An investigation of the effect of music upon the academic, affective, and attendance profiles of selected fourth grade students

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An investigation of the effect of music upon the academic, affective, and attendance profiles of selected fourth grade students

Kooyman, Rebecca Joy King, Ed.D.

University of Nevada, Las Vegas, 1988
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An Investigation of the Effect of Music
Upon the Academic, Affective, and Attendance
Profiles of Selected Fourth Grade Students
Rebecca J. King Kooyman
University of Nevada, Las Vegas
The thesis of Rebecca Joy King Kooymen for the degree of Ed.D., Doctor of Education is approved.

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University of Nevada
Las Vegas, Nevada
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ABSTRACT

The purpose of this study was to determine if there is an effect on the academic, affective and attendance profiles of selected fourth grade students when baroque music is introduced subliminally into the classroom intermittently or continuously throughout the school day. Students were randomly assigned to three classrooms with one of three treatments: music continuously, music intermittently, or a no treatment, control group. Fourteen measures from the Children's Personality Questionnaire, two measures from the Stanford Achievement Test, and attendance and discipline records were used to assess outcomes of this study. Analysis of variance with repeated measures revealed a significant post test score in the sub-test for tension on the Children's Personality Questionnaire, showing students in the classroom with no music becoming more tense than those in either classroom with music. Analysis of Variance revealed significantly more absences in the classroom with music continuously than in that with music intermittently or with no music. If questions about the possibility of increasing absences can be addressed, this study might be replicated with a larger population for further investigation of significant results.
CHAPTER ONE

Statement of Problem

In the past decade, public concern has focused on several issues within our educational system. Rising illiteracy rates and falling test scores are two of the problems which have resulted in the creation of excessive paperwork in an attempt to increase teacher accountability (Flanagan, 1986). In addition, the public is demanding that attention be directed to growing instances of violence in the classroom, increased problems relative to truancy and tardiness, and the higher-than-ever school dropout rates among teenagers (Brodinsky, 1980; DiPrete, 1981; Duke & Jones, 1983).

The general population assumes that the least capable student drops out of school because of being unable to keep pace with his peers. However, statistics indicate that 11% of all high school dropouts have IQs over 110 (Ballard, Ramirez & Weintraub, 1982). This is an alarming statistic when one considers the intellectual capabilities which are lost as a result of such victims. Can the country afford to waste the talents of these young people? In addressing this question, legislation in the last
thirty years has reflected the growing national concern for conservation of one of our greatest natural resource, our gifted and talented children (Ballard, Ramirez & Weintraub, 1982).

Relative to the gifted, one should not necessarily look at society's loss and ignore the loss to the individual. The American public recognizes the inalienable rights of the handicapped to an appropriate public education in the least restrictive environment (P.L. 94-142). Do gifted children not have these same inalienable rights? Perhaps not. It would appear to the writer that gifted education has become a sociopolitical pawn, governed rather directly by available funding and the amount of professional and public support received. Concern about gifted leadership, innovation, and intellectual excellence is generated in periods of stress, and creates support and interest in gifted programs. One specific example is the interest in the gifted programs sparked by Russia's launching of Sputnik.

Drawing from various sources (Clark, 1983; Cattell, 1971; Terman, 1925), and for the purposes of this study, the following terms are defined. Gifted will refer to individuals who are functioning, or who have the potential to function at high levels of
Intelligence will be understood as the development of brain function which, in turn, is manifested through cognitive ability, academic aptitude, creative behavior, leadership, and/or ability in visual and performing arts. This definition includes the capacity for understanding complex relationships, processes of abstract thinking, and competence in problem solving ability. High levels may mean different things to different people. Some experts feel it is the top 2% of a population on an IQ test. Use of the IQ measure, however, should be in conjunction with student achievement, teacher reports of student functioning, family history and student background, peer identification, student inventory, and multidimensional screening tests (Clark, 1983). For this study, it is the latter position which has been accepted.

When assessing the needs of gifted school-age individuals, it appears necessary to address needs of the entire school population. By nurturing the talents and skills of all children, the needs of gifted children may best be served. Problems common to all children should not have solutions which are unique to the gifted population.

The consolidation of these problems could result in
a commonality which might be influenced positively by a single change in classroom atmosphere. In an attempt to consolidate the schoolwide problems of discipline, truancies, late arrivals, and decreased student achievement, it is appropriate to identify a number of factors contributing to these problems and then, if possible, to isolate one that is common to all.

Certainly some of these factors would appear to be: (a) That schools have a preoccupation with order and control; (b) that students are forced to participate in mass instruction controlled by a rigid timetable; (c) that the atmosphere of the classroom has become unpleasant as a result of subordination of the individual to institutional goals and objectives; and (d) that, as a result of the previous factors, students feel tension and frustration and may either exhibit active resistance to this environment through disruptive behavior, or a type of passive resistance manifested in attendance problems, falling test scores, or simply dropping out (Silberman, 1971).

The teacher's role in the educational process is also crucial. His/her expectations certainly have an effect upon student performance. However, the primary factor influencing student productivity would seem to be the learner him/herself and the emotions with which
he has to contend \cite{Whitmore1970}.

In addition to the emotional factor, the gifted child has to contend with other problems. Included would be: Work that is too easy or boring and which can frustrate him/her, just as work that is too difficult; the ability to think in ways which can be interpreted by teachers as challenging their authority, as being disrespectful and disruptive \cite{Clark1983}; continually asking "Why?" and being viewed as a troublemaker when, in fact, he is simply curious. While there certainly would be others, these are but a few of the basic factors capable of generating tension and frustration within the gifted child as he moves through a school day.

