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The association between music intelligence and learning process style

Mary Jane Wishart-Morey
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The Association between Music Intelligence and Learning Process Style

By Mary Jane Wishart-Morey

A Thesis

Submitted in partial fulfillment of the requirements for the
Master of Arts Degree: Subject Matter Teaching Music
in the Graduate Division of Rowan University

1998

Approved by

Professor

Date Approved 4/28/98

ABSTRACT

Mary Jane Morey

The Association between Musical Intelligence

And Learning Process Style

1998

Thesis Advisor: Dr. Lili M. Levinowitz

Master of Arts: Subject Matter Teaching: Music

Graduate Division of Rowan University

The purpose of this study was to begin to understand brain function and musicality. The problem of this study was to determine if there is a relationship between learning process style and musical intelligence.

Subjects who were in grade three were administered the Intermediate Measures of Musical Audiation test (IMMA). This test was used to identify musically talented children. Subjects took the test by listening to a tonal cassette and rhythm cassette. The subjects decided whether pairs of tonal or rhythm pattern they heard sounded the same or different. These tests required no reading skills. Students put circles around the corresponding pictures on the answer sheet.

The Advanced Measures of Music Audiation (AMMA), was used for the seventh grade students and adults, also to determine musical intelligence. The AMMA is a cassette-recorded test that includes two subtests, tonal and rhythm.

Participants were also administered the Learning Combination Inventory by Dr. Christine Johnston. The test determined how the learner processes information on the basis of four patterns: sequential, precise, technical and confluent.

The musical aptitude scores and learning styles were entered into a 2x5 crossbreaks design and a chi-square was calculated to determine the strength of the association. The obtained chi-square was 4.008, which did not reach the critical value for the .05 probability level. Based on the data acquired from this study, it cannot yet be concluded that music aptitude and learning style are associated. This finding supports previous research in music aptitude, which shows that music aptitude is not related to other forms of intelligence.

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The purpose of this study was to begin to understand brain function and musicality. The problem was, is there a relationship between learning process style and Musical Intelligence. Based on the data acquired from this study, it cannot yet be concluded that music aptitude and learning style are associated.

ACKNOWLEDGEMENTS

First of all, I would like to say that I can't believe that I am finally going to graduate! It seems as though I have been going to school forever. I'm sure anyone who has ever attempted to obtain a degree knows what I am talking about.

I would have never been able to accomplish this amazing feat if it had not been for the support and encouragement, which I received during my "ordeal." The teachers and administrators in the Brigantine North School system have been an invaluable source of knowledge and support. I must not forget to specifically mention my Superintendent of Schools, Mr. (someday Doctor) Robert Previti. Without his guidance, I would have given up several times. I am going to give him a copy of my diploma with his name typed in it, because he truly deserves half this degree. Thank goodness he has a great sense of humor as well as the ability to teach a special learner.

Thank you to all the teachers whom so unselfishly gave of their time so that they could be used as my "guinea pigs" for this project. They truly were interested in the results, especially when it personally pertained to them and their colleagues.

Dr. Lili Levinowitz is the one person who "underhandedly" kept me going in the Master's program. She is a great mentor, guidance counselor, researcher and educator. She always listened to me and assured me that everything would be all right. It actually all worked out as she said it would. Hopefully, I will have the pleasure to continue working with Lili in her future research endeavors.

Last but not least, I have to thank God and the Blessed Mother for blessing me with such a wonderful and supportive family. My children knew when not to bother me when I was slowly losing my mind with schoolwork. They knew how important this was to me and gave me their full support. And Dennis, my husband, again I thank God for you. You are an answer to a prayer. You gave me sympathy when I needed it and a kick in the rear when necessary. You kept me on task and kept reminding me, May 15,1998, ***GRADUATION DAY! I MADE IT! YIPPEEEEEEEEEEEEEEEEEEEEEEEEE!!!!***

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CHAPTER ONE

Introduction

The brain is an amazing organ of the human body. Until recently, scientists believed that the brain was hard-wired at birth and that it's "programming" was predetermined. It has now been established that a newborn infant's brain requires input from the following senses: sight, hearing, touch, smell and taste. Richard Axel, a molecular biologist at Columbia University states, "the nose doesn't smell – the brain does." [1]

Many of us at times, wish that our brain would allow us to do certain tasks easier. That is, persons have individual strengths and weaknesses in their style of learning. One plausible explanation for this is presented in Howard Gardner's book, *Frames of Mind*, where he discusses his Theory of Multiple Intelligence's. Gardner states that there are several different types of intelligences, those being as follows: Linguistic Intelligence, Musical Intelligence, Logical-Mathematical Intelligence, Spatial Intelligence, Bodily-Kinesthetic Intelligence and Interpersonal and Intrapersonal intelligences.

