

THE EFFECTS OF THE MANHATTANVILLE MUSIC CURRICULUM PROGRAM  
ON THE DEVELOPMENT OF MUSICAL CREATIVITY  
IN GRADE EIGHT STUDENTS

by

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B.Mus., University of London, 1971

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF  
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THE EFFECT OF THE MANHATTANVILLE MUSIC CURRICULUM PROGRAM

ON THE DEVELOPMENT OF MUSICAL CREATIVITY IN GRADE EIGHT STUDENTS

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## ABSTRACT

This study investigated the effect of the Manhattanville Music Curriculum Program (MMCP) on the development of musical creativity in grade eight students. More specifically, the study sought to describe the MMCP and to compare its effect with that of a conventional general music program on musical creativity scores of grade eight students. Of secondary interest was the extent to which musical creativity, musical aptitude and musical training are related. The hypothesis was as follows: there will be a greater development of musical creativity in a class of grade eight students which has participated in the MMCP than in a class which has followed the general music program.

The study employed a class of 19 students designated the control group, and a class of 21 students, designated the experimental group. Both classes were from the same school and were randomly chosen from all grade eight general music classes in that school. The school was randomly chosen from three secondary schools which offer general music at the grade eight level, in a large school district in the metropolitan Vancouver, British Columbia area.

The data gathering instruments used were the Vaughan Musical Creativity Test, Seashore's Measures of Musical Talents and a musical background questionnaire developed by the writer. The data were collected and analyzed from September to December, 1979. The length of the program was four weeks. To determine the statistical significance of the effects of the treatments

upon musical creativity scores, separate 2 x 2 analyses of variance (treatment x pre-posttest) were carried out on each of the five dependent variables of the musical creativity test, the variables being fluency, rhythmic security, ideation, synthesis and total.

Significant main effects were found for both treatment and period of testing on all measures. On all variables the post-test scores were significantly higher than pretest scores, and the experimental group scored significantly higher than the control group. However, this latter effect was present on both the pretest and the posttest, despite the random selection and assignment of classes. Thus the main effect for treatment cannot be attributed to the experimental curriculum. There were no statistically significant treatment x pretest-posttest interactions.

Pearson correlation coefficients were calculated inter-relating musical creativity, musical aptitude and prior musical training scores. Significant correlations were found between musical creativity scores and Pitch and Tonal Memory scores on the musical aptitude test.

It was concluded that the MMCP and the conventional general music program are both equally effective in developing musical creativity at the grade eight level, as both programs produced equivalent and statistically significant increases in musical creativity scores. Furthermore, these differences were of educational significance since they averaged one standard deviation of growth.

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Firstly, I wish to express my gratitude to the late Dr. Joachim Sandvoss who was my Senior Supervisor until his sudden death in December, 1979. Without his help and encouragement this study would not have been possible. I will always remember how willingly he gave his valuable time.

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## Chapter 1

## INTRODUCTION

Creativity, for centuries thought to be an inexplicable property of genius, is now widely recognized as being potentially present in every human being. Guilford states:

It is probably only the layman's idea that the creative person is peculiarly gifted with a certain quality that ordinary people do not have. This conception can be dismissed by psychologists, very likely by common consent. The general psychological conviction seems to be that all individuals possess to some degree all abilities, except for the occurrence of pathologies. Creative acts can be expected, no matter how feeble or how infrequent, of almost all individuals....<sup>1</sup>

In the field of education, the interest lies in identifying and nurturing creative talent. At first, research dealt with identifying highly creative students and the relationship between creative talent and school achievement. More recently, however, studies have been concerned with the nurturing of creative talent at all levels. As Guilford says:

Whatever the nature of creative talent may be, those persons who are recognized as creative merely have more of what all of us have. It is the principle of continuity that makes possible the investigation of creativity in people who are not necessarily distinguished.<sup>2</sup>

Maslow's<sup>3</sup> concept of 'self actualization' is important when considering why creativity should be nurtured. He believes that the prime motivation of healthy individuals is to realize their potential. It is the responsibility of the educator to provide opportunities for individuals to maximize their creative potential, for by so doing, they are helping each student to achieve self-realization which Maslow believes to be a

necessary part of physical and mental well-being.

In music education, opportunities for creative activities are still often denied by many music educators, probably because traditionally music education has been concerned primarily with the art of performing. High calibre performance, particularly at the high school level, is frequently the main objective of the music educator and although no true music educator would deny the importance of developing performance skills, such importance should not be so overwhelming as to exclude all other musical activities. As Paynter and Aston say:

More often than not, school music has concentrated on the skills of performance. Even much so-called "creative music" is really only an extension of directed ensemble performances. Performance is an essential musical activity but it is not the whole of music.<sup>4</sup>

Schafer goes as far as to say that developing performance skills impedes musical creativity. He states:

It is the duty of every composer to be concerned with the creative ability of young people. But he has to be quick to catch it. For our system of music education is one in which creative music is progressively vilified and choked out of existence....Any public school class will improvise uninhibitedly, but by the time they have reached grade 12 or 13 this ability has completely soured into nervous laughter at the prospect of playing four notes that weren't given to them...<sup>5</sup>

Music is a creative art, and although it is possible to function creatively as a musician in many ways, the concept of creative activity in music is usually limited to composing. It is through discovering and organizing sound and silence, the two fundamental elements of music, that students come to "know" music, as distinct from knowing about it. On the subject of knowing, Sherman writes:

Knowing is a cultivated condition; it is nourished by the kind of doing that begets discovery...It is a result of all that may be associated with creative activity. In a sense, knowing is the result of one's coming to grips

personally with things and ideas in ways that reflect individualized assessments and decisions. Within the context of our educational institutions, we cannot teach creativity...but we can encourage it by establishing the conditions under which it may exist,<sup>6</sup> and we can stimulate it and to some degree guide it.

During the sixties, there was an outburst of energy directed towards music and creativity. Much of this energy can only be thought of as an all out effort to rejuvenate existing methods. Composing in the classroom meant, for many students, mechanically producing musical scores by the manipulation of symbols. This activity Sherman likens to "the idea of painting by numbers."<sup>7</sup> However, valuable work has, and is being carried out in many parts of the world. In England, the work carried out in schools and universities by Paynter and Aston is very highly regarded.<sup>8</sup> Canadian composer Murray Schafer provided food for thought among music educators with his revolutionary ideas on music education.<sup>9</sup> A grant from the Ford foundation funded the Contemporary Music Project in the United States in the sixties.<sup>10</sup> A variety of creative educational projects were sponsored including three pilot projects conducted in Baltimore, San Diego and Farmingdale. Through the use of contemporary music a new dimension in creative experiences was provided. Bruner's spiral curriculum was the underlying philosophy for the Farmingdale project. The concept provides for a pattern of teaching the same subject matter relearned with increasing degrees of difficulty through reinforcement. By presenting the tools and techniques necessary for composing music, the students could be led to musical discovery through creating.

The Manhattanville Music Curriculum Program (MMCP),<sup>11</sup> the subject of the present study, also bases its philosophy upon that of Bruner. It is being used in the United States as an alternative to the conventional music program. A more detailed description of the MMCP can be found in chapter three of this study.

The quality of innovative music programs needs to be examined through research studies in order to determine how successful these programs are in meeting their objectives. If musical creativity, like other kinds of creativity can be cultivated through the creative approach found in these programs, then there is cause to hope for their implementation in our school system.

### The Problem

Statement of the problem. The aim of this investigation was to ascertain whether the MMCP, a creative music program, would contribute significantly to the development of musical creativity in students at the grade eight level as measured by a specific instrument, the Vaughan Musical Creativity Test. The study also sought to discover the extent of relationships between musical creativity, musical aptitude and musical training.

The hypothesis was as follows: there will be a greater development of musical creativity in a grade eight class which has participated in the MMCP than in a class which has followed the general music program.

Importance of the study. Articles on the subject of creating music in the classrooms abound in music journals. They range from descriptive reports of programs introduced into schools by individual teachers, to philosophical discussions and personal viewpoints relating to the nature and value of creativity in music. Most show enthusiasm towards a creative approach in music education.

It therefore seems surprising that research in music education has contributed so little to show the effect of creative programs on the development of creativity in music. Leonard and Colwell write, "the area of creativity which seems such a fertile field for research, has been all but totally neglected in the past few years."<sup>12</sup>

Hitherto, interest in musical creativity has tended to be confined to the area of the elementary school. The apparent lack of interest in musical creativity in the secondary school seems to imply that music educators disregard the importance of nurturing creativity in older students. Perhaps the feeling is that development is less likely to occur in the higher grades. The very few secondary school creative music programs in existence in British Columbia are often not available to students at the junior high level.

Music educators should recognize the extent to which creative music programs and musical processes encourage creative development in students of all ages. It would therefore seem necessary for music educators to know more about the effects of such programs upon musical creativity than they do at the present time,

## Definition of Terms

A number of relevant terms are defined below. Since 'creativity' is central to the thesis, an extensive discussion of some of the more important creativity theories is warranted.

Creativity. In order to nurture creativity, it is necessary to understand what it is. Definitions are as diverse as they are numerous, perhaps because of the diversity of purpose and method found in existing studies.

