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AN INVESTIGATION BETWEEN MUSICAL CREATIVITY AND PERSONALITY TRAITS

By

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ABSTRACT

AN INVESTIGATION BETWEEN MUSICAL CREATIVITY AND PERSONALITY TRAITS

By

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The purpose of this study is to investigate the relationship between musical creativity and personality traits. More specifically, this study is concerned with investigating whether there is a relationship between personality traits and a student's use of time in the compositional processes of exploration, development, repetition, and silence.

Twenty-five third-grade students were audio-recorded while engaged in a 7-minute compositional session on a keyboard. The compositional sessions were analyzed through time analysis. To measure personality traits, all of the students received the Children's Personality Questionnaire. Results from the compositional session and the Children's Personality Questionnaire were correlated.

No statistical significance was found between personality traits and the students' use of time during the compositional process. However, several relationships did approach statistical significance.

Dedicated to my mother who knew I could do it.

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CHAPTER I

INTRODUCTION

Creativity In Music Education

Creativity, like intelligence, is something all people possess and develop in varying degrees (Sternberg, 1995). Creative activities are fundamental to an excellent education. With the atmosphere of contemporary education considerably weighted toward critical thinking skills and problem solving, creative activities can be of significance in the development of higher order thinking skills (Henry, 1996). Also, it is through creative activities that children can improve their mental health by expressing their own ideas and emotions, and become fully functioning persons as they develop all of their mental abilities (Torrance, 1963b)

The use of creativity in music education can be traced back to a practical source by Coleman (1922) on how to use creative musical activities with children of various ages. In addition, studying and encouraging the musical development of young children in a natural, discovery-based setting was the musical goal of the Pillsbury Foundation School. In 1937, the Pillsbury Foundation School opened in Santa Barbara, California, with Donald Pond as the musical director. Pond, a British composer, observed children between the ages of 2 and 6 engaging in the discovery of sounds and musical elements. Pond noted that repeated

opportunities for exploration of a variety of musical instruments, in a free setting, resulted in growth of understanding of timbre, vibration, pitch, melody, and rhythm. The Pillsbury Studies were published as a result of Pond's daily observations (Pond, 1978).

In 1967, the Declaration of the Tanglewood Symposium affirmed the vitality of musical creativity in music education (Choate, 1968). The Declaration stated that the support and nurturing of creativity should be a primary goal of music education. More recently, the National Standards for Arts Education (1994) restated the importance of musical creativity in the general music curriculum by including composition and improvisation as valuable types of musical achievement.

The Importance of Musical Creativity

Gordon has determined that all people have some degree of musical potential, or aptitude (Gordon, 1989). Pond (1981) observed that young children innately possess musicality, with music being rooted in the child's being as a separate way of knowing. This separate, unique way of knowing is considered by Gardner (1983) to be one of seven major intelligences that all human beings have to some extent. To know music is to have a non-verbal understanding of the musical elements and their functions. Gordon (1993) believes that audiation, or the hearing and thinking of music without the sound being physically present, is central to musical comprehension. Knowing in music is expressed through composition and performance (Sherman, 1991a). The creative process is "the surest means of getting to know

music" (Sherman, 1991b, p. 12).

There are important implications for musical creativity in music education. Kratus (1994b, p. 130) states the following:

> It is in the process of composing that students wrestle with solving musical problems of syntax and structure, unity and variety, individuality and universality. When our students compose, they reveal to us their understanding of how music works.

Henry (1995, p. 14) concurs stating that:

> ...children need to learn more than just the rules of music; they must be actively engaged in the creative process in order to enhance music understanding and appreciation.

Elliott addresses the need to understand musical creativity (Elliott, 1995, p. 222):

> ...the more we can clarify what musical creativity involves the more effectively we can enable and promote our students' efforts to achieve creative musical results.

To grasp musical creativity, one must have an understanding of the nature of creativity beyond the realm of music. In the following section, a definition of general creativity and a discussion of creativity models will ensue. Next, the manner in which general creativity relates to musical creativity will be examined.

Creativity

Torrance (1988) acknowledges the difficulty of defining creativity in precise terms. However, he indicates that creativity is a process or a product defined in terms of a personality or environmental condition (Torrance, 1963a). Kratus' (1985) definition is that of a property that can relate to process, product, and person. Similarly, Balkin (1990) suggests this creativity equation: C=3P, or

creativity is equivalent to process, product, and person. Most researchers who investigate creativity concentrate their exploration around one or a combination of the process, product, or person variables (Reinhardt, 1991).

Creative Process

Four steps of the creative process, preparation, incubation, illumination, and verification, were originally defined by Wallas (1926). These processes, listed and explained below, overlap in the daily stream of thought and as one explores different problems.

1. Preparation--conscious, systematic investigation of the problem. Voluntary work of the mind to define the scope of the problem.

2. Incubation--voluntary abstention from conscious thought on the problem. Unconscious, involuntary mental events that occur when the problem is put aside.

3. Illumination--instantaneous and unexpected appearance of a new idea that is not influenced by the direct effort of one's will. A flash of insight.

4. Verification--conscious effort used to refine and test solutions to the problem as found in the preparation stage.

The creative process model of Torrance (1966) is similar to Wallas' in the first, third and fourth steps. However, in the second step of the creative process a difference arises:

1. Becoming aware of the problem--Sensing of a need or a deficiency. Random exploration of the inadequacy, then pinning down of the problem.

2. Thinking up possible solutions--Formulating many possible solutions by reading, exploring, discussing, and critically analyzing the solutions for advantages and disadvantages.

3. Flash of insight--Birth of a new idea or solution.

4. Experimentation with possible solutions--Testing, revising and selecting the most promising solutions.

The creative process models of both Wallas (1926) and Torrance (1966) both hold that the first step of the creative process is the recognition of a need or a problem. A thorough investigation and exploration of the problem then occurs. However, while Wallas views the second step as unconscious, involuntary thinking, Torrance considers the second step as a type of brainstorming for solutions. The third and fourth steps of the creative process are similar in both models. Wallas (1926) and Torrance (1966) recognize that the third step is a flash of insight, or the birth of a new idea. Additionally, they agree that the fourth and final step of the creative process is the refining and testing of solutions until the most promising one is found.

Perkins believes that "purpose shapes process" (Perkins 1981, p. 101). The purpose of creating and resolving problems that require invention is the guiding force behind an individual's process, or method, of developing a product. He identifies four basic steps involved in gradually selecting a product from an infinity of possibilities:

1. Planning--The maker produces a plan for all or part of the product.

2. Abstracting--The maker takes ideas from the work in progress, or other sources, instead of always working from

the initial plan.

3. Undoing--The maker undoes and redoes parts of the work from the initial plan. It is a process of narrowing down through a chain of plans and deriving more plans from abstraction. The maker may undo or redo in favor of new plans and possibilities. This is a process of trial and error.

4. Making means into ends--The maker may be required to derive a means to overcome obstacles presented along the way. The development of obstacles and new problems are viewed as a window for more product selection, thereby initiating a new creative process.

The creative process models of Wallas (1926) and Torrance (1966) resemble each other. Perkins' model (1981) of the creative process, or product selection, is driven by a person's desire for invention and begins with a maker constructing a plan. The plan is flexible, and the maker may use ideas gleaned from the work itself or other outside sources. Product refinement takes place throughout the product selection process. This contrasts with the models of Wallas and Torrance in that their models of the creative process have the refinement and testing of solutions as the final step. Perkins' model acknowledges product selection to culminate in the production of the final work. However, unlike the models of Wallas and Torrance, Perkins recognizes that as the process of product selection occurs, the maker encounters new problems that do not concern the final work. The new problems that are found along the way may act as catalysts to reactivate the creative process.

Creative Products

A creative product is the end result of a person using a creative process. Creative products may be verbal, non-verbal, concrete, or abstract (Torrance, 1963a). Attributes of a creative product include that it is something new or original, contrasts with conformity, breaks out of a mold, and is a successful step into the unknown.

To define qualities of a creative product, Besemer and Treffinger (1981) reviewed more than 90 sources yielding 125 specific criteria. Three overall dimensions were found to describe a creative product:

1. Novelty--extent of newness of the product.
2. Resolution--extent to which the product fits the problem.
3. Elaboration and Synthesis--extent to which unlike elements are combined into a refined, developed whole.

Originality and high quality are two descriptors cited by Perkins (1981). Sternberg (1995) relates novelty (originality), appropriateness (usefulness), quality (high level of skill shown), and importance (the ability to stimulate further work and ideas) as primary components of a creative product. The final test of a creative product is being judged as creative by others (Sternberg, 1995).

Creative Person

The third and most important part of the creativity equation is the person. Without the person there is no process or product. Guilford, in his structure of intellect model (1968), identified several intellectual factors of a

person who is creatively engaged:

1. Fluency--the number of appropriate responses that a person is able to produce during a limited time.

2. Flexibility--the person's ability to produce different types of responses.

3. Originality--the degree to which the person produces unusual or different responses.

4. Elaboration--the person's ability to enlarge an idea.

Guilford's model includes these factors as a person's ability to use divergent thinking or a person's ability to generate many possible answers to a particular problem. In Guilford's model, the final creative act is a person's integration of divergent and convergent (the assimilation of many ideas into one right idea) thought processes (Guilford, 1968). To measure a person's potential for creative thinking, Torrance developed the Torrance Tests of Creative Thinking (1974). These tests measure an individual's ability in each of the areas as defined by Guilford and may be used as an indicator of one's creative potential.

A combination of features comprises the creative person according to Perkins (1981). Cognitive style (the recurrent patterns in the way a person approaches problems and processes information) and artistic style (one's individualistic qualities) help to define the creativity of a person (Perkins, 1981). Perkins also indicates that creative people value originality in others' work as well as their own and hold spontaneity in high regard. In addition, Perkins states that creative people value creativity, realizing that those who want to be creative are most likely

to be creative and remain creative (Perkins, 1981). Another element is one's beliefs or what one takes to be real. A creative person believes that opportunities are vast and waiting to be discovered and has a broad conception of what is personally attainable (Perkins, 1981). According to Perkins, a creative person may consciously set a work aside for awhile or sleep on an idea. In addition, familiar mental operations of remembering, understanding, and recognition are employed by the creative person in exceptional ways. Perkins states that all people have creative abilities. Yet, it is how those abilities are used that makes a person creative.