Gardner believes there is a specific brain organization, which makes musical achievement possible.[2] Ways in which individuals process the building blocks of music are single tones, elementary rhythmic patterns, and other units that allow ready

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[1] Brownlee and Watson. "The Senses." *U.S. News and World Report*, January 13, 1997: 51-59

[2] Gardner, Howard, *Frames of Mind, The Theory of Multiple Intelligences*, Harper-Collins Publishers, 1993.

presentation to experimental subjects and are devoid of the contextual information encountered in performance of works of music. People with Musical Intelligence note more global properties of music, for example, does it get faster or slower, louder or softer? Is the music light or heavy, triumphant or tragic, crowded or sparse? People with Musical Intelligence appear to be individuals that have "schemas" or "frames" for hearing music.[3]

Dr. Edwin Gordon has coined a phrase for the process which individuals use to think intelligently about music. The term, audiation, is defined as the hearing of sounds that are not before the ear at the moment, but are available through recall, prediction or conception. Gordon (1988) has identified seven types of audiation, each of which may be thought of as a specific situation in which audiation skills are needed if one is to be successful. The types of audiation are:

1. Listening to music.
2. Reading music (silently or in performance).
3. Writing music from dictation.
4. Recalling music (silently or in performance).
5. Writing music from recall.
6. Creating or improvising music (silently or in performance)
7. Writing music as it is created or improvised

[3] Gardner, Howard, *Frames of Mind, The Theory of Multiple Intelligences*, Harper-Collins Publishers, 1993.

All types of experiences related to music are dependent for their quality upon the ability of the person involved to audiate, to hear sounds that are not present at the moment.[4] If individuals do possess a musical intelligence that has been enhanced by the process of audiation, do these musical individuals possess a common way they process information? Dr. Christine Johnston, in her book, *Unlocking the Will to Learn,* introduces us to the Interactive Learning Model (ILM). The ILM emphasizes the interconnectedness of the conceptual components of the learning process. Dr. Johnston states that "cognition, conation, and affectation, and the interactive pattern of behavioral schema form interactions within the learner." The cognitive, conative and affective combine to involve the learner in processing, performing and reflecting on the basis of the following four basic patterns: "sequence and organization; specificity and precision; technical performance and reasoning; and confluence and intuition. Each is distinct for the other; each contributes to the other; each builds the wholeness of our learning process." [5]
Is there an interconnectedness of one's learning style to that of musical aptitude? Does musical aptitude influence ones learning style or vice versa?

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[4] Walters, Darrel L., "Audiation: The Term and the Process", in *Readings in Music Learning Theory.* (Chicago: G.I.A. Publications, Inc., 1989), 3-11

[5] Johnston, Christine A., "*Unlocking the Will to Learn*". Corwin Press Inc. 1996

Problem

Is there a relationship between learning process style and Musical Intelligence?

Sample

Fifty third grade students, fifty seventh grade students, and fifty staff members will be randomly selected from an elementary K-8 school district in Southern New Jersey. These students and staff members will constitute the test group and be representative of a diverse ethnic, intellectual and socioeconomic population.

Third grade students have been chosen as a target population because their musical aptitude has not yet stabilized. Seventh grade students were selected because their musical aptitude has stabilized. Adult staff members, certificated and non-certificated, were selected because their musical achievement has already been developed.

Procedures

Subjects who are in grades 3 will be administered the Intermediate Measures of Music Audiation test (IMMA). This test is used for one purpose; to identify musically talented children. Musically talented children may or may not be academically gifted.

Subjects will take the test by listening to a tonal cassette and a rhythm cassette. Each test takes only twelve minutes. Questions on the tape are identified on the answer sheet by pictures, not numbers or words. The subjects must decide whether pairs of tonal or rhythm patterns they hear sound the same or different. They indicate their choice by simply drawing a circle around the picture on the answer sheet. These tests require no reading skills. Once scored, the tonal and rhythm results are graphically compared for each subject. Raw scores are directly converted to percentile ranks.

