

The Comparative Effects Of Two Tonal Pattern Systems and Two Rhythm Pattern Systems For Learning To Play The Guitar

By Peter Gouzouasis

University of British Columbia

Most children and young adults who learn to play the guitar become interested in playing it through their exposure to contemporary media. Although the guitar is one of the most popular instruments of the twentieth century, little or no scientifically researched techniques and materials for teaching the guitar have been published. This study is a report on the development of a systematic approach to teaching the guitar based on Gordon's (1989) rhythm and tonal pattern taxonomies.

Traditional approaches to teaching novice guitarists are distinguished by numerous characteristics that have become generally accepted features of guitar texts (Bay, 1976, 1977 & 1980; Bennett, 1966 & 1967; Block, 1982; d'Auberge & Manus, 1959 & 1966; Fox & Weissman, 1978; Leavitt, 1970; Schmidt, 1980; Traum, 1984; Van Auken, 1964). Unfortunately, most of the lesson materials and music activities found in these traditional introductory guitar instruction texts are de-

signed only to teach techniques for playing the guitar, at the expense of learning general musicianship. From a rhythm perspective, the duration of notes and beats are counted with numbers in duple and triple meter. Meters and note values are described in terms of mathematical relationships rather than in terms of aural relationships.

For example, the durational values of rhythm patterns are formed by either dividing large note values into small rhythm components or by adding small note values to form large rhythm components. Picking and strumming patterns are mechanically derived and mathematically related, and picking and strumming motions are described in terms of down and up picking related to the mathematical division of the beat.

From a tonal perspective, letter names are associated with the location of pitches on the guitar strings. Pitches are taught by grouping notes on strings, usually from the first string to the sixth string. Illogically constructed melodic fragments, comprising two or three pitches, are commonly used to introduce pitches on the guitar. Songs in major tonality and melodic fragments without a tonal center are usually emphasized, and few introductory guitar texts introduce music in minor, dorian, or mixolydian tonalities. Pentatonic tonalities are rarely considered outside a rock or blues context. Furthermore, there is no logical sequence to teaching chord structures. Learn-

Peter Gouzouasis is Assistant Professor of the Faculty of Education in the Department of Visual and Performing Arts in Education and Coordinator of Graduate Programs at the University of British Columbia, Vancouver. His research interests include early childhood music education with an emphasis on the relationship between developmental music aptitude and music skills acquisition.

ing to play chords is not based upon musical principles, but rather on the use of particular chords as they appear in songs found in guitar texts. Also, visual and aural relationships between chord patterns are rarely dealt with on a technical or musical level. With few exceptions, most traditional approaches to teaching guitar emphasize the theoretical explanation of music principles rather than understanding sound relationships.¹

Audiation is the ability to comprehend music when the sound is not physically present (Gordon, 1989). Audiation is considered an innate music ability by which humans gain music knowledge and learn to understand music relationships. Like thinking, audiation is a conceptual process. In a music learning model that includes audiation, both percepts (that which is heard) and concepts (that which is audiated) are important processes in the acquisition of music information. The innate ability to audiate is perhaps the most important aspect of music learning, because without audiation one cannot organize and comprehend music logically. Because of the relationship between music aptitude (innate music ability, embodied by audiation) and music achievement (learned music skills), success in learning to play an instrument is influenced in part by one's level of music aptitude.

Relatively few traditional guitar manuals address the development of music audiation abilities and singing skills, yet the development of music abilities and skills of children should be of primary concern to classroom music teachers and instrumental teachers. When a guitar student can sing a song, chant a rhyme, or move to a particular music composition, those skills may be transferred in a natural and logical manner to the guitar. That is because the song, chant, or movement has become a natural part of the student's music vocabulary. The song, chant, or movement is familiar music information that may be trans-

ferred from a familiar performance medium, i.e., the voice and body, to an unfamiliar music medium, i.e., the guitar. To develop comprehensive musicianship, there should be an emphasis on the development of audiation, the development of singing and movement skills, and the development of executive technique through music experiences.

Grunow and Gordon (1987) have developed an approach to teaching wind instruments that is based on the student's ability to audiate, chant rhythm patterns, and sing

tonal patterns and songs. Prerecorded cassette tapes and instruction manuals are used to teach students tonal patterns, rhythm patterns, and songs.