Many authors including Freud, Jung, Wallas, Kris and Kubie believe creativity to be related to the Unconscious. Wallas<sup>13</sup> divides the creative process into four stages, namely, the preparation stage during which there is a thorough investigation of the problem; the stage of incubation, when there is no conscious thought about the problem; the illumination stage, when the idea is born, and finally, the verification stage, when the created product is tested. Kris's<sup>14</sup> theory, based on the term "regression in the service of the ego" deals with the appearance of preconscious and unconscious material in the creator's mind. Kubie,<sup>15</sup> on the other hand, believes that only preconscious material is used.

Other investigators believe creativity to be a conscious problem solving process. Guilford<sup>16</sup> refers to the conscious factors of creative thinking as "divergent production." He discovered these creativity traits by factor analysis and pointed out the importance of investigating them as properties of individuals whereby individual differences are emphasized. The five factors are fluency, flexibility, originality,

sensitivity to problems and redefinition. Mednick<sup>17</sup> refers to these conscious factors as the combination of remote associations.

For May<sup>18</sup> the creative process is an encounter with an idea which may occur either at the height of consciousness or at the unconscious level, but in either case the person must be intensely committed to his conscious living. He defines creativity thus: "Creativity is the encounter of the intensely conscious human being with his world."<sup>19</sup>

Rogers defines creativity as "the emergence in action of the novel relational product growing out of the individual on the one hand, and the materials, events, people and circumstances of his life on the other."<sup>20</sup> He makes no distinction between good and bad creativity as this is a value judgement, but Rogers maintains that if an individual remains open to all aspects of his experience, then the products he creates will be constructive. Denial to his awareness of areas of his experience may result in a pathologically or socially evil product. This "openness to experience" is considered not only by Rogers but by many other scholars to be an important condition of constructive creativity, along with the ability to be able to toy with elements and concepts and to be able to evaluate internally.

Roger's broad definition of creativity is in keeping with Maslow's ideas on the subject. Maslow regards self-actualizing creativity to be almost synonymous with health itself. In attempting to define this type of creativity, he writes:

...And since self-actualization or health must ultimately



be defined as the coming to pass of the fullest humanness, or as the "Being" of the person, it is as if self-actualizing creativity were almost synonymous with, or a sine qua non aspect of, or a defining characteristic of, essential humanness.<sup>21</sup>

Maslow talks of a childlike quality in creative people which reflects the innocence and spontaneity in which a child will create a song, poem, painting or dance. However, the naivete of children had been combined with sophistication in his adult subjects.

Some scholars do not accept that creativity is potentially present in everyone. Maddi believes that if this were so, creativity would then lose its importance, becoming little more than commonplace. He disagrees with those who say that a playful and relaxed attitude is desirable in order for creativity to take place. Maslow's "childlike" quality in creative people becomes for Maddi a disparaging "childishness." He associates terms like "live spontaneously", "trust one's organism" and "openness to experience" with an aimless kind of creativity which is of little importance. It seems that Maddi is concerned more with the type of creativity we have come to associate with genius or, at least, with special talent. He writes:

... We should keep in mind that John Bunyan began Pilgrim's Progress in the humiliating and rigidly regulated environment of a prison, and that Christ developed and preached his new ideas in a societal context that had become oppressively structured, to say nothing of the dangers he encountered."<sup>22</sup>

When discussing whether or not frustration and torment inhibits creativity, he talks about the creative life of Dante who was tormented by love for a woman; of Galileo and his economic frustrations and of Toulouse-Lautrec and Van Gogh with their

severe physical and mental suffering. It would seem that Maddi's rather "romantic" concept of the artist-creator cannot be applied to creative people generally. It is suggested that many conscientious creative people find that stressful situations inhibit their work. Many creative people prefer a playful approach to work. For them, the ability to toy easily with ideas and be flexible in their decision making, is essential to the creative process. This approach is certainly not considered to be an aimless and unimportant pursuit. Rather, it is felt to make an important contribution to the fruition of their ideas. In the same article, however, Maddi does point out that certain people including children, are vulnerable to pressure and a structured environment. He says:

... It is fairly typical for children and adolescents to be this vulnerable because their personalities are as yet too unformed and their store of experience too limited to permit much independence of environmental contexts. Indeed, growing up in a free and unevaluative surrounding may well be important to the kind of vigorous development that could underlie later creativity. But the adult who needs such a benign environment is already too chronically vulnerable to be strongly and consistently creative, regardless of the superiority of his natural endowment.<sup>23</sup>

For Sidney Parnes, creativity is "a function of knowledge, imagination and evaluation."<sup>24</sup> He likens the mind to a kaleidoscope, where the bits and pieces of knowledge can be manipulated into new patterns and ideas by the use of the imagination. These ideas can in turn be evaluated and developed.

Although the nature of this study does not permit an exhaustive discussion of creativity, there is one idea which is common to all definitions and that is the bringing into being

of something that is new and valuable. Creativity, then, for the purpose of this study, is defined as the decision making process which is prompted by the need to solve a problem which will result in the production of something which is new and of value to the individual.

Musical Creativity. For the purpose of this study musical creativity is the bringing into being of a musical composition as a result of the process of decision making in the organization of pitch, rhythm, dynamics, form and timbre in addition to spontaneous improvisation on musical instruments including the human voice. The term does not apply to skill drills in notational formulae. Operationally, the term is used to denote scores obtained on the Vaughan Musical Creativity test. Further information on the test is found in Chapter three of this study.

Musical Aptitude. This is understood as being a product of inherited potential and environmental influences. The term is used to describe scores obtained on the pitch, rhythm and tonal memory tests found in the Seashore Measures of Musical Talents.

Musical Training is defined for the purpose of this study as one year or more of private lessons on a musical instrument and is measured on a five point scale.

#### Organization of the Remainder of the Study

The remainder of the study is contained in three chapters.

Chapter two presents a review of the literature on music and creative thinking, musical creativity, and the MMCP and other creative music programs. Chapter three is concerned with the design of the study, and chapter four contains the analysis of the data, and the conclusions and recommendations of the study.

## FOOTNOTES FOR CHAPTER I

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- <sup>2</sup> Ibid.
- <sup>3</sup> Abraham Maslow, "Creativity in Self-Actualizing People," Creativity and its Cultivation, ed. Harold H. Anderson (New York: Harper, 1959), pp.83-95.
- <sup>4</sup> John Paynter and Peter Aston, Sound and Silence (London: Cambridge University Press, 1970) p. 5.
- <sup>5</sup> R. Murray Schafer, Creative Music Education (New York: Schirmer Books, 1976) p. 41.
- <sup>6</sup> Robert Sherman, "Creativity and the Condition of Knowing," Music Educators Journal, October 1971, p. 20.
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- 23 Maddi, Ibid, p. 330.
- 24 Sidney J. Parnes, "The Nurture of Creative Talent," Music Educators Journal, June-July, 1966, p.33.

## Chapter 2

## REVIEW OF RELATED LITERATURE

Scholarly research into creativity can be said to date from 1950 when J.P. Guilford gave his presidential address to the American Psychological Association. His speech attracted wide attention with respect to his thoughts on creativity and intelligence. He said:

When we look into the nature of intelligence tests, we encounter many doubts concerning their coverage of creative abilities. It should be remembered that from the time of Binet to the present, the chief practical criterion used in the validation of tests of intellect has been achievement in school. For children, this has meant largely achievement in reading and arithmetic... These subjects are not conspicuously demanding of creative talent. Examination of the content of intelligence tests reveals very little that is of an obviously creative nature...

.....  
 .... If the correlations between intelligence-test scores and many types of creative performance are only moderately low, and I predict that such correlations will be found, it is because the primary abilities represented in those tests are not all important for creative behaviour. It is also because some of the primary abilities important for creative behaviour are not represented in the test at all... In other words, we must look well beyond the boundaries of IQ if we are to fathom the domain of creativity.<sup>1</sup>

Since that time, many investigations concerned with creativity have been undertaken in a number of different disciplines, but in the area of musical creativity there seems to be a paucity of research. Study has been hindered by what Razik<sup>2</sup> has called "conceptual blocks," the greatest one being the lack of reliable measuring instruments. There seems to be only one 'standardized' test of musical creativity in North America and that is the

Vaughan Musical Creativity Test <sup>3</sup> and this is as yet unpublished. The instruments used in the small number of studies which investigate creativity in music seem to have been constructed specially for the study.

There have been a few research studies concerned directly with the effect of music on creative thinking. Roderick<sup>4</sup> investigated the relationships among creative thinking ability, musical ability and scholastic ability of music majors in a teacher training program, comparing their creative thinking ability with that of students in other fields and assessing the effect of one academic year of music courses on the competency of music majors to think creatively. Criterion measures were the Wing Tests, <sup>5</sup> the Aliferis Tests<sup>6</sup> and the Torrance Tests.<sup>7</sup> The results of the study showed a positive but low relationship between creative thinking ability and musical ability but no other relationships were found to exist. Roderick concluded that the effect of music courses on the creative thinking ability test scores was neither positive nor negative.