The Advanced Measures of Music Audiation (AMMA) – will be used for the seventh grade students and adults, also to determine musical intelligence. The AMMA is a cassette-recorded test that requires approximately 15 minutes to administer. Included are 30 questions, each containing a pair of short musical phrases. In addition to the test questions, directions for taking the test, along with practice examples, are recorded on the cassette. There are two subtests included in the AMMA, tonal and rhythm. The person simply indicates their selection by filling a space on the answer sheet whether two short musical phrases sound the same, whether they sound different because of a tonal change, or whether they sound different because of a rhythm change.

Participants will also be administered the Learning Combination Inventory by Dr. Christine Johnston. Subjects will answer a series of questions that best describes how they feel they learn and process information. The test will determine how the learner

processes, performs and reflects on the basis of four basic patterns: sequence and organization; specificity and precision; technical performance and reasoning; and confluence and intuition. These answers will then be computed and interpreted into the individual's personal learning profile.

To administer the tests, the local school system required this researcher to obtain permission from all parents of students involved. The first letter was sent home with a response rate of only ten- percent. The second letter was sent home two weeks after the first. It was a more general letter, assuming that if this researcher did not receive a reply from the parent, that the permission was automatically granted. There was a permission slip attached though, so that any parent, who wished to, could respond. This procedure was necessary because of the poor response received from the first letter. A copy of both letters is included in this document. (Appendix A) The second letter proved to be more successful.

Design and Analysis

Once all testing has been completed, the music aptitude scores from all three tests will be divided into two categories as follows: high and low. The percentile used as the criterion will be at or near the 60^{th} percentile. Furthermore, the scores from the learning inventory style test will be categorized according to the dominant learning style as follows: combination pattern process, sequential pattern process, precise pattern process, technical pattern process, or confluent pattern process. Those data will be entered into a 2 x 5 crossbreaks design and a chi-square will be calculated to determine the strength of the association.

CHAPTER TWO

Related Research

The Interactive Learning Model (ILM)

During the summer of 1993, Dr. Christine Johnston was approached by a group of educators who were very interested in more information from a recent study that she had done about student's learning style. They wanted to know what learning behaviors a student might possess and how this could be determined. The teachers also needed to know what to do with this information once they obtained it. Dr. Johnston was informed by this group of educators that what was needed was an assessment tool which could help them identify what their students learning styles were. Those teachers also were emphatic that this test not be sent away to be graded. They wanted a tool that was easy enough for the student or teacher to grade.

From these conversations, a comprehensive strategy has evolved for getting to know a student's learning behaviors. The strategy consists of two parts, a user-friendly instrument and a soft covered text. The instrument helps both the teacher and the student learn about their natural way of "doing" the task of learning. The text explains how both learners and teachers alike can use the Learning Combination process to unlock the will to learn and the will to teach.

The Interactive Learning Model (ILM), (Johnston 1996), emphasizes the interconnectedness of the conceptual components of the learning processes within the brain.

These processes make up the way an individual approaches learning. This has to do with how certain sections of the brain have developed since birth. For example, cognition, conation, affectation, and the interactive pattern of behavioral schema form interactions within the learner. The Learning Combination Inventory, based upon the Interactive Learning Model, is built on the idea that the interactive learning process occurs as a pattern of behaviors. The following are definitions of the aforementioned conceptual components. Cognition is a person's mental acuity, memory, range of experiences, ability to work with abstractions or concreteness. Conation is a person's natural skill, pace, autonomy and amount of engaged energy. Affectation is a person's feeling, values, and sense of self.

