

2013

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Canadian Journal of Research in Music Education

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Recommended Citation

Kratus, John (2013) "Characterization of the Compositional Strategies Used by Children to Compose a Melody," *Visions of Research in Music Education*: Vol. 23 , Article 6.

Available at: <https://opencommons.uconn.edu/vrme/vol23/iss1/6>

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By

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Kratus, J. (2013). Characterization of the compositional strategies used by children to compose a melody. *Canadian Journal of Research in Music Education*, 33, 95-103. (Reprinted with permission in *Visions of Research in Music Education*, 23). Retrieved from <http://www.rider.edu/~vrme>

CHARACTERIZATION OF THE COMPOSITIONAL STRATEGIES USED BY CHILDREN TO COMPOSE A MELODY

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ABSTRACT

This study examined the creative strategies employed by elementary children as they compose a song. The purpose of this study was to characterize the strategies of children who were best able to compose songs and to compare these strategies with those used by children who were least able to compose. Sixty subjects, aged 7, 9, and 11, were given 10 minutes to compose a melody on an electronic keyboard instrument. Two judges listened to tapes of the subjects' songs and rated the success of the songs (interjudge reliability = .88). Another set of three judges listened to tapes of the 10-minute composing periods for the 10 highest rated and 10 lowest rated songs. The three judges used observation forms to describe the ways in which the 20 subjects employed various composing strategies.

Among other results, the subjects who composed the most successful songs were found to use a variety of exploring, developing, and repeating strategies as they composed. The subjects who composed the least successful songs were more limited in the types of strategies they employed. Specifically, the low-success subjects explored new ideas and repeated individual notes and patterns as they composed, but only rarely did they employ strategies to develop their musical ideas. The results raise a series of questions concerning (a) the relationship between creative process and created product and (b) the genesis of compositional strategies in those children who composed successful songs.

Several prominent educators have recently called for expanding arts curricula to make greater use of educational activities that promote creativity and higher-order thinking skills (e.g., National Endowment for the Arts, 1988; Reimer, 1989). Unfortunately, there is little empir-

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ical research on children's creative musical behaviors to guide the development of such curricular changes in music education. One reason for the relative lack of research in this area may be the belief among some educational researchers that creative behaviors are too individualistic to be studied empirically. However, this view was disputed by Nobel laureate Sir Peter Medawar, who wrote, "That 'creativity' is beyond analysis is a romantic illusion we must now outgrow" (1969, p.46).

In recent years, music education researchers have taken the first tentative steps toward understanding how music is created. By observing the decisions that children make while composing and by analyzing children's compositional strategies, investigators are beginning to uncover similarities and differences among composing styles of children. Of the few studies that exist in this area, most are exploratory in nature, employing a variety of descriptive techniques and using small numbers of subjects.

DeLorenzo (1989) studied sixth graders engaged in small group and individual music compositions. She found that the students' decision making processes were dependent on four personal traits: (1) their openness in approaching the task, (2) their willingness to let the structure of their music flow from their musical ideas, (3) their ability to develop their musical ideas, and (4) their personal involvement in the task. Bamberger (1977) compared the compositional decisions made by two college-aged students and showed that the students' understanding of musical syntax was reflected in their approach to composition.

In a recent study (Kratus, 1989), I analyzed elementary children's approach to composition by examining the relative amount of time children of different ages and ability levels spent on various compositional processes in a 10-minute composing task. Results indicated that 7-year-olds differ from 9- and 11-year-olds, in that 7-year-olds spend significantly more time exploring new material as they compose and spend significantly less time developing and repeating their ideas. In addition, subjects who were able to play their songs the same way twice used significantly more repetition and less exploration than did subjects who could not replicate their songs.

Comparing composing strategies used by groups of students at different ability levels can lead to an understanding of how competence in composition develops. Davidson and Welsh (1988) compared the composing strategies of 5 college conservatory students who had had 2 years of conservatory training with the strategies used by 5 first-year conservatory students. Subjects were given 30 minutes to compose a melody that modulated from C major to F# major and back to C major.

The authors found that experienced students differed from beginners in that experienced students produced coherent melodies by coordinating their musical decisions at any one point in the melody with the music as a whole. On the other hand, beginners were more likely to work with small units (note-to-note), with little regard for overall melodic shape and direction.

The purpose of this study was to characterize the musical decisions, or strategies, used by elementary school-aged children who were best able to compose songs and to compare these strategies with those used by children who were least able to compose. The differences in the way that these two groups of children approach the task of composing a song can lead educators to an understanding of the developmental path of composition. It was my intent in this research to produce a detailed descriptive analysis using few subjects, with the aim of suggesting directions for future research on children's creative processes.

METHOD

The children's songs and compositional processes analyzed in this study were the same as those collected for a previous study (Kratus, 1989). Whereas the analysis in the earlier study focused on the *amount of time* children spent in exploring, developing, and repeating their musical ideas as they composed, the current study characterizes in much greater detail the *compositional strategies* children used.