According to Sternberg (1995), a creative person has certain resources that bear on creative potential. In Sternberg's model of the creative person, there are three types of intelligence: (a) synthetic intelligence--the ability to redefine a problem and use resources to make something unique; (b) analytic intelligence--the ability to discriminate a good idea from a poor one and recognize what ideas have potential; (c) practical intelligence--the ability to present one's work to an audience and receive feedback.

Knowledge is another resource that a creative person may possess and employ (Sternberg, 1995). Learning about the field in which one hopes to become creative and gaining a broad perspective in one's field will help to form a base of knowledge. This base of knowledge is important, as it might act as a springboard for ideas as well as prevent the thinking of ideas that have been previously thought of.

Sternberg (1995) asserts that thinking styles affect creativity. A person's thinking style is represented in the ways a person approaches problems or life in general (Sternberg, 1995). How a person chooses to engage and use his or her creative abilities or how one chooses to use one's intellect also reflect a person's thinking style. Thinking styles are used to activate abilities that may otherwise remain dormant.

Productive innovators who go beyond mere potential and are energetic possess motivation (Sternberg, 1995). One's motivation to be creative may be extrinsic in nature (such as the desire for money, power, or fame) or intrinsic in nature (such as the need for personal challenge, or self-expression). Sternberg implies that the love of one's work and a strong attachment to one's work are characteristics of high energy, task focused, creative people.

Another resource from which one may draw creative potential, as cited by Sternberg (1995), is one's environmental context. An individual's environmental context involves the interaction of the person with his environment. A nurturing environment that stimulates, encourages, and rewards a broad range of ideas fosters original and nonconformist thinking and behaviors (Sternberg, 1995).

Sternberg (1995) also states that personality is important to one's creativity. Sternberg indicates that personality traits form a person's preferred way of interacting with the environment. Sternberg adds that personality traits that influence one's creativity are nonconformity, willingness to take a stand, risk taking,

having a sense of humor, and courage. Personality traits such as these enable a person to face adversity, defend one's beliefs, and remain resilient through possible ridicule from others or through periods of self-doubt (Sternberg, 1995).

Research on musical creativity has primarily focused on the process, product and person aspects of creativity as previously described. How musical creativity associates with the preceding models will now be discussed.

Creativity in Music--Processes and Products

Bennett (1976) interviewed eight composers in an attempt to remove some of the mystery surrounding musical creation. He found that composers begin with a germinal idea or a sketch of the composition. Next, a first draft of the composition is produced. Composers then elaborate on and refine the first draft until the composition is completed. Once the composition is finished, composers copy the final score. Bennett found that these composers worked most productively in a tranquil, relaxed, and secure environment.

The processes of musical creativity, established by Kratus (1989, 1994b) are similar to the creative processes found in Wallas' (1926) model of general creativity. These processes allow for intermingling of each of the categories:

1. Exploration--searching; the unfolding of new ideas; trying one new idea after the next without reference to previous ideas.

2. Development and Silence--reworking; the revision of ideas; an idea generated through exploration is changed in

some aspect.

3. Repetition--testing and verifying; the review of ideas; testing and practicing ideas that lead to a finished product.

Gordon believes that the ability to audiate, or the hearing and comprehending of music without the sound being physically present (Gordon, 1993), is a necessary readiness for the musically creative process (Gordon, 1989). A study by Kratus (1994a) of 40 nine-year-olds' creative processes showed that students who audiate better use more development and silence and less exploration during the creative process than children who do not audiate well. The results suggest that audiation enables students to use their compositional time more effectively.

The compositional processes of exploration, development, repetition, and silence (Kratus, 1989) may lead to a musically created product. A musically created product is the result of improvisation, composition, or performance (Kratus, 1990). Kratus suggests this as a guide, "Music exists as a created product when the creator means to share it with others and structures the music in such a way that it can be shared" (Kratus, 1991b, p. 5).

Research has shown a strong bond between children's musically creative processes and products. Variables that have an effect on children's musically creative processes and resulting products have been the purpose of several research studies.

Investigations by Kratus (1990), Reinhardt (1990), and Henry (1995) indicate that the musically creative process and the musically created product are closely linked and

that certain factors may act on those processes and products.

Kratus (1990) analyzed ten high-success and ten low-success compositions for compositional strategies used during the compositional process. Differences between high-success and low-success compositions appeared to involve how the students used the compositional processes of exploration, development, repetition, and silence, and nine different compositional strategies as identified by Kratus. Both high-success and low-success students used exploration and repetition. However, the high-success students used skip/step movement early in the compositional session, developed patterns more, and used little transposition. The low-success students mainly used exploration and very little development. Kratus determined that at the base of a successful composition lies certain compositional strategies and that the process of composition determines the outcome of the compositional product.

Repeated compositional opportunities may have an effect on students' compositional products (Reinhardt, 1990). Fifth-grade students' compositional products were examined for the effect of repeated compositional opportunities. The data suggest that repeated compositional opportunities may result in more replicable compositional products (Reinhardt, 1990).

In addition, Henry found that instructional techniques and music aptitude may influence the ways students compose (Henry, 1995). Fourth-grade students' (N=64) musically creative processes and products were examined for the effects of instructional methods and music

aptitude. The results indicate that instructional techniques, such as pattern instruction, and music aptitude positively influence the ways in which students use their time while engaged in the musically creative process.

A number of variables have been found to act on the musically creative process consequently influencing the resulting product. An examination of the variables that are concerned with the person component of the creativity equation and the effect on compositional processes and products may bring about a more comprehensive view of the child's involvement with musical creativity.

Musical Creativity and the Musically Creative Person

To understand the person who is creatively engaged, some researchers have focused on the person's creative thought processes, as determined by Guilford (1981), on musically creative activities. Vaughan and Myers (1971), Vaughan (1977), and Gorder (1980) have examined a person's creative thinking ability through musically created products in terms of fluency, flexibility, originality, elaboration, ideation, and synthesis. Also, Webster's Measure of Creative Thinking in Music, part II (MCTM-II) (Webster, 1987) has been used to assess creative thinking skills in music. MCTM-II, intended for children between the ages of 7 to 10 uses activities designed to elicit creative responses that are evaluated for extensiveness, flexibility, originality, and syntax.

MCTM-II was used by Swanner (1986) to examine the relationships between musical creativity, personality traits, motivation, gender, music aptitude, and cognitive

intelligence with 69 third-grade children. Personality traits of independence, aggression, excitability, self-confidence, anxiety, curiosity, and imagination were related to MCTM-II scores. However, gender, music aptitude, and cognitive intelligence were not related to MCTM-II scores. Swanner's results suggest that certain personality traits may have an effect on creative thinking in music.

Schmidt and Sinor (1986) investigated 34 second-grade students' achievement in convergent and divergent musical tasks and the effect of gender and its interaction with cognitive style. MCTM-II was the criterion measure for creative thinking in music. Schmidt and Sinor found that reflective/implusive thinking and music aptitude were not related to MCTM-II scores. Additionally, Schmidt and Sinor found high intercorrelations between the four MCTM-II dimensions, and concluded that the measure was by nature masculine oriented, as boys scored significantly higher than girls on the measure.

MCTM-II has drawn some criticism as to what type of creativity it is valid for. Henry remarks (1995, p. 36), "MCTM does not appear to measure creativity in a musical context, rather it appears to measure a child's creative use of instruments to simulate a given situation or place." Kratus notes that MCTM scores reflect divergent thinking and that composition requires both divergent and convergent thinking. He also cautions that the MCTM should not be confused with the ability to compose as the tasks are mainly improvisational by nature and do not allow the subject time to reflect and revise their responses (Kratus, 1994a, pp. 116-117).

The age of a child can determine how a child creates music. Kratus (1985) examined the compositional products of 80 children for 21 different independent variables relating to rhythmic, melodic, motivic, and phrase characteristics. The children involved in the study were 5, 7, 9, 11, and 13 years old. Compositional products from 16 children of each age group were analyzed. Kratus found that the use of melodic and rhythmic motives increased consistently from the ages of 5 to 11 suggesting a developmental pattern of musical understanding.

This was confirmed in another study by Kratus (1989). The compositional processes and products of 60 students aged 7, 9, and 11 were analyzed for exploration, development, repetition, and silence using time analysis (Kratus, 1989). Students as young as 7 can engage in meaningful improvisation, and students between the ages of 9 and 11 are capable of composing with musical meaning.

Studies conducted by Wilson and Wales (1995), Swanwick and Tillman (1986), and Swanwick (1996) affirm that children create music according to a developmental progression. As children age, their musically creative processes and products reflect the use of more complex musically creative processes. Barrett (1996), however, indicates that children as young as 5 are capable of creating compositions that exhibit structure and form, implying that the development of musical creativity may not be associated with age.

Compositional intentions may dictate a child's involvement in the musically creative process (Kratus, 1991). The orientation and intent of the student may

act upon whether and end product occurs. Intentions may be developmental, changing from a process orientation to a product orientation as a child's age increases. Levi (1991) observed a shift from process to product orientation while second-grade students were engaged in creating compositions over a period of a semester.

Gordon (1993) believes that audiation provides the necessary readiness for a person's musical creativity. On the contrary Vaughan and Myers (1971) and Swanner (1986) found no relationship between a person's musical creativity and music aptitude. However, Auh established compositional creativity to be related to tonal music aptitude (Auh, 1995) and Henry (1995) found that a students' music aptitude may influence the strategies used while composing. Kratus (1994a) determined in a study of 40 9-year-olds that a child's ability to audiate was related to the musically creative processes of development and silence, but negatively related to the compositional process of exploration. He also found that a child's ability to audiate was related to a compositional product's tonal and metrical cohesiveness and developed rhythm patterns.

Other aspects that affect a child's musical creativity are musical knowledge, musical experience, and prior compositional experience (Kratus, 1994a). Auh (1995) found informal music experience, musical achievement and academic grades to be influential on 5th- and 6th-grade students' musical creativity.

Swanner studied music aptitude, personality, cognitive intelligence, and gender and their relationship to creative thinking in music (Swanner, 1986) and determined several

personality traits to be related to creative thinking in music as measured by MCTM-II (Webster, 1987). As stated previously, the MCTM-II may not clearly establish musical creativity; therefore, the results of this study should be viewed with caution.