In an earlier writing, Torrance \cite{1963} was a bit more emphatic when he suggested that gifted or creative children are a minority of one and that it takes a great deal of courage to remain gifted or creative. Creativity, or that process by which an individual finds facts, problems, ideas, solutions, and acceptance \cite{Parnes1967}, declines upon the child's entry into school and continues that decline at each pivotal point in the educational process (between primary and upper elementary grades, for example). This drop is attributed to the increased expectations of schools to
maintain order and control within the classroom (Torrance, 1963).

Advocates for the gifted postulate that, in order to produce high levels of actualization, gifted individuals must be challenged throughout their student lifetimes. Special programs or classes are needed to fulfill this requirement (Alexander & Muiia, 1982; Clark, 1983; Perone & Male, 1981; Sellin & Birch, 1981). Classes that do not challenge the learner and do not promote high levels of actualization are not appropriate to the needs of children (Whitmore, 1980). Unfortunately, fewer than one-third of the gifted learners in the United States are reported to be receiving education appropriate to their needs (Mitchell & Erickson, 1978).

The absence of segregated settings leaves gifted students in that classroom setting where they have increased reason to feel tension and frustration because of the disparity between their abilities and the level of work expected. If, indeed, the regular classroom teacher is responsible for the education of these students, then (s)he must work to relieve that disparity. The first step in the educational process would seem to be the necessity of breaking through the suspected tension and frustration experienced by the
learner. Once this is accomplished, the teacher may be more effective. Faster rates of learning result from a positive, expectant classroom atmosphere, which in turn leads to academic success (Prichard & Taylor, 1980).

One method of enhancing the classroom atmosphere is through the introduction of music. Studies indicate the music helps to establish a psychological climate which is conducive to learning (Barber, 1982; Mullikin & Henk, 1985; Prichard & Taylor, 1980). Enhancing the learning atmosphere in this manner should result in improvement in student productivity, that is, in a rising of grades or improvement of test scores.

A study conducted among staff members at a college level indicated that improvement in physical, mental and emotional lives contributed significantly to increased attendance, improvement in morale, and stress reduction (McMillen, 1986). Therefore, as the classroom atmosphere is made more pleasant through the introduction of music, it would seem reasonable to expect student response to this enhanced atmosphere to be characterized by decreased absenteeism and fewer late arrivals.

One might question the validity of using background music with a student who has an auditory process deficit or who has trouble with figure-ground.
Mullikin and Henk (1985) have suggested that certain types of music can drown out potential distractions which would limit learners' ability to concentrate on the task and thus inhibit performance. With this in mind, it would seem that music should help all students.

Purpose of the Study

It was the purpose of this study to investigate the impact of differentially presented music upon the academic productivity, affective development, and attendance patterns of selected fourth grade, public school students.

Students in a classroom having no music were compared with students where music was presented for the total day and with those where the music was intermittent. This was an attempt to show that those students in the classroom with background music all day, or intermittently, would show measurable improvement in the following: (a) Academic productivity, as measured by scores on selected sections of the Stanford Achievement Test (SAT); (b) affect, as measured by the Children's Personality Questionnaire (CPQ) and the frequency of discipline referrals; and (c) attendance, as measured by traditional school registers for recording attendance.
Hypotheses

It was hypothesized that:

1. Within the classroom where background music is present for the entire day, students will demonstrate significantly greater increases in math and language arts achievement, attendance, and in measured affect, and decreases in tardiness when compared with students in classrooms having intermittent or no subliminal background music.

2. Within the classroom where background music is present intermittently, students will demonstrate significantly greater increases in math and language arts achievement, attendance, and in a measured affect, and decreases in tardiness when compared with students in classrooms having no background music.

Definition of Terms

Intermittently referred to presentation of the controlled variable at unscheduled periods throughout the school day.

In the context of this research, subliminal was understood to be the level of presentation of the controlled variable, that is, at a level just loud
enough to be audible. It would be more correct to state that the music was at an almost subliminal level; however, for the sake of economy with words, the presentation will be referred to as subliminal.

Affect referred to the emotional life of the student.

Self-actualization reflected Maslow's (1954) fifth level in the hierarchy of human needs. At this level, Maslow believed the individual reached his highest potential development.

Instruments Used in the Study

The Stanford Achievement Tests currently are in use by the study's host school. Selected for inclusion in this study were the Mathematics Applications and the Language sections. Using data provided by the host District, the reliability coefficient (using the Kuder-Richardson Formula #20) for the Mathematics Applications section was .91 and the reliability coefficient for the Language section was .88.

Validity of this test was determined by the host District through examination of test content as presented in the Stanford Index of Instructional Objectives.

Two tests of personality were considered by the investigator -- the California Test of Personality
(CTP) and the Children's Personality Questionnaire (CPQ), 1975 Edition (R). The latter was selected as a more reliable instrument after consulting The Ninth Mental Measurements Yearbook (1985).

Developed by Rutherford B. Porter and Raymond B. Cattell to measure a set of fourteen factorially independent dimensions of personality, the CPQ was designed to be useful in predicting various motivators of behavior, including emotional conflict, ego strength, and anxiety. Validity and reliability data are included as Appendix B. Permission to reprint this section of the Children's Personality Questionnaire Handbook is included as Appendix A.