Cognitive scientists believe that the mind operates through the use of developed patterning, which they call Schema. "A schema is a mental configuration of experience that includes a particular organized way of perceiving cognitively and responding to complex situation or set of stimuli".[6]

The cognitive, conative and affective combine to involve the learner in processing, performing and reflecting on the basis of four basic patterns as follows: "sequence and organization; specificity and precision; technical performance and

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[6] Johnston, Christine A., *"Unlocking the Will to Learn"*. Corwin Press Inc. 1996

reasoning; and confluence and intuition. Each is distinct from the other; each contributes to the other; each builds the wholeness of our learning process".[7]

A learner, who favors the sequential pattern, is one who seeks order and consistency. The sequential processor starts a learning task by asking, "What are the directions?" "What am I expected to do?" "Do you have an example I can look at?" "Can I see what students did last year?" These types of processors need time to do their assignments methodically, neatly, and completely. They will not start an assignment until they know exactly what a completed project looks like which has been approved by the teacher.[8]

The precise pattern learner wants to know exactly what is going on. These types of processors gather a lot of data, a lot of facts, and a lot of specifics. They are relentless in seeking information. They challenge the teacher to provide more and more detail in the instructions. These processors want to know where the source of information was gathered. Furthermore, they love trivia. They ask lots of specific questions and often they take really good notes. Precise processors love to do research.[9]

The technical pattern learner processes his information in a technical manner by using stand-alone, independent reasoning. The technical processor processes information on an as needed basis. That which they don't need they throw out. For them, the information received must be concise, to the point, and relevant to warrant their consideration. Relevance, real world, and rigor form their rationale for investing in any learning task. If these validations are not present, they will be altogether avoided. The

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[7] Johnston, Christine A, *"Unlocking the Will to Learn"*. Corwin Press Inc., 1996
[8] Ibid.
9 Ibid.

technical learner understands tools, gadgets, and technical instruments. They are persons of few words, and if given a paragraph to write, will write one draft, and only one draft.[10]

The confluent pattern learner, pulls together all the areas of experience and forms them into a sense of "I've been here, I understand this territory. This is how it fits together." The confluent processor is one who, in the middle of a focused activity, may say something totally unrelated. That is, a confluent mind will take disparate information and make connections from their similarities. This connection is one that no other processor may relate to. Confluent processors want no direction at all. They rebel against what they believe are senseless rules and they thrive on change. They learn by "osmosis."[11]

None of these processing schema have been associated with scholastic aptitude or achievement. Furthermore, music aptitude, which will be presented herein, is also not related to scholastic aptitude.

Edwin Gordon's Music Aptitudes

Musical aptitude was thought to be a gift bestowed at birth. Gordon believes that this relates only to musical aptitude, not achievement. Musical aptitude and musical achievement are not the same. One can have a high music aptitude with low achievement, or a high achievement with a low aptitude. There are two musical aptitudes, tonal and rhythmic. It is very unusual that one person would have the identical tonal and rhythmic aptitude.

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[10] Johnston, Christine A. *"Unlocking the Will to Learn"*. Corwin Press, Inc. 1996.
[11] Ibid.

In order to take an academic intelligence test, you need to have at least some level of academic achievement. This is not so with a valid music aptitude test. A well-constructed music aptitude test is unbiased; therefore high validity is achieved. Practically, results can be used to identify students who should be studying music and also diagnose students musical strengths and weaknesses to adapt instruction. This creates realistic expectations for a student's musical achievement. The nature, description, measurement and evaluation of music aptitude, give a comprehensive understanding of music aptitude.

There are three parts to the nature of musical aptitude: the source of musical aptitude, the development and the characteristics of musical aptitude. "Research over the years have strongly indicated that music aptitude is a product of both nature and nurture. The potential with which a child is born and his early environmental experiences interact and contribute in unknown proportions to his music aptitude."[12]

There are two stages of musical aptitude, those being developmental and stabilized. Developmental musical aptitude is what it implies. The musical aptitude of the child is still developing from all the experiences that life gives the child. Gordon feels that musical aptitude stabilizes around eight or nine years of age. Once the child gets to this age, they are no longer in the developmental stage of music aptitude, but the stabilized stage. At the stabilized stage, music achievement then takes over. Developmental and stabilized musical aptitude share some of the same characteristics.

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[12] Gordon, Edwin E., "*The Nature, Description, Measurement, and Evaluation of Music Aptitudes*", G.I.A. Publications, Inc. Chicago, 1987.

Both are based on the construct of audiation and musical ability. Musical aptitude is normally distributed and the ability to audiate is also normally distributed.

Audiation is the ability to hear and feel music for which the sound is not physically present. A satisfactory verbal description of music aptitude or the definition of its elements, has not yet been found. A thorough understanding of the description of music aptitude is best acquired by an examination of the content and psychological constructs of valid music aptitude test batteries.