Simpson<sup>8</sup> examined a number of different music courses to determine which was the most conducive to growth in general creativity. The study was conducted in a multi-racial, inner-city school with an experimental group of 170 subjects and a control group of 45 subjects. The experimental classes were: Band, Choir, Beginning Ensemble, Beginning Instruments, Harmony, Music Appreciation, Piano, Music History and Jazz Workshop.



The control group received no music. Both groups were tested and then re-tested after one semester, using a six factor Guilford test measuring word fluency, divergent production of figural systems, elaboration, spontaneous flexibility, ideational fluency and originality. Based on the results that significant gains on the factors of word fluency, elaboration and spontaneous flexibility were made in the experimental classes, tentative generalizations were made that musical studies can be conducive to growth in general creative potential. The variables of sex, IQ, grade level and musical aptitude were found to have little or no effect upon the results. The author exercised caution in generalizing since many variables were not taken into account, such as teachers, methods used and the fact that the study took place in a multi-racial school. It was also concluded that it is not necessary to consciously cultivate creativity in order to stimulate growth in creative thinking.

The only studies which deal directly with the growth of musical creativity seem to be those of Vaughan. The Vaughan Musical Creativity Test, the instrument used in the present study, had its origins in the Vaughan-Myers Test of Musical Creativity, a one item test used by the authors in a study of the relationship between musical processes and creative thinking.<sup>9</sup> The test was given to a control and an experimental group of fourth and fifth grade students, at the end of a short music program which lasted three months. The Torrance Tests<sup>10</sup> (pre- and posttests) and the Bentley Tests<sup>11</sup> were

also administered. Singing, ear training and listening to concert music were the main activities of the control group while the experimental group was involved in various creative activities including improvising on classroom instruments and structured listening with an emphasis on twentieth century music. Significant gains were made in the experimental group on the factor of fluency in the Torrance tests. No relationship was found between musical aptitude and creative thinking. The experimental group surpassed the control group at the .01 level of significance on the Vaughan-Myers Test of Musical Creativity, which consisted of a short musical phrase played by the tester on the black keys of a set of bells which must be answered with a response which is in keeping with the stem. The student is given a separate set of bells on which to answer. There was no relationship between musical aptitude and musical creativity. The authors suggested that a more comprehensive measure should be devised and Vaughan pointed out that the study was rudimentary, serving as an introduction to more elaborate future studies.

Vaughan pursued the argument that musical processes and creative thinking are analogous, and constructed a test of musical creativity which was based on the principles of previous creativity testing. Details of these principles can be found in Chapter three of this study. Using this test, the Torrance tests and the Bentley Tests as criterion measures, the author tested the hypothesis that musical creativity is significantly related to general creativity.<sup>12</sup> This hypothesis was supported. Musical

creativity and musical aptitude were also found to be significantly correlated, which was anomolous to the results of the previously reported study.

Vaughan suggested that the scoring procedure should be revised to eliminate the high degree of disagreement amongst the judges. She also stated that the factor analysis revealed that the rhythm and ideation scores were not separated and that no discrimination between them was made by the judges.

Because of the small sample ( $n = 47$ ) used in the study, Vaughan repeated it the following year and the same tests were administered to 213 elementary school children, 106 being at the grade three level and 107 at the grade six level. There were 115 males and 98 females. This study,<sup>13</sup> the main purpose of which was to validate further the Vaughan Musical Creativity Test, also investigated the relationship between musical and figural creativity, the effect of age and sex on these variables and the extent to which musical creativity and musical aptitude may be considered as separate faculties.

Kuder-Richardson 20 inter-judge reliability coefficients were found to be higher than in the previous study ranging from .78 to .88 on individual items with a total score of .90. In the previous study the coefficients had ranged from .67 to .79. Musical creativity and musical aptitude were found to be significantly correlated, the significance levels ranging from .05 to .01 on thirteen out of sixteen variables. These correlations ranged from .19 to .36. Musical and figural creativity were found to be related in part and significance levels of .05 were obtained on six of the sixteen variables.

The older subjects were significantly superior on all but the Torrance measures of fluency, flexibility and originality. Higher scores on the Bentley rhythm test and the Torrance originality measure were obtained by the boys. The interaction of age and sex showed the girls to have higher scores for fluency and ideation on the Vaughan Musical Creativity Test.

The author concluded that although musical creativity and musical aptitude were found to be significantly correlated, the highest correlation was only .36 and such a correlation would seem to indicate that musical creativity and musical aptitude are separable factors.

Vaughan's next study investigated further the relationship between musical and figural creativity in addition to examining the effect of a program of creative musical activities upon creative development.<sup>14</sup> The sample was drawn from 33 classes of grade five students in a large urban area in British Columbia. Five classes were randomly assigned to the experimental group, the total number of students being 126. The remaining classes were then divided into two groups, those who were receiving music instruction and those who were not. Five classes from each group were randomly chosen and were assigned to control group one (music instruction) and control group two (no music instruction). There were 108 students in the first, and 112 students in the second control group. All students were pretested using the Torrance Tests of Creative Thinking, figural forms, and the Vaughan Test of Musical Creativity. The program lasted for ten weeks during which time the

author met several times with the teachers of the classes in the experimental group, none of whom were music specialists.

Creative principles and specific techniques were discussed.

They were as follows:<sup>15</sup>

<u>Creative Principle</u>	<u>Musical Process</u>
1. Flexibility, or ability to break a mental set.	Musical systems other than common practice; e.g., 12-tone, aleatoric, electronic.
2. Associative thinking.	Completion exercises; e.g., adding a consequent phrase or response to a given antecedent.
3. Bisociation.	Ostinato and counterpoint.
4. Metaphorical thinking.	Programmatic or extra-musical stimuli.
5. Synthesizing, or integrative behaviour.	Composition requiring a synthesis of certain predetermined elements, characteristics, etc.

Teachers did not have to adhere to a strict curriculum and were encouraged to develop the techniques presented by the author in any way they wished. No mention is made by Vaughan of the possibility of biased results due to the uncontrolled teacher variable and this would seem to be a major shortcoming of the study.

After posttests of the two criterion measures, the data were analyzed by an analysis of covariance and a correlated t test. The experimental group was superior to the other groups only on the factor of synthesis in the musical creativity test. The no music control group was equal to the experimental group on the factors of fluency, rhythmic security and ideation in

the musical creativity test. The control group receiving regular music instruction showed no significant gains on any of the factors and scored significantly lower than the other two groups on the factors of fluency and rhythm in the musical creativity test. However, this group showed significant gains over the other two groups on factors of fluency, originality and elaboration on the Torrance test.

Although the creative approach to music did not increase musical creativity significantly except on the factor of synthesis, the fact that the group involved in regular music instruction was significantly behind the other two groups on two factors suggests that a re-thinking of classroom procedures is in order. The possibility that the conventional music curriculum actually impedes creativity is cause for concern among music educators.

Another study concerned with musical creativity is that of Gorder<sup>16</sup> who constructed a test of musical creativity based on the methods of Guilford and Torrance. The test attempted to measure the strengths of fluency, flexibility, elaboration, originality and musical quality. The subjects were junior high school instrumental students who were given tasks of improvised divergent production. Fluency was measured by the number of phrases produced in a limited time, flexibility by the number of phrases exhibiting different kinds of material, elaboration by variation of basic phrases, originality by the rarity of the use of specific types of content and quality by the amount of musical appeal. Creativity

scores showed no significant correlation with standardized achievement test scores, the tests used being those of Seashore, Drake and Colwell. The constructs of creativity were not dependent on age, musical training or experience. These results differ from those of Vaughan who found significant positive correlations between age and musical creativity scores. Also, Tarratus<sup>17</sup> in an earlier study of creative processes in music students, found that creativity scores were significantly correlated with jazz experience.

There seem to be very few studies which examine the effectiveness of creative music programs in terms of musical achievement. A study by Kyme sought to establish the degree to which musical composition contributed to the development of musicality. He states:

Musicality, as an operational term, is defined as the capacity to express accurately through pitch and time the mental images of a musical idea. Conversely, it is the capacity to grasp in its completeness and detail a musical idea heard. The stringent measures of this latter capacity will be a measure of aesthetic sensitivity in music.<sup>18</sup>

The sample for this study was drawn from nine junior high schools in the Oakland, Berkeley and Richmond, California, public school systems. There were three control groups and one experimental group, each being approximately equal in size, and comprising about 1200 grade seven students. The control groups did not receive any instruction in musical composition. One control group in each school was instructed in choral performance. Another control group comprised students who were excused from general music classes to take instrumental music instruction. The third control group received no music

instruction. The experimental group received instruction in musical composition, the program having been adapted from the methods of Orff and Kodaly.

The Aesthetic Judgement Test was given as a pre- and posttest to all subjects at the beginning and end of the school year. The test, derived from five well established standardized music tests, was validated using 300 junior high school students from outside the East Bay area. Sixteen hundred grades 4 through 7 students from schools in Madeira County served to develop norms and to establish a growth gradient through grades. Significant gains in the experimental group were made in five out of the nine schools but in two of the schools the control groups' scores were higher than those in the experimental group. However, from the overall results, the author concluded that the teaching of musical composition did contribute significantly to the development of musicality.