Methodology

Subjects

Sixty-two students in three fourth-grade classrooms of a public elementary school in a large western community were subjects for the study. A chronological age range of nine to ten years was reflected among the population. No effort was made to match subjects on such variables as socioeconomic level, intelligence, or ethnic background so that alteration of the day-to-day routine of the classroom might be held to an absolute minimum.
Materials

Materials unique to this study were limited to music, registers for recording attendance/tardiness, and discipline referral forms. Such a restriction was put in place in a deliberate effort by the investigator to minimally alter established routines in each classroom.

Music

The controlled variable for this study consisted of investigator-selected tapes of classical music for programmed presentation over the host school's intercommunication system.

Attendance, Tardiness, and Discipline

Traditional registers for recording student attendance and tardiness were employed. Forms in use by the host school relative to discipline referrals also were utilized. Copies of each form are included as part of Appendix C.

Procedure

Selection of Subjects

Students were randomly assigned to classrooms prior
to the beginning of the school year by the host school's administration, thus creating a typical fourth grade population in each classroom. Entire classes were accepted intact by the writer so as to maintain a normal day-to-day environment. Health records were studied to determine that there were no subjects with auditory problems.

Parental Permission

A form letter detailing the study and requesting permission to include their child in the study was mailed to parents or guardians of each student in the identified classrooms. Since the Stanford Achievement Tests are administered routinely by each school, special permission was needed only to include results of these tests, along with beginning and ending profiles of attendance, tardiness, and discipline referrals. A copy of the form letter is included as Appendix D.

Instructions to Classroom Teachers

A copy of instructions for administering the Children's Personality Questionnaire was given to teachers in each of the selected classrooms. A copy of these instructions is included as Appendix E. Since inclusion of the CPQ is the only deviation from standard classroom routine, no other instructions were
given, that is, for testing, etc.

When enquiries were made about the presence, or lack of music in the classroom, teachers were to state that, "It's just something new for us; you know, like new pencils or books." The only other instruction to teachers was to avoid, at all times, any overt change in teaching patterns and classroom routines.

Any further enquiries were to be directed to the building principal or to the investigator. Upon conclusion of the study, a copy of its results was made available to those requesting it.

**Introduction of Music**

In order to keep presentation of the music as simple as possible, and to avoid any change in teaching patterns, control was through the school office and by the school secretary.

As noted earlier, the music was taped and was of the so-called "classical" nature, presented at a near subliminal level so that it would be background.

Selection of the music was based upon Dr. Steven Halpern's findings which indicate that sounds with a more natural rhythm, the one-beat-per-second rhythm of the heart, tend to be more relaxing to most people (Padus, 1986). It is Halpern's position that the
entire body responds naturally to this musical stimulus -- and at a cellular level. This, in turn, tends to balance, harmonize, and synchronize the activities of both halves of the brain. Thus the music acts as a catalyst during the process of instruction.

Physiological response parameters tested by Halpern included electrical conductivity of the skin as measured by Galvanic Skin Response (GSR) and by electromagnetic energy fields measured by Kirlian photography, as well as subsequent testing involving electro-acupuncture and applied kinesiology and kinesionics (Halpern & Savary, 1985).

Since music has been shown to make a difference on test scores when played solely during the testing session (Blanchard, 1979), it was not to be introduced until after the pre-tests had been administered.

Too, since reading is departmentalized and presented during the first hour in the host school, music was not introduced until after reading instruction had been completed for the day.

One class, designated Group E1 (N=19), had subliminal music piped into the classroom for the entire school day, excepting first period. Another class, designated Group E2 (N=21), had subliminal music piped into the classroom intermittently during the day;
a third class, identified as Group C (N=22), received no music.

Consideration was given to an additional classroom receiving music for one half of the school day; however, fourth grade classrooms in the host school present all academic subjects in the morning. If music were piped in during the first half of the day, academic results should be similar to those of the class receiving music all day. Conversely, if the music were piped in during the last half of the day, academic results should be similar to those of the class receiving no music. It was decided by the investigator to forego this possible facet of the study.

Within the experimental classrooms, music ceased just prior to the administration of the post-tests to ensure similar conditions for both pre- and post-testing.

**Pretesting**

All classes began the school year without any interruption to their routine. Results of the Stanford Achievement Tests—given routinely at the end of the students' third grade year—already were a part of each student's cumulative file. Within the SAT, results of the Mathematics Applications and Language sections were considered as part of the pre-test battery. New
enrollees included in the population studied had responded to this test prior to being placed in the class.

The only deviation from regular classroom routine was administration of the Children's Personality Questionnaire. Teachers administered this test, in accordance with prescribed instructions, in their individual classrooms during the first week of school.

Anonymity of each subject was maintained by assigning numbers to students for purposes of comparing pre- and post-test results. Teachers assigning the numbers did not have access to results of the personality testing and the investigator did not have access to the numbering system, nor did the investigator have access to the match of name and number.

**Post-testing**

The post-test battery consisted of the Mathematics Applications and Language sections of the Stanford Achievement Test, along with the Children's Personality Questionnaire. These were administered by the involved classroom teachers during the second week in March so as not to interfere with other District testing which had to be completed by the end of the school year. These tests were administered in the classroom, again
to avoid any unnecessary interruption of the regular school routine.

**Statistical Analysis**

Differences between pre- and post-tests for each group relative to measures of achievement and affect were treated with two ANOVA with repeated measures across time, and patterns of attendance, tardiness, and discipline referrals were treated with one way analysis of variance.