Music Aptitude has been measured reliably since 1965 when the *Musical Aptitude Profile* (Gordon) was completed. This test was a valid test standardized for students in grades four through twelve. When this test was administered to children in grades lower than fourth grade, the results were not encouraging. Therefore Gordon developed a music aptitude test that was made as simple as possible. This was the beginning of the *Primary Measures of Music Audiation* and *Intermediate Measures of Music Audiation* test.

The *Primary Measures of Music Audiation*, (PMMA – 1971), was a test that included a taxonomy of tonal and rhythm patterns. These patterns were then categorized into perceptual and audiational difficulty levels and growth rates. On the basis of the categorizations, the final study, after being revised four separate times, was finally developed. The *Primary Measures of Music Audiation* comprises, with few exceptions, all of the easy tonal patterns in major and minor tonalities and all of the easy rhythm patterns in every meter. The content, including practice examples, of the *Intermediate*

Measures of Music Audiation comprises all of the difficult tonal pattens in major and minot tonalities and all of the difficult rhythm patterns in every meter.[13]

Since the *Musical Aptitude Profile* (Gordon) was not validated for students beyond high school, the battery, the *Advanced Measures of Music Audiation* was developed. This test was designed specifically for undergraduate and graduate students in colleges and universities. This test is designed to be difficult and is a much shorter test. [14]

The Hobbs Study

The Hobbs study (1980), A Comparison of the Music Aptitude, Scholastic Aptitude, and Academic Achievement of Young Children, was done to assess possible correlation's between musical aptitude and scholastic aptitude. Previous research involving the above mentioned had been limited to subjects older than eight years of age. This study involved first, second and third grade children.

The purpose of the Hobbs study was as follows: (1) to replicate Edwin E. Gordon's findings in the standardization of the Primary Measures of Music Audiation (PMMA), (2) to use individually administered IQ tests instead of the more common

[13] Gordon, Edwin E., Primary & Intermediate Measures of Music Audiation, G.I.A. Publications,Inc.,1986
[14] Gordon, Edwin E., Advanced Measures of Music Audiation, G.I.A. Publications, Inc., 1989

group-administered IQ tests, (3) to include first and second grade children's IQ scores, and (4) to broaden the geographic parameters.[15]

There were twenty-four students from each grade level aforementioned, who were randomly selected from a school system where 50% of the head of household parents had a professional or technical occupation. This atypical learning environment enabled the researcher to obtain individual scores in intelligence tests, music aptitude, individual IQ and academic achievement.

First grade students were administered the Wechsler Preschool and Primary Scale of Intelligence (WPPSI) (Wechsler, 1967). Second and third grade pupils were tested on the Wechsler Intelligence Scale for Children-Revised form (WISC-R) (Wechsler, 1974). These tests were administered in the fall and winter of 1980. In the spring of 1980, all pupils were given the appropriate level of the California Achievement Test, Form C-D (CAT) (CTB/McGraw Hill, 1977). Their classroom teachers administered these tests. All children were also administered the PMMA test by their music teacher. This was also done in the spring of 1980. [16]

The IQ and Music Aptitude comparisons were similar to those found in earlier research. At all three grade levels, results support the inference that music aptitude and scholastic aptitude tests measure dissimilar forms of mental processing. In comparison to the Edwin Gordon study, substantially higher correlations were found

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[15] Hobbs, Christine, A Comparison of the Music Aptitude, Scholastic Aptitude, and Academic Achievement of Young Children, *Psychology of Music,* Vol.13, #2, 1985, 93-98.
[16] Ibid.

between academic achievement and music aptitude. These correlations might indicate some bias of the PMMA toward young pupils with high academic achievement.[17]

[17] Hobbs, Christine, A Comparison of the Music Aptitude, Scholastic Aptitude, and Academic Achievement of Young Children, Psychology of Music. Vol. 13, #2, 1985, 93-98.

CHAPTER THREE

Design and Analysis

Sample

Fifty third grade students, fifty seventh grade students, and fifty staff members were randomly selected from an elementary K-8 school district in Southern New Jersey. These students and staff members constituted the test group and was representative of a diverse ethnic, intellectual and socioeconomic population.

Third grade students were chosen as a target population because their musical aptitude has not yet stabilized. Seventh grade students were selected because their musical aptitude has stabilized. Adult staff members, certificated and non-certificated, were selected because their musical achievement has already been developed.

