences of instrumental music majors and their instrumental musical growth (i.e., musical independence). Less is known about the things that are positively or negatively related to the non-music major's musical independence. What do college instrumental students learn about musical excellence from course work and musical experiences/activities? Some educators contend that musical outcome cannot be evaluated like other academic subjects such as math or English. Since the production of music involves "feelings", "artistry", and "talent"—ambiguous attributes. However, prior studies have shown that musical outcome can be measured in terms of musical independence.

The study's primary purpose is to examine college course work, instrumental specialty activities, and artistic activities associated with music majors' and non-music majors' musical independence. A second purpose is to examine whether or not these experiences and activities influence musical independence.

II. Postsecondary Musical Experiences: An Overview

The authors have divided postsecondary musical experiences and activities into three primary areas: (1) college course work, focusing on the role of private teacher and band director, (2) performance activities, and (3) artistic fundamental skills Before discussing these areas, we explain the notion of musical independence.

A. Musical Independence (MI) Hierarchy.

Musical independence (MI) is the key indicator of student outcome in music (see references). For example, in the area of instrumental performance, a beginner requires constant instruction, a college student requires some but not constant instruction, and a professional performer requires little instruction. Hence, the beginner is musically dependent on the teacher, the college student is moderately musically independent, and the professional is musically independent.

The authors differenciate between musical achievement and MI. Musical achievement represents the mastery of any academic skill related to music, but MI is directly related to the production and performance of music. The link between knowledge acquisition and the application and use of that knowledge in performance is the key: music knowledge may exist without MI, but MI may not exist without music knowledge.

The five skill levels of the MI hierarchy, progressing from the lowest to highest, are thinking (to know), listening (to sense), performing (to make), conducting (to direct), and composing (to originate). The hierarchy implies that to play an instrument, the instrumentalist must master knowledge skills (Level 1), listening skills (Level 2), and performance skills (Level 3). To compose music (Level 5), the musician must master thinking, listening, performing, conducting, and composition skills (Figure 1).

B. **College Course Work: Role of private teacher and band director.** Knowing the important and unimportant performance activities and how they impact MI are essential to MI development--WITHOUT KNOWLEDGE THERE IS NO DISCRIMINATION. Student outcome refects educational and pedagogical philosophy which focuses on essential performance activities. To communicate clearly with the student, the private teacher, band director, and advanced music major should share the same basic musical philosophy. As stated by the late William D. Revelli, should the goal of music education majors be (1975): ". . . *to become the best possible musician you can be on your instrument. That is the first step to becoming a great teacher and band director*"? Does one have to be able to make great music (musicianship) to be a great music teachers? In today's music education, do private teachers, band directors, and music majors

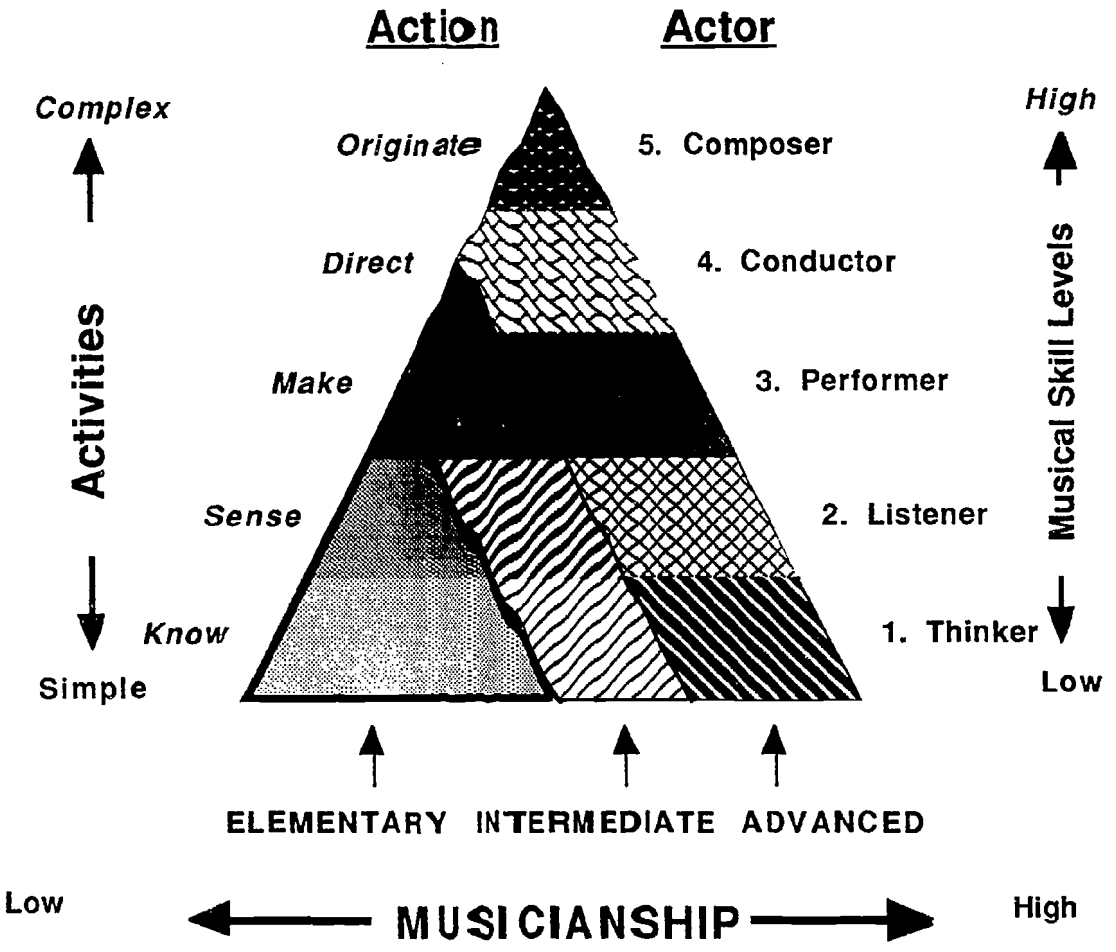

Figure 1. Hierarchy of Musical Independence (MI) characteristics, Bobbett, 1987.

reflect the same or a different musical agenda in the development of musicianship?

The music major's private instrumental teacher is the cornerstone of that students' MI development. Private teachers are responsible for whether or not the students master their instrument. During the lesson, the teacher observes and diagnoses the student's strengths and weaknesses, then prescribes specific activities to remediate a specific instrumental deficiency. For every deficiency, there is a remedy. For instance, if the students cannot play a technical passage musically, the private teacher might assign scales, thirds, and arpeggios. Teachers are then expected to evaluate the students' performance and assign a grade. The assigned grade should reflect the degree to which the students have mastered performance on their instruments during the lessons and juries.

The band director is responsible for determining and producing the instrumental musical output for the band as a whole and not for the specific development of any one individual. The ensemble's performance becomes the result, whereas the student's instrumental efforts and accomplishments are the means to accomplish this end—performing a band piece with a high level of musical finesse and artistry. For example, if the clarinets are having a problem with a particular passage in "E major", the director might suggest that the students practice their scales, thirds, or arpeggios, focusing on E major; if the brass are having difficulty with double-tonguing, the director might suggest etudes which address advanced articulation. Too often though, when students are playing a particular band piece poorly, directors simply tell the students to practice their band music or sight-reading.

Individual practicing is important for developing student MI. Private teachers, music faculty, and band directors should emphasize this essential activity in developing instrumental musicians. While the teacher or band director guides the students, the student must develop by themselves, in much the same way that an infant learns to walk. During practicing, the students applies the MI skills taught by the private teacher or band director. When students practice correctly, they should progress and grow; but practicing the wrong things might stall or even harm students' instrumental growth.

C. **Performance Activities (PA).** During the present study, students were asked to specify to what extent (percent emphasized) they practiced scales, thirds/arpeggios, etudes, solos, band music, improvisation, or other." Students defined "other" as cleaning their instrument (woodwind and brass), seating and adjusting pads (woodwinds), adjusting drum heads (percussion), and fixing and making reeds (woodwinds) (Bobbett, 1992 e).

This study examined eight performance activities that students could emphasize during their practicing. The practice activities include: (1) scales, (2) third/arpeggios, (3) etudes, (4) band music, (5) sight-reading, (6) solos, (7) improvisation, and (8) other. What training activities and related performance activities do excellent instrumentalists emphasize during their practicing? Are some performance activities more valuable to student MI development than others?

Garofalo (1992) identifies intervals, scales, chords, rhythm, dynamics, form, and style as areas that should be included in the instrumental music curriculum (p. 116). He states that to play, sing, and identify by ear and eye intervals, chords, scales and rhythms derived from the score "as one of his five basic learning goals" (p. 1). Middleton, Haines, and Garner (1966) emphasized the importance of performance activities: "Technical drill geared toward increasing fluency, flexibility, control, and articulation skills should be a regular part of the rehearsal routine. Scales and arpeggios, in all keys, should receive major emphasis" (p. 94). Prentice (1987) wrote: "Scales are good for everyone. Practice slow and fast, major, minor, and chromatic; tongued and slurred; with arpeggios; in as many octaves as possible"(p. 108).

When performing scales, students master one fundamental of musical performance—the intervals of a major and minor second. Gilbert (1987) wrote: "Almost all music is built on the simple basic elements of music: scales, thirds, and arpeggios. If you had learned to play these before you started working on the piece then there would be only limited portions of it you would have to practice" (p. 58) (emphasis added). In all tonal western music, scales, or portions of scales, are present. Mastery of scales, therefore, reflects not only the mastery of the musical instrument, but also mastery of one basic melodic construct of western music.

While scales represent the mastery of seconds, the performance of thirds represents the mastery of intervals of a major and minor third. Thirds are slightly more difficult to master than seconds because they move around in skips rather than step-wise. Arpeggios include the technical mastery of both major and minor thirds along with the mastery of fourths. Added technical skill is required in mastering arpeggios. All tonal western music is based on tertial harmony and the dominant to tonic root movement of the fourth. Thirds and arpeggios are usually taught by the private teacher and sometimes incorporated as part of the warm-up portion of an instrumental rehearsal.

Etudes are pieces written to teach one or more instrumental skills such as technique, air support, embouchure control, the mastery of large or small intervals, dynamics, tonal color, phrasing, and articulation. The primary purpose is mastery of one or more different performance skills.

Performing an instrumental solo represents the application of skills into an artistic experience for both the listener and the instrumentalist. The musical skills necessary to perform a solo cover the full gamut of musical skills. Where etudes are a mechanism to teach MI skills, a solo represents the application of these skills. While performing solos, instrumentalists demonstrate the accumulation of all their performance skills, including scales, thirds, arpeggios, phrasing, articulation, intonation, dynamics, plus a variety of other ensemble skills related to MI.

Sight-reading has been used from Bach to the present as a method of evaluating a performer's level of MI. Because of the tremendous impact the Watkins-Farnum Performance Scale (Watkins and Farnum, 1962) had on music education in America beginning in the 1960s, sight-reading is a common method of evaluating a student's performance skills. In many states, sight-reading is used as a portion of the all-state audition process or as a portion of the Concert Festival. At the secondary and postsecondary level, it is often used as a method of evaluating student instrumental growth. Sight-reading's popularity among music educators may be because it provides an easy quantitatively way to evaluate a student's performance. For example, if student "A" misses three notes and student "B" misses five notes, then student "A" must be a better instrumentalist. Yet, music is a complex activity to evaluate. The weakness of using sight-reading as a primary indicator of MI is that counting the number of correct or wrong notes at a first reading does not always accurately indicate the student's level of instrumental excellence.