Musical creativity is vital to music education, as it is an important means for children to learn about and comprehend music. To develop a complete understanding of what the person brings to the musically creative experience, aspects of the creatively engaged person should be considered. Investigation of personality and its relationship to a child's musical creativity may provide more important information on the child's involvement in the musically creative process.

Musical Creativity and Personality

Guilford (1959) defines personality as an individual's unique pattern of traits. "A trait is any distinguishable, relatively enduring way in which one individual differs from others" (Guilford, 1959, p. 6). Sternberg (1995) characterizes personality as stable dispositions that comprise a preferred way of interacting with the environment. Cattell further describes personality as follows: "The personality of an individual is that which enables us to predict what he will do in a given situation" (Cattell, 1950, p. 21).

Researchers have investigated the relationship of personality traits to musicians, music educators, music students, and listener response (Bell, 1984; Kemp, 1981; Lewis & Schmidt, 1991). Yet, little research has

been conducted on the relationship of personality to children's musical creativity. Swanner (1986) examined the relationship of 69 third grade students' personality traits to MCTM-II and found personality traits of independence, excitability, self-confidence, aggression, anxiety, curiosity, and imagination to be related to MCTM-II scores. Unfortunately, the results of this study cannot be generalized to a compositional task as MCTM-II was the criterion measure. Composition requires both divergent and convergent thinking (Kratus, 1994a). MCTM-II largely measures divergent thought processes and is primarily improvisational in nature.

The study of personality traits and musical creativity might offer more insight on the person component of musical creativity. However, information on the relationship between musical creativity and personality traits is virtually non-existent. Investigation of the relationship of children's personality traits to the musically creative process may reveal important implications for music education.

Purpose

The purpose of this study is to examine the relationship of personality traits and the musically creative process.

Problem of the Study

The problem of the study is as follows:

To investigate the relationship between personality traits and the subject's use of time during the compositional processes of exploration, development, repetition, and silence.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

This study is concerned with whether there is a relationship between musically creative process and personality traits of children. Therefore, the literature that is related to this study is concerned with the child and what the child brings to the musically creative processes and products. The literature falls into the following categories: (1) studies of characteristics of the child engaged in musical creativity, (2) studies of personality and music, and (3) studies of personality traits and their relationship to a child's musical creativity.

Musically Creative Person Studies

Researchers have examined the musically creative processes and products of children in an attempt to determine characteristics of the creatively engaged child. MCTM-II has been used to assess creative thinking in music. Additionally, studies have been conducted on how certain charateristics such as personality, age, orientation and intentionality, audiation, IQ, gender, and instructional techniques affect a child's compositional decisions. A review of theses studies will now be presented.

Researchers have investigated creative thought processes in order to better understand the person who is creatively engaged. Webster's Measures of Creative Thinking

In Music, part II (MCTM-II) (Webster, 1987) has been used to assess creative thinking skills in music. MCTM-II is intended for children between the ages of 7 to 10 and uses ten activities designed to elicit creative responses such as imitation of an ascending elevator with a Nerf ball on a piano, imitation of a growing rainstorm on temple blocks, and vocal improvisations of a truck or robot music through a microphone. Children's responses are videotaped and subsequently analyzed for extensiveness (amount of time to elicit a musical response), flexibility (freedom of movement from one extreme to another), originality (unique use of sounds), and syntax (creating ideas in context of entire piece). As a criterion measure, MCTM-II appears to involve students in non-musical, improvisationally-oriented activities that require divergent thinking. It is more of a measure of a child's ability to imitate, or simulate responses in compliance with a supplied situation or place than a measure of how a child thinks creatively while engaged in a musically creative task. In addition, children are offered very little time to reflect and revise their responses which is necessary for composition (Kratus, 1994a).

Swanner (1986) used the MCTM-II to examine the relationships between musical creativity, personality traits, motivation, music aptitude and cognitive intelligence with 69 third-grade children. Data were collected using Primary Measures of Music Audiation (Gordon, 1986) to assess music aptitude, and the Early School Personality Questionnaire (Cattell, 1966) to measure personality traits. She found that personality traits of

independence, excitability, self-confidence, aggression, anxiety, curiosity and imagination were related to scores on MCTM-II. However, gender, music aptitude, and cognitive intelligence were not related to scores on MCTM-II.

As already stated, MCTM-II is not a valid measure for musical creativity. The relationship between the personality traits of independence, excitability, self-confidence, aggression, anxiety, curiosity, and imagination and MCTM-II scores is actually based on creative thinking in general as assessed by using musical devices. It is not based on musically creative thinking in terms of musical composition. The present study will investigate personality traits in relation to musical composition.

An investigation of second-grade students' achievement in convergent and divergent musical tasks and the effect of gender and its interaction with cognitive style was conducted by Schmidt and Sinor (1986). Thirty-four second-grade students were identified as impulsive/reflective thinkers. Data were collected using Primary Measures of Music Audiation and MCTM-II. The results of the study indicated that music aptitude and reflective/impulsivity were not related to MCTM-II scores. In addition, Schmidt and Sinor found high intercorrelations between the four MCTM-II dimensions. The researchers also concluded that the MCTM-II was by nature masculine-oriented as boys scored significantly higher than girls on the measure. The high intercorrelations found among the four MCTM-II dimensions, and the masculine-orientation of the measure further support that MCTM-II is not a valid measure for musically

creative thinkng. The present study will use time analysis (Kratus, 1989) to examine how students make musically creative decisions regarding the musically creative process.

Other investigations have focused on the development of musical creativity in children and suggest that an important aspect of a child engaged in musical creativity is age. Kratus (1985) examined the compositional products of eighty children for 21 different independent variables relating to rhythmic, melodic, motivic and phrase characteristics. The children were 5, 7, 9, 11 and 13 years old. Compositional products from 16 children of each age group were analyzed. Individual testing was completed on a hand-held keyboard with each student being asked to create a song that would "sound good to him or her." The students were asked to begin their compositions on the pitches C, D, E, which were labelled 1, 2, 3 on the keyboard, and to use only the white keys. The compositions were analyzed independently by two judges with interjudge reliabilities ranging from .55 to .88 for the five types of motives. Results of this study indicated that 5-to 11-year-olds were less likely to use tonal structure in phrases. Older children were more aware of tonality. Repetition was common in songs from all age groups with no significant difference found in melodic repetition among the age groups. Kratus did find a significant difference in the use of melodic development in both same and different directions between 5-and 11-year-old students. The 11-year-olds used more melodic development than the 5-year-olds. Also, 11-year-old students used significantly more rhythmic repetition than five-year-olds. Rhythmic

development was a rare feature among all age groups. Overall, children's use of melodic and rhythmic motives increased consistently from the ages of 5 to 11 suggesting a developmental pattern of musical understanding. Thirteen-year-old students were found to use fewer melodic and rhythmic motives than 11-year-old students. This may have resulted from cultural or peer influences, lack of instruction, musical aptitude, or poor student attitudes.

In another study, Kratus (1989) investigated the compositional processes and products of 60 students ages 7, 9, and 11. There were 20 students from each age group. The students were given 10 minutes to create a song on a keyboard. A cassette recording was made of each student's compositional period. The recordings were analyzed using the time analysis method originated by Kratus (1989). Each of the recordings was analyzed at 5-second intervals for the musically creative processes of exploration, repetition, development and silence. Interjudge reliability between the judges' and the researcher's ratings ranged from .76 to .98. Kratus identified developmental patterns in the way children use their compositional time. He found that the 7-year-old students principally used the compositional process of exploration, some repetition and very little development. The 9-year-old students were also found to mainly use exploration, yet these students used more of their time for development, repetition and silence than the 7-year-old students. Eleven-year-old students used more of the compositional processes of development and repetition than the 7- and 9-year-old students. The 11-year-old students

also used the compositional processes of exploration and silence less than the 7-and 9-year-old students. Those students who were able to replicate their songs at the end of the 10-minute compositional period were designated as being product oriented. Those who were unable to replicate their songs were designated as being process oriented. The results of this study indicate a developmental progression of musical creativity and imply that children at 7 years of age can engage in creative musical improvisation. The results also suggest that 9- and 11-year-old children can shape their musical ideas and compose music with purpose.

Wilson and Wales (1995) in an exploratory study, used a previously untried methodology of analyzing children's musical compositions. The subjects were 7- and 9-year-old students. There were 40 students from each age group. The students used a computer program that did not require formal music training to create their musical compositions. They were allowed 10 minutes of compositional time. Post hoc analysis revealed that the compositions could be divided into three melodic and rhythmic developmental stages that varied according to melodic contour, tonality, rhythmic grouping, and meter. Wilson and Wales (1995) found that the older students created more compositions at higher stages of complexity. They also found that the more formal musical training children had received, the more rhythmically complex their compositions were and that girls produced a greater percentage of compositions assigned to the highest stages

of composition than boys. This investigation supports the developmental stages of children's composition with the increasing age of a student being positively linked to an increasing level of musically creative development.

Swanwick and Tillman (1986) determined a developmental spiral consisting of eight musically creative stages of development upon analyzing over 700 compositional products of children from 3 to 15 years of age. Piagetian concepts of assimilation and accomodation were applied to the musically developmental stages. The eight stages were identified as Sensory, Manipulative, Personal Expressiveness, Vernacular, Speculative, Idiomatic, Symbolic and Systematic. Swanwick (1996) later confirmed these stages in a study of 28 compositional products randomly chosen from a pool of 600 recorded compositional products by children from 4 to 15 years of age. He noted that as children aged there was an increased tendency to use melodic and rhythmic repetitions and that older children used more development than younger children. These results support Kratus' and and Wilson and Wales' observations of a developmental progression within the musically creative process.

An investigation involving 137 compositional products of children ranging from 5 to 12 years of age was conducted by Barrett (1996). The intent of the study was to analyze compositional products across a school population to find whether there was an age group incapable of displaying form and structure within their compositions. Composition and observation data were collected as part of the regular classroom music program.

In the school music program, students were exposed to compositional activity approximately four times a year with compositional tasks structured over three week intervals to allow the children time to reflect, revise and refine their compositions. For this investigation, Barrett asked the students to compose a solo work that had a beginning, middle, and end. The students were at liberty to choose the instrumentation from those instruments available in the classroom music program. Barrett reports that instruments included body percussion, recorder, voice, guitar, percussion, flute, clarinet, and cornet. The students were not required to notate their pieces.