For example, there are 16 units of lesson material and 16 units of music enrichment material included on the cassette tape for primary level instruction in the soprano recorder method. Tonal and rhythm pattern taxonomies were constructed and sequentially structured for each instrument. Those tonal and rhythm patterns are audiated, sung and chanted, and transferred to the instrument in a

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logically consistent manner. In a tonal context, the student first learns to audiate and to sing tonal patterns using a neutral syllable, then learns to audiate and sing the same patterns using tonal syllables, and then learns to audiate and perform the same patterns using an instrument. In a rhythm context, the student learns to audiate and to chant rhythm patterns using a neutral syllable, to audiate and chant rhythm patterns using rhythm syllables, and learns to audiate and perform the same patterns using an instrument.

Each song on the tape is sung by a male or female voice with piano accompaniment, then sung with piano accompaniment only. Songs

are imitated by the student on the recorder after he or she listens to a professional recorder player accompanied by a piano. The student performs the songs with piano accompaniment only. In the soprano recorder manual, style of articulation, tone quality, and phrasing are taught by asking students to audiate and echo music examples performed by a professional musician on the instructional tape. Fingering pattern charts with the appropriate tonal syllables (not letter names) are used as a reference tool, but not as a teaching technique, to locate particular pitches.

Although Grunow and Gordon (1987) organized tonal and rhythm pattern taxonomies for teaching wind instruments, there is no published research on the content of the pattern taxonomies for each instrument. The selection of patterns for their instrumental texts was based upon the consideration of audiation difficulty levels of patterns and the executive technique difficulty levels of patterns. They were selected from taxonomies of hierarchically ordered (easy to audiate, moderately difficult to audiate, and difficult to audiate) tonal patterns and rhythm patterns. In his factor analysis of tonal and rhythm patterns, Gordon determined only the audiation difficulty levels—not the achievement difficulty levels (singing, chanting, or instrumental performance)—of tonal and rhythm patterns (Gordon 1978).

Many music educators consider tonal and rhythm patterns to be the fundamental components of music. In a progressive guitar approach, tonal and rhythm patterns, along with songs and chants, may be considered the fundamental elements of music learning. Although other music education researchers have developed tonal and rhythm pattern taxonomies for wind instruments based on a music learning sequence, there are no pattern taxonomies for guitar instruction. Also, there are no studies in the music education literature that explain the rationale for constructing a tonal and rhythm pattern taxonomy to teach instrumental music. This study is an attempt to document a fundamental step in the process of constructing an instrumental method.

Purpose and Problems

The purpose of this research was to discover a tonal and rhythm pattern taxonomy that will improve guitar instruction. The specific problems of this study were:

- (1) to determine the effects of two types of tonal pattern instruction on the guitar performance of sixth-grade students who possess high and low levels of tonal music aptitude, and
- (2) to determine the effects of two types of rhythm pattern instruction on the guitar performance of sixth-grade students who possess high and low levels of rhythm music aptitude.

Design and Analysis

Fifty-eight sixth-grade students were given classroom instruction in playing the guitar. The subjects represented a socioeconomically and ethnically diverse population in Ambler, Pennsylvania. Prior to the experimental music instruction, the *Tonal Imagery (Melody and Harmony)* and *Rhythm Imagery* subtests (*Tempo and Meter*) subtests of the *Musical Aptitude Profile* (Gordon, 1988) were administered to all subjects. The *Musical Aptitude Profile (MAP)* is widely used to measure stabilized music aptitude.

Subjects ($n = 29$) were assigned randomly to a hierarchically sequenced guitar instruction group. This group learned tonal and rhythm patterns from *Jump Right In: The Music Curriculum: Learning Sequence Activities*, in which the tonal and rhythm patterns are arranged in three levels of audiation difficulty: easy, moderately difficult, and difficult.² The patterns were taught in a hierarchical sequence based upon those difficulty levels. The other group of subjects ($n = 29$) learned tonal and rhythm patterns selected from the *Tonal and Rhythm Pattern Audiation Cassettes*. Those patterns are not arranged hierarchically according to audiation difficulty levels, and the patterns were not taught according to audiation difficulty levels.