Since all of the study's participants were members of their college band, the participants had to master their band music to maintain their music scholarship or their chair placement. The mastery of band music can be a portion of the activity used to develop MI just as instrumentalists at the music conservatory level learn and master different orchestral excerpts as part of their musical training.

Because of the popularity of contemporary music, including jazz, many private teachers or ensemble directors encourage student improvisation. There are many storied accounts of J.S. Bach using improvisation as a means of demonstrating his musical abilities. Today, improvisation is an essential component of much contemporary music. Instrumentalists need improvisation skills to play jazz, rock, country, soul, new-age, or dixie-land music. Improvisation is a unique training activity. Where the other activities might be categorized as skills represented in the third level of the MI hierarchy, improvisation implies mastery of the top level of MI. To improvise, the instrumentalist is essentially composing music. Also, the improvisers are constantly balancing their performance with the rhythmic, harmonic, melodic, and textural/tonal constraints of the ensemble.

D. **Artistic Fundamental Skills (AFS).** A musician's artistry and musicianship are the sum of musical fundamentals, skills, concepts, and knowledge. What are the essential performance **AFS** associated with artistry and musicianship? Do each of these **AFS** play an equal role in developing artistry, or are some more important than others? Are some **AFS** more basic to musicianship and artistry than others? If the answer is yes, then perhaps there is an overall hierarchy associated with the development of musicianship. Does quantifiable AFS and perception indicators measure similar interactions, or do they overlap each other when examining skills associated with MI?

While music educators have identified important concepts and skills that are generally associated with musicianship and artistry, a universal taxonomy of definitions and concepts has not been

adopted. With the current national movements toward educational assessment and accountability, music education would be well served by the development of a hierarchical set of descriptors and criteria.

What are the fundamental skills associated with artistry? In the discussion below Hovey (1976), although identifying important performance fundamentals, does not clearly define or prioritize them.

> . . . But in all situations the rehearsal objective is the same: to improve the existing level of musical knowledge and performing skills of the organization. This objective can be subdivided into what might be called the fundamentals of effective ensemble performance, namely: intonation, tone quality, rhythm, articulation, tempo, phrasing, dynamics and balance.
>
> The ideal rehearsal will concentrate heavily on ensemble rather than individual problems. It will probably be found that some section work is essential at times, but fitting prepared parts together correctly is the primary function of the rehearsal. This indicates that some individual preparation (*i.e., individual practicing*) should be expected and required .
>
> When a conductor corrects a wrong note he is solving a short-range problem. When he works to improve intonation he is attacking a long-range problem (i.e., implies the importance of musical independence) (emphasis added).

In the above citation, Hovey implies the direct linkage between the term "ensemble" with the term "performance". The Harvard Dictionary of Music (Apel, 1969, p. 294) defines the term "Ensemble": "Ensemble refers to the balance and unification attained in performance." The term Ensemble, when connected to the actual performance, should be one of the cornerstones of a musical performance and therefore directly linked to the student's MI. Hovey further recognizes that the final objective of music instruction is independence from supervision; he speaks of "individual preparation." Reynolds (1993) also endorses the importance of musical independence:

> "Build Player Independence:" Our purpose here is to make ourselves dispensable as teachers. We should be beginning the process of helping students to become independent musicians at the elementary level and then carry it right on through. We know that in the really wonderful groups in this world, much of the work is done by players listening to each other. However, in most bands, the players feel a need to play to the conductor, who controls every aspect, often with an "iron hand." We conductors are certainly essential—guiding the rehearsals and directing the interpretation--but the ultimate precision, pitch and so many of these kinds of things are really achieved by players (*i.e., the notion of independence*) (emphasis added).

In the real world of instrumental performance, instrumental students or ensembles are evaluated or judged by musical experts. The North Dakota High School Activities Association (1993) uses an adjudication sheet that identifies 10 general areas of performance fundamentals including: (1) quality of selection, (2) dynamics, (3) blend, balance, (4) intonation, (5) tone quality, (6) rhythm, (7) tempo, (8) style, interpretation, (9) articulation, technique, and (10) musical effect (i.e., a phrase implying general artistry). The judges rate each of the 10 performance fundamentals and then rate the band performance as: STAR (superior performance), HONORABLE MENTION (commendable performance), and SATISFACTORY. All 10 performance fundamentals are weighed equally with no attempt to prioritize the criteria.

In Tennessee, the Smoky Mountain Music Festival (1987) "Concert Band Adjudication" identifies similar performance fundamentals, but goes a step farther by assigning different weights to the criteria: (1) Tone (20 points), (2) Intonation (20 points), (3) Balance (20 points), (4) Technique (15 points), (5) Interpretation (15 points), and (6) Choice of Music (10 points). Both adjudication sheets are similar, for

they require judges to evaluate instrumental students on recognizable and identifiable performance fundamentals.

Bollinger (1979, p. 94) states: "Most of the principles of good musicianship are developed and refined over a period of years through lesson materials presented in . . . individual lessons. Student intonation, however, must be learned in a group situation. Tone, intonation, technique, and rhythm can be taught in a full band, even though less effectively than through small group training" (emphasis added). Middleton (1986, p. 46) identifies many of the same AFS: "Tone, intonation, precision, blend and balance, dynamics, style, and musicianship are recognized as areas to be addressed when planning both short and long-range goals" (emphasis added). Again, Middleton never suggested that the items should be prioritized.

III. BACKGROUND

In the authors' secondary MI research (i.e., 9th or 10th grade through 12th grade), the findings indicated identifiable and measurable differences between average (randomly selected) and outstanding (nominated) instrumental music programs (Bobbett, 1987a and b). Other research examined students and band directors participating in "good" Appalachian high school instrumental programs. The student portion of the project noted a positive relationship between high school music activities such as marching contests, concert festival, solo-ensemble, solos, other ensembles, etc., and the student's MI (Bobbett, 1991a). The band director segment examined the grading procedures that influence a student's musicianship and the relationships that exist between demographic data and band directors' and students' MI (Bobbett, and Bobbett, 1990b).

Student's MI and high school activities that impacted MI were studied from the post-secondary perspective as well. When the students participating in the University of Tennessee band were evaluated (Bobbett, et al., 1989, 1990a), the findings indicated that participation in all-state band, solo-ensemble, concert festival, private lessons, and church/community choir had a positive impact on the student's MI. Researchers expanded the early post-secondary research and examined the students participating in the three instrumental ensembles at Ball State University (Bobbett, et al., 1991b, 1992). The findings suggested positive links between high school activities such as all-state band, concert festival, solo-ensemble, private lessons, and student/program MI.

During the last three years (1992-1995), the authors examined 276 instrumental music majors participating in the bands at Ball State University, Florida State University, and Wichita State University. This research examined the relationship between Colwell's MAT3 and MAT4 and five specific areas including: (1) General Demographic, (2) College Course Work, (3) High School Music Activities, (4) College Music Activities (Performance Activities), and (5) Musicianship (Artistic Fundamental Skills).

IV. PURPOSE

The purposes of this study were (a) to examine the relationships between the non-music majors' (NMM) college music activities, experiences, and instrumental skills and their musical independence (MI), and (b) the experiences, activities and music skills between the NMMs and music majors (MM).

V. TESTS AND QUESTIONNAIRES

The Instrumental College Survey-2 (ICS-2) (see Appendix A), Colwell's Music Achievement Test 3 (MAT3), and Colwell's Music Achievement Test 4 (MAT4) were administered to 354 instrumentalists participating in Ball State University, Florida State University, and Wichita State University bands.

The instruments (Colwells MAT3 and MAT4 and ICS-2) examined two general areas: student outcome and general demographic data.

A. **Instrumental College Survey-2 (ICS-2)**

The three ICS-2 areas examined in this study included (see Appendix A):

1. **College Course Work (CCW),** (see ICS-2's Section B titled College Music Activities) Students were asked to indicate the number of college classes and the average grade in each of the 10 course areas. This section of the survey identified and examined the following ten course areas:

1. Private Lessons (PL)
2. Ear training (ET)
3. Theory (TH)
4. Keyboard/piano (K/P)
5. Music History (MH),
6. Conducting (CO)
7. Music Education (ME)
8. Voice/Choir (VC)
9. Instrumental Ensemble (IE)
10. General Academics (GA)

2. **Performance Activity Skills (performance activities),** (see ICS-2's Section D titled College Music Activities). Students indicated the percentage of time they spent during their individual practicing and during their instrumental private lessons on each of the eight **performance activities**. This section of the survey identified and examined the following eight performance activities:

1. Scales (SC)
2. Etudes (ET)
3. Thirds/Arpeggios (TA)
4. Band Music (BM)
5. Sight-reading (SR)
6. Solos (SO)
7. Improvisation (IM)
8. Other (OT)

3. **Artistic Fundamental Skill (AFS)** (see ICS-2's Section E titled Musicianship). Students indicated the percentage of time they spent during their individual practicing, band rehearsal, and private lessons on each of the the following 10 AFS:

1. Tone (TO)
2. Intonation (IN)
3. Phrasing (PH)
4. Ensemble (EN)
5. Technique (TE)
6. Dynamics (DY)
7. Rhythm (RH)
8. History (HI)
9. Form (FO)
10. Theory (TH)

B. **Musical Independence (MI).**

The researchers used Richard Colwell's (1970) Music Achievement Test 3 (MAT3) and Music Achievement Test 4 (MAT4) to evaluate the musical independence (MI) of instrumental students participating in the top, middle, and bottom bands at Ball State University, Florida State University, and Wichita State University. MAT3 was selected because the standardization information provided in the Interpretive Manual and the Administrative and Scoring Manual is adequate and the answer sheets are clear, self-explanatory, and easy to grade. Further, it best evaluates the student's musical independence (Bobbett, 1987) and has previously determined reliability estimates. Colwell's MAT4 was selected because it addresses, more directly, some of the concepts of music history and music theory generally covered in the undergraduate music curriculum. Colwell (1970) used the Kuder Richardson 21 (KR21) to evaluate the internal consistency of MAT3 and MAT4 for grades 9-12. The KR 21 ranged from .87 to .89 for MAT3 and from .84 to .89 for MAT4. The MAT 3 consists of four subtests:

1. Tonal Memory (e.g., MAT3, subtest #1 [3ST1]): (20 items) A chord is played on a piano first in block form, and then arpeggiated. The subject determines which tone of the arpeggiated version (four tones) changed. If the two chords are identical, the subject fills in the blank marked "O." Colwell defines this as "the ability to retain the quality of a chord" (p. 100).

2. Melody Recognition (3ST2): (20 items) A melody is first played on a piano and then it is placed in a three-part setting. The subject determines whether the original melody is in the high (H), middle (M), or lower (L), voice. If the subject is in doubt or fails to hear the melody, he fills in the blank marked "?" Colwell defines this as "the ability to follow a melody aurally" (p. 102).