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Subjects took the test by listening to a tonal cassette and a rhythm cassette. Each test took only twelve minutes. Questions on the tape were identified on the answer sheet by pictures, not numbers or words. The subjects decided whether pairs of tonal or rhythm patterns they heard sound the same or different. They indicated their choice by simply

drawing a circle around the picture on the answer sheet. These tests required no reading skills. Once scored, the tonal and rhythm results were graphically compared for each subject. Raw scores were directly converted to percentile ranks.

The Advanced Measures of Music Audiation (AMMA) was used for the seventh grade students and adults, also to determine musical intelligence. The AMMA is a cassette-recorded test that required approximately 15 minutes to administer. Included were 30 questions, each containing a pair of short musical phrases. In addition to the test questions, directions for taking the test, along with practice examples, were recorded on the cassette. There are two subtests included in the AMMA, tonal and rhythm. The person simply indicates their selection by filling a space on the answer sheet whether two short musical phrases sound the same, whether they sound different because of a tonal change, or whether they sound different because of a rhythm change.

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To administer the tests, the local school system required this researcher to obtain permission from all parents of students involved. The first letter was sent home with a response rate of only ten- percent. The second letter was sent home two weeks after the first. It was a more general letter, assuming that if this researcher did not receive a reply

from the parent, that the permission was automatically granted. There was a permission slip attached, so that any parent, who wished to, could respond. This procedure was necessary because of the poor response received from the first letter. A copy of both letters is included in this document. (Appendix A) The second letter proved to be more successful.

Design and Analysis

Once all testing was completed, the music aptitude scores from all three tests were divided into two categories as follows: high and low. The percentile used as the criterion was at or near the 60^{th} percentile. Furthermore, the scores from the learning inventory style test were categorized according to the dominant learning style as follows: combination pattern process, sequential pattern process, precise pattern process, technical pattern process, or confluent pattern process. Those data were entered into a 2 x 5 crossbreaks design and a chi-square was calculated to determine the strength of the association.

CHAPTER FOUR

Results and Interpretation

The category table, which represents the obtained values for music aptitude and learning combination inventory, is presented in Table I. The researcher failed to find an association between a person's learning style and their music aptitude.

Table I

Contingency Table for Obtained Values

For Music Aptitude and Learning Combination Inventory

		Learning Combination			
High	23	3	18	11	25
Low	34	7	22	10	41

Interpretations

The researcher failed to find a statistically significant association between music aptitude and Learning style. This may have occurred because a Type II error was committed. That is, an association is evident but was unable to be detected for the following reasons: 1) the criterion measures were inadequate, 2) the sample size was too small, or 3) the representative sample was in fact biased.

Nevertheless, these results support the extant research regarding music aptitude and further validate the notion that music intelligence is separate and distinct from other intelligences.

CHAPTER FIVE

Summary and Conclusions

Purpose and Problem of this Study

The purpose of this study was to begin to understand brain function and musicality. The problems of this study were as follows: 1) To determine if there was an interconnectedness of one's learning style to that of musical aptitude, 2) To determine if musical aptitude influences ones learning style or vice versa. Summarized, is there a relationship between learning process style and Musical Intelligence?

Design and Analysis

Fifty third grade students, fifty seventh grade students, and fifty staff members were randomly selected from a school district in Southern New Jersey. Third graders were selected because their musical aptitude had not yet stabilized. The seventh grade students were selected because their musical aptitude had already stabilized. The adults were selected because their musical achievement had already developed.

Students in third grade were administered the Intermediate Measures of Music Audiation test (IMMA). Students in grade seven and the staff members were administered the Advanced Measures of Music Audiation test (AMMA). These were administered to determine the level of musical intelligence.

Participants were also administered the Learning Combination Inventory to determine how the person processes information. Subjects were then broken down into

five categories of learners. The categories are as follows: Sequential learner, Precise, learner, Technical learner, Confluent Learner, and Combination Learner.

Once all testing was completed, the music aptitude scores from all three tests were divided into two categories as follows: high and low. The learning style data and musical aptitude data were entered into a 2 x 5 crossbreaks design and a chi-square was calculated to determine the strength of the association.

Results

The obtained chi square was 4.008 which did not reach the critical value for the .05 probability level.