Twenty-two of the 40 major tonal patterns selected for each set (hierarchically and non-hierarchical) of major tonal patterns were identical for each set. Twelve of the patterns were tonic and 10 were dominant function. Of the 40 minor tonal patterns selected for

the hierarchically arranged set of minor tonal patterns and the 40 minor tonal patterns selected for the non-hierarchical set of minor tonal patterns, 19 of the patterns were the same for both sets. They comprise 13 tonic and 6 dominant function patterns.

The hierarchically ordered duple and triple meter rhythm pattern sets used in the experimental treatments were taken from the *Jump Right In: The Music Curriculum: Reference Handbook For Using Learning Sequence Activities* (Gordon, 1985). Another rhythm pattern set that included patterns not organized according to pattern difficulty levels was created by moving the micro beat divisions of macro 4 beats and combinations of micro beat divisions of macro beats across the four macro beat pattern in an additive manner. The same 20 duple and the same 20 triple meter patterns were used in both the hierarchically arranged and non-hierarchical sets

The researcher taught each group two 30-minute lessons per week for 10 weeks. General music instruction was included with guitar instruction and consisted of singing songs and tonal patterns and chanting rhythm patterns. All songs, tonal patterns and rhythm patterns were also performed with the guitar. All music activities were taught using a rote procedure.³

Before the study began, the researcher determined that the design of the study would be balanced if only one aspect of familiar pattern instruction (major tonal patterns) and only one aspect of unfamiliar pattern instruction (triple meter rhythm patterns) were used as criterion patterns, because performing 60 criterion patterns (15 tonal patterns each in major and minor tonalities and 15 rhythm patterns each in duple and triple meters) would have resulted in subject fatigue and may have affected the internal validity of the design due to a maturation variable (Campbell & Stanley, 1969, pp. 7-8). Moreover, minor tonal patterns and duple meter rhythm patterns were not considered as criterion rhythm patterns because of time constraints in the testing procedure. Minor tonal patterns and duple meter rhythm patterns, however, were included in the guitar instruction to give the students balanced instruction in audiation and to provide more variety in

the instructional materials. Because all students were beginners, no guitar pretest was necessary.

All students learned to sing the tonal patterns on a neutral syllable ("bum" for tonal patterns) to establish familiarity, and then they learned to sing those familiar tonal patterns with tonal syllables, using the movable "do" system ("do" based major and "la" based minor). To avoid the confusion of octave transposition, the researcher always sang all of the tonal patterns in the actual pitch range in which they were performed on the guitar. The same familiar tonal patterns were transferred to the guitar with the aid of tonal syllables, using the following sequence of techniques:

- 1) The researcher sang the tonal pattern with the appropriate tonal syllables and the students echoed the pattern with the same tonal syllables.
- 2) The researcher used a singing voice to describe the location of the tonal pattern on the guitar, waited for the students to finger the pattern on the fingerboard, and repeated the same tonal pattern with the appropriate pitches and tonal syllables.
- 3) The students sang the same tonal pattern and the teacher sang "ready play" on the first pitch of the pattern to signal the student to perform the tonal pattern on the guitar.

The pitches in the tonal pattern were always performed using a nonmetrical downpick motion.

All students learned to chant the rhythm patterns with a steady macro beat on a neutral syllable ("bah" for rhythm patterns) to establish familiarity, and then they learned to chant those familiar rhythm patterns with rhythm syllables using the beat function system (the same syllable "du" is used to name the macro beat in duple and triple meters). The same familiar rhythm patterns were transferred to the guitar with the aid of rhythm syllables.⁴

All students learned to hold the guitar with proper body posture in the same manner. A plectrum (guitar pick) was used to sound individual pitches. Moreover, all students learned to hold the plectrum in a consistent manner, and they learned to pick and strum with a plectrum using a consistent hand and arm motion. Tonal patterns were sounded

using a consistent picking motion of the arm and hand.