The Manhattanville Music Curriculum Program (MMCP) has been the subject of several studies in the past decade. This creative music program is based on Bruner's spiral curriculum approach to learning.<sup>19</sup> Details of this approach have been set out in Chapter three of this study. Kyme<sup>19</sup> also investigated the effect of the MMCP on scores of his Aesthetic Judgement Test. The test was administered to a national sample of 800 MMCP students from grades four to ten, and 4000 students selected from various music programs and grade levels in California. A comparison of sub-sample scores at the fourth,



sixth and eighth grades led Kyme to conclude that MMCP students were more aurally perceptive than Californian students. However, in his evaluation of the study, Kyme pointed out that it was not a controlled experiment nor an evaluation of the MMCP. Length and frequency of class periods were not controlled and neither was teacher expertise. No justifiable comparisons could be made between samples.

In a study which attempted to examine the effectiveness of the MMCP in terms of musical achievement and attitude, Gibbs<sup>20</sup> described the MMCP and its implementation in Jefferson, Colorado. The sample consisted of 101 grade five students and 183 grade eight students. Of these, 111 had been exposed to the MMCP for one and a half years while the remainder had been participating in the regular music program. All students were administered the following tests: Gordon's Musical Aptitude Profile, Colwell's Musical Achievement Test II and the Oregon Scale of Attitudes Towards Music. No significant differences were found between the two programs but an analysis of subgroups revealed that the MMCP had a positive significant effect on the attitude scores of the highly intelligent students. The author suggested that this may indicate that MMCP procedures have a stronger appeal to the more intelligent students who respond with a more positive attitude.

It was pointed out by the author that although the conventional music program did include some creativity, it was not the centre of musical activities. Singing occupied the greatest part of the time but music theory and listening experiences

were also included. A detailed description of both programs formed a valuable part of this study. Such information is vital if studies are to be replicated and the programs described are to be used by other classroom teachers. Use of vague terms such as "experimentation" and "improvisation" found in some of the other studies cited, may not convey sufficient information for the teacher to effectively organize the lesson.

Bradley<sup>21</sup> conducted a two year study of creative processes in music education and their effect upon aural and visual perception. The underlying philosophy of the creative music program used in this study closely parallels that of the MMCP, though it was not the particular concern of the author to evaluate that specific program. The results of an earlier pilot study<sup>22</sup> had led the writer to conclude that aural and visual perception was positively influenced by a creative approach to music. In this study, six classes of grade four students, one being the experimental group, were pre- and posttested with an aural and visual discrimination test at the beginning and end of the school year. The test, in two parts, was constructed by the author specially for the study. Reliability coefficients of .87 and .84 were reported for the two parts and content validity was established by obtaining ratings from recognized musicians in the community who established agreement that the tests measured what they claimed to measure.

The experimental group, engaged in a program of creative musical activities, gained significantly over the control groups

on the visual part of the test and over four of the five groups on the aural part. The control groups were taught by their regular classroom teachers, their program being mainly singing and listening activities with occasional music reading instruction.

The design of Bradley's two year study was very similar. Four schools, two for the control, and two for the experimental program were selected in Victoria, British Columbia. The two classes in the experimental group each had a set of Orff instruments and were staffed by a research assistant who conducted the creative program. The two schools in the control group continued with the regular music periods twice weekly. All students from grades two to seven in all four schools were tested at the end of the first year. The scores of the experimental group exceeded those of the control group on both parts of the test. The significance level was .001.

The second year study was a replication of the first year although the original experimental design had provided for the continuing of creative procedures into the second year using the same students. However, problems arising from a highly mobile population resulted in the original sample being reduced to almost half its size in some classes. The question of possibly developing more advanced levels of aural and visual discrimination was abandoned at this time and Bradley set out to discover whether a replication study would yield the same results. The gains in the experimental group were still highly significant. The mean scores increased with grade level

in both groups. As no pretest was given, there was no way of measuring the growth of aural and visual perception.

Bradley stated:

In the pilot study previously cited it was discovered that in the initial stages pretesting was of questionable value, for students at the grade four level showed relatively little development in either aural or visual acuity as measured by the written tests. Consequently a decision was made to avoid pretesting at the commencement of the program for both the experimental and control groups. Data were collected at the end of both the first and second year in all groups.<sup>23</sup>

The decision not to have a pretest seems surprising since the study is investigating the development of visual and aural perception. A pretest is necessary unless subjects have been randomly sampled from a population and subsequently randomly assigned to a group. As this procedure was apparently not used, the assumption that the mean scores for aural and visual perception were the same for both groups at the outset of the experiment cannot be made. Therefore, without pretest scores to use as comparisons, any gains made by one group over another cannot be said to have occurred as a result of treatment.

Bradley's study, the results of which are encouraging to music educators concerned with the value of creative music programs, has nevertheless left questions unanswered. A clear definition of the terms 'aural perception' and 'visual perception' could not be found in either the report or the pilot study or in the final report. Furthermore, the author made no clear distinction between 'perception' and 'discrimination', using them interchangeably. This left some doubt as to what was actually being measured.

The MMCP studies quoted so far have used students from the public school system for their subjects. Five recent studies have investigated the application of the MMCP to the training of elementary classroom teachers. Drew<sup>24</sup> used a control/experimental group design, the sample being drawn from three colleges, two acting as control and the other as experimental. Statistically significant differences on the Colwell Achievement Test I and on the Manhattanville Sentence Completion Test, a music attitude measure led Drew to conclude that the MMCP did contribute to the greater development of proficiency involving certain musical concepts and to a positive attitude to the curriculum, music teaching and music programs in the elementary school.

Daugherty<sup>25</sup> in a later study, used a very different design and a different attitude measure, but findings were similar. Fourteen elementary education students received a six week traditionally oriented unit of instruction followed by a six week MMCP instructional unit. Data were gathered after each unit using standardized measures and individual case reports were compiled. It was concluded that the MMCP instructional Unit was evaluated more favorably by the students than the traditionally oriented Unit I; student knowledge of music vocabulary and symbols and of aural discrimination between high and low pitches had improved by the end of the MMCP Unit; positive attitudes towards the value of music in elementary schools were expressed at the end of both units of

instruction.

The studies of McClellan,<sup>26</sup> Madachy<sup>27</sup> and Dodson<sup>28</sup> use creative music programs which, although developed specially for the individual study and therefore differing slightly from each other, are nevertheless built on essentially the same underlying rationale found in the MMCP. The findings of these studies differ from those of Drew and Daugherty but support the findings of Gibbs in that no difference between groups was found in performance of music achievement and music attitude tests, although Madachy found that the experimental group gained significantly in keyboard proficiency and had a slightly more positive attitude toward music. McClellan found that on a posttest of musical creativity the experimental group was superior to the control group. However, without a pretest, the amount of development of musical creativity in each group cannot be known.

From the review of the literature, it is apparent that further research into musical creativity and its development is necessary. Apart from the early pilot study of Vaughan and Myers in which the group involved in creative music activities scored higher on the musical creativity test than the control group, the literature revealed only two other studies concerned with the effect of creative musical experiences on the growth of musical creativity. Vaughan's 1974 study which used a pretest/posttest design, an experimental group receiving a creative music program, and two control groups, one receiving no music and the other receiving the regular music program, showed the experimental group to be superior only on the

factor of synthesis on the musical creativity test. McClellan found that the experimental group was superior on a posttest of musical creativity. Perhaps a pretest/posttest design would have yielded different results.

One study, that of Gorder, investigated the relationship between musical creativity and music achievement. No relationship was found between these variables. The studies investigating the relationship among the variables musical aptitude, musical creativity and creative thinking have produced varying results. Roderick found a low but positive relationship between musical aptitude and creative thinking but no such relationship was found in the Vaughan-Myers study, nor was there a relationship between musical creativity and musical aptitude. However, in Vaughan's two subsequent studies they were found to be statistically significantly correlated, though the correlation was quite low. Vaughan also found musical creativity and general creativity to be related but as the relationship is between only six out of sixteen variables, one must conclude that the overall relationship is low.

The two studies investigating the effect of music courses on creative thinking differed in their findings. Roderick found them to have neither a positive nor a negative effect whereas Simpson concluded that they were conducive to growth of creative thinking.

The results of studies concerned with the effects of creative music programs on music achievement and attitude are also conflicting. Kyme, Bradley, Drew and Daugherty found

that creative music programs resulted in higher scores on these measures whereas Gibbs, Dodson, McClellan and Madachy found few, if any significant differences. It is hoped that future research will provide convincing rather than conflicting evidence.



## FOOTNOTES FOR CHAPTER 2

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## METHODS

Design of the Study

The study was designed to determine the effects of two independent variables upon one dependent variable. The independent variables were: musical aptitude and musical training, and the dependent variable was musical creativity.

Sampling Procedure. Initially it had been planned to randomly sample all school districts in the lower mainland area of British Columbia. Indeed, this procedure was carried out and Burnaby was the chosen school district. Music at the grade eight level had, however, become an elective rather than a requirement in Burnaby and in all but one of the other lower mainland school districts. Vancouver, the only school district where general music at the grade eight level is still mandatory in three schools, was therefore selected. From these three schools, one was randomly sampled. There were five grade eight general music classes and from these, two classes were randomly chosen and randomly designated experimental group and control group.