3. Pitch Recognition (3ST3): (20 items) The subject hears the first tone of two written pitches, and afterward hears three additional pitches. The subject indicates which of the three pitches matches the second written pitch. Colwell defines this as "the ability to mentally hear the pitches seen on a page of music" (p. 104).

4. Instrument Recognition (3ST4): (15 items)
Subtest A: (10 items) After listening to a melody played on a particular instrument, the subject identifies, from the four possible choices, the correct instrument. If the four instrument choices do not match the instrument heard, the subject fills in the blank marked "O." Colwell defines this as "the ability to identify solo instruments . . . from an aural example" (pp. 106-7).

Subtest B: (5 items) After listening to a melody played on a particular instrument within an orchestra setting, the subject identifies from the four possible choices, the correct instrument. If the four instrument choices do not match the instrument heard, the subject fills in the blank marked "O." Colwell defines this as "the ability to identify . . . accompanied instruments from an aural example" (pp. 106-7).

The MAT4[2] consists of "five" subtests:

1. Musical Style: (40 items)
Subtest A: Composer (4ST1): (20 items) After listening to a short orchestral excerpt, the subject selects from four choices the composer whose style most closely resembles that of the musical excerpt. Colwell defines this as "the ability to categorize music as to genre and style" (p. 166).

Subtest B: Texture (4ST2): (20 items) After listening to a short musical composition played on a piano, the subject marks the blank "M" for monophonic, "H" for homophonic, "P" for polyphonic, or "?" to indicate if s/he is in doubt. Colwell defines this as "the ability to categorize music as to genre and style" (p. 166).

2. Auditory-Visual Discrimination (4ST3): (14 items) After listening and viewing a four-measure melody, the subject fills in a blank below every measure in which the notation is rhythmically different from the melody s/he hears. If all the measures are correct, he fills in the blank marked "O". Colwell defines this as "the ability to accurately read rhythmic notation" (pp. 169-170).

3. Chord Recognition (4ST4): (15 items) A block chord is played on the piano, and afterwards, three trial chords are played. The subject identifies from the three trial chords the one which sounds like the first chord. If none of the three chords are like the first chord, then she fills in the blank marked "O". If in doubt, s/he fills in the blank marked "?". Colwell defines this as "the ability to recall the sound of a chord, either by listening for its general harmonic characteristics, by recognition of the chord as an entity, or by mentally singing the pitches of the chord" (pp. 170-71).

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2. For this study plus other related studies, Colwell's MAT4 subtest 4 (Chord Recognition) was re-organized into two subtests that are reported as MAT4 ST3 and MAT4 ST4.

4. Cadence Recognition (4ST5): (15 items) After listening to a short musical phrase played on a piano, the subject identifies the cadence by filling in the blank "F" for full cadence, "H" for half cadence, and "D" for deceptive cadence. If the subject is in doubt, s/he fills in the blank marked question "?". Colwell defines this as "the ability to distinguish among three common kinds of cadence (full, half, deceptive)" (pp. 173-174).

VI. METHODOLOGY

Do MMs have more urgency in developing musical skills during college than NMMs? Music majors could have participated in high school music activities that were directly linked to the development of MI if they were planning a career in music. Non-music majors might have participated in music activities for reasons other than MI development, such as social interaction. Realizing that the comparison between music majors and non-music majors might provide additional insights regarding the evaluation of student outcome, the authors compared non-music majors (n=78) and the music majors (n=276).

This is not a longitudinal study: the instrumental postsecondary students were evaluated only once during the spring of 1991. To provide a fuller portrayal of the study's inter-related issues, inferential statistics were used. By using inferential statistics, the researchers realized that several assumptions were not strictly adhered to including: (a) students were not randomly assigned to the groups, and (b) the variance for each group was not equal (i.e., homogeneity of variance assumption) (Nunnally, 1978, pp 24-34). Therefore, instead of using randomly selected samples, the researchers used the total population of participants.

Since students spend varying amounts of time practicing per week, the ICS-2 items related to individual practicing (e.g., Performance Activities and Artistic Fundamentals ICS-2 areas) were transformed by multiplying the number of hours practiced each week times the percentage of time attributed to that item. The items are identified by the suffix "/T".

The following questions guided the study:

1. When descriptive analysis is used to examine the study's 66 "behavior" items, what is the typical profile for MMs and NMMs?

2. Using univariate analysis, which items had a significant association with the NMMs GT score?

3. Can Colwell's MAT3 and MAT4 differentiate between MMs and NMMs?

4. How do MMs and non-music majors differ in musical and non-musical experiences, performance activities, and the development of musical skills?

5. Using a preliminary regression statistic, what ICS-2 areas and items have an important association with the NMMs MI?

In response to question 1, descriptive analysis was used to compare the following for MMs and NMMs: (A) number of semesters and respective grades for each of the 10 course areas; (B) the percentage of time during individual practicing and during private lessons they emphasized each of the 8 **performance activities**; and (C) the percentage of time during individual practicing, band rehearsal, and private lessons they emphasized each of the 10 AFS. The descriptive analysis included: number (n) of responses, mean scores (M), standard deviation (SD), minimum (MIN), maximum (MAX), and range. The kurtosis and skewness were used to examine the normal distribution for each of the study's items.

Regarding question 2, the Pearson Product Moment correlation statistic was used to examine the association (both positive and negative) among the study's 71 items and the non-music majors' GT score.

To answer question 3, the t-test statistic was used to compare the music majors' and non-music majors' subtests, tests, and grand total (GT) test scores.

In response to question 4, the t-test statistic was used to examine the differences ($p \leq .05$) between the music majors' and non-music majors' demographic data, college course work, performance activities, and artistic fundamental skills.

Concerning question 5, Stepwise Regression statistic was used to examine each of the ICS-2 areas, subareas, and items' impact on MI. The percentage of variance between each area and MI was developed, and the positive and negative association with MI was noted.

VII. FINDINGS

A. When descriptive analysis is used to examine the study's 66 "behavior" items, what is the typical profile for music majors and non-music majors?

1. **Demographic (General).** (See Appendix B)

Music majors (MM) practice more hours and study less hours per week than NMMs . The MMs and NMMs have similar GPAs (3.3 vs 3.1). The MMs are about a year older (20.3 vs 19.2) than NMMs and started beginning band about a half year (5.9 vs 5.4) later than NMMs. Note that the MMs and NMMs collectively study about 17.5 hours per week, which includes practicing their instrument and academic study.

2. **College Course Work (CCW).** (See Appendix B)

a. **Number of Hours** As expected, MMs generally have taken over ***twice*** as many semester hours in private lessons, ear training, theory, keyboard/piano, music history, conducting, and general music education. In addition, MMs have participated in more voice/choir, and instrumental ensemble. Non-music majors have taken about twice the number of semester hours of general course work than MMs. The standard deviation analysis along with the maximum-minimum-range analysis suggests that there are three-plus standard deviations between both the MMs and NMMs number of semester hours in each course work area. The ranking analysis suggests that both the MMs and NMMs have taken the most course work in general academics , instrumental ensemble, and private lessons and the least hours in conducting, voice/choir, music education, and music history. Since the MM has averaged about 32 (≈ sophomore status) semester hours compared to the NMM's 21 (≈ freshman status) semester hours, the MM generally reflects a higher college grade level status.

b. **Course Grade** The MM's reflected higher grades than the NMM's in private lessons, ear training, theory, keyboard/piano, music history, conducting, and [general] music education. In addition, MMs received higher grades in voice/choir, instrumental ensemble, but lower grades in general academic classes. The ranking analysis (i.e.,mean analysis) reflected that both the MMs and NMMs earned the high grades in instrumental ensemble, and private lessons. Music majors earned the lowest grades in music history, general academics, and ear training, and NMMs earned the lowest grades in conducting, voice/choir, and music education. When the grades in the 10 course areas are examined collectively, MMs average about a 3.4 GPA and the NMMs average about a 2.3 GPA.

3. **Performance Activities (PA).** (See Appendix B)

a. **Percent Individual Practicing** Again, as expected, the MMs averaged more hours per week practicing scales, etudes, thirds/arpeggios, sight-reading, solos, and other than NMMs. Non-music majors practiced more hours on band music and improvisation than MMs. Music majors average about 1 1/2 hours a day or 11.5 hours per week and NMMs average about 48 minutes per day or about 5.6 hours a week practicing their instruments—MMs practice about twice as much as NMMs. The ranking analysis suggests that both the MMs and NMMs typically emphasize solos, etudes, and scales and deemphasize improvisation, sight-reading, and thirds/arpeggios during practicing.

b. **Percent Private Lessons** The NMMs averaged a smaller percentage of time during private lessons emphasizing scales, thirds/arpegglos, band music, sight reading, and improvisation than MMs. The MMs averaged more time on etudes, solos, and other than NMMs. Similar performance activities are emphasized by both MMs and NMMs during private lessons. The standard deviation analysis and the range analysis reflect three-plus deviations between the top and bottom students for each of the five demographic items. The analysis suggested that private teachers used the same instructional strategy and emphasized the same performance activities during private lessons for both MMs and NMMs.

4. **Artistic Fundamental Skills (AFS).** (See Appendix B)

a. **Percent Individual Practicing** The analysis reflects that MMs spent about 300% more time emphasizing tone, 250% more time on intonation, 200% on technique, and about 300% more emphasizing dynamics per week than NMMs, but about the same percentage on ensemble and theory . The MMs spent about 300% more on dynamics, 250% on rhythm, 50% less on history, and slightly more on form. The ranking analysis reflected that most items were similarly emphasized or deemphasized during lessons. MMs generally placed more emphasis on dynamics and less on theory than NMMs. Both MMs and NMMs emphasized tone, technique, and rhythm during their lessons and deemphasized history, form, and ensemble.

b. **Band Rehearsal** The mean analysis and ranking analysis suggested that MMs and NMMs emphasized or deemphasized similar AFS during band rehearsals. Both emphasized ensemble , intonation, tone and dynamics and deemphasized history, theory, and form. The mean analysis reflected that both groups generally emphasized tone, intonation, phrasing, ensemble, technique, dynamics, and rhythm about five times more during band rehearsal than history, form, and theory. The analysis suggested that band directors had an equal influence on both MMs and NMMs.

c. **Private Lessons** During private lessons, MMs allocated a larger percent of time on tone , phrasing, technique, dynamics, and history. Non-music majors emphasized intonation, ensemble , rhythm, form, and theory more than MMs during private lessons. The ranking analysis reflected that both groups of instrumentalists generally emphasized and deemphasized the same things during private lessons. Both MMs and NMMS emphasized tone, technique, and phrasing, and deemphasized history , ensemble, and theory during private lessons. The analysis suggested that private teachers used the same instructional strategy and emphasized the same AFSs during private lessons for both MMs and NMMs.

d. **Similarities among activities (practicing, band rehearsals, and private lessons)** Both MMs and NMMs emphasized tone and technique in all three instrumental activities and deemphasized history, form, and theory. Understandably, ensemble was deemphasized during individual practicing and private lessons but strongly emphasized during band rehearsals.

B. **Using univariate analysis, which items have a significant association with the non-music majors' musical independence [GT score]?** (See Appendix C)

1. **Negative Associations** Of the study's 71 items, the Pearson Product Moment data analysis reflected four items with a significantly negative association with the student's MI (see Appendix C). Two items were in the Performance Activities area and two items were in the Artistic Fundamental Skills area. The negative items included:

(1) the percentage of time a NMM emphasized band music during private lessons,
(2) the amount of time the student practiced band music,

(3) the percentage of time the student emphasized form during private lessons, and
(4) the amount of time the NMM emphasized rhythm during individual practicing.