After ten weeks of music instruction, the student performances of 15 tonal patterns in major tonality and fifteen rhythm patterns in triple meter were video recorded individually. For the major tonal pattern performances, the video camera lens was adjusted to include (in the video frame) only the fretboard of the guitar and the left hand of the student performing the tonal patterns. For the triple meter rhythm pattern performances, the video camera lens was adjusted to include only the right hand of the student performing the rhythm patterns and the body of the guitar. High quality audio was simultaneously recorded by a sensitive video camera microphone for both tonal pattern and rhythm pattern performances. To assist the judges in obtaining an accurate measure of the performance achievement for each student and to eliminate bias from the recognition of the student's treatment group, the students performed the tonal patterns and rhythm patterns in the same randomly selected order. That randomly selected order was different from the order in which the patterns were learned by both groups. Furthermore, each student randomly selected an identification number to identify his or her guitar performance.

After ten weeks of music instruction, the tonal pattern and rhythm pattern performances were rated by two judges independently using the same five-point, continuous rating scale for each of the tonal patterns in major tonality and for each of the rhythm patterns in triple meter. The following criteria constitute the scales.

Tonal

5. The child can sing the tonal pattern and can perform the tonal pattern on the guitar.
4. The child can sing the tonal pattern and can perform most of the tonal pattern on the guitar.
3. The child can sing the complete tonal pattern and can finger the pattern on the guitar, but cannot perform the same pattern on the guitar.
2. The child cannot sing the tonal pattern, but can perform most of the tonal pattern on the guitar.
1. The child cannot sing the tonal pattern and cannot perform the tonal pattern on the guitar.

Rhythm

5. The child can chant the complete rhythm pattern and can perform the complete rhythm pattern on the guitar.
4. The child can chant the complete rhythm pattern and can perform at least two macro beats and no more than three macro beats of the rhythm pattern on the guitar.
3. The child can chant the complete rhythm pattern and can locate a pattern on the guitar, but cannot perform the same pattern on the guitar.
2. The child cannot chant the rhythm pattern, but can perform most of the pattern on the guitar.
1. The child cannot chant the rhythm pattern and cannot perform the pattern on the guitar.

Due to the lack of uniformity in aptitude score distributions, students were randomly eliminated from the study to establish proportional cell sizes for both the tonal and rhythm analyses. Also, because many of the students were absent on the days assigned to achievement evaluation, only 45 of 58 students were filmed performing criterion tonal patterns and 46 students of 58 students were filmed performing criterion rhythm patterns.

The composite ratings of the two judges were organized into two 2 x 2 designs (experimental treatment by levels of tonal aptitude and by levels of rhythm aptitude). Music aptitude scores were used to identify students with high and low levels of music aptitude. Students who scored above the seventy-fifth percentile on the combined *Tonal Imagery* subtests (*Melody* and *Harmony*) were considered to possess high tonal aptitude. Students who scored above the seventy-fifth percentile on the combined *Rhythm Imagery* subtests (*Tempo* and *Meter*) were considered to possess high rhythm aptitude. Those who scored below the seventy-fifth percentile were considered to possess either low tonal or low rhythm aptitude.

Two two-way analyses of variance were performed to determine the comparative effects of the pattern instruction on the guitar achievement of the students, one each for the tonal and rhythm patterns. Interjudge reliability coefficients for the rating scale were calculated by correlating the ratings of the two independent judges for the tonal patterns and for the rhythm patterns. Main and interaction effects, were tested at the .05 level of significance.

Results

The interjudge reliabilities for the criterion tonal patterns and rhythm patterns were .96 and .93, respectively, which indicate that there was consistency between the ratings of the two judges. The high reliabilities may be due to the use of an evaluation kit, which was prepared by the researcher. It included a video cassette recording of the criterion pattern performances of each student, a set of instructions that explained why and how the rating scales were constructed, a guide for using the rating scales, and separate evaluation sheets for the criterion tonal and rhythm patterns. Also, a full explanation of what each level of the rating scale represented was included in the evaluation kit to assist each judge in using the rating scale.