The grade eight level was chosen for these reasons: (1) music at the grade eight level is of particular interest to me and it is in this area that I have most teaching experience, (2) the time table allows for a minimum of three one hour periods of music a week, whereas in the elementary school the time allocated to music is normally not more than two forty minute periods a week. The MMCP emphasises continuous musical growth and this

is less likely to be achieved when classes are short and infrequent. Also, the practical nature of the curriculum demands organizational time for such tasks as the distribution and collection of instruments. The shorter period leaves little time for actual music making.

School and Subjects. The school in which the study was conducted is a multi-racial secondary school situated in South East Vancouver. The total number of subjects at the commencement of the study was 46. Of this number, 24 were boys and 22 were girls. There were 21 in the control group and 25 in the experimental group. All subjects were between the age of 12 years-0 months and 14 years-4 months, having just entered grade eight. Fourteen subjects were from homes where English is spoken as a second language and 16 subjects were Asian.

Collection of Data. During the second week in September, 1979, each student in both the control group and the experimental group was given the Vaughan Musical Creativity Test which was individually administered during two morning meetings. Both groups were also administered Seashore's Measures of Musical Talents during an afternoon meeting. Each student was also asked to complete a questionnaire providing information on previous musical experience. At the end of the experimental program, the Vaughan Musical Creativity Test was administered to each student as a posttest.

Six subjects were subsequently dropped from the study. Three boys were transferred to the Learning Assistance Centre

during the course of the program, one from the control group and two from the experimental group. One girl was transferred from the control group to the experimental group half way through the program and her data were therefore discounted, and two girls were dropped from the experimental group, one because of emotional problems and the other because of her absence from school during the final testing period. The final distribution of subjects per group was as follows: Control, (N=19, 12 males/7 females) and Experimental, (N=21, 9 males/12 females).

### Instruments

Vaughan Musical Creativity Test.<sup>1</sup> This test is based on three principles common to creativity tests. They are: warm-up, feelings of psychological safety and open-ended tasks which call forth a variety of different responses. The test consists of five items, each being rated on a scale of 1 to 5 using four criteria. The criteria are: fluency, rhythmic security, ideation and synthesis. A minimum response is scaled as 1 and a comparatively ideal response as 5. All responses are tape recorded and scored by a minimum of three judges.

Question 1 is concerned with measuring the ability to maintain some sense of independence while at the same time retaining a sense of relatedness to another part. This reflects Koestler's theory of bisociation, which requires thought on different levels of continuity, simultaneously. While the tester taps a steady beat, the testee improvises a rhythm over the beat. Many rhythm

patterns may be generated within the basic beat structure, though some testees will inevitably produce stereotypic motives which continually repeat, being unable to break the set.

The second and third questions are of the completion type, the second concerned with rhythm alone and the third concerned with rhythm and melody. The students are told not to copy the stimulus but to add something which fits. It is important that the answer be appropriate within certain guidelines. Vaughan explained that although these two questions appear to be measuring the same thing in the same way, repetition might result in greater fluency and the introduction of melody in item three might motivate students in a different way.

Item four requires the testee to improvise rhythmically and melodically over a two note ostinato. It is hoped that the student, given the security of the ostinato will be able to improvise freely, exploring the possibilities in preparation for the final item which is unstructured. This fifth item is designed to tap the student's ability to synthesize, an important criterion for creativity. The student is asked to complete the stem, which is in contemporary idiom, using any or all of the instruments in front of him in any way he likes. Other sounds made from objects within easy reach can also be used.

In her test instructions, Vaughan defines the four criteria. Fluency is measured by the degree of ease with which the testee responds regardless of quality. Rhythmic security is measured by the amount of control exercised in any attempted figurations and the degree to which the given tempo is maintained

by the testee. Ideation is measured by how frequently patterning occurs over and above a straight note for note response. Vaughan considers a distinction between rhythmic and melodic ideation to be invalid as both the pitches chosen by the students and the impression of tonality would be arbitrary as such. When scoring synthesis, judges must consider to what degree the total effect is satisfying. A mere generation of a variety of ideas does not necessarily result in a satisfying synthesis. The presence of musical devices such as thematic repetition and intentional cadencing are also important considerations.

Vaughan recommends that the judges reestablish their criteria after responses from every 20 subjects have been scored. The judges in this study listened to some sample evaluations of test responses supplied on tape by Vaughan and the criteria were discussed. They then listened to another sample response to each test item, scored them, compared their scores with those of Vaughan and with each other and then discussed how they had arrived at their scores. By the end of the session, it was felt that a high amount of agreement had been reached. Two subsequent meetings also resulted in high agreement among the judges.

Seashore's Measures of Musical Talents<sup>2</sup> are measures of pitch, loudness, rhythm, time, timbre and tonal memory. These tests have had a long history of wide application. Presented on a long playing recording, the six tests are administered separately and measure different aspects of musical ability. Subjects respond on specially designed IBM answer sheets. In



the present study, only the tests of Pitch, Rhythm and Tonal Memory were used since the greater popularity of these three measures has resulted in a widespread practice of limiting musical talent testing only to them. In the pitch test, 50 pairs of tones are presented and testees must determine whether the second tone is higher or lower than the first. The rhythm test comprises 30 pairs of rhythm patterns and testees must determine whether the two patterns in each pair are the same or different. In the 30 pairs of tonal sequences which comprise the tonal memory test, one note is different in the two sequences and subjects must identify which note it is by number.

The Questionnaire on Musical Background (see Appendix A) was developed in order to gather information about previous musical experience and other general information. An item-check questionnaire was designed in order that the amount of writing by the respondent be minimal. The information gathered was used to construct a rating scale of musical training from zero to five.

#### Reliability and Validity of the Instruments.

When Vaughan first developed her musical creativity test in 1971, Kuder-Richardson 20 inter-judge reliability co-efficients ranged from .67 to .79 on individual items. A validation study carried out the following year resulted in higher reliability, KR 20 coefficients ranging from .78 to .88 on individual items and from .83 to .87 on individual factors. A histogram showed how the scores were distributed on a curve with respect to each

item and factor. Item 4 and Synthesis showed a slight negative skew, and Fluency a slight positive skew but otherwise the curves were normal. The following table shows factor discreteness and inter-judge reliabilities:

TABLE I

Intercorrelations and Reliabilities on Musical Creativity Test Factors (after Vaughan, 1972)

	Fluency	Rhythm	Ideation	Synthesis
Fluency	(.87)			
Rhythm	.80	(.83)		
Ideation	.80 <sup>a</sup>	.74	(.87)	
Synthesis	.83	.83	.93	(.84)

Note: Inter-judge reliabilities are on the diagonal.

<sup>a</sup>Table II in Vaughan's 1972 report includes an apparent typographical error. The correlation between fluency and ideation was reported as both .80 and .86. I have taken the more conservative value as evidence of factor independence.

I carried out a reliability study on the test in January, 1979, using a class of 15 grade eight students from a secondary school in Vancouver, British Columbia. The test was administered individually at the beginning and end of a two week period and scored by four judges. The judges were not informed as to the identity of the tapes (test or retest) and the subject order was different from test to retest.

The testing situation was by no means ideal. The testing was carried out during a drama lesson which took place on the

stage in the auditorium. Each student was tested in a room at the back of the stage. It was noisy, and during the retest a guitar class could be heard from the band room.

Test-retest correlation coefficients for each of the five factors are reported in Table II

TABLE II  
Test-Retest Reliabilities for Vaughan  
Musical Creativity Test (n=15)

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Total	.38
Fluency	-.03
Rhythm	.31
Ideation	.52
Synthesis	.54

---

The correlations shown above seem to indicate a low reliability regarding the stability of the test. A stability coefficient is not reported by Vaughan, which seems to indicate the test-retest reliability was not studied.

Cronbach's coefficient alpha was used to assess the inter-judge reliability. This is a measure of the average correlation between all possible pairs of judges across the total number of subjects (n=15). Separate alphas were calculated for each factor and for total on test and retest scores. These are

shown in Table III below. While test-retest reliability seems rather low on these scales, the inter-judge reliability is adequate. Despite these low reliabilities, it was decided that the test be used, in the absence of any other suitable test.

TABLE III  
Inter-judge Reliabilities (Cronbach Alpha) on Musical  
Creativity Test Factors (n=15)

	$\bar{X}$	Test SD	$\alpha$	$\bar{X}$	Retest SD	$\alpha$	t
Fluency	73.75	15.84	.95	77.81	9.98	.77	0.82
Rhythm	60.93	15.54	.94	63.37	9.08	.77	1.08
Ideation	54	13.56	.89	59.50	10.26	.81	2.29*
Synthesis	50.19	11.68	.91	54.31	9.24	.77	1.70
Total	237	45.32	.94	255.12	33.63	.83	1.71

\* $p < .05$

In order to eliminate any possibility of a significant main effect in the main study being due to practice rather than treatment, separate t tests comparing test and retest scores were carried out on each of the musical creativity test factors from the pilot sample. None of the t statistics were significant except on the factor of ideation. However, gains made from test to retest by three subjects were sufficiently large to account for the significant t. It was therefore concluded that, overall, the effect of practice is not significant.