The subjects were 60 children, aged 7, 9, and 11, selected randomly from the student population of a suburban elementary school. None of the subjects had had any formal training in composition, and children who had taken piano or organ lessons or had an electronic keyboard at home were excluded from the study in order to control for prior experience with a keyboard instrument.

I met individually with the subjects. Each subject was introduced to a small, electronic keyboard instrument (Casio PT-1) by playing several imitative games with me on the keyboard. After this introduction, the subject was asked to make up a new song using the white keys of the keyboard. I explained to the subject that he or she would have exactly 10 minutes in which to make up the song, and a large clock-timer was set in front of the subject to indicate the amount of time remaining in the task. At the end of the 10-minute composing period, I asked each subject to play his or her song twice. (Replication of the songs was necessary in order to later evaluate whether subjects had reached closure on a specific song.) I made an audio recording of the sessions using a Sony TC-62 cassette recorder.

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ANALYSIS OF THE SONGS AND THE COMPOSITION PERIODS

The first step in the analysis was to determine which of the 60 songs were most successful and which were least successful. I rerecorded all 60 songs and their replications onto another set of audio tapes. Two independent judges, who were music teachers pursuing graduate degrees in music education, listened to the 60 pairs of recorded songs and rated two dimensions of the songs: Craftsmanship and Replication. The rating scales used by the judges are as follows:

Craftsmanship: Assign the first song in each pair of songs a number from 7 to 1, with...

7 = the song forms a cohesive whole and makes interesting use of melodic and rhythmic patterns.

1 = the song appears to have no structure, with seemingly random pitches and rhythmic durations.

Replication: Assign each pair of songs a number from 7 to 1, with...

7 = the repetition of the song is the same as the original.

1 = none of the repetition of the song is the same as the original.

The operational definition for the success of a song was, therefore, determined by the combined Craftsmanship and Replication ratings. Songs were presented in a random order to the judges, and the judges recorded their Craftsmanship and Replication ratings for each song on a rating sheet that I provided.

To determine the success of a song, I summed both judges' combined ratings for Craftsmanship plus Replication. Given this procedure, the success ratings for songs could range from 4 to 28. I computed interjudge reliability using the Pearson Product Moment Correlation. Interjudge reliability for Craftsmanship ratings was .84, for Replication ratings was .80, and for combined ratings was .88.

The 10 songs with success ratings of 24 to 28 were designated as the most successful songs, and 10 songs with ratings of 4 to 7 were considered the least successful songs. In this study, the 10 subjects who produced the highest rated songs are referred to as "high-success" subjects, and the 10 subjects who produced the songs with the lowest ratings are referred to as "low-success" subjects. I recorded another set of tapes containing the 20 songs of the high-success and low-success subjects in a random sequence. Each song on the tape was followed by the 10-minute composing period in which the song was created. Another set of three independent judges, comprised of one graduate music education student and two college music faculty

members, listened to the tapes of the 20 songs and the corresponding composing periods. I asked the three judges to complete forms designed to characterize the composing strategies used by the subjects during the 10-minute composing periods. Each 10-minute period was divided into five equal time intervals (i.e., minutes 1 and 2 formed one interval, as did minutes 3 and 4, and so on). Judges were asked to check which of the following 11 strategies were present in each 2-minute interval of the composing periods. These strategies were defined as follows:

- Stepping movement: exploration of new musical material using adjacent scale steps.
- Skipping movement: exploration of new musical material using intervals larger than a step.
- Changing pitch of pattern: development of a pattern by changing one or more pitches of an established pattern, while keeping the rhythm constant.
- Transposing pattern: development of a pattern by shifting the contour of an established pattern up or down the scale, while keeping the rhythm constant.
- Changing rhythm of pattern: development of a pattern by changing one or more durations of an established pattern, while keeping the pitches constant.
- Extending pattern: development of an established pattern by adding notes to the end of the pattern.
- Repeating pitch: one or more consecutive repetitions of a pitch.
- Repeating pattern: one or more consecutive repetitions of a pattern.
- Repeating whole song: one or more consecutive repetitions of the whole song.
- Speaking: subjects asks a question or makes a statement.
- Silence: subject stops playing the keyboard for 10 seconds or more.

The percentage of agreement among judges was used as a measure of interjudge reliability. (Fifty percent agreement between two judges would be chance agreement, and 100% agreement would be perfect agreement.) The percentage agreement between judges 1 and 2 was 85.70%, between judges 2 and 3 was 76.55%, and between judges 1 and 3 was 78.65%. The mean percentage agreement among all combinations of the three judges was 80.30%. For the purposes of this study, a compositional strategy was considered to be present in a 2-minute interval if at least two of the three judges rated it as being present.