Major Tonal Pattern Analysis

The means and standard deviations for the familiar major criterion tonal patterns are presented in Table 1. The ANOVA summary for the criterion tonal patterns is presented in Table 2. It can be seen that no significant interaction or main effects for treatment were found for the familiar major tonal patterns. The mean achievement of guitar students who learned familiar major tonal patterns that were hierarchically ordered was not significantly higher than the mean achievement of guitar students who learned familiar major tonal patterns not according to pattern difficulty levels. However, the mean achievement of students who possess high tonal aptitude was significantly higher than the mean achievement of students who possess low

Table 1. Means and Standard Deviations for the Major Tonal Patterns

	Treatment 1			Treatment 2			Totals	
	n	Mean	S. D.	n	Mean	S. D.	n	Mean
High Aptitude	13	113.2	18.2	13	90.7	28.3	26	102
Low Aptitude	9	72.3	11	9	76.3	27.8	18	74.3
Totals	22	96.5		22	84.2		44	90.7

Table 2. ANOVA Summary Table for the Major Tonal Patterns

Source	Sum of Squares	df	Mean Square	F-test
Treatment	913.9	1	913.9	1.6
Level (Tonal Aptitude)	8118.9	1	8118.9	14.3*
Treatment x Level	1872.8	1	1872.8	3.29
Error	22765.1	40	569.1	3.29
				$.05 F_{1,40} = 4.1$

tonal aptitude for the familiar major criterion tonal patterns.

Triple Meter Rhythm Pattern Analysis

The means and standard deviations for the unfamiliar triple meter criterion rhythm patterns are presented in Table 3. The ANOVA summary for the criterion rhythm patterns is presented in Table 4. Although there was no significant interaction effect, there was a significant treatment effect for the unfamiliar triple meter rhythm patterns. The mean achievement of guitar students who learned unfamiliar triple meter rhythm patterns that were hierarchically ordered was significantly higher than the mean achievement of guitar students who learned unfamiliar triple meter rhythm patterns not according to pattern difficulty levels. Also, the mean achievement of students who possess high rhythm aptitude

was significantly higher than the mean achievement of students who possess low rhythm aptitude for the unfamiliar triple meter criterion rhythm patterns.

Interpretations

The large standard deviations for the major tonal patterns and triple meter rhythm patterns were not surprising, because the range (from 30 to 150) of the composite achievement scores for each student was wide. Using the Bartlett-Box test, it was determined that the assumption of homogeneity of variance for tonal and rhythm aptitude scores was not violated for either treatment group ($p = .28$ for tonal aptitude scores and $p = .39$ for rhythm aptitude scores at the .05 level of significance).

Although there is an anticipated pattern of difference, there is not a significant difference between learning major tonal patterns in hier-

Table 3. Means and Standard Deviations for the Triple Meter Rhythm Patterns								
	Treatment 1			Treatment 2			Totals	
	n	Mean	S.D.	n	Mean	S.D.	n	Mean
	12	114.5	17.6	12	102.4	12.4	24	108.5
High Aptitude								
Low Aptitude	8	95.3	8.7	8	86.5	18.6	16	90.8
Totals	20	96.5		20	84.8		40	101.4

Table 4. ANOVA Summary Table for the Triple Meter Rhythm Patterns				
Source	Sum of Squares	df	Mean Square	F-test
Treatment	1029.2	1	1029.2	4.2*
Level (Rhythm Aptitude)	2989.2	1	2989.2	12.1*
Treatment x Level	28.7	1	28.7	.12
Error	8906.8	36	247.4	
				.05 $F_{1,40} = 4.1$

archical order and learning major tonal patterns in nonhierarchical order. That may be because most of the tonal patterns and songs that the students heard and learned while in sixth grade, before guitar instruction, were in major tonality. Also, songs and tonal patterns in major tonality were taught most prevalently in the kindergarten through fifth grade.

Whereas rhythm patterns and songs in duple meter are commonly emphasized in elementary and middle school music education and whereas songs in duple meter are prevalent in popular music heard on radio and television, songs and rhythm patterns in triple meter are infrequently studied and heard. Also, triple meter rhythm patterns are rarely presented to students in accordance with their rhythm aptitude and hierarchically ordered rhythm patterns. Therefore, the researcher believes that the significant treatment effect for rhythm patterns in triple meter can be attributed to instruction with hierarchically ordered rhythm patterns, which facilitated the learning of unfamiliar patterns.

Conclusions

On the basis of the results of this study, it can be concluded that although hierarchically ordered tonal pattern instruction does not enhance tonal aspects of guitar performance skills, hierarchically ordered rhythm pattern instruction does enhance rhythm aspects of guitar performance skills. Furthermore, regardless of type of instruction, students who possess high music aptitudes achieve higher levels of guitar performance skills than do students who possess low levels of music aptitudes.