The students worked on their compositions over a 3-week period. All completed works were recorded on audio-cassette at the end of the period. The recordings were transcribed into musical notation. Analysis of the compositional products focused on how students used the elements of beginning, middle, and end. Barrett (1996) used the following definitions in her analysis:

1. Beginning--A melodic and/or rhythmic musical event (or events) that may be described as a single unit.

2. Middle--Repetition and/or development that occurs through the use of alternation, sequence, inversion, diminution, or augmentation.

3. End--Indentification of closure through the manipulation of melody, harmony, rhythm, tempo, timbre, texture, or dynamics.

Barrett found that structure was apparent in some way in each of the 137 compositions. Students in all

age groups used repetition as a structural device and developed musical ideas through abstraction, transferral, sequencing, and inversion. Also, students in all age groups were able to achieve closure in their compositions. The results of this study suggest that children as young as 5 years of age are capable of using structure and form in their compositions and that the use of structure and form is not necessarily associated with age.

Researchers have investigated the musically creative process and resulting products in an attempt to define developmental stages of how children create music. Kratus (1985, 1989), Wilson and Wales (1995), Swanwick and Tillman (1986) and Swanwick (1996) confirm that children create music according to a developmental progression. As children grow older their use of musically creative processes grow more complex and their musically creative compositions reflect that. Barrett (1996), however, is in disagreement with these findings. Her results suggest that children as young as five years of age are able to engage in creating musically complex compositions that exhibit form and structure. For the purposes of this study, 9-year-old students will be used as subjects, as the majority of the research indicates that 9-year-old children are capable of creating meaningful compositions.

Differences exist between those studies that have found a developmental progression in the ways children compose and the study conducted by Barrett. Among the differences are the amount of time allotted to students to create a musical

composition. The studies conducted by Kratus (1985, 1989) and Wilson and Wales (1995) allowed each student 10 minutes to create their compositions. Barrett's subjects had three weeks to work on their compositions. Also, the mediums for composition differed from study to study, with Kratus using a small keyboard, Swanwick and Tillman using instruments and voice, Wilson and Wales using a computer program, and Barrett allowing the students free choice. Barrett may have found that young students are able to compose with structure and form because of their repeated opportunities to work on their compositions, familiarity with the medium for composition, and/or because the students were given the parameters of creating a composition with a beginning, middle, and end. The other studies do not impose such parameters on the students' compositions. These differences may account for the discrepancy between the results of these studies.

Kratus (1991) observed that the orientation and intentionality of a child creating a composition may be indicative of whether an end product appears. Using previously collected data from his 1985 and 1989 studies, Kratus suggests that, if a child has a product orientation toward musical creation, that child is aware of structuring the composition so that it can be shared. On the other hand, a child who does not intend to share or is unable to share the music has a process orientation. A compositional product exists if the composer can perform and then replicate the composition. If the composition cannot be replicated, then it cannot be defined as a compositional product. Kratus states that a child's compositional

intentions may be developmental, changing from a process orientation to a product orientation in a developmental progression.

A child's ability to audiate has a bearing on the compositional process and resulting product (Kratus, 1994a). Kratus (1994a) conducted an investigation of music audiation, compositional processes, and musical characteristics of the resulting compositional products with forty 9-year-old students. The students were administered the Intermediate Measures of Music Audiation (Gordon, 1986) and were asked to compose a 10-minute song on a synthesizer. Time analysis (Kratus, 1989) was used by two independent judges to determine the amount of time each student spent in the musically creative processes of exploration, repetition, development, and silence. Another pair of judges analyzed the resulting products for tonal and metric cohesiveness, use of melodic, rhythmic, repeated and developed patterns, and extensiveness of length and pitch range. Kratus discovered that audiation was positively related to the musically creative process of development and silence and that audiation was negatively related to the process of exploration. He also found that audiation was positively related to a musical product's tonal and metrical cohesiveness and developed rhythmic patterns. Audiation was found to be negatively correlated with the product's pitch range. These results support that a child's ability to audiate has an effect on the creative process which in turn affects the outcome of the product.

In another study regarding audiation, Henry (1995) examined the effects of music aptitude and different

instructional methods on 64 fourth-grade students' musically creative processes and products. Four intact classes were used with one class receiving repeated compositional opportunities and pattern instruction; the second received repeated compositional opportunities; the third received pattern instruction, and the fourth was the control group. The Intermediate Measures of Music Audiation (Gordon, 1986) was used to measure all of the participants' music aptitude. The students were individually recorded while composing a song at the end of a 12-week period. Using time analysis, (Kratus, 1989) two independent judges analyzed each of the recordings to determine the amount of time that each child spent in exploration, repetition, development and silence. Compositional products were analyzed by another pair of judges for cohesiveness, pattern use, extensiveness and students' ability to replicate their song. Significant differences pertaining to the students' use of time spent in the compositional processes were found. The students that received pattern instruction and repeated compositional opportunities used less exploration than all other groups. Students with high music aptitude also used less exploration than those with low music aptitude. The group that had pattern instruction and repeated compositional opportunities and the group that received only pattern instruction used more development than the control group. More repetition was used by the group that received pattern instruction than by the control group and the group that received repeated compositional opportunities. There were no significant differences among the four groups in the use of silence.

Interestingly, the group that received pattern instruction used more time to compose than any of the other groups. No significant differences were found between the compositional products' features of metric cohesiveness, developed rhythmic patterns, repeated melodic patterns, and compositional length for the four groups of the study. However, there were significant interactions for tonal cohesiveness, repeated rhythmic patterns, range, and replication among the treatment groups and music aptitude. Henry found that students with low music aptitude who received repeated opportunities to compose were less able to replicate their songs than students from all other groups.

The results of this study indicate that instructional techniques, such as pattern instruction, and a child's music aptitude may influence the ways that students use their time while engaged in the musically creative processes of composition. Furthermore, instructional methods and a child's music aptitude may have an impact on the musically creative process and in turn affect the outcome of the compositional product.

Auh (1995) studied selected variables as predictors of musical creativity in an investigation that included music aptitude, formal and informal music experiences, musical self-esteem, music achievement, IQ, and gender. To determine compositional creativity, 67 fifth- and sixth-grade students completed a 10-minute compositional task on an alto xylophone. When students were finished with their compositional session, they were asked to play their composition and repeat it exactly as it was played the first time. Then, the students' musical products were rated for

five dimensions: craftsmanship, musical syntax, musical originality, musical sensitivity, and repetition of song. Students also completed the Musical Experiences Questionnaire (Auh, 1995), the Self-Esteem of Musical Ability (Schmitt, 1979), the Music Aptitude Profile (Gordon, 1988), and the Music Achievement Test (Colwell, 1968). Auh found compositional creativity to be significantly related to informal music experience, tonal music aptitude, musical achievement-pitch, and academic grades. Informal music experience was determined to be the strongest predictor of compositional creativity. What if personality traits had been included as a selected variable? Is it possible that personality has a bearing on compositional creativity?

Reseachers of musical creativity have centered their investigations on aspects of the involvement of a person in musically creative activities. Knowledge of the child who is creatively engaged and what the child brings to the musically creative experience will serve to deepen music education's understanding of the musically creative process and resulting products. Creative thought processes of children have been examined, yet in relation to MCTM-II. It is difficult to glean any relationship between children's thought processes and musical creativity as there is much speculation surrounding that measure. Most researchers agree that children's compositional processes and products evolve on a developmental continuum (Kratus 1985, 1989, 1991; Swanwick, 1996; Swanwick & Tillman, 1986; Wilson & Wales, 1995). Additionally, a child's ability to audiate has been shown to have an effect on compositional processes and products (Auh, 1995; Henry, 1996; Kratus, 1994a).

Outside influences affect the child and therefore impact a child's musical creativity. Instruction, academic grades, and informal music experience seem to have a bearing on a child's musical creativity (Auh, 1995; Henry, 1996). However, there is insufficient information regarding the relationship of a child's musical creativity to a child's personality. A review of the investigations relating to personality and music will serve as a foundation for the review of the investigation concerning personality traits and musical creativity.

Personality and Music

Kemp (1981) attempted to compile a profile of personality traits of 55 instrumentalists and singers. The sample was comprised of musicians who played brass, woodwind, keyboard, and string instruments, as well as vocalists. Cattell's High School Personality Questionnaire (HSPQ) (Cattell, 1969) was administered to 13 17-year-old subjects and 17 25-year-old subjects. Twenty-five 70-year-old subjects received Cattell's 16 Personality Factor test (16PF) (Cattell, 1970). Personality traits of introversion, pathemia, and intelligence were found to be present to a significant degree among all age groups as compared to the normative population. The results suggest that there may be a connection of the traits of introversion, pathemia, and intelligence with musicians that are 17, 25, and 70 years of age. However, more research needs to be conducted for there to be significant meaning for the results, as the sample size for each of the age groups is too small for generalization of the findings.

In another study, Kemp (1982) compared 32 graduate music education students to 32 college student performers All subjects were administered Cattell's 16PF (Cattell, 1970). Both groups were found to have notable personality differences as compared to the population as a whole. The graduate music education students were found to exhibit traits of extraversion, realism, and tough-mindedness, while the college student performers were found to have traits of sensitivity and introversion.

Bell (1984) administered Cattell's HSPQ (Cattell, 1969) to 28 high school instrumental students and Cattell's 16PF (Cattell, 1970) to 30 undergraduate instrumentalists. Both samples showed significant personality differences from the normative populations from which they were drawn. Instrumentalists in both populations showed a greater intelligence, greater cortical arousal, and more ability to acquire the appropriate skills needed to play their instruments.

More recently, Lewis and Schmidt (1991) investigated listener response to music as a function of personality type. A sample of 328 undergraduate non-music majors who were enrolled in music appreciation courses were administered the Myers-Briggs Type Indicator (Myers, 1985). The subjects also completed the Music Listener Response Scale (Hedden, 1973). The authors stated that it appeared that individual differences in personality may offer some explanatory power for certain responses in listening to music, although the results of the study were inconclusive.