**Summary**

In combating the current problems of decreasing student achievement and increasing student apathy, it would seem appropriate to address changes in the classroom atmosphere of all students. One area of possible change is the introduction of music. Music has been introduced effectively into some medical clinics and hospitals as a therapeutic device to aid in the treatment of anxiety, depression, irritability, and other emotional instabilities (Blanchard, 1979). When exhibited by students within the classroom, such instabilities can be expected to interfere with learning. While the classroom teacher is not a therapist, her/his effectiveness might be enhanced when techniques intended to minimize these problems are implemented. Music may, indeed, be one such technique.
This study investigated the impact of music upon the academic and affective responses of selected students within a public school fourth grade setting.
CHAPTER TWO

If one contends that education is a process which changes the learner, and that education is the primary function of the public classroom, one might wish to identify those changes which take place within the classroom. The changes which occur should be joyous ones; however, many times they are not (Leonard, 1968). Perhaps this missing element explains some of the problems facing the American educational system today.

Maslow’s (1954) hierarchy of needs may be used to explain how a student’s emotional development may be facilitated or inhibited. Within the context of his theory, he would see human energy being used to provide for needs at six levels. If, at one level, the needs are unmet, energy will be directed to meeting those needs at that level, inhibiting further progress. Individuals may be operating on several levels at the same time, with more or less emphasis on each of these levels.

It may be useful for both parents and educators to be familiar with Maslow’s six levels of needs since Maslow would not view the student as an isolated piece of machinery in the classroom. On the contrary,
students are human beings with physical and emotional needs which must be addressed prior to engaging in the process of learning (Clark, 1983).

Level one is the provision for basic physical necessities to support life. At first glance, this might seem to be of no concern to educators. These basic needs are usually met by the home. However, at times they are not satisfactorily met within that setting, for instance, those children who come to school hungry. The educator should realize that the student will be unable to direct energy to learning within the classroom while most of his/her energy is directed to meeting survival needs.

The second level concerns safety needs, whether they be physical, psychological or emotional. Again, it is important that these needs be met both within and outside of the home. Many times the classroom atmosphere forces children to spend a great deal of energy ensuring their own physiological safety (Clark, 1983). One example might be the child who reacts negatively to a teacher who continually raises his/her voice. Regardless of the intelligence of the child, anxiety in the classroom is debilitating and interferes with the learning process.

The need for love and belonging, level three,
establish a foundation that influences how the individual views others and operates in the world. Families provide primary opportunities for development of this level, however secondary opportunities for the fulfillment of love and belonging needs may evolve through group involvement. Within the school setting, a climate of trust and allegiance will enable students to avoid spending unnecessary energy seeking fulfillment of needs at this level.

When lower level needs have been met, the child can begin to deal with more abstract thinking skills, be more creative and more self directed. Thus the child begins to focus on the needs for self-esteem, the fourth level. Children must have positive responses from others, especially those within the home and the classroom, to provide a sense of well being and self satisfaction. By encouraging students within a non-threatening and accepting environment, educators allow students to engage in risk taking, which is required for learning.

The fifth and final level, according to Maslow (1954), relates to self actualization needs of the individual. It is here that the individual reaches his/her highest level of potential development. At this level, one recognizes the necessity for creating
the educational opportunity for self-exploration, introspection, interaction, and quiet contemplation (Clark, 1983). If given the opportunity to attain self-actualization, the gifted individual has tremendous potential to make the greatest contributions to our culture.

Barbara Clark expressed the belief that Maslow would have added a sixth level, transcendence, had he lived another decade. This level is characterized by a unity of all being. Schools could encourage this type of thinking by engaging in self-evolving education, that is, education where the process of self-discovery is an essential element in learning (Clark, 1983).

The process of education may be facilitated by meeting the lower level needs of students and promoting environments where the higher level needs also are met. It is especially important for these needs to be met among the gifted population since a greater proportion of contributions to society might be expected to come from this group. At the same time, however, society is more demanding of innovation from the gifted population (Clark, 1983).

The term "elitism" frequently is heard addressing the needs of the gifted. Gallagher (1966) responded to this by defining gifted as a group having some special
skill or ability which needs fostering to become truly outstanding. He continued by suggesting that society encourages elitism in physical or artistic areas and wonders if society has more of a need for these abilities than for intellectual ability.

John Kristofco (1984) suggested that education can best serve the needs of gifted students if it nurtures the talents and skills of all children. Others (Davis and Rimm, 1985) shared a similar position when they advocated that programming should be integrated, with an effort to meet the educational needs of all students. This would seem to be a meaningful approach, that is, providing the gifted and talented with appropriate education while working to develop and encourage the creativity which exists in all students.

When the National Commission on Excellence began its work in August, 1981, it fostered interest in improving the quality of our nation's schools. This commission was instrumental in promoting the Effective Schools movement. One product of this effort was Reaching for Excellence, An Effective Schools Sourcebook (1985), which advocated methods for promoting thinking skills, reducing behavior problems, improving attendance, and, as a result, creating a more effective school. The Sourcebook focused on school
characteristics associated with school success, including: A pleasant physical setting; agreeable working conditions for staff and students; an orderly and caring environment; higher levels of student self-esteem; and a climate of positive attitudes and high expectations.

If one relates these characteristics back to Maslow's hierarchy of needs, creating a pleasant physical setting can refer to a setting in which the lower level needs are met, where the child is safe and feels a sense of belonging. When the classroom promotes self esteem and a climate of positive attitudes, the higher level needs are being addressed.