Recommendations

On the basis of the data acquired from this study and on the basis of observations made of the students who participated in this study, the researcher believes that the following suggestions might be incorporated in future studies. During classroom or individual teaching activities, educators might consider teaching students to sing unfamiliar tonal patterns in minor, dorian, mixolydian, lydian, and phrygian tonalities and to chant unfamiliar rhythm patterns in triple and unusual meters before teaching students to play the guitar. As the result of that type of instruc-

tion, the students should develop their audiation skills and expand their tonal and rhythm pattern vocabularies. Also, familiarity with patterns in a variety of tonalities and meters positively affects audiation and might positively affect the way that students learn tonal and rhythm patterns on the guitar.

Additional research is needed to develop extensive tonal pattern taxonomies in minor, dorian, mixolydian, lydian, and phrygian tonality for general music instruction and guitar instruction. Similarly, research is needed to develop extensive rhythm pattern taxonomies in usual and unusual meters for general music instruction and for guitar instruction. Research is also needed to develop intermediate level and advanced level guitar teaching materials for tonal pattern instruction in major and minor tonalities, and to develop intermediate level and advanced level guitar teaching materials for rhythm pattern instruction in duple and triple meters.

Notes

1. Please refer to *Introducing The Guitar: The Individualized Instructor* by James Froseth and Hunter March (Chicago: G.I.A. Publications, 1982). Froseth and March use a sound recording that accompanies the text to teach the student how to play only individual pitches and not tonal and rhythm patterns. Schmidt and Traum also use a sound recording that accompanies the text, but the recordings are used only for tuning the guitar, for chord practice, and for singing songs.

2. The existence of tonal and rhythm pattern difficulty levels and the development of tonal and rhythm pattern taxonomies was researched by Gordon (1972, 1976, 1978).

3. The songs and chord progressions included major and minor tonalities, and were in either duple or triple meter. All of the songs were unital and unimetric. The terms "unital" and "unimetric" are used to describe music with only one part. A unital melody includes only one tonality. A unimetric melody includes only one meter. For a complete discussion of the taxonomy of tonality and meter, see chapters 3 and 4 in *Learning Sequences in Music: Skill, Content, and Patterns: A Music Learning Theory* by Edwin E. Gordon (Chicago: G.I.A. Publications, 1989).

All of the chords used to accompany songs used one or two fingers and all of the chords were strummed on the first three strings to a steady macro beat. The tonal patterns were in major and minor tonalities, and the rhythm patterns were in duple and triple meters. All of the

tonal patterns and rhythm patterns were unital and unimetric. Duple meter rhythm patterns and major tonal patterns were classified as familiar patterns, because all of the students who participated in the study had been taught to audiate and chant mostly duple meter rhythm patterns and major tonal patterns in their music education prior to learning to play the guitar. Triple meter rhythm patterns and minor tonal patterns were classified as unfamiliar patterns, because all of the students who participated in the study had not been taught to audiate and chant triple meter rhythm patterns and minor tonal patterns in their music education prior to learning to play the guitar.

4. 1) The researcher chanted the rhythm pattern with a steady macro beat and with the appropriate rhythm syllables, and the students echoed the pattern with the same rhythm syllables.

2) The researcher chanted the picking motion of the rhythm pattern (down - down - down/up - down, for a pattern that is rhythmically notated as quarter note-quarter note-eighth note/eighth note-quarter note) as he performed that motion without the guitar against his chest.

3) The students chanted the picking motion of the rhythm pattern and performed that motion in the air and over the strings of the guitar, without sounding the rhythm pattern on the guitar.

4) The researcher chanted the rhythm pattern with a steady macro beat and with the appropriate rhythm syllables, and the students echoed the pattern with the same rhythm syllables.

5) The students performed the rhythm pattern on a single string on the guitar with the appropriate picking motion.

For rhythm patterns in duple meter, the macro beat was performed using a downpick motion and the micro beat was performed using an uppick motion. For rhythm patterns in triple meter, the macro beat was performed using a downpick motion. The picking motion of the micro beats was determined by the divisions of micro beats.

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