2. **Positive Associations** The Pearson Product Moment correlation analysis was used to analyze the relationship between the NMMs' MI and each of the study's 71 items (see Appendix C). Seven items reflected a positive association between MI and college skills or activities. Items with a significantly positive association with MI included the NMM's:

(1) college GPA,
(2) grade in Keyboard/Piano,
(3) course grade in general academics,
(4) course grade in ear training,
(5) number of semesters the NMM took theory,
(6) the percentage of time the NMM emphasized solos during private lessons, and
(7) the percentage of time they emphasized intonation during band rehearsal.

3. **No Significant Association** Sixty of the study's 71 items had no significant association with the NMM's MI.

C. **Can Colwell's MAT3 and MAT4 differentiate between music majors' and non-music majors' MI?**

The t-test statistic was used to compare the MMs' and NMMs' subtests, tests, and grand total MI scores (see Appendix D). The MMs scored higher than the NMMs on each of the four MAT3 subtests. The MMs scored significantly higher on ST2, ST3, and ST4, but not significantly higher on ST1. The MMs scored significantly higher on the five MAT4 subtests than the NMMs. The MMs earned significantly higher scores on MAT3 (60.2 vs 54.7), MAT4 (72.1 vs 64.2), and the GT (132.3 vs 118.8).

Based on measurable and identifiable MI indicators viewed from a variety of perspectives (i.e., subtests, tests, and grand total tests), the MMs scored significantly higher than the NMMs and therefore reflected a significantly higher level of MI. This further illustrates that melody recognition (MAT3, ST2), pitch recognition (MAT3, ST3), instrument recognition (MAT3, ST4), composer (MAT4, ST1), musical texture (MAT4, ST2), auditory-visual discrimination (MAT4, ST3), chord recognition (MAT4, ST4), and cadence recognition (MAT4, ST5) are strongly linked to MI growth.

D. **How do music majors and non-music majors differ in musical and non-musical experiences, performance activities, and the development of musical skills?**

Traditionally, many activities and experiences are attributed or possibly related to the development of MI. Which of the study's items are significantly different between MMs and NMMs? The complete t-test ($p \leq .05$) data analysis for this question is provided in Appendix E.

1. **Demographics** The MMs practice significantly more hours per week (M=11.4 vs 4.2), are significantly older (M=20.3 vs 19.2), and started beginner band at a higher grade level (M=5.9 vs 5.4) than NMMs.

2. **College Course Work** The MMs have taken more semester hours in all the music related course work items than NMMs. Of the 10 CCW items, nine relate to music, and in each instance, MMs have taken more courses. For example, MMs have significantly more private lessons, ear training , theory, keyboard/piano, music history, conducting, [general] music education, voice/choir, and instrumental ensemble. In general academics, the single item in the CCW area not related to music or music education, NMMs have taken significantly more semester hours than MMs (M=8.8 vs 14.3).

The instrumentalist's grades in course work are another possible indicator of MI development. The MMs did not make significantly higher grades in private lessons, but did make higher grades than NMMs in ear training, theory, keyboard/piano, music history, conducting, music education, voice/choir, and instrumental ensemble. There was no significant difference between MMs and NMMs grades in general academics.

3. Performance Activities

a. Individual Practicing

i. **Percent of Time** There was no significant difference between the percentage of time the MMs and NMMs emphasized scales, improvisation, and "other". The MMs spent a significantly larger percentage of time practicing etudes, third/arpeggios, and solos. The NMMs spent a significantly larger percentage of time practicing band music and sight-reading.

ii. **Transformed data** (i.e., hours practiced per week times the percentage of time emphasizing the activity). When the actual time-on-task was examined (instead of percentage of time on respective activity), the MMs spent more hours per week than the NMMs practicing scales, etudes, thirds/arpeggios, sight-reading, solos, and "other". Interestingly, there was no significant difference between the number of hours per week that the MMs and NMMs practiced band music and improvisation.

b. Private Lessons During Private lessons, there was no significant difference in the percentage of time the MMs and NMMs emphasized scales, etudes, thirds/arpeggios, solos, improvisation, and "other". The NMM spent a significantly larger percentage of time emphasizing band musicand sight-reading.

4. Artistic Fundamental Skills

a. Individual Practicing

i. **Percent of Time** The percentage of time allocated to each AFS was examined for the MMs and NMMs. There was no significant difference between the percentage of time the MMs and NMMs emphasized tone, intonation, technique, dynamics, rhythm, history, form, or theory. The MMs spent significantly more time emphasizing phrasing, and significantly less time emphasizing ensemble. Simply, there was no significant difference in the percentage of time the instrumentalist emphasized 8 of the 10 AFS.

ii. **Transformed data (time-on-task)** The specific number of hours per week the instrumentalist emphasized each of the AFS during individual practicing was examined. The MMs spent significantly more hours emphasizing all AFS including: tone, intonation, phrasing, ensemble, technique, dynamics, rhythm, history, form, and theory.

b. Band Rehearsal During the instrumentalist's band rehearsals, there was no significant difference in the percentage of time they emphasized 9 of the 10 AFS. The MMs spent significantly more time emphasizing phrasing ($\underline{M}$=11.8 vs 9.8, $p \leq .011$) during band rehearsal than NMMs.

c. **Private Lessons** During private lessons, there was no significant difference in the percentage of time the instrumentalist emphasized 9 of the 10 AFS. The MMs spent significantly more time emphasizing phrasing ($\underline{M}$=14.9 vs 12.1, $p \leq .02$) than NMMs.

E. Using a preliminary regression statistic, what ICS-2 areas and items have an important association with the non-music majors' MI?

Since there were only 66 NMM participants, this might be viewed as a minimum statistical "n". Also, not every NMM responded to every ICS-2 item. For example, 10 NMMs were given a grade in

conducting, 15 were awarded a grade in music education, 27 responded to the percentage of time they practiced improvisation during practicing, and 18 responded to thinking of theory, and 13 responded to thinking about history [music] during private lessons. Alternatively, most of the other items reflected a large "n". Because of the many missing cells (responses for a respective item), the authors elected to use Stepwise Regression to examine each of the areas and subareas.

1. **Stepwise Regression (Forward)** In the **Demographic** area, the analysis reflected that college GPA accounted for 18.7% of the variance for NMM's association with MI (See Table 1). In the **CCW** area dealing with the number of semesters, 17.8% of the relationship between the NMM's MI was associated to theory (positive) and conducting (*negative*); 0% of the variance was identified in the NMM's grades in these 10 course items indicating that "college" grades have no association with MI. In the **Performance Activities** area, 15.8% of the variance was associated with practicing band music (*negative*), and 28.8% of the variance was related to the emphasis of band music (*negative*) during private lessons. During the development and emphasis of **Artistic Fundamental Skills**, 15.5% of the variance was related to the emphasis of rhythm (*negative*) and phrasing (positive) during individual practicing, 6.8% of the variance was related to the emphasis of intonation (positive) during band rehearsals, and 21.5% of the variance was associated with the emphasis of form (*negative*) and rhythm (*negative*) during the NMM's private lessons. From an overview perspective, band music, form, rhythm, and conducting have *negative* associations and college GPA, theory, phrasing, and intonation have positive associations.

Table 1. Stepwise Regression statistic used to examine the relationship between areas and subareas and the non-music major's musical independence.

AREA	SUBAREA	Adj.: R^2	1st	Slope & %	2nd	Slope & %
Demog.	•	18.7%	Col. GPA	•	•	•
CCW	No. of Semesters	17.8%	Theory	6.7%	Conducting	-11.1%
CCW	Grade	0.0%	•	•	•	•
PA	Indiv. Practicing	15.8%	Band Music	-15.8%	•	•
PA	Private Lessons	28.8%	Band Music	-28.8%	•	•
AFS	Indiv. Practicing	15.5%	Rhythm	-7.4%	Phrasing	8.1%
AFS	Band Rehearsal	6.8%	Intonation	6.8%	•	•
AFS	Private Lessons	21.5%	Form	-13.0%	Rhythm	-8.5%
	Average	15.6%				

2. **Exploratory Multiple Regression** The exploratory multiple regression statistic was used to re-examine the relationships between the study's 71 independent variables and the NMM's musical independence (see Appendix F, 3rd page). The authors elected to include only items with 50 or more responses. Seven variables had a significant association with the instrumentalist's level of MI. The four independent variables with a positive association with MI included the number of general academic courses and keyboard/piano courses the NMM had taken in college, and the percentage of time the NMMs emphasized phrasing and theory during individual practicing. Items with a negative relationship to MI included the percentage of time they emphasized band music and scales during private lessons, and the number of semesters they took conducting in college. Where the Pearson Product Moment

correlation statistic helped to identify 11 independent variables with a significant association with MI, the exploratory multiple regression statistic found 7 independent variables with an important association with the NMM's level of MI.

VIII. CONCLUSIONS

A. Colwell's MAT3 and MAT4 successfully evaluated the MI of postsecondary music majors and non-music majors.

Colwell's MAT3 and MAT4 were designed to evaluate middle and high school students, not postsecondary students. Music majors, as expected, reflected significantly higher scores than NMMs on eight of the nine subtests,MAT3, MAT4, and on the Grand Total Tests (MAT3 plus MAT4) (see Appendix D). On the one subtest where there was no significant difference (MAT3, ST1), MMs earned higher scores ($p \leq .08$).

Without accountability, there is no credibility. Likewise, knowledge is the basis of discrimination. Historically, many music educators have argued that aesthetics cannot be measured in a conventional manner. Postsecondary instrumental music students possess measurable and identifiable music skills that relate to the student's growth. Using these tests collectively, non-music majors' MI were successfully evaluated using auditory paper-and-pencil tests, and therefore, Colwell's MAT3/MAT4 are effective MI tests for evaluating postsecondary students and programs.

B. Music majors and non-music majors emphasize or deemphasize similar performance activities or artistic fundamental skills in their related MI development.

Both groups emphasize the mastery of scales and etudes during practicing and deemphasize improvisation. The primary difference during individual practicing is that NMMs rate practicing band music important and MMs do not. Why do NMMs spend a significantly larger percentage of time emphasizing band music and sight reading (Appendix E)? Does this suggest that the NMMs have a higher level of urgency when preparing for band than private lessons? Does this suggest that private teachers generally demanded less from NMMs during private lessons than MMs during private lessons?

During private lessons, the ranking analysis reflected that the NMMs and MMs emphasized solos, etudes, and scales, and deemphasized improvisation and band music (see Appendix B). The analysis further reflected that NMMs spent significantly more time emphasizing band music and sight reading, but not any of the other PAs. The NMMs emphasized the same PAs during individual practicing that they were taught during private lessons (Appendix E).

The mastery of artistic fundamental skills represents the foundation of musicianship. NMMs and MMs spent about the same percent of time emphasizing tone, technique, and rhythm; and deemphasizing history, form, and theory during individual practicing (Rankings: Appendix B). During band rehearsals, they both emphasized ensemble, intonation, and tone, and deemphasized history, form, and theory. During private lessons they both emphasized tone, technique, and phrasing, and deemphasized history, form, and theory.