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RESULTS

Table 1

Number of High-success Subjects (n = 10) Using Various Compositional Strategies During a 10-Minute Composition Task

Compositional Strategy	Minutes:	Subjects Employing Compositional Strategies During 2-Minute Intervals				
		1-2	3-4	5-6	7-8	9-10
<u>Exploration</u>						
Stepping movement		9	8	3	2	3
Skipping movement		7	5	3	3	3
<u>Development</u>						
Changing pitch of pattern		7	3	6	2	1
Transposing pattern		3	3	2	1	1
Changing rhythm of pattern		3	5	5	6	4
Extending pattern		4	6	4	2	3
<u>Repetition</u>						
Repeating pitch		8	7	7	8	9
Repeating pattern		10	10	10	10	10
Repeating whole song		2	3	7	10	10
<u>Non-musical characteristics</u>						
Speaking		2	0	1	0	0
Silence		0	0	1	2	2

Table 2

Number of Low-success Subjects (n = 10) Using Various Compositional Strategies During a 10-Minute Composition Task

Compositional Strategy	Minutes:	Subjects Employing Compositional Strategies During 2-Minute Intervals				
		1-2	3-4	5-6	7-8	9-10
<u>Exploration</u>						
Stepping movement		9	10	10	10	10
Skipping movement		10	10	9	9	9
<u>Development</u>						
Changing pitch of pattern		0	2	0	0	0
Transposing pattern		3	2	2	1	4
Changing rhythm of pattern		0	0	0	1	0
Extending pattern		0	1	1	0	0
<u>Repetition</u>						
Repeating pitch		10	10	10	10	9
Repeating pattern		6	8	9	9	9
Repeating whole song		0	0	0	0	0
<u>Non-musical characteristics</u>						
Speaking		1	0	0	0	0
Silence		1	0	0	1	1

The composing strategies employed by the high-success and low-success subjects are shown in Figures 1 and 2. The following descriptions characterize the composing periods of the high-success subjects:

- 1) Both stepping and skipping movement were commonly used to explore musical materials early in the composing period, but these types of exploratory movement became relatively infrequent later in the composing period.
- 2) Musical patterns were developed by changing pitches, by changing rhythms, and by extending patterns. Transposition was less frequently used to develop musical ideas.
- 3) Repetition of individual pitches and patterns was common throughout the composition periods.
- 4) Closure on a single melody occurred before the end of the 10-minute composing period. In some cases, closure occurred in the first 2-minute interval.
- 5) Speaking and silence occurred infrequently.

Low-success subjects were similar to high-success subjects in the following ways:

- 1) Both groups explored through stepping and skipping movement in the early minutes of the composing periods.
- 2) Repetition of pitches and patterns was common as both groups composed.
- 3) Non-musical behaviors (speaking and silence) were infrequently used.

Low-success subjects differed from high-success subjects in the following ways:

- 1) Low-success subjects continued exploratory stepping and skipping movement even into the last 2-minute interval, whereas most high-success subjects did not explore new musical ideas after the first 4 minutes.
- 2) Development of musical patterns was relatively infrequent for the low-success subjects, and when development occurred, it was usually accomplished through transposition. A majority of the high-success subjects, on the other hand, developed their musical ideas by changing the pitches or rhythms of their patterns or by extending their patterns, with transposition being the least used means of development. For the high-success subjects, the most frequently used strategy for developing patterns was changing the rhythm, yet this strategy was used least by the low-success subjects.
- 3) None of the low-success subjects demonstrated closure on a song by repeating it as they composed, but all high-success subjects did so.

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DISCUSSION

This study is exploratory in nature, and the results should be viewed as providing tentative avenues for further research into children's creative processes, rather than as generalizable statements about children's creativity. Specifically, two main areas for future research were uncovered by the results of this study. The first area concerns the relationship between the process of composition and the resulting musical product. The results here suggest that successful songs (as defined in this study) are the product of certain compositional strategies, and that these strategies are quite different from those used to produce unsuccessful songs. In other words, the success of the product appears to be dependent upon the nature of the process. If this is, in fact, the case, then further efforts in conducting creativity research and improving creativity pedagogy may well be directed toward *how children compose* rather than *what children compose*. Of particular interest to researchers and educators may be children's development of their musical ideas.

The second area for further study is in regard to the genesis of compositional strategies in some children. The high-success subjects in this study were able to employ a wide variety of composing strategies, whereas low-success subjects were more limited in the types of strategies they used. If none of the subjects had had any prior training in composition, why did the high-success subjects compose in radically different ways from the low-success subjects? Is this difference a matter of musical aptitude (as traditionally defined) or musical achievement, or do some children transfer their creative strategies from prior, non-musical creative problem-solving experiences? Can the strategies used successfully by high-success students be taught to low-success students?

It is hoped that music education researchers will more fully explore the important area of musical creativity. Before developmentally appropriate goals and activities for creative musicianship can be devised, much remains to be learned.

The author is indebted to Jane Bracey-Gibbon, Laura Lee Rajcan, Deborah Reinhardt, Cynthia Crump Taggart, and Bruce Taggart for their assistance on this project.

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