Lightfoot (1983) delineated a series of six stages through which schools develop into good schools and suggests that, in the current "effective schools" movement, few of them progress past stage three. In sequential order, these stages are: (1) Safety and security; (2) attendance and discipline; (3) basic skills and graduation; (4) post-school preparations and individualization; (5) intellectual growth and performance; and (6) leadership and responsibility. It therefore would seem appropriate to introduce a factor into the classroom addressing stages one through three with the hope of improving the classroom and,
ultimately, the school. Once the school has progressed past the first three stages, one would hope that the educator could devote his/her energy to addressing the last three stages. Again, for emphasis, and analogous to Maslow's model, until lower level needs are met, it is difficult for the individual to devote energy to the higher level needs.

Music

Safety and Security

Dr. Steven Halpern (1985), a composer and musical researcher, contended that our response to music is far more than an auditory response. Since music is vibrations, one would "feel" the music even while wearing earplugs and these vibrations, in turn, effect one's entire body chemistry, including heartbeat, blood flow, and brainwaves.

Researchers (Halpern & Savary, 1985) who have monitored these physiological responses noted that a person does not have to like a particular type of music to benefit from its relaxing effect. Music which seems to have the most positive effect on the individual is that which has a more natural rhythm, a beat which reflects our own heartbeat and breathing.

Dr. Halpern referred to brainwave patterns, heart
rate, blood flow, muscle response, and galvanic skin response as standard stress indicators. Within the classroom, these stress indicators, it is suspected, could be viewed as being generated by competition for grades, frustration, and various types of conflict. Referring again to Maslow's hierarchy of needs, when a student feels tension and stress in the classroom, (s)he feels that her/his safety needs or belonging needs are not being met. Therefore the student must expend her/his energy trying to fulfill those needs. In doing so, energy is directed toward fulfilling lower level needs, energy which, ideally, should be directed toward learning. Students who are relaxed may be able to engage the whole brain and be ready to begin the process of learning. By employing music in the classroom, learning might become a vital and holistic experience, activating the flow of stored memory material across the corpus callosum, so that the right and left hemispheres of the brain work in harmony, rather than in conflict (Halpern & Savary, 1985).

To go a step further, W. Jane Bancroft (1985) contended that music can help individuals develop self esteem through self actualization. As skills are acquired, self-development is encouraged. Using background music can provide relief from psychological
stress and promote absorption of materials available within the classroom.

In one particular piece of research (Blanchard, 1979), an effort was made to study the tensions, nervousness and apprehensive uneasiness which college students often experience while taking examinations. Subjects in one group were administered examinations under normal conditions; a second group was administered the examination accompanied by rock and roll music as background; and a third group was administered the examination accompanied by classical music.

Pulse rate and blood pressure were taken by a registered nurse and a medical technician before, during and after the examination. Prior to the examination, pulse rates of the three groups were relatively similar and blood pressure rates were within 13 points. During the examination and immediately afterward, pulse rates of the control group were significantly higher than those of the two experimental groups. Music, in this experiment, seemed to ease the tension, nervousness, and uneasiness experienced by the students.

The Society for Accelerative Learning and Teaching (SALT) based much of its research and learning
approaches on the idea that learning is accelerated when students are relaxed and that one element in the relaxation process is the use of music. Three articles which appeared in SALT's *Journal of the Society for Accelerative Learning and Teaching* specifically addressed the lower level needs of students:

Patsy K. Barber (1982) discussed results of using relaxation techniques over the course of an introductory management class at the college level. In this type of class, students were confronted with information, research, challenges and application of their knowledge to employment. It was Barber's premise that students undergo stress which, in turn, harms health. Researchers intended to counteract the postulated tension through the use of music in conjunction with relaxation techniques. Indeed, with music present, students experienced significant relaxation; this, in turn, appeared to contribute to delight and enthusiasm, considered to be critical factors in learning. It was found that, when the music was eliminated prior to an exam, students' grades fell.

Loren Alexander (1982) contended that, in a college introductory German class, the use of relaxation techniques created a positive atmosphere. His research indicated that music may penetrate the subconscious
even when the individual is not consciously aware of it, thus affecting one’s openness to information. Alexander suggested that this may have something to do with freeing the learner to create images or mental connections which correlate better with the individual’s own knowledge and experience.

While noting that ancient peoples used music to treat physical and mental problems, Bancroft (1985) considered three areas in which music can contribute to therapy: (a) As a social art, it can help individuals establish interpersonal relationships and social involvements (Rhythm has measurable physiological effects on the body, that is, on respiration, pulse and heart rate, while harmony, melody and instrumentation produce psychological effects on mood and personality.); (b) it can help individuals develop self-esteem through self-actualization (that is, using music for relaxation to enhance concentration, or focusing to facilitate learning); and (c) the rhythmic structure of music can energize and bring order (Gaston, 1968). Music has been especially effective in working with mentally retarded, physically disabled, and emotionally disturbed. It is used, especially in Europe, for group therapy and to relieve fear and anxiety of patients in hospitals. Bancroft (1985)
suggested music therapy as appropriate for the education of children, to facilitate learning and to make it more pleasant.

Attendance and Discipline

Safety and security concerns seem to have a direct influence upon attendance and discipline problems (Silberman, 1971). It would therefore seem that the same factors which reduce safety and security concerns would influence attendance and discipline. Bancroft (1985) believed that some types of music, that is, those with simple harmonies and even dynamics, tend to reduce physical activity and enhance contemplation.