C. Phrasing represents a higher-level MI skill.

When phrasing is compared to the other AFS, does it represent a higher level or more complex skill (Appendix E)? The MMs scored significantly higher on the MAT3 and MAT4 (appendix D). Does the analysis reflect that phrasing is an essential component of higher level MI development? While AFS such as tone, technique, dynamics, rhythm, form, history, and theory are primarily individual, isolated cognitive skills, phrasing represents the accumulative mastery of all of these skills. Individual practicing had a significant association with MI development, i.e., 16% of the variance (Appendix F). The amount of time the NMMs emphasized phrasing during individual practicing had a positive association with MI development ($p \leq .02$). Phrasing could be one of the most complex and difficult to understand AFSs. The analysis suggests that it acts as the rubrick for the other AFSs. Elementary AFSs need to be mastered before advanced AFSs are introduced to the student.

D. **Private lessons and individual practicing have a more important impact on MI development than participation in band rehearsals.**

During private lessons, about 22% of the AFS are associated with MI development, and during individual practicing, about 16% of the AFS are significantly related to MI development (Appendix F). Comparatively, about 7% of the AFS that are associated with MI development are connected to the NMM's band rehearsals. Why do NMMs learn two to three times more MI skills during private lessons and individual practicing than during band rehearsals? The only AFS that has an association with MI development during band rehearsals is intonation (Appendix F, $p \leq .05$); emphasizing tone, phrasing, ensemble, technique, dynamics, rhythm, history, form, and theory during band rehearsals has no association with students' MI development. During individual practicing, phrasing and rhythm have an association (two items) with MI, while rhythm and form (two items) have an association during private lessons. Why does participation in band rehearsals have so little impact on MI development? Does the band director believe and promote the notion that the mastery of a band piece has precedence over the NMM's development of MI skills? In an educational hierarchy, does the band director rate the marching band and concert band performances higher than than the musical skills related to MI? Is it time for music education departments to *reassess* the curriculum and start separating the "wheat from the chaff"?

E. **Practicing band music and sight-reading during individual practicing or during private lessons has a destructive impact on the NMM's development of musical independence.**

The EMR analysis reflects that the amount of time spent on practicing band music has the most negative impact on the NMM's musical development (Appendix F, 2nd page). The EMR analysis by area suggested that practicing band music or learning band music during private lessons has a significantly negative association with MI development. Of the 8 PAs, NMMs spend about 300% more time emphasizing band music during individual practicing or during private lessons than MMs (Appendix E). Involvement and emphasizing band music is one of two areas (sight reading is the other) that differentiates the performance areas of the NMMs from the MMs (Appendix E).

The t-test analysis reflected that emphasis on sight-reading is another destructive activity that can clearly differentiate the MMs from the NMMs. Sight-reading has either a neutral or a negative impact on MI. Why do music educators constantly promote the importance of practicing and rehearsing band music and sight-reading? The analysis suggested that NMMs think as they are taught, and their musical philosophy is an accurate reflection what is communicated to them by their private teachers, band directors, or other music educators.

F. **Most NMM's college activities and experiences have little association with MI development.**

The Pearson Product Moment correlation analysis reflected that about 11 of the study's 71 items had a significant association with MI—60 items did not have an important association with MI development (Appendix C). During individual practicing, seven of the eight PAs had no association with MI development, and emphasizing 6 of the 8 private lesson's PA had no relationship with the NMM's MI development. During individual practicing, band rehearsals, or private lessons, 9 of the 10 AFS had no important relationship to the NMM's MI development. Alternatively, the exploratory multiple regression analysis suggested that only 7 of the 71 independent variables had an important relationship to MI development. Why? Were the skills being taught at too advanced a level for the NMMs to understand and comprehend? Were the NMMs exposed to incompetent faculty members who could not teach these PA and AFS? Or did the NMMs perceive the activities and experiences as recreational instead of educational? The NMMs earn credit hours and are awarded grades in music education. They practice and are taught by private teachers or band directors the PAs and AFS. Isn't it time for music educators to be accountable for activities and experiences in which the NMM's participate?

G. **Many postsecondary schools will have to be examined collectively before an accurate**

portrayal of the things that have an impact on NMM's MI can be examined.

This study collectively examined the instrumental students participating in three large postsecondary schools and examined the relationships between 276 MMs and 65 NMMs activities and experiences and their level of MI. A review of the literature suggested that this study is one of, if not the largest, most comprehensive study of this kind ever conducted in music education. A weakness of this study is that many NMMs did not provide responses to all ICS-2 questions. The analysis reflected that 10 NMMs had taken one or more semesters of conducting, 14 had taken voice/choir, and 15 had taken one or more semesters of [general] music education classes. Without complete responses from all participants, and a larger "n", the task of a comprehensive examination of MI becomes difficult, if not impossible. Many of the things associated with NMM's MI will remain a mystery until a more comprehensive study is conducted examining the association between college activities and experiences and the NMM's level of MI.

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INSTRUMENTAL COLLEGE SURVEY-2

A. General

Social Security Number_____ **Instrument** _____

1. Instrumental Organization _____
2. College rank: (Fr) (So) (Jr) (Sr) (Masters) (Doctoral)
3. College major: Music ( ), Non-music ( )
4. Total years you have played your band instrument (*grade school to present*): _____
5. What grade did you start band?_____

- Gender (M) (F)
- College GPA _____
- Age _____

B. College Course Work

1. How many hours a week do you:
   a. Practice Instrument _____
   b. Study non-music course work _____
2. Number of semester (quarter) classes you have completed in each area
3. Your average grade in each area (*A-B-C-D-F*)

Using the following scale for Questions 4-5, ***RATE*** *each activity as to its importance in:*

	Private (Inst.) Lessons	Ear training	Theory	Keyboard/Piano	Music History	Conducting	Music Education	Voice/Choir	Inst. Ensemble	General Academic

5 VERY important 4 Important
3 Somewhat Important
2 Little Importance 1 NOT important

4. Developing musicianship										
5. In your opinion, how would the music faculty **RATE** each area's importance?										

6. The music course(s) that helped your musicianship the **most**? _____
   _____ **Least?** _____

C. High School Music Activities

1. High school GPA _____
2. ACT score _____ SAT score _____
3. Excellent high school musicians emphasize _____
4. How many **YEARS** did you participate in each of these high school activities?

Using the following scale for Questions 5-6, ***RATE*** *each activity as to its importance in developing* ***MUSICIANSHIP****:*

5. Your **Musical Development**
6. In your opinion, how would your high school **Band Director** rate each area's importance?

	All-State Band	All-State Orchestra	All-State Jazz Band	All-State Choir	Concert Festival	Solo-Ensemble	Marching Contests	Private Lessons	Church/Community Choir	High School Jazz Band	Community Band

5 Very important 4 Important 3 Somewhat Important,
2 Little Importance 1 Not important

OVER

D. College Music Activities

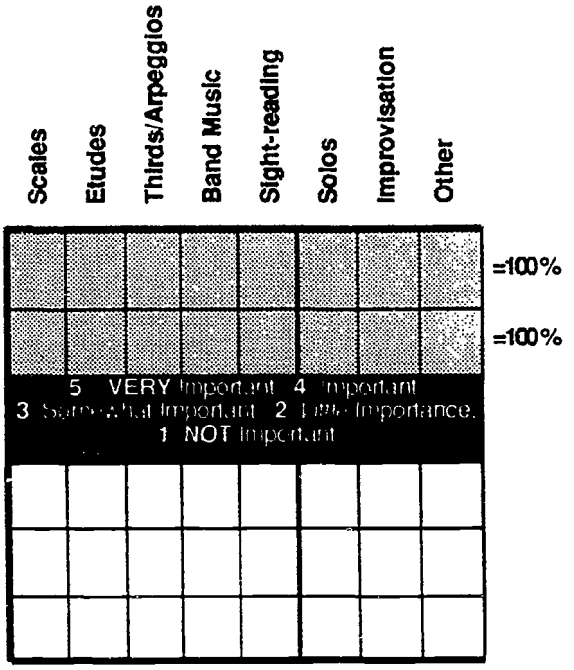
1. The percentage (%) of time you use a metronome during practicing?_____

Make sure Questions 2 and 3 each add up to 100%
What percentage (%) of time do you spend on the following activities during:

2. **Individual Practicing**
3. **Private Lessons** (*Major Inst.*)

Using the following scale for Questions 4-6, give YOUR PERCEPTION of how the following individuals would **RATE** each activity's importance in developing **MUSICIANSHIP**:

4. **Yourself**
5. Your private instrumental **Teacher**
6. Your college **Band Director**



7. Number of minutes per month you make a audio/video recording of your playing _____
8. Number of minutes per week you ask a **classmate/friend/faculty member** (*exclude private instrument teacher*) to listen/critique your instrument playing _____

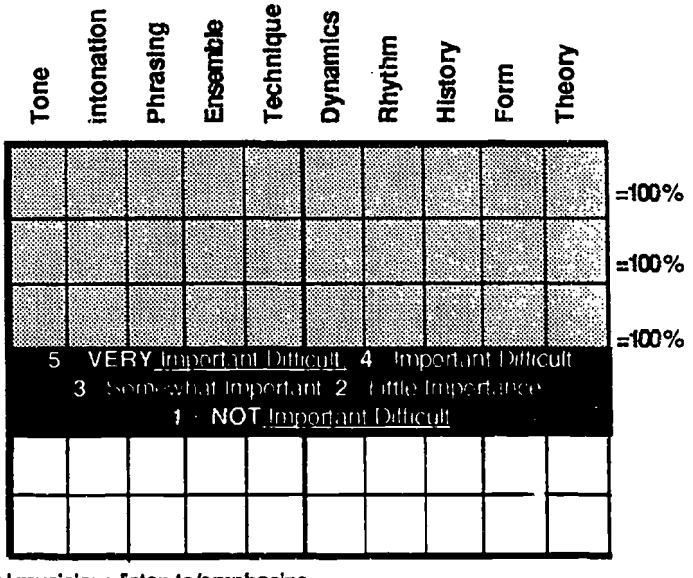
E. Musicianship

Make sure Questions 1, 2, and 3 each add up to 100%
What percentage (%) of time is spent practicing / thinking about these music items during:

1. **Individual Practicing?**
2. **Band Rehearsal?**
3. **Private Lessons ?**

*Using the following scale for Questions 4-5, **RATE** each activity in developing musicianship from the following perspectives:*

4. Its **Importance**
5. How **Difficult** is it to learn/master



6. When Performing, **excellent** instrumental musicians listen to/emphasize _____ while **poor** instrumental musicians listen to/emphasize _____