Reliability of Seashore's Measures of Musical Talent. Because this is a well established standardized test, its reliability

and validity has been established. The test manual reports Kuder-Richardson 21 internal consistency coefficients for Grades 6-8 as .84 for Pitch, .69 for Rhythm and .84 for Tonal Memory.

Reliability of the Questionnaire on Musical Background and Training. The questionnaire was given to the class of 15 grade 8 students at the beginning and end of the two week period. There were no changes from time one to time two and so it was concluded that the instrument was reliable.

### The Experiment

Both the control group and the experimental group received three one hour periods of music a week for four weeks. The control group was taught by the regular music teacher and I taught the experimental group.

The Control Program. Singing was the most important activity but the program also included a short music history course, during which students listened to recorded music. Theory of music with emphasis on staff notation was also included. During the singing lessons, the students sang from songbooks. The material was varied and included a number of folksongs. Sometimes the teacher would instruct individuals to come to the piano to sing part of a song to the rest of the class. The quality of their term grade depended to a large extent on these individual performances.

The music history course began with ancient Christian chant, tracing music's development through to the present day, though

only music up to the classical period had been covered by the end of the four week period. The teacher talked at length about each composer, the period in which he lived and the kind of music that he wrote and then played musical examples on record.

Musical notation was taught from the blackboard and students were assigned a page in their songbooks to copy. The teacher would then check the work for copying mistakes. At no time were students involved in decision making. Creative music activities were not part of the music program. Students were given written tests periodically to determine how much they had learned. Questions were on elementary theory and on topics covered in the music history course.

The experimental program. The experimental group followed the MMCP Synthesis,<sup>3</sup> a curriculum developed between 1965 and 1970 by a group of musicians at Manhattanville College, New York. Designed for use in grades three to twelve, the curriculum's main objective is to foster creative development through music. The project is designed with the assumption that "music is a medium which serves man as a basis of perceptual exploration, free of the constraints of verbal definition, singular causes and effects, and pre-ordained structural assumptions."<sup>4</sup>

According to Thomas, music has three main characteristics. The first is that "music is an agent for the projection and clarification of thought."<sup>5</sup> Secondly, "music is a continuing art, always sensitive to and interpreting the present. It is neither a static medium nor a completed monument of the past."<sup>6</sup>

The third characteristic is that music is "a vehicle for man in his constant search for individual creative fulfillment."<sup>7</sup>

Since the intention of the curriculum is to develop musical behaviours through creative involvement, it was necessary, in order to identify and define such behaviours, to examine the roles of musicians and the types of behaviours exercised by them. From the first characteristic of music, the statement was made that:

...the musician functions largely on the basis of his aural sensitivity. He hears and finds meaning in the things he hears. He is not dependent on verbal or written explanations of music in order to make judgements or to respond to musical stimuli. It is also apparent that the musician is more than a receptor, he is a producer. He is actively engaged in the creation and interpretive performance of music on a level which transcends operational mechanics, on a level of personal thought."<sup>8</sup>

The inference can be made from the second characteristic of music that musicians, with regard to their creative involvement, are concerned with the music of today. Thomas states:

...It must be presumed that a musician is familiar with and participates in the musical scene of the latter half of the twentieth century. This does not preclude the understanding of or appreciation for the music of other times, but it does frame the conditions of his creative involvement.....By the fact that music is a continuing art and not a static or completed set of occurrences, the musician is a contributor to the continual development of musical thought and practice. It is his knowledge of music and society today that influences the extent and manner of his contribution.<sup>9</sup>

Two conclusions regarding the behaviour of the musician were drawn from the third characteristic of music. They were as follows:

...First, he is a risk taker....He is not afraid to explore ideas which have not yet been documented or theorized. Second, the musician has a creative imagination. He sees past the commonplace and can think beyond the prescribed

limits of established practice. Often he follows his intuition to create new forms, new sounds, new interpretations. He is far more a developer of thought than a subservient follower of systems.<sup>10</sup>

From the above statements it can be seen that the musician is seen as an involved participant rather than an observer, concerned with knowing music rather than knowing about music. His personal need for fulfillment is satisfied through his ability to explore and create music.

The objectives of the MMCP are divided into four categories: cognitive, attitudinal, skill and aesthetic objectives. By using a spiral of musical concepts containing sixteen "cycles" cognitive and skill objectives are developed. A cycle is defined as "a level of conceptual refinement related to the spiral curriculum. It describes one horizontal plane of highly related categories of musical concepts."<sup>11</sup> Specific conceptual objectives are listed under the headings timbre, rhythm, pitch, dynamics and form. Accompanying each cycle are some suggested skills. Thomas explained skill objectives in relation to the other areas. He states:

It must be emphasized that the development of skills is an objective of the MMCP when these skills serve to enhance, expand, or bring clarity to cognitive, attitudinal and aesthetic objectives. However, the development of performance, notational or aural skills in isolation from these other goals must be considered an irrelevant experience."<sup>12</sup>

The three categories of skills in order of importance are aural, dexterous and translative. In the first category can be included the identification of pitches, durations, timbres and dynamics. Memory is the most important facet. Dexterous



skills include those needed for vocal and instrumental performance and for conducting, while translative skills include those needed for the writing and interpretation of notation.

Attitudinal objectives form a very important part of the MMCP as can be seen from the following statement:

... The fostering of positive attitudes is crucial if personal concern and involvement are to be motivated intrinsically...

... It is the objective of the program to have the student develop excitement about and confidence in his own creative potential, to believe in the worth and validity of his own inventive and expressive endeavours. The attitude of openness of mind, of receptiveness to new situations, is also most desirable.....It is also fundamental that the program uncover and expand the individual's sense of inquisitiveness and sense of personal security in intuitive thinking.<sup>13</sup>

The development of aesthetic sensitivity is an important objective of the MMCP. It is difficult to define the aesthetic objective exactly but it involves the spirit and emotions of the individual. Thomas states:

... Aesthetic insight is a condition which can exist only from one's personal affinity to the nature of the art.....aesthetic sensitivity cannot be taught. It is rather, an intimate response that may grow from the nature of personal experience.....Aesthetic sensitivity can be fostered by educational strategies which demand analytical, judicial and creative thinking....<sup>13</sup>

These objectives must be conceived in relation to each other just as the musical elements must interact to form the totality of musical experience. Throughout the four week period each strategy was designed wherever possible to encourage

the realization of these objectives.

The students worked in groups of four or five using a variety of Orff type instruments and other sound producing objects such as wind chimes, metal chains and various types of homemade maracas. The first two cycles from the MMCP Synthesis were used. The format of each period was basically the same, beginning with a brief discussion of the compositional task to be presented, and followed by the composing, rehearsing and finally performing of the piece by each group. All pieces were taped for immediate playback and evaluation by teacher and students together. A more detailed description of each lesson can be found in Appendix B.

The MMCP has been designed to operate most effectively in an environment where students are given enough freedom to think and act for themselves. Classroom conditions should allow students maximum opportunities to discover the language of music through creative exploration. Equipment, the physical arrangement of the classroom, scheduling, and the role of the teacher are all important considerations. The classroom used to conduct the experiment allowed each group to work independently, with minimal disturbance from the other groups. There were three small rooms off the back of the classroom, an area between the classroom door and the outer door, and another small room leading off the front of the classroom. Once the assignment had been discussed, the students were free to use these spaces to work on their compositions. The teacher's role then ceased to be that of instructor and became

that of guide and resource person.

During the week following the four week program, all students in both groups were administered the Vaughan Musical Creativity Test as a posttest. Some difficulties were encountered in administering the test. Because it is an individually administered test, several periods were required to complete the testing, thus causing some inconvenience to the regular music teacher who was concerned about testing students for report card grades. Diplomacy required and resulted in a room change for the testing, involving several students in each group. This, coupled with the ensuing feelings of pressure which I experienced, may have resulted in the posttest being administered in a less relaxed manner than the pretest.

## FOOTNOTES FOR CHAPTER 3

- 1 Margery M. Vaughan, Vaughan Musical Creativity Test, University of Victoria, 1972.
- 2 Carl E. Seashore, Don Lewis, and Joseph G. Saltveit, Seashore's Measures of Musical Talents, 1919, 1939, 1956, 1960, (New York: The Psychological Corporation).
- 3 Ronald B. Thomas, MMCP Synthesis (Bellingham, Wa: Americole, 1979).
- 4 Thomas, Ibid, p. ix.
- 5 Thomas, Ibid, p. 1.
- 6 Thomas, Ibid, p. 2.
- 7 Thomas, Ibid, p. 2.
- 8 Thomas, Ibid, p. 6.
- 9 Thomas, Ibid, p. 6.
- 10 Thomas, Ibid, p. 6.
- 11 Thomas, Ibid, p. 37.
- 12 Thomas, Ibid, p. 9.
- 13 Thomas, Ibid, p. 8.

## Chapter 4

## RESULTS AND DISCUSSION

Reliability of Vaughan Test

Inter-judge reliability was established for the dependent variable by the same method used in the earlier reliability study described in Chapter Three. Cronbach's coefficient alphas were calculated for each factor and for total on pre and posttest and are reported in Table IV.