Behavior and attendance may be affected positively through the development of the following:

1. The introduction of music is instrumental in creating a positive learning experience (Smith, 1982). Music activates both hemispheres of the brain for maximum learning. In minimizing basic learning difficulties, it is possible that stress-related health problems are eliminated, thus reducing attendance problems.

Smith began a class with thirty students who previously had been exposed to the material in various settings and had "never been good at it." The class was a no-tuition, no pre-requisite, nontransferable
community college course which normally had a high attrition rate. This experimental class, however, began with thirty students and ended with thirty students.

2. The enhancement of self-concept may induce the individual to function more effectively. As psychological well being is enhanced, health is rebalanced and learning occurs without stress (Ostrander, Schroder & Ostrander, 1979). Building on this premise, accelerative learning techniques were implemented with students who scored low on a self concept scale (Edwards & Thomas, 1982). Students used relaxation techniques to deal with assertiveness, weight control, exercise, study, getting along with others, and being comfortable in groups. After the treatment, nine out of the ten members of the treatment group appeared to make appreciable gains in enhanced self-esteem and improved self-concept.

3. Music may help return control of the learning environment to the individual learner (Redmond, 1984). Having influenced behavior for thousands of years (Gaston, 1968), and as an integral part of man's daily routine, music promotes sales of commercial products, makes driving more enjoyable, provides a relaxing atmosphere for dining out, and sets the desired mood
for weddings, funerals, or ball games. If music thus can influence mood responses, then music might be expected to create the optimum learning situation, where learner and learning environment are in synchrony. By reacquainting people with their natural rhythm, self-awareness may be increased, along with sensitivity, empathy and caring.

**Basic Skills and Graduation**

Just as with Maslow's hierarchy of needs, when lower level needs are fulfilled, energy then can be directed toward fulfilling higher level needs. When safety, security, attendance, and discipline problems are resolved, one can direct more energy to acquiring basic skills and to progressing toward graduation. It appears that, in the presence of music, academics are enhanced as lower level needs are fulfilled.

Research by Donald H. Schuster and Dave Mouzon (1982) supported the contention that the presentation of music facilitates learning. In vocabulary learning, playing baroque music resulted in better acquisition and retention. Using affective ratings, the students were more relaxed, happier and more alert when learning with background music present. Credit was given to the relaxation facilitative effect of the music upon the learner, since literature has indicated that subjects
learn best when relaxed in a learning situation (Chaney & Andreasean, 1972).

In addition to the relaxation which music affords, it also has been suggested that classical background music helps neutralize other room noise which might compete for the student's attention (Mulliken & Henk, 1985). In a reading setting, when noise diverts the reader's attention from the text, comprehension may be reduced (Dallmaw, Rouch, Char & DeBoer, 1978). Music can help to overcome that problem by neutralizing the noise which, in turn, should aid in improving comprehension.

Again, the Society for Accelerative Learning and Teaching offered additional research to support the idea that music enhances the learning process (Bancroft, 1982; Fisher, 1982; Gamble, Gamble, Parr & Caskey, 1982; Stein, Hardy & Totten, 1982). Listening to music generally is associated with the right hemisphere of the brain. On the other hand, many language tools utilized in the schools are associated with the left hemisphere. By using multiple channels for teaching, the entire brain is utilized; this, in turn, dramatically can increase rates and retention of learning.
Summary

In trying to improve the quality of education, it has been pointed out that most schools fail to progress past the first three stages of development delineated in Reaching for Excellence, An Effective Schools Sourcebook. In reviewing factors which may influence these stages (safety and security, attendance and discipline, and basic skills and graduation), it would seem that, if one factor could influence all three stages simultaneously, schools would be able, then, to proceed to the latter stages of development (post-school preparation and individualization, intellectual growth and performance, and leadership and responsibility).

Music seems to be a factor which can influence these stages. Safety and security are influenced positively through diminishing tension and frustration. Behavior and attendance are influenced positively through the enhancement of the individual's self-concept. Basic skills are attained through the ability to acquire and retain knowledge more easily. By keeping them involved in a positive learning experience, students may be more willing to participate in the formal educational process to its successful completion, graduation.
CHAPTER THREE

Results

As reported in Tables 1 through 16, results of the analysis of variance with repeated measures reflect the cognitive and affective variables noted in the hypotheses found on pages 7 and 8. Tables 2, 4, and 11 reflect scores in which the F-Observed was higher than necessary to reach a(n) .05 probability level, and when considering the passage of time (or difference between pre- and post-tests over all three groups). Although this was not reflected in the hypotheses, it could be expected that a change would be seen in the variables over time, since it is the contention of this writer that education is a process which changes the learner. Table 2 reported the increase in math scores over time for all three groups; Table 4 did the same for element B of the Children's Personality Questionnaire (Concrete thinking-score of 1, to abstract thinking-score of 10); Table 11 reported element I of the CPQ (Self-reliant-score of 1, to overprotected-score of 10).