Descriptive Statistics

Demographics	Music Majors N:	M:	Rk	SD	Min.:	Max.:	Range:	Non-Music Majors N:	M:	Rk	SD	Min.:	Max.:	Range:
1 Prac./ Wk (Hrs)	273	11.37		5.74	0	30	30	65	4.15		3.03	0	11	11
2 St./Wk(Hrs)	260	6.29		4.95	0	28	28	60	14.22		9.43	1	40	39
3 Co. GPA	252	3.26		.52	1	4	3	58	3.14		.58	1.6	4	2.4
4 Age	263	20.33		2.94	18	48	30	64	19.16		1.14	17	23	6
5 Grade	270	5.90		1.32	3	13	10	64	5.39		1.06	3	8	5
B: College Course Skills														
Number of Semester Hours														
1 B2 PL--Private Lessons	272	4.65	8	4.1	0	32	32	65	1.49	8	1.87	0	6	6
2 B2 ET--Ear Training	271	2.77	6	1.8	0	15	15	65	.55	6	1.28	0	5	5
3 B2 TH--Theory	271	3.23	7	2.4	0	18	18	65	.59	7	1.24	0	5	5
4 B2 KP--Keyboard/Piano	269	2.19	5	1.6	0	10	10	65	.40	5	1.03	0	5	5
5 B2 MH--Music History	271	1.27	3	2.0	0	12	12	65	.39	4	.76	0	4	4
6 B2 CO--Conducting	268	.68	1	1.5	0	12	12	65	.08	1	.51	0	4	4
7 B2 ME--Music Education	268	1.88	4	4.9	0	70	70	65	.19	2	.64	0	4	4
8 B2 VC--Voice Choir	267	.72	2	1.7	0	20	20	65	.20	3	.78	0	5	5
9 B2 IE--Instrumental Ensemble	270	6.38	9	8.3	0	70	70	65	2.68	9	2.71	0	11	11
10 B2 GA--General Academics	262	8.29	10	11.4	0	72	72	65	14.31	10	25.04	0	180	180
Average		*3.21*							*20.9*					
Average Grade														
1 B3 PL--Private Lessons	266	3.77	9	.53	1	4	5	33	3.61	9	.66	2	4	2
2 B3 ET--Ear Training	257	3.15	3	.84	1	4	4	20	2.05	4	1.85	0	4	4
3 B3 TH--Theory	258	3.24	6	.93	1	4	4	24	2.29	6	1.81	0	4	4
4 B3 KP--Keyboard/Piano	236	3.60	8	.70	1	4	4	20	2.15	5	1.90	0	4	4
5 B3 MH--Music History	145	2.95	1	1.18	1	4	4	26	2.39	7	1.75	0	4	4
6 B3 CO--Conducting	104	3.17	4	1.47	2	4	5	10	.70	1	1.49	0	4	4
7 B3 ME--Music Education	155	3.34	7	1.23	2	4	4	15	1.60	3	1.84	0	4	4
8 B3 VC--Voice Choir	116	3.23	5	1.48	2	4	5	14	1.36	2	1.78	0	4	4
9 B3 IE--Instrumental Ensemble	260	3.95	10	.14	3	4	4	50	3.88	10	.59	0	4	4
10 B3 GA--General Academics	249	3.10	2	.68	1	4	5	56	3.21	8	.91	0	4	4
Average		*3.35*							*2.32*					
D: College Music Acitivties (Performance Activity Skills)														
Individual Practicing (%)	**Transformed DATA: Practicing (Hrs/Wk) X Percentage**													
1 *D2 SC/T--Scales*	*268*	*1.48*	*6*	*1.27*	*0*	*7.5*	*7.5*	56	.65	5	.70	0.02	3	2.98
2 *D2 ET/T--Etudes*	*271*	*2.38*	*7*	*2.10*	*0*	*11.9*	*11.9*	47	.81	6	.86	0.02	4	3.98
3 *D2 TA/T--Thirds/Arpeggios*	*267*	*.88*	*3*	*.92*	*0*	*6*	*6*	37	.44	1	.48	0.02	2.2	2.18
4 *D2 BM/T--Band Music*	*267*	*.89*	*4*	*1.02*	*0*	*7*	*7*	53	1.00	7	.90	0.01	4	3.99
5 *D2 SR/T--Sight Reading*	*267*	*.80*	*2*	*.89*	*0*	*6*	*6*	46	.58	4	.47	0.01	2	1.99
6 *D2 SO/T--Solos*	*268*	*3.71*	*8*	*2.85*	*0*	*18*	*18*	51	1.14	8	1.08	0.02	5	4.98
7 *D2 IM/T-Improvisation*	*267*	*.43*	*1*	*1.01*	*0*	*6*	*6*	27	.49	2	.50	0.01	1.8	1.79
8 *D2 OT/T--Other*	*262*	*.90*	*5*	*1.67*	*0*	*13*	*13*	34	.51	3	.49	0.03	2	1.97
Sum		*11.47*							*5.62*					

Private Lessons (%)	N:	M:	Rk	SD	Min.:	Max.:	Range:	N:	M:	Rk	SD	Min.:	Max.:	Range:
1 D3 SC--Scales	267	11.19	6	11.1	0	55	55	49	12.49	6	10.11	0	50	50
2 D3 ET--Etudes	268	26.79	7	18.5	0	85	85	49	22.78	7	18.95	0	90	90
3 D3 TA--Thirds/Arpeggios	267	5.20	3	6.4	0	35	35	49	5.41	2	6.024	0	25	25
4 D3 BM--Band Music	267	2.03	2	4.9	0	30	30	49	6.25	4	15.713	0	100	100
5 D3 SR--Sight Reading	267	6.36	4	9.2	0	60	60	49	11.67	5	11.926	0	50	50
6 D3 SO--Solos	268	39.06	8	22.9	0	100	100	49	33.16	8	24.531	0	90	90
7 D3 IM--Improvisation	267	1.24	1	4.8	0	40	40	49	1.78	1	4.15	0	20	20
8 D3 OT--Other	267	7.12	5	11.9	0	70	70	49	6.16	3	10.47	0	40	40

E: Musicianship (Artistic Fundamental Skills)

Individual Practicing (%)	Transformed DATA: Practicing (Time/wk) x Percentage													
1 *E1 TO/T--Tone*	*261*	*2.09*	*10*	*1.8*	*0*	*12.6*	*12.6*	54	.78	9	.62	0.1	2.8	2.7
2 *E1 IN/T--Intonation*	*261*	*1.31*	*5*	*1.1*	*0*	*5.6*	*5.6*	51	.56	6	.49	0.01	2	1.99
3 *E1 PH/T--Phrasing*	*261*	*1.38*	*6*	*1.0*	*0*	*6*	*6*	53	.51	5	.49	0.01	2	1.99
4 *E1 EN/T--Ensemble*	*261*	*.54*	*3*	*0.9*	*0*	*6*	*6*	34	.50	4	.45	0.05	2	1.95
5 *E1 TE/T--Technique*	*261*	*1.96*	*9*	*1.4*	*0*	*10.2*	*10.2*	54	.81	10	.69	0.03	2.8	2.77
6 *E1 DY/T--Dynamics*	*260*	*1.45*	*7*	*2.3*	*0*	*32.2*	*32.2*	53	.48	3	.33	0.01	1.2	1.19
7 *E1 RH/T--Rhythm*	*260*	*1.61*	*8*	*1.6*	*0*	*14*	*14*	56	.64	7	.55	0.03	2	1.97
8 *E1 HI/T--History*	*259*	*.24*	*1*	*0.5*	*0*	*3*	*3*	13	.38	1.5	.25	0.06	1	0.94
9 *E1 FO/T--Form*	*260*	*.45*	*2*	*0.6*	*0*	*3.45*	*3.45*	24	.38	1.5	.30	0.03	1	0.97
10 *E1 TH/T--Theory*	*260*	*.66*	*4*	*0.7*	*0*	*4.8*	*4.8*	18	.66	8	1.01	0.05	4.4	4.35
Band Rehearsals (%)														
1 E2 TO--Tone	260	12.98	8	8.8	0	50	50	59	11.54	6	8.30	0	40	40
2 E2 IN--Intonation	260	15.67	9	8.3	0	52	52	59	17.85	9	13.80	0	75	75
3 E2 PH--Phrasing	260	11.82	6	5.8	0	30	30	59	9.75	4	5.04	0	30	30
4 E2 EN--Ensemble	260	17.72	10	11.3	0	80	80	59	18.34	10	13.62	0	70	70
5 E2 TE--Technique	260	10.72	4	7.9	0	52	52	59	10.93	5	8.45	0	35	35
6 E2 DY--Dynamics	260	11.91	7	5.8	0	45	45	59	12.03	7	7.03	0	40	40
7 E2 RH--Rhythm	260	10.95	5	7.9	0	75	75	59	13.09	8	6.26	0	30	30
8 E2 HI--History	260	2.28	1	3.3	0	10	10	59	1.44	1	3.53	0	20	20
9 E2 FO--Form	260	3.26	3	4.1	0	20	20	59	2.73	3	4.05	0	10	10
10 E2 TH--Theory	260	2.34	2	3.6	0	20	20	59	1.75	2	3.52	0	15	15
Private Lessons (%)														
1 E3 TO--Tone	253	19.00	10	13.2	0	90	90	46	18.04	10	11.38	5	65	60
2 E3 IN--Intonation	253	10.95	5	7.6	0	40	40	46	12.76	7	7.29	0	30	30
3 E3 PH--Phrasing	253	14.87	8	7.8	0	52	52	46	12.07	6	5.20	2	25	23
4 E3 EN--Ensemble	252	2.71	2	4.2	0	20	20	46	3.61	2	4.29	0	10	10
5 E3 TE--Technique	254	18.09	9	8.9	0	60	60	46	17.94	9	10.09	0	50	50
6 E3 DY--Dynamics	253	11.03	6	6.0	0	50	50	46	10.91	5	5.62	0	25	25
7 E3 RH--Rhythm	253	12.66	7	8.0	0	60	60	46	13.50	8	7.47	3	30	27
8 E3 HI--History	253	2.60	1	3.6	0	15	15	46	2.30	1	3.71	0	10	10
9 E3 FO--Form	253	3.78	4	4.5	0	20	20	46	5.26	4	5.34	0	20	20
10 E3 TH--Theory	253	3.57	3	4.6	0	30	30	46	3.89	3	6.01	0	30	30

Appendix C

Pearson Product Moment Correlation : GT Score

Significant Associations (p≤.05)

	Variable	"R"	Number	1-tail P-value
Negative Associations with musical independence (MI)				
1	**D3 BM**	**-.536**	**49**	**.000**
2	**D2BM/T**	**-.399**	**62**	**.001**
3	**E3 FO**	**-.360**	**46**	**.014**
4	**E1RH/T**	**-.273**	**59**	**.037**
Positive Associations with musical independence (MI)				
5	**Co. GPA**	**.489**	**58**	**.000**
6	**B3 KB**	**.639**	**20**	**.002**
7	**B3 GA**	**.317**	**56**	**.017**
8	**D3 SO**	**.330**	**49**	**.021**
9	**B3 ET**	**.494**	**20**	**.027**
10	**B2 TH**	**.259**	**65**	**.037**
11	**E2 IN**	**.260**	**59**	**.047**

No Association between non-music majors MI and Activity/Skill (GT score)

	Variable	"R"	Number	1-tail P-value
Demographic				
12	**B1b. Study**	**-.117**	**60**	**.374**
13	Age	.068	64	.593
14	B1a. Pract.	.067	65	.599
15	Grade	.060	64	.640
College Course Skills				
	Number of Semester Hours			
16	B2 ET	.236	65	.058
17	B2 PL	.226	65	.070
18	B2 KB	.196	65	.118
19	B2 IE	.187	65	.136
20	**B2 CO**	**-.149**	**65**	**.237**
21	B2 GA	.146	65	.247
22	**B2 MH**	**-.142**	**65**	**.259**
23	B2 VC	-.008	65	.953
24	B2 ME	.007	65	.955
	Grades			
25	B3 VC	.493	14	.073
26	B3 TH	.304	24	.149
27	B3 ME	.340	15	.215
28	B3 PL	.186	33	.300
29	B3 CO	.226	10	.530
30	B3 IE	.086	50	.554
31	B3 MH	.111	26	.590

Clear = Positive/ non-significant associations with MI , and Shade = Negative/ non-significant associations with MI.