Personality Traits and Musical Creativity

Only one study was found on the relationship between personality traits and musical creativity in children. Swanner (1986) explored music aptitude, cognitive intelligence, personality, and gender in relationship to creative thinking in music. The sample consisted of 69 third-grade students who were administered Gordon's Primary Measures of Music Audiation (PMMA) (Gordon, 1986), Cattell's Early School Personality Questionnaire (ESPQ) (Cattell, 1966) and Webster's MCTM-II (Webster, 1987). Cognitive intelligence was measured by IQ scores taken from each subject's school records. No significant relationship was found between music aptitude, cognitive intelligence, or gender and MCTM-II scores. Yet, personality traits of independence, excitability, self-confidence, aggression, anxiety, curiosity, and imagination were found to be significantly related to MCTM-II scores. Swanner concluded that the best predictors of creative thinking in music were the personality traits of imagination, curiosity, and anxiety. Unfortunately, the findings of this study cannot be generalized to a compositional task, as MCTM-II was used as the criterion measure for creative thinking in music. As stated before, MCTM-II is largely improvisationally oriented and rewards divergent thinking over convergent thinking. The act of composition requires both types of thought processes (Kratus, 1994a). Additionally, the value of MCTM-II for measuring musical creativity is questionable at best.

Summary

These studies are related to the present one in that the relationship of personality traits to a musical aspect is explored. All of the studies, with the exception of the Lewis and Schmidt study, used one of Cattell's personality measures to describe personality traits. The present study will use Cattell's Children's Personality Questionnaire (CPQ) (Cattell, 1992). It is the only personality measure specifically designed for children from 8 through 12 years of age, and this study will use third-grade students with a mean age of 9 as subjects.

CHAPTER III

METHOD

Subjects

The subjects for this study are 25 third-grade students from two intact classrooms. The elementary school is located in a rural area consisting primarily of Caucasian, middle, working-class citizens in lower Michigan. Third-grade students were chosen for this research. Kratus (1985, 1989) found that nine-year-olds were able to compose and perform songs with a consistent tempo, were able to reproduce their songs, used more repetition and development and had a stronger sense of tonality than 5- and 7-year-old children. This indicates that children as young as nine years old can compose with meaning. The students receive general music instruction from a music specialist for 30 minutes per week and do not participate regularly in creative musical activities.

Approval of this study was granted by the University Committee on Research Involving Human Subjects at Michigan State University (see Appendix A). Consent forms for participation were sent home to 51 students and their parents (see Appendix B). Of the 51 forms sent home, 31 were returned to the school. Twenty-eight students and parents responded positively to participating in the study. Three of the responding 28 students were excluded from the study because they indicated they had received

formal keyboard instruction on the consent form. Formal keyboard instruction could affect how these students approached the compositional task, contaminating the results of the study.

Procedural Overview

At the beginning of the study, the researcher was introduced to the participants in the study by their classroom teachers. The purpose of this meeting was to answer any questions the students had and to put the children at ease with the researcher. Only one room existed in the school that met the researcher's criteria for a quiet environment with sufficient space for the students to work. This room was only available at the beginning of the study. Consequently, the students completed the individual compositional task first. The compositional task took each student approximately 15 minutes and was conducted over a period of 2 weeks. During the third week of the study, Form C of the Children's Personality Questionnaire (CPQ) (Cattell, 1992) was administered. All students participating in the study (N=25) were assembled in one of the classrooms for the CPQ. A classroom teacher was present during the testing to control for potential behavioral problems. The administration of the test proceeded smoothly, with the first part of the CPQ taking 45 minutes to administer and the second part taking 35 minutes. Students were given a 10-minute break between the two parts of the test. The researcher had full cooperation from the students, as well as the teachers and staff of the school.

Materials for the Individual Compositional Task

All compositional testing took place in a storage room adjacent to the school's computer lab. This room had sufficient space, warmth, lighting, and no environmental noise. The dimensions of the room were 9'10"x 6'4", which allowed students to sit at a large student desk positioned on the long side of the room. The researcher sat at a desk somewhat behind the student desk and was situated so that each student could work independently and feel comfortable to ask questions if necessary. A Yamaha PortaSound PSS-190 keyboard was positioned on the student desk. The PSS-190 has a three octave range and 100 different voice settings. The toy piano voice was chosen for the compositional task; it is the only voice for which only one pitch sounds when one or more keys are depressed, it has no vibrato, and the length of the pitch decay is related to how long a key is depressed. The toy piano has a voice range from middle C to C-3. A Craig dual-cassette audio recorder with a built-in microphone was placed behind the keyboard. Above the cassette recorder, a clock with 1" sized numerals was situated so that students could monitor their time. Gemini MP90 high energy/low noise audio cassettes were used to record the individual compositional sessions.

Procedure for the Individual Compositional Task

The procedure for the individual compositional task included pre-task preparation of the student. The researcher escorted each student to the testing site. It took about 45 seconds to walk from the students' classroom

to the testing room. The researcher engaged each student in conversation to and from the room to help create a relaxed atmosphere and to put the students at ease. Once the student was seated at the student desk, the researcher familiarized the student with the keyboard by playing imitative games using ascending and descending stepwise and skipping movement and repeated tones. This pre-task preparation of the student is similar to the procedure used by Kratus (1985) in preparing his students for their compositional session.

After each student had been familiarized with the keyboard, the following instructions, modelled after Kratus (1989), were given:

> I would like you to make up your own special song. This will be your very own music. It will be music that no one has ever heard or made up before! You will have 10 minutes to work on it. I want you to use the whole time to work on it. After your time is up, I will have you play your song two times into the tape recorder. When you make up your song, I want you to use only the white keys. (The researcher demonstrated the playing of white keys and was imitated by each student.) I would also like you to begin with the keys marked 1, 2, 3. (The researcher demonstrated the playing of 1, 2, 3, or C, D, E the first three keys of the keyboard and was imitated by each student. Note: the use of C, D, E at the beginning of a students' compositional session is to provide a ready-made starting motive. This motive serves the purpose of providing a place for students

to begin working.) The clock is here to show you how much time you have to work on your music. Be sure to remember your song so that you can play it two times for me. Do you have any questions? You may begin. (At that time, the researcher began to audio-tape the compositional session.)

Each of the students played their composition two times into the cassette recorder at the end of the compositional session. As a reward, students were allowed to explore the various settings of the keyboard.

The researcher then walked each student back to the classroom. The entire process took approximately 20 minutes per student.

After all students had completed the compositional task, each student's use of time during the compositional session was measured by time analysis. This method of analysis was developed by Kratus (1989) and is used to measure the amount of time one spends in the musically creative processes of exploration, development, silence, and repetition while engaged in creating a composition. At the onset of data analysis, the researcher discovered that not all students used the entire 10-minutes for the compositional task. However, all of the students did compose for at least 7 minutes. The researcher decided to use data from only the first 7 minutes of the compositional task for the compositional process data analysis.

Two judges independently rated the students' compositional processes. The judges included the researcher and a secondary-level band, choral and general music

instructor with a master's degree in music education. To rate which compositional processes occurred most frequently during the students' 7-minute compositional sessions, the judges listened to and analyzed each of the audio-tapes for the processes of exploration, development, repetition, and silence by marking an "E" for exploration, "D" for development, "R" for repetition, and "S" for silence when they heard that particular process dominate a 5-second interval. The researcher tallied the amount of 5-second intervals each judge had marked for E, D, R, or S on a rating form (see Appendix C).

Prior to listening to the audio-cassettes, the second judge was trained in the use of the compositional process terminology and printed tally form. The following definitions (Kratus, 1989) were used for the compositional processes of exploration, development, silence, and repetition:

1. Exploration--musical sounds that are unlike any other music played previously.

2. Development--musical sounds that are somewhat like music that has been played before.

3. Silence--no musical sounds.

4. Repetition--musical sounds that are the same as music that has been played previously.

The judges listened to three sample recordings of students' compositional processes, rated the samples, and discussed the results.

Children's Personality Questionnaire

After the completion of the individual compositional

task, the students' personality traits were measured with Cattell's Children's Personality Questionnaire (CPQ) (Cattell, 1992). Administration of the test took place in a classroom setting during the third and final week of the study. The CPQ is intended for children ages 8 through 12 and measures a set of 14 factorially independent dimensions of personality as well as four second-order dimensions. These dimensions, or personality source traits, are identified by letters of the alphabet A through Q4. Additionally, there are technical names that give the most accurate meaning for the traits, but are less understandable for lay discussion. Cattell (1992) provides the alphabet identifier, and the bi-polar title used in psychological literature as well as a description for use by lay people in the test manual. The fourteen dimensions of personality are listed below with the alphabet identifier and a general description of the bi-polar traits (Cattell, 1992, p. 10):

1. A--reserved/warmhearted
2. B--dull/bright
3. C--affected by feelings/emotionally stable
4. D--phlegmatic/excitable
5. E--obedient/dominant
6. F--sober/enthusiastic
7. G--expedient/conscientious
8. H--shy/venturesome
9. I--tough-minded/tender-minded
10. J--zestful/reflectful
11. N--forthright/shrewd
12. O--self-assured/guilt-prone

13. Q3--undisciplined/controlled

14. Q4--relaxed/tense

Second-order factors may be viewed as broader influences, or organizers of personality (Cattell, 1992) and may be found by factor-analyzing the intercorrelations among the primary factor scores. The second-order factors may be interpreted as follows (Cattell, 1992, p. 39):

1. Extraversion vs. Introversion--A factor that predicts the child's seeking or avoiding social interaction.

2. High Anxiety vs. Low Anxiety--A factor that may indicate a relatively permanent characteristic of an individual, a transitory mood, or a combination of the two.

3. Tough Poise vs. Tenderminded Emotionality--A factor that may express an individual's level of cortical alertness, quick reaction time, energy level, and level of sensitivity.

4. Independence--A single factor that is associated with the ability to maintain higher criticalness of judgment, precision and exactitude of performance, aggressiveness, and creativity.

The CPQ is a pencil and paper test that requires the student to mark the box that best describes him or her. There are four forms of CPQ, with each form divided into two sections of 70 questions each. Although reliabilities are the highest when two of the four forms are combined, this researcher decided to use one form of the test due to the long administration time for each form of the test (90 minutes for each form). Also, Cattell

reports that low reliability coefficients on some of the personality factors, "...probably tell more about the stability of the trait than the construction of the test" (Cattell, 1992, p. 13). Therefore Form C, with test-retest reliabilities ranging from .50 to .78 for the 14 personality factors as reported in the test manual, was used.