TABLE IV

Inter-judge Reliabilities on Musical  
Creativity Test Factors (n=40)

	Pretest	Posttest
Fluency	.94	.79
Rhythm	.85	.88
Ideation	.82	.85
Synthesis	.77	.77
Total	.91	.91

Comparability of the Groups on Aptitude Measures

Separate t tests comparing the two groups were carried out on each of the three musical aptitude sub-scales (pitch, rhythm, and tonal memory), and on the musical training scale. None of the t ratios\* were significant beyond the .05 level and therefore it appears that the two groups were similar with regards to

musical aptitude and musical training.

### Test of the Hypothesis

It was hypothesised that the experimental treatment would result in greater gains in musical creativity scores than the control treatment. To test this hypothesis, separate 2 x 2 (group x pre vs. posttest) analyses of variance were carried out on each of the five dependent variables: fluency, rhythmic security, ideation, synthesis and total. Groups was a between-subject factor and Pre-Post was a within-subject factor. The analysis of variance revealed statistically significant main effects on all five variables. From the analysis of variance results, it can be concluded that both the MMCP and the control curriculum produced equivalent, and statistically significant increases in musical creativity scores. Furthermore, these differences were of educational significance since they averaged about one standard deviation of growth (as measured by pretest standard deviations). Separate ANOVA summary tables for the various dependent variables together with means and standard deviations are contained in Tables V to XIV.

It appeared that there were significant differences between groups on the pretest musical creativity scores. It was assumed at the commencement of the study that the two groups would be similar because of the way in which they were sampled. The difference between them must have occurred by chance since classes were randomly sampled and randomly assigned to treatments.

TABLE V  
Analysis of Variance Summary Table for Fluency

Source	df	Mean Square	F	p
Group	1	565.89	7.34	.01
Error	38	77.13		
Trial	1	1712.76	30.63	.01
Gr. x Tr.	1	34.41	< 1	
Error	38	55.92		

TABLE VI  
Means and Standard Deviations for Fluency

		Pretest	Posttest	Total
Experimental	M	60.43	68.38	64.40
	SD	10.72	3.60	8.84
Control	M	53.79	64.37	59.08
	SD	10.94	4.37	9.80
Total	M	57.28	66.48	
	SD	11.17	4.44	

TABLE VII

Analysis of Variance Summary Table for Rhythmic Security

Source	df	Mean Square	F	p
Group	1	612.34	4.86	.05
Error	38	125.98		
Trial	1	1373.36	34.36	.01
Gr. x Tr.	1	3.86	< 1	
Error	38	40.08		

TABLE VIII

Means and Standard Deviations for Rhythmic Security

		Pretest	Posttest	Total
Experimental	M	51.19	59.05	55.12
	SD	11.21	8.96	10.78
Control	M	45.21	53.95	49.58
	SD	9.51	5.59	8.88
Total	M	48.35	56.63	
	SD	10.74	7.78	



TABLE IX

## Analysis of Variance Summary Table for Ideation

Source	df	Mean Square	F	p
Group	1	244.58	4.02	.05
Error	38	60.87		
Trial	1	1676.81	29.49	.01
Gr. x Tr.	1	8.21	< 1	
Error	38	56.87		

TABLE X

## Means and Standard Deviations for Ideation

		Pretest	Posttest	Total
Experimental	M	35.33	45.14	40.24
	SD	5.98	6.84	8.04
Control	M	32.47	41.00	36.74
	SD	8.81	8.91	9.73
Total	M	33.98	43.17	
	SD	7.50	8.04	

TABLE XI

## Analysis of Variance Summary Table for Synthesis

Source	df	Mean Square	F	p
Group	1	455.26	5.72	.05
Error	38	79.63		
Trial	1	1975.05	55.97	.01
Gr. x Tr.	1	20.05	<1	
Error	38	35.29		

TABLE XII

## Means and Standard Deviations for Synthesis

		Pretest	Posttest	Total
Experimental	M	35.14	46.10	40.62
	SD	7.30	6.96	8.96
Control	M	31.37	40.32	35.84
	SD	8.33	7.76	9.13
Total	M	33.35	43.35	
	SD	7.94	7.82	

TABLE XIII

## Analysis of Variance Summary Table for Total

Source	df	Mean Square	F	p
Group	1	7172.17	7.74	.01
Error	38	950.66		
Trial	1	27111.91	61.92	.01
Gr. x Tr.	1	1.71	< 1	
Error	38	437.89		

TABLE XIV

## Means and Standard Deviations for Total

		Pretest	Posttest	Total
Experimental	M	182.10	218.67	200.38
	SD	27.23	21.22	32.00
Control	M	162.84	200.00	181.42
	SD	34.24	20.84	33.71
Total	M	172.95	209.80	
	SD	31.88	22.84	

Of secondary interest to the study was the relationship between the variables musical creativity, musical aptitude and musical training. Neither musical creativity nor musical aptitude were significantly correlated with musical training. However, there were significant correlations between musical creativity scores (both pre and post) and Pitch and Tonal Memory scores on the Musical Aptitude Test. Table XV shows the correlations for both the control and experimental group between musical creativity pre and post total scores and musical aptitude Pitch and Tonal Memory scores.

TABLE XV

Pearson Correlation Coefficients on Vaughan  
Musical Creativity Test Total Scores and  
Seashore's Measures of Musical Talents  
Pitch and Tonal Memory Scores

	Vaughan Pretotal		Posttotal	
	Control n = 19	Exp. n = 21	Control n = 19	Exp. n = 21
<u>Musical Aptitude</u>				
Pitch	.41*	.06	.08	.42*
Tonal Memory	.55*	.18	.16	.53**

\*p<.05

\*\*p<.01

Interesting though these findings may be, the design of the study permits only speculative discussion at this point. In the control group, musical aptitude and musical creativity were significantly correlated at the beginning of the experiment

but after the treatment they were no longer significantly correlated. In the experimental group, the reverse happened, there being no significant correlation between musical creativity and musical aptitude before the treatment but a significant correlation being apparent after the treatment. In view of the fact that the groups differed on the musical creativity pre-test by chance, it is also likely that these correlations were chance occurrences. However, one might speculate that for those students with a reasonably high musical aptitude, the experimental treatment enabled their inherent musical creativity to develop to the full.

These correlations between the two types of musicality are higher than the ones found by Vaughan. The highest correlation between any factor on her test and on Bentley's Measures of Musical Abilities was .36 and that was between the factors of rhythm. Oddly enough, the Seashore test for rhythm was not significantly correlated with any of the musical creativity factors.

It would be interesting to design a study which tested for possible interaction of musical aptitude and treatment, but in the absence of such a study, further discussion at this time would seem unmerited.

### Conclusion

It was hypothesised that there would be greater development of musical creativity in a class of Grade Eight students part-

icipating in the MMCP than in a similar class following the regular general music program. This hypothesis was not supported. Both groups improved equally over time, there being no significant gains between groups. It is therefore concluded that both treatments are equally effective in the development of musical creativity.

The problem of how to measure creativity, and in particular, musical creativity, remains for me, largely unsolved. Vaughan's test was found in this study to have a low stability coefficient. A larger reliability study with a large sample from a variety of grade levels needs to be undertaken to determine whether any stability of performance is possible using these test items and factors.

Vaughan strongly emphasized in her test instructions the importance of establishing a testing environment in which students feel psychologically safe and free from the tensions normally associated with test situations. Despite every effort made to meet these conditions, the nature of the test nevertheless required students to perform the five test tasks individually, thus placing them in an altered environment.

It is suggested that the test is biased in favour of the control methodology. Students in the control group had become accustomed to test situations and a teacher centred program. It is probable that most students in both groups had only experienced music as a recreative art during the seven years of music education. Opportunities for musical learning through personal

discovery and self evaluation, if provided at all, would almost certainly have been minimal. At the time of posttesting, students in the experimental program had been operating for four weeks in a classroom environment which offered them the opportunity to make musical decisions freely and in a non-competitive way. After growing acclimatized to this new environment they were once again subjected to the testing situation. This altered environment may well have adversely affected their scores on the posttest.

Because of this possible bias towards the control group, the fact that the significant increase in scores of the experimental group equalled that of the control group cannot be lightly dismissed. It would seem to be more of an achievement than the study would reveal at first glance. However, it should also be noted that the experimental group had had considerable opportunity to develop dexterity on the classroom instruments used in the test whereas the control group had had no opportunity.

The question of quantitative versus qualitative research is an interesting one. Perhaps the role of quantitative research in the area of musical creativity should be explored further. During the experiment most students were behaving creatively in that they were engaged in the act of musical composition. A study which allowed for assessment of musical creativity within the MMCP by objective observers might be more appropriate. It is recommended that this type of qualitative research be undertaken in order to further the study of musical creativity.

## APPENDIX A

QUESTIONNAIRE.GENERAL INFORMATION AND MUSICAL BACKGROUND

Name ..... Age in years and months .....

Country of birth..... Number of years you have lived  
in Canada.....

Have you ever belonged to a school music organization? (band,  
choir, recorder group, etc.)

Check one of the boxes      Yes     No

If you answered 'Yes' to the last question, please answer  
question 2.