Performance Activities

% Individual Practicing

32	D2ET/T	.227	62	.077
33	D2SO/T	.220	62	.086
34	D2TA/T	.173	62	.178
35	D2HI/T	-.089	62	.598
36	D2SC/T	-.039	62	.765
37	D2SR/T	.037	62	.776
38	D2OT/T	.002	62	.988

% Private Lessons

39	D3 ET	.226	49	.119
40	D3 HI	-.126	49	.377
41	D3 SC	-.140	49	.336
42	D3 OT	-.147	49	.314
43	D3 TA	-.128	49	.380
44	D3 SR	.064	49	.664

Artistic Fundamentals

% Individual Practicing

45	E1FO/T	-.153	59	.245
46	E1HI/T	-.131	59	.322
47	E1EN/T	-.107	59	.421
48	E1PH/T	.101	59	.447
49	E1TO/T	.069	59	.606
50	E1TE/T	-.067	59	.667
51	E1DY/T	.021	59	.872
52	E1IN/T	-.015	59	.910
53	E1TH/T	.006	59	.965

% Band Rehearsal

54	E2 RH	-.246	59	.061
55	E2 TO	-.131	59	.323
56	E2 TE	.129	59	.329
57	E2 DY	-.125	59	.345
58	E2 HI	-.097	59	.467
59	E2 EN	-.093	59	.484
60	E2 PH	-.050	59	.705
61	E2 TH	.041	59	.758
62	E2 IN	-.001	59	.996

% Private Lessons

63	E3 DY	.267	46	.073
64	E3 EN	-.218	46	.145
65	E3 RH	-.203	46	.175
66	E3 PH	.164	46	.278
67	E3 TO	.092	46	.543
68	E3 TH	-.073	46	.631
69	E3 TE	.057	46	.708
70	E3 IN	.043	46	.777
71	E3 HI	.006	46	.971

Appendix D

T-Test

		Music Major n=276		Non-Music Major n=66				
		Mean:	Std. Dev.:	Mean:	Std. Dev.:	DF:	Unpaired t Value:	Prob. (2-tail):
MAT 3:	Subtest 1 (ST1)	16.79	2.33	16.24	2.37	340	1.72	.087
	Subtest 2 (ST2)	14.81	3.06	12.83	3.36	340	4.62	.000
	Subtest 3 (ST3)	15.26	3.16	12.86	3.81	340	5.32	.000
	Subtest 4 (ST4)	13.30	1.49	12.74	1.51	340	2.73	.007
MAT 4:	Subtest 1 (ST1)	15.05	3.83	11.99	3.98	340	5.79	.000
	Subtest 2 (ST2)	16.93	3.16	15.58	3.66	340	3.03	.003
	Subtest 3 (ST3)	15.80	2.76	14.47	3.01	340	3.46	.001
	Subtest 4 (ST4)	13.68	2.00	12.83	2.31	340	2.98	.003
	Subtest 5 (ST5)	10.69	2.24	9.29	2.50	340	4.45	.000
	MAT 3	60.17	7.15	54.68	8.57	340	5.38	.000
	MAT 4	72.14	9.10	64.15	10.57	340	6.21	.000
	Grand Total (GT)	132.308	14.675	118.833	18.17	340	6.384	.000

Appendix E

T-Test

Box = Largest item (MM vs NMM) and significant difference

			Music Major			Non-Music Major			Difference					
			N	Mean	Std. Dev.	N	Mean	Std. Dev.	DF	t-value:	P. (2-tail)	Sig: p≤.05	No Sig.	Ratio
Demographics														
1	Prac./ Wk (Hrs)		273	11.37	5.74	65	4.15	3.03	336	9.80	.000	✓		2.7
2	St./Wk(Hrs)		260	6.29	4.95	60	14.22	9.43	318	-9.18	.000	✓		.4
3	Co. GPA		252	3.26	.52	58	3.14	.58	308	1.50	.134		✖	1.0
4	Age		263	20.33	2.94	64	19.16	1.14	325	3.13	.002	✓		1.1
5	Grade		270	5.90	1.32	64	5.39	1.06	332	2.90	.004	✓		1.1
College Course Work (CCW)														
Number of Semesters														
1	B2 PL		270	4.69	4.09	65	1.49	1.87	333	6.14	.000	✓		3.1
2	B2 ET		258	2.91	1.71	65	.55	1.28	321	10.38	.000	✓		5.3
3	B2 TH		261	3.35	2.36	65	.59	1.24	324	9.16	.000	✓		5.7
4	B2 KB		239	2.46	1.49	65	.40	1.03	302	10.49	.000	✓		6.2
5	B2 MH		132	2.56	2.13	65	.39	.76	195	7.98	.000	✓		6.7
6	B2 CO		88	2.08	1.88	65	.08	.51	151	8.37	.000	✓		27.0
7	B2 ME		145	3.48	6.22	65	.19	.64	208	4.25	.000	✓		18.8
8	B2 VC		97	1.97	2.35	65	.20	.78	160	5.85	.000	✓		9.8
9	B2 IE		262	6.58	8.36	65	2.68	2.71	325	3.71	.000	✓		2.5
10	B2 GA		247	8.79	11.40	65	14.31	25.04	310	-2.59	.010	✓		.6
Grades														
1	B3 PL		264	3.75	.51	33	3.61	.66	295	1.53	.128		✖	1.0
2	B3 ET		253	3.20	.84	20	2.05	1.85	271	5.24	.000	✓		1.6
3	B3 TH		254	3.29	.84	24	2.29	1.81	276	4.87	.000	✓		1.4
4	B3 KB		235	3.62	.67	20	2.15	1.90	253	7.64	.000	✓		1.7
5	B3 MH		134	3.19	.86	26	2.39	1.75	158	3.56	.001	✓		1.3
6	B3 CO		86	3.78	.45	10	.70	1.49	94	14.71	.000	✓		5.4
7	B3 ME		139	3.72	.51	15	1.60	1.84	152	10.51	.000	✓		2.3
8	B3 VC		96	3.85	.38	14	1.36	1.78	108	12.21	.000	✓		2.8
9	B3 IE		258	3.98	.14	50	3.88	.59	306	2.42	.016	✓		1.0
10	B3 GA		243	3.14	.66	56	3.21	.91	297	-.70	.482		✖	1.0
Performance Activities														
Individual Practicing														
1	D2 SC		271	12.90	8.02	63	12.59	9.00	332	.27	.785		✖	1.0
2	D2 ET		271	20.79	14.71	63	13.02	15.49	332	3.74	.000	✓		1.6
3	D2 TA		270	7.31	6.02	63	5.05	6.36	331	2.65	.008	✓		1.4
4	D2 BM		270	8.36	8.57	63	27.32	27.97	331	-9.44	.000	✓		.3
5	D2 SR		270	7.27	6.97	63	9.76	8.58	331	-2.44	.015	✓		.7
6	D2 SO		271	33.02	18.09	63	21.35	19.88	332	4.52	.000	✓		1.5
7	D2 IM		270	3.68	7.88	63	3.95	7.23	331	-.25	.80[illegible]		✖	.9
8	D2 OT		265	6.94	11.63	63	6.27	9.69	326	.42	.674		✖	1.1
1	*D2 SC/T*	Transformed	*268*	*1.48*	*1.27*	*62*	*.59*	*.69*	*328*	*5.34*	*.000*	✓		2.5
2	*D2 ET/T*		*268*	*2.38*	*2.10*	*62*	*.62*	*.83*	*328*	*6.51*	*.000*	✓		3.9
3	*D2 TA/T*		*267*	*.88*	*.92*	*62*	*.26*	*.43*	*327*	*5.12*	*.000*	✓		3.3
4	*D2 BM/T*		*267*	*.89*	*1.02*	*62*	*.85*	*.91*	*327*	*.29*	*.771*		✖	1.0
5	*D2 SR/T*		*267*	*.80*	*.89*	*62*	*.43*	*.48*	*327*	*3.16*	*.002*	✓		1.9
6	*D2 SO/T*		*268*	*3.71*	*2.85*	*62*	*.94*	*1.07*	*328*	*7.53*	*.000*	✓		4.0
7	*D2 IM/T*		*267*	*.43*	*1.01*	*62*	*.21*	*.41*	*327*	*1.63*	*.105*		✖	2.0
8	*D2 OT/T*		*262*	*.90*	*1.67*	*62*	*.28*	*.44*	*322*	*2.89*	*.004*	✓		3.2

Private Lessons	1	D3 SC	267	11.19	11.06	49	12.49	10.11	314	-.77	.443		✖	.9
	2	D3 ET	268	26.79	18.47	49	22.78	18.95	315	1.39	.165		✖	1.2
	3	D3 TA	267	5.20	6.43	49	5.41	6.02	314	-.21	.832		✖	1.0
	4	D3 BM	267	2.03	4.92	49	6.25	15.71	314	-3.55	.000	✔		.3
	5	D3 SR	267	6.36	9.19	49	11.67	11.93	314	-3.54	.001	✔		.5
	6	D3 SO	268	39.06	22.93	49	33.16	24.53	315	1.64	.103		✖	1.2
	7	D3 IM	267	1.24	4.84	49	1.78	4.15	314	-.72	.471		✖	.7
	8	D3 OT	267	7.12	11.927	49	6.16	10.47	314	.52	.601		✖	1.2