Procedure for Administering the Children's Personality Questionnaire

The procedure for administering the CPQ was taken from the CPQ test manual (Cattell, 1992). Once the students were assembled in the classroom, the researcher passed out the test booklets and pre-sharpened pencils. A classroom teacher was present during the administration of the CPQ, to control for any potential behavioral problems. Before opening the test booklets, the researcher told the students that the CPQ would provide information on what students like to do and that each student should choose the answer that best describes him or her. Two sample questions are provided in the test booklet. All students completed these questions prior to beginning the test to assure the researcher that all of the students understood how to provide their answers in the test booklets.

The researcher then asked for any questions the students might have and stated that students should raise their hands if there were any questions during the testing period. When all questions were answered, the researcher began the test. Upon the advice of the classroom teachers, the researcher read each question aloud to the students.

This was done to control for the reading ability and attention spans of some of the students. After the testing had started, the researcher moved rapidly around the group to ensure that the students were answering all of the questions and that the pace of the test was neither too slow nor too fast.

The first part of Form C of the CPQ took 45 minutes to administer. The researcher gave the students a 10-minute break before beginning the second part of Form C. This procedure was repeated for part two of Form C. Part two took 35 minutes to administer.

After completion of the test, the researcher had the students look over their test booklets to be sure that all questions had been answered. The researcher then collected the test booklets and pencils.

Statistical Design and Analysis

At the conclusion of the individual compositional task, the researcher calculated the amount of time each student spent in the compositional processes of exploration, repetition, development, and silence. Interjudge reliabilities were calculated for the compositional dimensions of exploration, repetition, development, and silence. Additionally, the means, standard deviations and intercorrelations were calculated for each of the compositional processes.

For the CPQ, the researcher hand-scored each student's test booklet and computed each subject's raw scores for the 14 personality traits. Once the raw scores had been obtained, N-stens (the normalized distribution

of where an individual stands in comparison to a given population) were calculated for each of the personality traits. N-stens from the 14 personality traits were used used to determine the four second-order factors and to plot out each student's personality profile. The means and standard deviations were calculated for each of the personality traits of the CPQ, and the intercorrelations between the source traits were determined.

To determine the relationship between each of the personality traits and time spent in each of the compositional processes, a Pearson-Product moment correlation was used for each of the personality traits and the amount of time spent in each of the compositional processes. To determine the relationship between each of the second-order factors and time spent in each of the compositional processes, a Pearson-Product moment correlation was used for each of the second-order factors and the amount of time spent in each of the compositional processes. A significant correlation ($p < .05$) between a personality trait or second-order factor and amount of time spent in one of the compositional processes indicates that the personality trait, or second-order factor is related to how one spends time in the compositional processes of exploration, repetition, development, and silence.

CHAPTER IV

RESULTS AND INTERPRETATION OF DATA

Introduction

This investigation is concerned with the relationships of third grade students' personality traits to their use of exploration, development, repetition, and silence while composing. To examine these relationships, each student participated in a 7-minute individual compositional session. Two independent judges listened to the audio-recording of each of the students' compositional sessions and rated each of the sessions for the amount of time spent in exploration, development, repetition, and silence. The judges recorded their analysis on a printed sheet that was pre-marked with a total of 84 5-second intervals. To determine personality traits the CPQ (Cattell, 1975) was administered to each student. The CPQ measured 14 independent and four second-order personality traits for each student. This chapter begins by discussing the analysis and results of the students' compositional processes. Next, a discussion of the analysis and results of the Children's Personality Questionnaire will follow. Finally, the analysis, results, and interpretations of the correlations between the compositional processes and the CPQ will be presented.

Results of the Compositional Processes

The researcher totalled the amount of time each student spent in the compositional of processes of exploration, development, repetition, and silence from the printed forms of the independent judges' analysis and calculated the means and standard deviations for the compositional processes. Table 1 presents the sums, means, and standard deviations for each of the four compositional processes. The students spent the majority of time in exploration and repetition, followed by development and then silence.

Table 1

Compositional Process Sums, Means, and Standard Deviations

	Exploration	Development	Repetition	Silence
Sum	1614	762	1586	222
Mean	64.56	30.48	63.44	8.88
S.D.	32.51	24.82	27.77	12.92

Interjudge reliabilities were determined for each of the compositional processes. Interjudge reliabilities, as presented in Table 2, were high for the compositional processes of exploration, development, and silence. The interjudge reliability was moderately low for the process of repetition, indicating a discrepancy between the judges interpretation of the definition of that process.

Intercorrelations among the four compositional processes were calculated and found to be low, as expected. Table 3 shows that all of the compositional processes had negative intercorrelations with one another with the

exception of one relationship. The intercorrelation between repetition and silence was .11.

Table 2

Interjudge Reliabilities

Exploration	.859
Development	.904
Repetition	.558
Silence	.916

Table 3

Compositional Process Intercorrelations

E/D	-0.380	E/R	-0.673
E/S	-0.132	D/R	-0.305
D/S	-0.374	R/S	0.113

E=Exploration; D=Development; R=Repetition; S=Silence

Children's Personality Questionnaire Results

Raw scores for the 14 personality traits were totalled and converted into N-sten scores using a table provided in the CPQ manual and the four second-order personality traits were calculated. Table 4 presents the sums, means and standard deviations for the personality traits and second-order factors. Means and standard deviations for the second-order factors were markedly different from those as reported in the test manual (see Table 5). This variance may be due to the small sample size of the present study.

Intercorrelations of the 14 personality traits were calculated (see Table 6). Overall, intercorrelations were moderate with the highest correlation (.85) found

between the factors of Q4 (relaxed/tense) and D (phlegmatic/excitable). As expected, high intercorrelations were found between the second-order factors as the 14 primary traits contribute to the four secondary traits.

Table 4

CPQ Sums, Means, and Standard Deviations

	A	B	C	D	E	F	G	H	I
Sum	143	136	130	112	92	133	133	135	116
Mean	5.72	5.44	5.2	4.48	3.68	5.32	5.32	5.4	4.64
S D.	1.69	1.60	1.77	1.73	2.32	1.62	2.05	1.55	2.13
	J	N	O	Q3	Q4	EX	TP	ANX	IND
Sum	121	120	133	144	115	132	136	132	118
Mean	4.84	4.8	5.32	5.76	4.6	5.26	5.45	5.29	4.72
S.D.	1.99	2.27	2.42	2.04	1.63	0.76	1.16	0.84	0.66

(N=25)

Table 5

CPQ Test Manual Means and Standard Deviations

	A	B	C	D	E	F	G	H	I
Mean	7.08	5.97	6.17	4.27	4.16	4.68	6.60	5.66	4.22
S.D.	1.82	2.16	2.12	1.98	1.88	2.05	2.23	1.79	2.26
	J	N	O	Q3	Q4	EX	TP	ANX	IND
Mean	4.46	3.78	4.56	6.99	4.10	5.5	5.5	5.5	5.5
S.D.	1.88	2.16	1.68	1.88	1.96	2.0	2.0	2.0	2.0

(N=2218)

Table 6

CPQ Intercorrelations

	A	B	C	D	E	F	G	H	I
A		.10	.32	-.60	-.33	-.23	.78	-.09	.22
B			.42	-.19	-.24	-.02	-.03	.07	.14
C				-.43	-.02	-.22	.31	.15	.31
D					.56	.32	-.74	.20	-.35
E						.35	-.50	.41	-.41
F							-.31	.45	.37
G								-.22	.35
H									-.00
I	.22	.14	.31	-.35	-.41	-.37	.35	.00	
J	.02	-.15	-.28	-.04	-.23	-.27	-.03	-.51	-.20
N	-.45	-.07	-.42	.60	.36	.36	-.73	-.07	-.58
O	-.02	.07	.00	.02	-.23	-.13	.04	.06	-.00
Q3	.48	.35	.44	-.74	-.56	-.40	.68	-.20	.49
Q4	-.49	-.26	-.50	.85	.43	.19	-.64	.03	-.18
EX	.07	-.09	-.01	.32	.64	.75	-.21	.74	-.33
TP	-.69	-.16	-.30	.73	.75	.53	.53	-.82	.46
AN	-.63	-.25	-.65	.85	.40	.39	.75	.04	-.46
IN	-.03	-.06	.16	.13	.41	.03	-.00	.16	-.14

	J	N	O	Q3	Q4	EX	TP	AN	IN
I	-.20	-.58	-.00	.49	-.18	-.33	-.65	-.46	-.14
J		.25	-.13	.13	.05	-.43	-.15	.02	.26
N			-.05	-.67	.56	.22	.64	.73	-.04
O				-.02	.02	-.11	-.01	.24	.02
Q3					-.69	-.47	-.78	-.83	.25
Q4						.19	.55	.83	.10
EX							.55	.25	.13
TP								.72	.14
AN									-.05
IN									

Compositional Processes and Children's Personality Questionnaire Results

To determine whether a statistically significant relationship ($p<.05$) exists between third grade students' personality traits and the amount of time spent in each of the four compositional processes the Pearson Product Moment correlation formula was used. The total time spent in the process of exploration was correlated with

the N-sten scores from each of the 14 personality traits and four secondary personality factors. The same analytic procedure was applied for development, repetition, and silence.

The results indicated no statistically significant relationships ($p<.05$) between the amount of time spent in exploration, development, repetition, and silence and any of the 14 personality traits or four secondary factors (see Table 7).

However, three correlations approached statistical significance. Exploration was found to be positively correlated with the B factor personality trait of low intelligence vs. high intelligence at the .391 level, indicating that children with a higher degree of intelligence may use more exploration (see Figure 1). This relationship was closest to the critical level of .396. Repetition was found to be negatively correlated with the I factor personality trait of tough-minded vs. tender-minded emotionality at the -.376 level, suggesting that tough-minded children may use more repetition than tender-minded children (see Figure 2). Finally, silence was found to be positively correlated with the C factor personality trait of emotional instability vs. emotional stability at the .301 level, indicating a possible relationship between emotional stability and the use of more silence among children during the compositional process (see Figure 3).