For all but one variable, F-Observed failed to reach the .05 probability level when interaction of treatment and the passage of time were considered. These results did not support hypotheses one and two.
### TABLE 1

**SUMMARY OF ANALYSIS OF VARIANCE WITH REPEATED MEASURES OF MEAN DIFFERENCES FOR THE STANFORD ACHIEVEMENT TEST**

**LANGUAGE ARTS SECTION**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>Observed F</th>
</tr>
</thead>
<tbody>
<tr>
<td>A*</td>
<td>68.005</td>
<td>2</td>
<td>34.003</td>
<td>.674</td>
</tr>
<tr>
<td>Error 1</td>
<td>2977.189</td>
<td>59</td>
<td>50.461</td>
<td></td>
</tr>
<tr>
<td>R**</td>
<td>1.774</td>
<td>1</td>
<td>1.774</td>
<td>.078</td>
</tr>
<tr>
<td>A X R</td>
<td>34.037</td>
<td>2</td>
<td>17.018</td>
<td>.746</td>
</tr>
<tr>
<td>Error 2</td>
<td>1345.899</td>
<td>59</td>
<td>22.812</td>
<td></td>
</tr>
</tbody>
</table>

* A - treatment (no music, intermittent, and full music)

**TABLE 2**

**SUMMARY OF ANALYSIS OF VARIANCE WITH REPEATED MEASURES OF MEAN DIFFERENCES FOR THE STANFORD ACHIEVEMENT TEST**

**MATH APPLICATIONS SECTION**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>Observed F</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>36.988</td>
<td>2</td>
<td>18.494</td>
<td>.439</td>
</tr>
<tr>
<td>Error 1</td>
<td>2483.859</td>
<td>59</td>
<td>42.099</td>
<td></td>
</tr>
<tr>
<td>R</td>
<td>129.634</td>
<td>1</td>
<td>129.634</td>
<td>8.583*</td>
</tr>
<tr>
<td>A X R</td>
<td>6.287</td>
<td>2</td>
<td>3.143</td>
<td>.208</td>
</tr>
<tr>
<td>Error 2</td>
<td>891.141</td>
<td>59</td>
<td>15.104</td>
<td></td>
</tr>
</tbody>
</table>

*p < .01
TABLE 3
SUMMARY OF ANALYSIS OF VARIANCE WITH REPEATED MEASURES
OF MEAN DIFFERENCES FOR
CHILDREN'S PERSONALITY QUESTIONNAIRE

| ELEMENT A |
|-----------------|-----------------|-----------------|-----------------|
| Source of Variation | Sum of Squares | Degrees of Freedom | Mean Square | Observed F |
| A | 2.804 | 2 | 1.402 | .317 |
| Error 1 | 260.583 | 59 | 4.417 |
| R | 4.516 | 1 | 4.516 | 2.871 |
| A X R | 6.283 | 2 | 3.141 | 1.997 |
| Error 2 | 92.814 | 59 | 1.573 |

TABLE 4
SUMMARY OF ANALYSIS OF VARIANCE WITH REPEATED MEASURES
OF MEAN DIFFERENCES FOR
CHILDREN'S PERSONALITY QUESTIONNAIRE

| ELEMENT B |
|-----------------|-----------------|-----------------|-----------------|
| Source of Variation | Sum of Squares | Degrees of Freedom | Mean Square | Observed F |
| A | 1.032 | 2 | .516 | .144 |
| Error 1 | 211.065 | 59 | 3.577 |
| R | 30.896 | 1 | 30.896 | 18.099* |
| A X R | 6.286 | 2 | 3.143 | 1.841 |
| Error 2 | 100.714 | 59 | 1.707 |

*p<.01
### TABLE 5
**SUMMARY OF ANALYSIS OF VARIANCE WITH REPEATED MEASURES OF MEAN DIFFERENCES FOR CHILDREN'S PERSONALITY QUESTIONNAIRE**

**ELEMENT C**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
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<td>2</td>
<td>0.585</td>
<td>0.089</td>
</tr>
<tr>
<td>Error 1</td>
<td>389.024</td>
<td>59</td>
<td>6.594</td>
<td></td>
</tr>
<tr>
<td>R</td>
<td>0.696</td>
<td>1</td>
<td>0.696</td>
<td>0.598</td>
</tr>
<tr>
<td>A X R</td>
<td>2.562</td>
<td>2</td>
<td>1.281</td>
<td>1.101</td>
</tr>
<tr>
<td>Error 2</td>
<td>68.632</td>
<td>59</td>
<td>1.163</td>
<td></td>
</tr>
</tbody>
</table>

### TABLE 6
**SUMMARY OF ANALYSIS OF VARIANCE WITH REPEATED MEASURES OF MEAN DIFFERENCES FOR CHILDREN'S PERSONALITY QUESTIONNAIRE**

**ELEMENT D**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>6.535</td>
<td>2</td>
<td>3.267</td>
<td>0.570</td>
</tr>
<tr>
<td>Error 1</td>
<td>338.143</td>
<td>59</td>
<td>5.731</td>
<td></td>
</tr>
<tr>
<td>R</td>
<td>5.197</td>
<td>1</td>
<td>5.197</td>
<td>3.356</td>
</tr>
<tr>
<td>A X R</td>
<td>1.177</td>
<td>2</td>
<td>0.589</td>
<td>0.380</td>
</tr>
<tr>
<td>Error 2</td>
<td>91.371</td>
<td>59</td>
<td>1.549</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 7

**SUMMARY OF ANALYSIS OF VARIANCE WITH REPEATED MEASURES OF MEAN DIFFERENCES FOR CHILDREN'S PERSONALITY QUESTIONNAIRE**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2.592</td>
<td>2</td>
<td>1.296</td>
<td>.167</td>
</tr>
<tr>
<td>Error 1</td>
<td>456.827</td>
<td>59</td>
<td>7.743</td>
<td></td>
</tr>
<tr>
<td>R</td>
<td>6.291</td>
<td>1</td>
<td>6.291</td>
<td>2.909</td>
</tr>
<tr>
<td>A X R</td>
<td>.083</td>
<td>2</td>
<td>.042</td>
<td>.019</td>
</tr>
<tr>
<td>Error 2</td>
<td>127.594</td>
<td>59</td>
<td>2.163</td>
<td></td>
</tr>
</tbody>
</table>