Artistic Fundamental Skills

Individual Practicing	1	E1 TO	264	19.21	13.44	60	18.83	16.03	322	.19	.850		✖	1.0
	2	E1 IN	264	11.61	7.60	60	11.18	9.20	322	.38	.704		✖	1.0
	3	E1PH	264	12.10	6.10	60	9.60	6.25	322	2.85	.005	✔		1.3
	4	E1 EN	264	4.52	5.64	60	6.68	9.07	322	-2.37	.019	✔		.7
	5	E1 TE	264	17.58	9.31	60	17.80	13.23	322	-.15	.879		✖	1.0
	6	E1DY	263	12.33	14.57	60	11.33	6.84	321	.52	.606		✖	1.1
	7	E1 RH	263	14.14	10.05	60	15.30	11.15	321	-.79	.430		✖	.9
	8	E1 HI	262	1.86	3.14	60	1.37	2.74	320	1.13	.260		✖	1.4
	9	E1 FO	263	3.97	4.84	60	3.38	4.82	321	.85	.397		✖	1.2
	10	E1 TH	263	3.49	4.55	60	3.97	11.26	321	-.53	.597		✖	.9
	1	E1 TO/T	261	2.09	1.84	59	.71	.63	318	5.67	.000	✔		2.9
	2	E1 IN/T	261	1.31	1.12	59	.49	.49	318	5.52	.000	✔		2.7
	3	E1PH/T	261	1.38	1.00	59	.45	.49	318	6.90	.000	✔		3.0
	4	E1 EN/T	261	.54	.85	59	.29	.42	318	2.23	.026	✔		1.9
	5	E1 TE/T	261	1.96	1.43	59	.74	.69	318	6.34	.000	✔		2.6
	6	E1 DY/T	260	1.45	2.30	59	.43	.34	317	3.38	.001	✔		3.3
	7	E1 RH/T	260	1.61	1.57	59	.61	.55	317	4.82	.000	✔		2.6
	8	E1 HI/T	259	.24	.48	59	.08	.20	316	2.45	.015	✔		2.9
	9	E1 FO/T	260	.45	.62	59	.16	.27	317	3.59	.000	✔		2.9
	10	E1 TH/T	260	.42	.66	59	.20	.63	317	2.30	.022	✔		2.1
Band Rehearsal	1	E2 TO	260	13.87	17.53	59	11.54	8.30	317	1.00	.320		✖	1.2
	2	E2 IN	260	15.67	8.31	59	17.85	13.80	317	-1.58	.115		✖	.9
	3	E2 PH	260	11.82	5.76	59	9.75	5.04	317	2.55	.011	✔		1.2
	4	E2 EN	260	17.72	11.29	59	18.34	13.62	317	-.37	.715		✖	1.0
	5	E2 TE	260	10.72	7.88	59	10.93	8.45	317	-.18	.856		✖	1.0
	6	E2 DY	260	11.91	5.82	59	12.03	7.03	317	-.14	.889		✖	1.0
	7	E2 RH	260	10.95	7.85	59	13.09	6.26	317	-1.95	.052		✖	.8
	8	E2 HI	260	2.28	3.27	59	1.44	3.53	317	1.75	.080		✖	1.6
	9	E2 FO	260	3.26	4.10	59	2.73	4.05	317	.90	.370		✖	1.2
	10	E2 TH	260	2.34	3.60	59	1.75	3.52	317	1.14	.255		✖	1.3
Private Lessons	1	E3 TO	253	19.00	13.21	46	18.04	11.38	297	.46	.647		✖	1.1
	2	E3 IN	253	10.95	7.57	46	12.76	7.29	297	-1.50	.134		✖	.9
	3	E3 PH	253	14.87	7.82	46	12.07	5.20	297	2.34	.020	✔		1.2
	4	E3 EN	252	2.71	4.21	46	3.61	4.29	296	-1.33	.183		✖	.7
	5	E3 TE	254	18.09	8.93	46	17.94	10.09	298	.11	.915		✖	1.0
	6	E3 DY	253	12.50	11.48	46	10.91	5.62	297	.92	.359		✖	1.1
	7	E3 RH	253	12.66	8.03	46	13.50	7.47	297	-.66	.512		✖	.9
	8	E3 HI	253	2.60	3.58	46	2.30	3.71	297	.51	.612		✖	1.1
	9	E3 FO	253	3.78	4.47	46	5.26	5.34	297	-2.00	.047		✖	.7
	10	E3 TH	253	3.57	4.58	46	3.89	6.01	297	-.41	.681		✖	.9

Transformed

Stepwise Regression (Forward)

p≤.05

by ISC-2 group

Demographic

Current Estimates

SSE	DFE	MSE	R^2	R^2: Adj
13491.0	47	287.0	18.7%	17.0%

	Parameter	Estimate	nDF	SS	F Ratio	Prob>F
	Intercept	76.7	1	0	0	1
1	Co. GPA	13.91	1	3105.802	10.82	.00
2	Yrs/Inst.	•	1	4.707725	0.016	.90
3	Age	•	1	525.0657	1.863	.18
4	B1a. Pract.	•	1	630.0631	2.254	.14
5	B1b. Study	•	1	344.8183	1.207	.28

Step	Parameter	P	Seq SS	R^2	Association
1	Co. GPA	.002	3105.8	18.7%	Positive

College Course Work

A. Number of Semesters

Current Estimates

SSE	DFE	MSE	R^2	R^2: Adj
17446.321	62	281.3923	17.8%	15.2%

	Parameter	Estimate	nDF	SS	F Ratio	Prob>F
	Intercept	116.1	1	0	0	1
1	B2 PL	•	1	66.71	.23	.63
2	B2 ET	•	1	80.65	.28	.60
3	B2 TH	6.84	1	3320.09	11.80	.00
4	B2 KB	•	1	909.76	3.36	.07
5	B2 MH	•	1	373.41	1.33	.25
6	B2 CO	-13.99	1	2361.57	8.39	.01
7	B2 ME	•	1	282.54	1.00	.32
8	B2 VC	•	1	452.55	1.62	.21
9	B2 IE	•	1	202.63	.72	.40
10	B2 GA	•	1	552.07	1.99	.16

Step	Parameter	P	Seq SS	R^2	Association
1	B2 TH	.037	1427.862	6.7%	Positive
2	B2 CO	.005	2361.571	17.8%	Negative

B. Grade

Current Estimates

SSE	DFE	MSE	R^2	R^2: Adj
3198.9	8	399.9	0%	0%

	Parameter	Estimate	nDF	SS	F Ratio	Prob>F
	Intercept	119.888889	1	0	0	1
1	B3 PL	•	1	.96	.00	.96
2	B3 ET	•	1	168.93	.39	.55
3	B3 TH	•	1	168.93	.39	.55
4	B3 KB	•	1	1260.34	4.55	.07
5	B3 MH	•	1	850.69	2.54	.16
6	B3 CO	•	1	153.44	.35	.57
7	B3 ME	•	1	153.44	.35	.57
8	B3 VC	•	1	153.44	.35	.57
9	B3 IE	•	1	4.01	.01	.93
10	B3 GA	•	1	330.75	.81	.40

Performance Activities

A. Individual Practicing

Current Estimates

SSE	DFE	MSE	R^2	R^2: Adj
16502.9	60	275.0	15.8%	14.4%

	Parameter	Estimate	nDF	SS	F Ratio	Prob>F
	Intercept	126.68	1	0	0	1
1	D2SC/T	•	1	31.96	.11	.74
2	D2ET/T	•	1	437.32	1.61	.21
3	D2TA/T	•	1	809.42	3.04	.09
4	D2BM/T	-7.87	1	3103.07	11.28	.00
5	D2SR/T	•	1	291.99	1.06	.31
6	D2SO/T	•	1	511.07	1.89	.17
7	D2IM/T	•	1	.05	.00	.99
8	D2OT/T	•	1	311.53	1.14	.29

Step	Parameter	P	Seq SS	R^2	Association
1	D2BM/T	.001	3103.1	15.8%	Negative

B. Private Lessons

Current Estimates

SSE	DFE	MSE	R^2	R^2: Adj
11163.6	47	237.5	28.8%	27.2%

	Parameter	Estimate	nDF	SS	F Ratio	Prob>F
	Intercept	125.36	1	0	0	1
1	D3 SC	•	1	610.51	2.66	.11
2	D3 ET	•	1	230.16	.97	.33
3	D3 TA	•	1	397.25	1.70	.20
4	D3 BM	-.62	1	4506.66	18.97	.00
5	D3 SR	•	1	39.22	.16	.69
6	D3 SO	•	1	216.05	.91	.35
7	D3 IM	•	1	443.74	1.90	.17
8	D3 OT	•	1	430.99	1.85	.18

Step	Parameter	P	Seq SS	R^2	Association
1	D3 BM	.000	4506.7	28.8%	Negative

Artistic Fundamental Skills

A. Individual Practicing

Current Estimates

SSE	DFE	MSE	RSquare	RSquare Adj
14599.452	56	260.7045	15.5%	12.5%

	Parameter	Estimate	nDF	SS	F Ratio	Prob>F
	Intercept	123.18	1.00	0	0	1
1	E1TO/T	•	1.00	.65	.00	.96
2	E1IN/T	•	1.00	228.46	.87	.35
3	E1PH/T	11.76	1.00	1386.49	5.32	.02
4	E1EN/T	•	1.00	288.59	1.11	.30
5	E1TE/T	•	1.00	1.56	.01	.94
6	E1DY/T	•	1.00	518.96	2.03	.16
7	E1RH/T	-13.90	1.00	2496.33	9.58	.00
8	E1HI/T	•	1.00	144.10	.55	.46
9	E1FO/T	•	1.00	51.37	.19	.66
10	E1TH/T	•	1.00	2.40	.01	.92

Step	Parameter	P	Seq SS	R^2	Association
1	E1RH/T	.037	1286.8	7.4%	Negative
2	E1PH/T	.025	1386.5	15.5%	Positive

B. Band Rehearsal

Current Estimates

SSE	DFE	MSE	R^2	R^2: Adj
16104.5	57	282.5	6.8%	5.1%

	Parameter	Estimate	nDF	SS	F Ratio	Prob>F
	Intercept	114.27	1	0	0	1
1	E2 TO	•	1	428.15	1.53	.22
2	E2 IN	.33	1	1167.20	4.13	.05
3	E2 PH	•	1	14.58	.05	.82
4	E2 EN	•	1	185.12	.65	.42
5	E2 TE	•	1	866.76	3.19	.08
6	E2 DY	•	1	71.49	.25	.62
7	E2 RH	•	1	473.17	1.70	.20
8	E2 HI	•	1	31.51	.11	.74
9	E2 FO	•	1	7.72	.03	.87
10	E2 TH	•	1	208.51	.74	.40

Step	Parameter	P	Seq SS	R^2	Association
1	E2 IN	.047	1167.2	6.8%	Positive

C. Private Lessons

Current Estimates

SSE	DFE	MSE	R^2	R^2: Adj
11691.3	43	271.9	21.5%	17.8%

	Parameter	Estimate	nDF	SS	F Ratio	Prob>F
	Intercept	137.95	1	0	0	1
1	E3 TO	•	1	231.86	.85	.36
2	E3 IN	•	1	51.69	.19	.67
3	E3 PH	•	1	524.04	1.97	.17
4	E3 EN	•	1	475.79	1.78	.19
5	E3 TE	•	1	59.02	.21	.65
6	E3 DY	•	1	999.67	3.93	.05
7	E3 RH	-.73	1	1264.06	4.65	.04
8	E3 HI	•	1	151.25	.55	.46
9	E3 FO	-1.46	1	2576.90	9.48	.00
10	E3 TH	•	1	6.78	.02	.88

Step	Parameter	P	Seq SS	R^2	Association
1	E3 FO	.014	1928.0	15.0%	Negative
2	E3 RH	.037	1264.1	21.5%	Negative

Exploratory Multiple Regression

Count:	R:	R-sq.:	R^2	RMS Res.:
58	0.73	0.533	46.7%	12.606

Analysis of Variance Table

Source	DF:	SS	Mean Sq.:	F-test:
REGRESSIO	7	9063.36	1294.77	8.15
RESIDUAL	50	7945.75	158.92 p = .0001	
TOTAL	57	17009.103		

Beta Coefficient Table

Variable:	Coeff:	Std. Err.:	Std. Coeff.:	t-Value:	P
NTERCEPT	117.59				
D2EMUS	-5.19	1.25	-.45	-4.17	.0001
B2 GA	.43	.12	.36	3.60	.0007
B2 CO	-14.66	4.23	-.46	-3.46	.0016
B2 KB	7.04	2.18	.44	3.23	.0022
E1PH/T	14.91	4.80	.42	3.11	.0031