Table 7

CPQ and Compositional Process Correlations

	E	D	R	S
A Reserved/Warmhearted	0	-.011	-.110	-.043
B Dull/Bright	.391	-.137	-.299	.030
C Affected/Stable	.170	-.279	-.041	.301
D Phlegmatic/Excitable	-.194	.167	.130	-.044
E Obedient/Dominant	-.147	-.038	.231	-.097
F Sober/Enthusiastic	.024	.296	-.049	-.279
G Expedient/Conscientious	.025	-.101	.064	-.115
H Shy/Venturesome	-.150	-.060	.171	.183
I Tough-minded/Tender-minded	.088	.109	-.376	.052
J Zestful/reflectful	-.052	.161	-.103	.059
N Forthright/Shrewd	.104	.140	-.120	.004
O Self-assured/Guilt-prone	-.089	-.024	.042	.213
Q3 Undisciplined/Controlled	.168	-.153	-.165	.073
Q4 Relaxed/Tense	-.126	.225	.010	-.067
Extraversion/Introversion	-.088	.126	.116	-.053
Tough Poise/Tender-minded	-.157	-.014	.268	.076
High Anxiety/Low Anxiety	-.138	.241	.043	-.095
Independence	-.257	.033	.175	.273

p<.05; E=Exploration; D=Development; R=Repetition; S=Silence

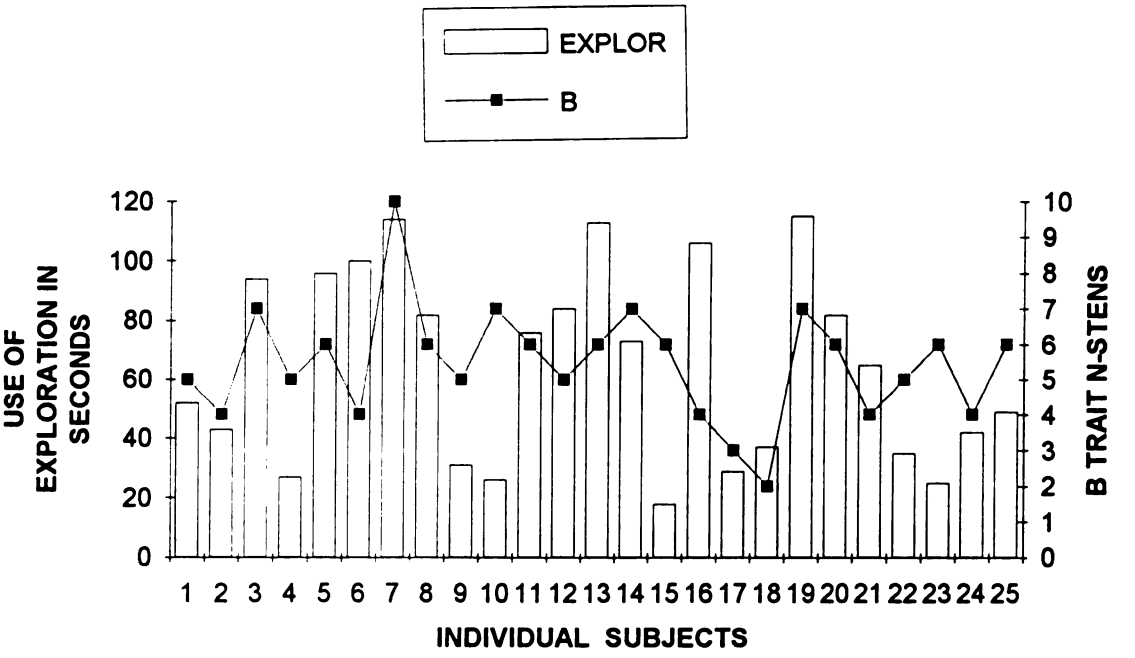

Figure 1: Exploration and "B" Trait

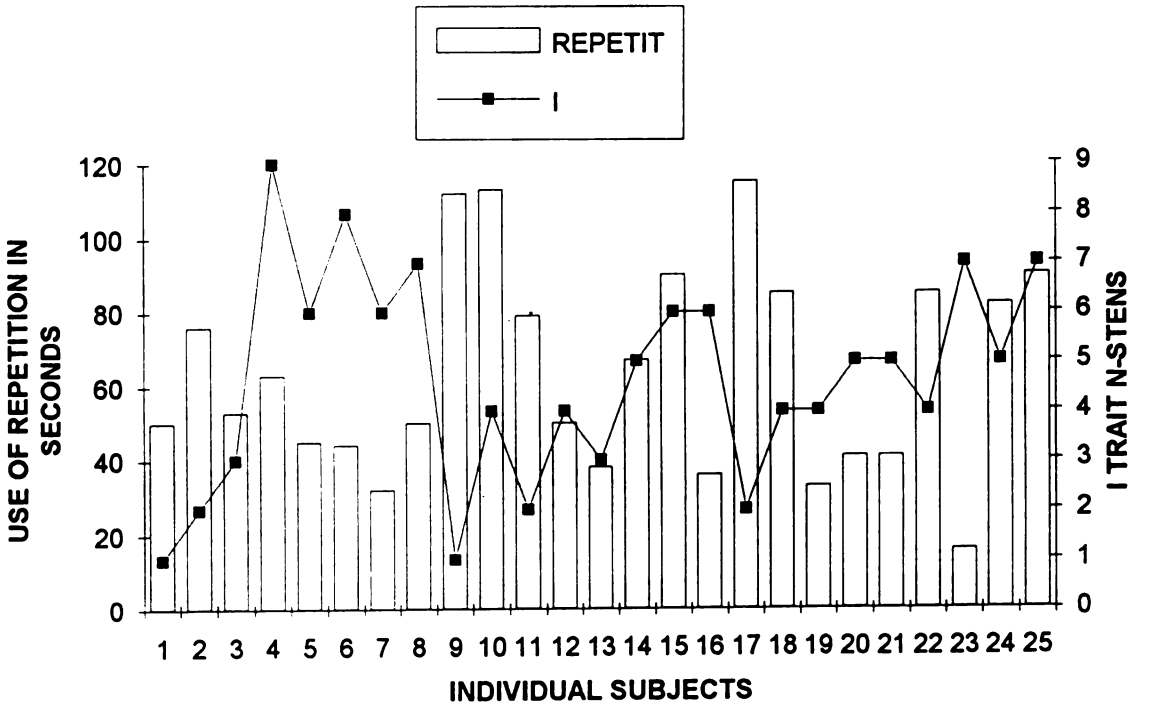

Figure 2: Repetition and "I" Trait

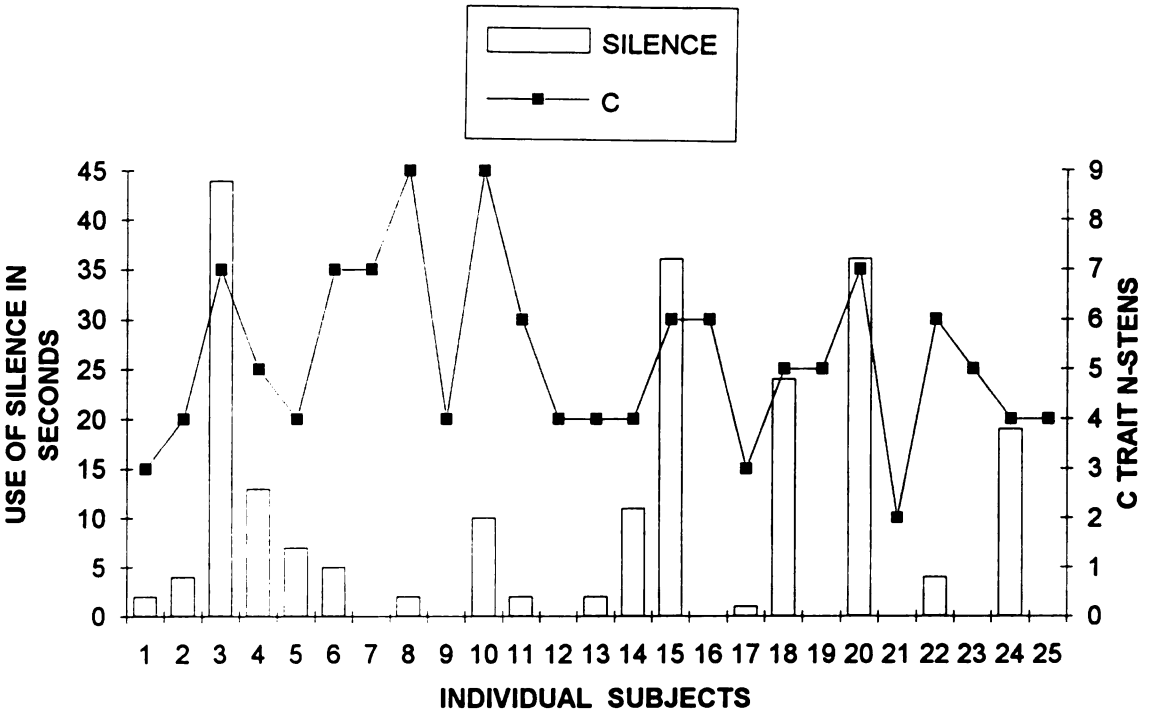

Figure 3: Silence and "C" Trait

Interpretations

The results of this study yielded no statistically significant relationships between third grade students' personality traits and how they used their time while engaged in the musically creative processes of exploration, development, repetition and silence. This may have resulted from several factors.

The small size of the sample (N=25) may have had an impact on the results of the study making it difficult to attain statistical significance. Additionally, the small sample size could account for the discrepancies between the means and standard deviations for the 14 personality traits and four second order personality factors as reported in the CPQ test manual and the means and standard deviations found in this study.

Using only one form of the CPQ may have had an effect on the results of that measure. The CPQ was found to be the only personality trait measure appropriate for third grade students. Additionally, it was the only measure available that gave a broad description of third grade students' personalities. However, administration of one form of the CPQ takes approximately 90 minutes. The test manual recommends administering two separate forms for the highest reliabilities on all of the personality factors. This researcher decided to use one form of the test due to the length of time for administration of the test, and the length of time the subjects would have needed to be released from regular classroom activities to take the test. Reliabilities may have increased for the personality traits had more than one form of the CPQ been used, and higher reliabilities might have yielded a significant relationship between compositional processes and personality traits.