2. Did you belong to the school music organization for

Check one of the boxes.      not more than 1 year   
not more than 2 years   
not more than 3 years   
more than 3 years

3. Have you ever taken private lessons on a musical instrument?

Check one of the boxes      Yes     No

If your answer was 'Yes' please answer the next question.

4. How long have you studied?

Check one of the boxes.      not more than a year   
not more than 2 years   
not more than 3 years   
not more than 4 years   
longer than 4 years



APPENDIX BLESSON NOTES FOR THE EXPERIMENTAL PROGRAMLesson 1

Introduction. Explain briefly about the program and the format each lesson will take.

Talk about music scrap book. Explain that it can be worked on during any spare time while waiting for other groups to finish assignments etc.

Talk about the senses we use in order to perceive the world around us. List the senses on the board. Ask them to write a list of everything they perceive within a two minute period.

Give each student 3 peanuts (unshelled). Ask them to examine them closely using all their senses but in particular the sense of touch. Divide class into four groups. Give each group a paper bag and ask them to pick one peanut and put it in the bag - object is to retrieve their own peanut from the bag by feeling it.

Ask students to name instruments set out at the front of the class - classify into pitched and non pitched (orally). Ask students to form a circle - distribute non pitched instruments and ask them to make a very soft sound on their instrument when they receive a given signal - demonstrate signal.

Talk about timbre. How many different timbres are there in group? Introduce metallophone and glock. How are these sounds different from the others? Ask student to become a conductor - must make it clear to class what signals will be used. Sounds must always be soft - give several different students the opportunity to become a conductor.

Record their efforts and play them back - discuss. Divide students into groups for next lesson - ask them to bring a small sound making object to next lesson e.g. comb, rubber band, cardboard tube etc.

Lesson 2

Recap. on timbre - what does it mean? Introduce italian terms for soft (p). talk about form in music - the overall plan, ordering of events etc.

Ask each student to make 3 different sounds using their sound making object - those who forget may find an object in the room or use a small non-pitched percussion instrument.

Remind them of their groups. Each group must choose a conductor and then make a piece using the sound making objects - length 30 secs. - use single soft sounds and combined sounds - aim for contrasting colour. Organize order of events - group together must decide upon various signs - 10 mins. to do this.

Have each group perform - record - playback and discuss and evaluate each group - how many different kinds of sounds were used in your group. Could the different sounds be put into categories? Was there good use of p? Did the piece hang together satisfactorily?

If time play "Construction in Metal" by John Cage - talk about shape and plan.

### Lesson 3

Warm up - class works in circle, each with an instrument. Talk about importance of silence in music - introduce Italian terms mf and f. Let two or three students try conducting, ensuring that various signs to be used have been decided upon beforehand.

Class divides into groups to work on a composition using f, mf, p, single and combined sounds - piece must contain 5 complete silences - ending must be same as beginning - not more than one minute long.

Each group performs composition and it is recorded. Evaluation and discussion follows.

Comments - didn't finish recording groups 4 and 5.

### Lesson 4

Record remaining two groups - playback and evaluation.

Return to places - discussion of material covered so far - timbre, colour - words to describe certain colours - dynamics f, mf and p. form - the overall aural plan. Introduce cresc. and mp. Talk about rhythm - pulse and tempo.

Each member of the class must think of an unusual vocal sound. Remainder of lesson taken from MMCP Synthesis P. 45.

N.B. they didn't finish pieces.

Lesson 5

Straight into groups to finish pieces. Remind them that they should be considering pulse and tempo as well as dynamics.

Record for immediate playback and evaluation. How would you describe the motion - slow, medium, fast? Could you hear a steady beat or pulse?

Play "Flight of the Bumblebee" by Rimsky-Korsakov and discuss pulse and tempo.

Talk about scores. Show a variety of scores e.g. George Self, Brian Dennis, Schafer. Draw other examples on board - talk about inventing other kinds of symbols. Conclude by telling class that next period they will be asked to create a composition and make a score for it.

Lesson 6

Use a sample strategy for cycle 2, p. 48 in MMCP Synthesis.

NB didn't finish recording all groups - 1 and 2 next period.

Lesson 7

Record Thursday's work (1 & 2) - playback all and evaluate together.

Ask class to write the five musical parameters in their books as column headings. List everything covered under appropriate heading - this will be a review.

Distribute all pitched instruments - ask students to find lowest F and to play it - establish a pulse - use metronome - ask students to count out loud - try different metres - introduce note values for 1, 2 and 4 beats. Write simple rhythms on board and ask class to play them on F. Introduce rests. Demonstrate how to create a composition using the pitch F. Consider all parameters.

Ask students to divide into groups - each member should practise being a conductor, composing an interesting piece using the pitch F (lowest on instrument).

There probably won't be time to record these.

Lesson 8

Give out pitched instruments. Teach FGA and F octave. Introduce staff notation. Write notes of treble clef on board (one octave). Point out FGA. Divide class in half - one half will play an ostinato F G A G F G A G. Ask a student to establish the pulse. Each sound will be concurrent with pulse - second half of class will play octave F once every 4 beats. Discuss ostinato and combining rhythm patterns.

Two halves of class change over. This time the F can be played every 3 beats and every 2. Go over note values for 1, 2, 3 and 4 beats.

Divide into groups. Create a composition using F G A and F octave. Use any or all of the note values learned so far. Use sounds and rests which correspond with the pulse or are longer than the pulse. Use at least 1 repeated pattern - dynamics p, mp, mf, f cresc. and descresc. - length 45 secs.

Record for immediate playback. Evaluation and discussion. How many patterns were there? How many note values? Were there rests? How did they contribute to the effectiveness of the piece? Discuss timbre. Were there contrasts?

N.B. None of the groups finished.

Lesson 9

Allow 10 minutes to rehearse pieces from last period (16 mins. in all)

Record and evaluate. (see lesson 8).

How many groups have completed scores? N.B. Students seem to be having problems with scores so a discussion and possibly group or class participation in making a score might be worthwhile. Choose one of the taped compositions (preferably one which meets the requirements of the assignment). Make a score on the board using suggestions from class.

Free time for music scrapbooks.

Lesson 10

Review orally concepts covered (10 mins.)

Tell the class that they are going to compose a composition together. The setting is an old, empty house. Ask them what kinds of sounds they might hear in the house. List on board e.g. creaking door, mice, bats, footsteps. How could we illustrate these using our available sounds? How can we use the elements of music to create tension, suspense, fear, relief? Timbre - contrasting colours - colours used simultaneously which are similar

Dynamics - p mp mf f cresc. decresc.

Rhythm - steady pulse e.g. heartbeat, breathing, tap dripping - creates tension.

Silence - creates tension and relaxation. Discuss.

Pitch - extremes - highs, lows - or repeated pitches to create tension.

Use of voices - e.g. cackling laughter, cries, moans, owls, sighs, screams.

Form - repetition, rondo or ternary etc.

The order of events will be determined by class. This will probably take the rest of the period.

### Lesson 11

Distribute instruments. Start right in with "A Frightening Experience" (title was decided on by class) - hand out duplicated sheet of events - decide who is doing what. Ask a student to be a conductor. Demonstrate if necessary. Ask 2 or 3 students to be conductors. Record piece each time. It will be slightly different each time. Discuss this.

Individual assignment. Compose a melody using F G A and octave F. Length of piece will be 25 secs. approx. You can divide it into blocks of 1 sec. or 5 secs. Indicate in the blocks which notes will be played, how fast, at what volume. Think about the form. How will repetition be used to good effect? Discuss the assignment fully. Draw a sample score on board. Pass around Schafer's 'Epitaph for Moonlight', Self's 'New Sounds in Class', Dennis's 'Experimental Music in Schools'.

Part B of assignment will be to make up a rhythm pattern using note values and rests covered in class. This must be written down also, so that it can be performed by another student.

They can begin their assignments this period as next period is tomorrow so time lag will be minimal.

N.B. Except for 2 people, the class preferred to work in pairs.

Lesson 12

Continue from yesterday. Remind class to finish Music Scrap Books. Allow enough time to record, discuss and evaluate assignments.

Comment Everyone performed their compositions but we were unable to tape them because the tape recorder wasn't working properly.

The time gap between periods was a definite disadvantage. On the occasions when work was not completed in one period, by the time the next period came around, some students had forgotten what they had been doing and took a long time to get organized. However, the enthusiasm which most of them showed for their work was refreshing to experience.

A Frightening Experience

Complete silence  
 Breathing  
 Silence  
 Rustling sounds (squeezy bottles)  
 Melodica chords for wind  
 Silence  
 Dripping water (claves)  
 Ghosts (glocks)  
 Silence  
 Cobwebs (small glocks)  
 Bats (feet stamping)  
 Silence  
 Footsteps (maracas)  
 Owl (sound made by girl)  
 Rats (scratching on tambourines)  
 Cobwebs (small glocks)  
 Thunder (drums)  
 Laughter (all)  
 Silence  
 Piano, soft sounds  
 Silence  
 Cobwebs (xylophones)  
 Bricks falling (wood block)  
 Ghosts (autoharps and xylos)  
 Midnight chimes (metallophone)  
 Silence  
 Cobwebs (autoharps)  
 Wind (melodica)  
 Dripping (claves)  
 Chains rattling  
 Piano (loud sounds)  
 Scream  
 Silence

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