Conclusions

Based on the data acquired from this study, it cannot yet be concluded that music aptitude and learning style are associated. This finding supports previous research in music aptitude, which shows that music aptitude is not related to other forms of intelligence.

Appendix A

To Parents of Third or Seventh Graders and Staff Members: From Mary Jane Morey

I am currently writing my thesis as a requirement for receiving my Masters Degree in Music Education. The thesis is entitled "Musical Intelligence and how it influences one's Learning Style and Brain Processing". In order to obtain data for my paper, I need student and staff member volunteers to be used as my subjects.

Subjects will be administered a test to determine musical intelligence. The test will be administered by listening to a tonal cassette and a rhythm cassette. Each tape takes only twelve minutes. Questions on the tape are identified on the answer sheet by pictures, not numbers or words. The subjects must decide whether pairs of tonal or rhythm patterns they hear sound the same or different. They indicate their choice by simply drawing a circle around the picture on the answer sheet. These tests require no reading skills. Tests will be administered to students in a classroom setting during the school day. Staff members will be asked to take the group tests at predetermined times convenient to them.

On a different day, subjects will be administered the Learning Combination Inventory test. Subjects will answer a series of questions that best describes how they feel they learn and process information. Obviously, the children's test is much more simplified than the adult test. This test takes no more than fifteen minutes. It can be administered in a group setting, as will be done for the students. Adults can do this test at their leisure.

Should you stipulate your agreement below, the data I obtain will be held in the strictest confidence; under no circumstances will this data be published in a form that would jeopardize that confidentiality.

By signing below, I (or my child) agree to participate in this project.

_____ I here by grant permission to Mrs. Mary Jane Morey to test me (or my child) as stated above.

_____ I understand that this information will never be published except in the context of a group data comparison. Also, any personal information will be accessible only to researchers directly involved with this project. (Mrs. Morey and Rowan University).

Your Name _____

Parent/Staff Signature _____ ***Date:*** _____

Student's Grade/Homeroom _____

I would be interested in receiving my individual results from this data collection:

___YES **___NO**

PLEASE RETURN THIS CONSENT FORM TO MIDDLE SCHOOL OR ELEMENTARY SCHOOL OFFICE BY FEBRUARY 24, 1998 THANK YOU! MRS. M.J. MOREY

To Parents of Third or Seventh Graders: From Mary Jane Morey

SECOND NOTICE (March 6,1998)

Sometime between March 12-31, 1998, students in select **third and seventh grades** will be administered a test to determine musical intelligence. The test will be administered by listening to a tonal cassette and a rhythm cassette. Each tape takes only twelve minutes. Questions on the tape are identified on the answer sheet by pictures, not numbers or words. The subjects must decide whether pairs of tonal or rhythm patterns they hear sound the same or different. They indicate their choice by simply drawing a circle around the picture on the answer sheet. These tests require no reading skills. Tests will be administered to students in a classroom setting during the school day.

On a different day, subjects will be administered the Learning Combination Inventory test. Subjects will answer a series of questions that best describes how they feel they learn and process information. The children's test is very easy and should take no more than fifteen minutes. It will be administered during the school day in their homeroom classes.

The data I obtain will be used for information on my thesis research project on Musical Intelligence and Learning Processing. The data will be held in the strictest confidence; under no circumstances will this data be published in a form that would jeopardize the confidentiality of the student.

Please return this by Monday March 9, 1998 – This is VERY IMPORTANT

_____Yes, I give my child (name - _____) permission to participate in this music and educational learning styles project.

_____ No, I do not wish my child (name - _____) to participate in this music and educational learning styles project.

Parent's signature_____

Student's Homeroom Teacher and Grade level_____

Thank you for your cooperation!
Mary Jane Morey – Brigantine Schools Music Specialist

To Staff members in the Elementary and Middle School: from Mary Jane Morey
March 6, 1998

HELP!!!!!! I still need thirty more staff members to participate in my musical intelligence and learning styles thesis project. If you have not yet replied to me, volunteering yourself as a "subject", would you please fill out the form below and return it to either Sheila Daily or Sandy Morgan at your earliest convenience. I would like to start testing the second week in March. My target date to be finished collecting data is March 31, 1998.

Thank You for your help in this matter!!

I will be a guinea pig for your research.

Name _____

School: ___ Elementary ____ Middle
Return to either Sheila Daily or Sandy Morgan by Monday, March 9, 1998

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