Interjudge reliabilities may have had an impact on compositional process results. Although interjudge reliabilities were high for the compositional processes of exploration, development, and silence, the interjudge reliability for the compositional process of repetition was disappointing at .55. This indicates only a moderate level of agreement on the definition of the process term "repetition" between the two independent judges. Had the interjudge reliability been higher for the process of repetition, the compositional process totals would have been different and the results of this study would have been affected.

Finally, it is possible that the results of this study

demonstrate there is no meaningful relationship between musical creativity and personality, specifically, that no relationship exists between students' use of time during the compositional process and personality traits.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

This investigation was conducted to examine the relationship of personality traits and the musically creative process of the composer. More specifically, this study was concerned with investigating the relationship between personality traits and third-grade students' use of time during the compositional processes of exploration, development, repetition, and silence.

A review of related literature revealed only one similar study. Swanner (1985) investigated the relationship between creative thinking in music and music aptitude, cognitive intelligence, personality and gender in a study involving 69 third-grade students. Personality traits, measured by Cattell's Early School Personality Questionnaire (Cattell, 1966), of independence, excitability, self-confidence, aggression, anxiety, curiosity, and imagination were found to be significantly related to MCTM-II (Webster, 1987) scores. However, the results of Swanner's study cannot be generalized to a compositional task because MCTM-II does not measure the compositional process.

This investigation included 25 third-grade students from a small, rural public school district in lower Michigan. A total of 51 consent forms were sent home

with the students from two third-grade classrooms. Of the 31 forms that were returned, only 25 met the criteria for participation in the study. The length of the study was three weeks.

All of the students completed a 7-minute compositional task, on a keyboard, that was audio-recorded by the researcher and later analyzed by two independent judges for the amount of time spent in the compositional processes of exploration, development, repetition, and silence. In addition, all students were administered the Children's Personality Questionnaire (CPQ) (Cattell, 1976). The CPQ was used to measure 14 independent personality traits and four second-order personality traits for each student. Pearson Product Moment correlations were used to determine whether a relationship existed among the four compositional processes and the 14 personality traits and four second-order personality factors.

Results and Conclusions

No statistically significant ($p<.05$) relationship was found between the compositional processes of exploration, development, repetition, and silence and the 14 personality traits and four second-order factors. It appears that no relationship exists between third-grade students' musically creative processes of exploration, development, repetition, and silence, and their personality traits. However, three relationships approached statistical significance:

1. The relationship between the compositional process of exploration and personality trait of low intelligence vs.

high intelligence was found to be positively correlated. More exploration may be used by students with a higher level of intelligence.

2. The relationship between the compositional process of repetition and the personality trait of tough-minded vs. tender-minded emotionality was found to be negatively correlated. More repetition may be used by those students who are tough-minded, self-reliant, practical and realistic.

3. The compositional process of silence was found to be positively correlated with the personality trait of emotional instability vs. emotional stability. More silence may be used by those students who are emotionally stable, mature, and calm.

Certain explanations exist as to why no significant relationship was found among the four compositional processes and the 14 personality traits and four second-order personality factors. The small size of the sample may have had an impact on the final outcome of the study. Using only one form of the CPQ may have decreased the reliabilities of the personality traits and second-order personality factors being measured. With low reliabilities it is difficult to find statistical significance. Interjudge reliability on the compositional process of repetition was unsatisfactory. It is possible that with a high level of agreement between the judges a significant relationship between compositional processes and personality traits might have been determined.

Recommendations for Future Research

The following recommendations reflect the need for further investigations regarding students' compositional processes and products and their relationships to personality traits.

The review of related literature reflected little research on the relationship between personality traits and the musically creative processes of children. Although no statistically significant relationships were found, this study may be used as a model for replication, with a larger sample. A larger sample may produce different results. An investigation with a larger, and more diverse sample would also produce results that would be applicable to a larger population.

When replicating this study using time analysis for compositional processes, all judges need clear and extensive training on the process rating system. High or low interjudge reliabilities would have an influence on the statistical significance of a study.

Replication of this study using two forms of the Children's Personality Questionnaire (Cattell, 1975) might also be useful. The reliabilities for the personality traits would be higher. A study's results may be affected by higher personality trait reliabilities.

Music education might benefit from further study of personality traits and their relationships to the compositional processes. Giving students repeated opportunities for composition and relating the resulting processes and products to personality traits would provide additional information on how children create music.

Future research could include the study of intelligence and its relationships to aspects of musical creativity. Statistical significance was approached between the compositional process of exploration and the personality trait of intelligence. Intelligence was measured in terms of a child's general mental ability by the CPQ. Studying intelligence and how it relates to aspects of musical creativity may result in a deeper understanding of children's musical creativity.

Implications

Children learn and know music through active participation in musically creative activities. It is through creativity that higher levels of thinking such as application, evaluation, and synthesis are employed. For music education to structure a sequentially ordered curriculum with creativity at its base, the musically creative elements of process, product, and person must be understood. The majority of research in musical creativity has centered around the process and product components of creativity. Although no relationships were determined among musically creative processes and personality traits of the students in this study, more research needs to be conducted on the person aspect of musical creativity. Comprehending how children approach musically creative activities, and understanding how a person functions while creatively engaged, will serve to advance music education. With a deeper understanding of the children who are creatively engaged, music education will be further enabled to structure music curricula and

musically creative activities for optimal student learning.

APPENDIX A

APPENDIX A

MICHIGAN STATE
UNIVERSITY

May 6, 1997

TO: Cynthia Taggart
204 Music Bldg.

RE: IRB#: **97-159**
TITLE: AN INVESTIGATION BETWEEN MUSICAL CREATIVITY AND PERSONALITY TRAITS
REVISION REQUESTED: N/A
CATEGORY: 2-I
APPROVAL DATE: 05/05/97

The University Committee on Research Involving Human Subjects'(UCRIHS) review of this project is complete. I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS approved this project and any revisions listed above.

RENEWAL: UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Investigators planning to continue a project beyond one year must use the green renewal form (enclosed with the original approval letter or when a project is renewed) to seek updated certification. There is a maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for complete review.

REVISIONS: UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. If this is done at the time of renewal, please use the green renewal form. To revise an approved protocol at any other time during the year, send your written request to the UCRIHS Chair, requesting revised approval and referencing the project's IRB # and title. Include in your request a description of the change and any revised instruments, consent forms or advertisements that are applicable.

PROBLEMS/ CHANGES: Should either of the following arise during the course of the work, investigators must notify UCRIHS promptly: (1) problems (unexpected side effects, complaints, etc.) involving human subjects or (2) changes in the research environment or new information indicating greater risk to the human subjects than existed when the protocol was previously reviewed and approved.

If we can be of any future help, please do not hesitate to contact us at (517)355-2180 or FAX (517)432-1171.

Sincerely,

David E. Wright, Ph.D.
UCRIHS Chair

DEW:bed

cc: Suzanne L. Burton

OFFICE OF
RESEARCH AND GRADUATE STUDIES

University Committee on Research Involving Human Subjects (UCRIHS)
Michigan State University
246 Administration Building
East Lansing, Michigan
48824-1046

517/355-2180
FAX: 517/432-1171

APPENDIX B

PARENTAL PERMISSION FORM

Dear Parent or Guardian:

My name is Suzanne Burton. I am a master's degree candidate in music education at Michigan State University in East Lansing, Michigan. I am working on a thesis on personality traits and musical creativity. With the intention of contributing to the improvement of music learning and teaching, I am conducting an investigation with third grade students. Therefore, I am writing to you in request for your agreement on your child's participation in this study.

Your child will be asked to compose a song on a keyboard instrument within a seven minute time frame. This will require the student to leave the classroom for about 15 minutes. Also, he/she will be asked to take two short music listening tests and the Children's Personality Questionnaire. Each of the listening tests will take 20 minutes and will be administered during the regularly scheduled music class time. The Personality Questionnaire will take 60-90 minutes and will be given during a time that has been blocked by the classroom teachers. If you wish to know the results of your child's tests, I will be happy to share them with you. Testing will begin the latter part of April, 1997 and should be completed by the middle of May, 1997.

The music teacher of your child, Mrs. Glenda Kreger, and the third grade teachers have offered their cooperation with this project. The researcher and the teachers will know the identities of the children who participate in this study. Yet, only the researcher will know each child's results of the study. Your child's results will be kept entirely confidential and will remain anonymous in the report of any research findings. Participation in this research project is voluntary and will not affect your child's grades in any way. Also, you may withdraw your child from this study at any time without penalty to your child. Please complete the bottom portion of this sheet and have your son or daughter return it to school as soon as possible. Should you have any questions or concerns please contact me at 688-4768.

Sincerely,

Suzanne Burton

Your child's name:_____

Your child's birthdate:_____

Has your child received instruction on a keyboard instrument? (circle one) YES NO

If yes, please explain:_____

Would you agree on your child's participation in this research project? (circle one) YES NO

Parent or Guardian signature:_____Date:_____

Child's signature:_____Date:_____

APPENDIX C

APPENDIX C

Subject name_____ Judge_____

Compositional Processes

E=Exploration, D=Development, R=Repetition, S=Silence

0:05_____	2:05_____	4:05_____	6:05_____
0:10_____	2:10_____	4:10_____	6:10_____
0:15_____	2:15_____	4:15_____	6:15_____
0:20_____	2:20_____	4:20_____	6:20_____
0:25_____	2:25_____	4:25_____	6:25_____
0:30_____	2:30_____	4:30_____	6:30_____
0:35_____	2:35_____	4:35_____	6:35_____
0:40_____	2:40_____	4:40_____	6:40_____
0:45_____	2:45_____	4:45_____	6:45_____
0:50_____	2:50_____	4:50_____	6:50_____
0:55_____	2:55_____	4:55_____	6:55_____
1:00_____	3:00_____	5:00_____	7:00_____
1:05_____	3:05_____	5:05_____	
1:10_____	3:10_____	5:10_____	
1:15_____	3:15_____	5:15_____	
1:20_____	3:20_____	5:20_____	
1:25_____	3:25_____	5:25_____	
1:30_____	3:30_____	5:30_____	
1:35_____	3:35_____	5:35_____	
1:40_____	3:40_____	5:40_____	
1:45_____	3:45_____	5:45_____	
1:50_____	3:50_____	5:50_____	
1:55_____	3:55_____	5:55_____	
2:00_____	4:00_____	6:00_____	

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