### TABLE 8

**SUMMARY OF ANALYSIS OF VARIANCE WITH REPEATED MEASURES OF MEAN DIFFERENCES FOR CHILDREN'S PERSONALITY QUESTIONNAIRE**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
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<tr>
<td>A</td>
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<td>2</td>
<td>1.236</td>
<td>.202</td>
</tr>
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<td>Error 1</td>
<td>361.237</td>
<td>59</td>
<td>6.123</td>
<td></td>
</tr>
<tr>
<td>R</td>
<td>.026</td>
<td>1</td>
<td>.026</td>
<td>.015</td>
</tr>
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<td>A X R</td>
<td>1.407</td>
<td>2</td>
<td>.704</td>
<td>.401</td>
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<td>Error 2</td>
<td>103.560</td>
<td>59</td>
<td>1.755</td>
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</table>
TABLE 9

SUMMARY OF ANALYSIS OF VARIANCE WITH REPEATED MEASURES
OF MEAN DIFFERENCES FOR
CHILDREN'S PERSONALITY QUESTIONNAIRE

**ELEMENT G**

<table>
<thead>
<tr>
<th>Source of Variation</th>
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<th>Mean Square</th>
<th>F Observed</th>
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</tr>
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<td>237.133</td>
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<td>4.019</td>
<td></td>
</tr>
<tr>
<td>R</td>
<td>1.021</td>
<td>1</td>
<td>1.021</td>
<td>.578</td>
</tr>
<tr>
<td>A X R</td>
<td>2.347</td>
<td>2</td>
<td>1.173</td>
<td>.664</td>
</tr>
<tr>
<td>Error 2</td>
<td>104.178</td>
<td>59</td>
<td>1.766</td>
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</tr>
</tbody>
</table>

TABLE 10

SUMMARY OF ANALYSIS OF VARIANCE WITH REPEATED MEASURES
OF MEAN DIFFERENCES FOR
CHILDREN'S PERSONALITY QUESTIONNAIRE

**ELEMENT H**

<table>
<thead>
<tr>
<th>Source of Variation</th>
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<th>Mean Square</th>
<th>F Observed</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
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<td>59</td>
<td>6.338</td>
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</tr>
<tr>
<td>R</td>
<td>.002</td>
<td>1</td>
<td>.002</td>
<td>.001</td>
</tr>
<tr>
<td>A X R</td>
<td>1.130</td>
<td>2</td>
<td>.565</td>
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<td>1.786</td>
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**TABLE 11**

**SUMMARY OF ANALYSIS OF VARIANCE WITH REPEATED MEASURES**

**OF MEAN DIFFERENCES FOR**

**CHILDREN'S PERSONALITY QUESTIONNAIRE**

**ELEMENT I**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>Observed F</th>
</tr>
</thead>
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<tr>
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</tr>
<tr>
<td>R</td>
<td>13.207</td>
<td>1</td>
<td>13.207</td>
<td>6.275*</td>
</tr>
<tr>
<td>A X R</td>
<td>.924</td>
<td>2</td>
<td>.462</td>
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</tr>
<tr>
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<td>59</td>
<td>2.105</td>
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</tr>
</tbody>
</table>

*p < .05

**TABLE 12**

**SUMMARY OF ANALYSIS OF VARIANCE WITH REPEATED MEASURES**

**OF MEAN DIFFERENCES FOR**

**CHILDREN'S PERSONALITY QUESTIONNAIRE**

**ELEMENT J**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
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<th>Mean Square</th>
<th>Observed F</th>
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<tr>
<td>R</td>
<td>.446</td>
<td>1</td>
<td>.446</td>
<td>.240</td>
</tr>
<tr>
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<tr>
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</table>
### TABLE 13

**SUMMARY OF ANALYSIS OF VARIANCE WITH REPEATED MEASURES OF MEAN DIFFERENCES FOR CHILDREN'S PERSONALITY QUESTIONNAIRE**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F</th>
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<tr>
<td>R</td>
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<td>.010</td>
<td>.006</td>
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<td>97.228</td>
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</table>

### TABLE 14

**SUMMARY OF ANALYSIS OF VARIANCE WITH REPEATED MEASURES OF MEAN DIFFERENCES FOR CHILDREN'S PERSONALITY QUESTIONNAIRE**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
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<tbody>
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<td>R</td>
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<td>3.247</td>
<td>1.463</td>
</tr>
<tr>
<td>A X R</td>
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<td>2</td>
<td>1.325</td>
<td>.597</td>
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<tr>
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</tbody>
</table>
### TABLE 15

**SUMMARY OF ANALYSIS OF VARIANCE WITH REPEATED MEASURES OF MEAN DIFFERENCES FOR CHILDREN'S PERSONALITY QUESTIONNAIRE**

**ELEMENT Q3**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>Observed F</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1.898</td>
<td>2</td>
<td>.949</td>
<td>.219</td>
</tr>
<tr>
<td>Error 1</td>
<td>255.788</td>
<td>59</td>
<td>4.335</td>
<td></td>
</tr>
<tr>
<td>R</td>
<td>1.093</td>
<td>1</td>
<td>1.093</td>
<td>1.049</td>
</tr>
<tr>
<td>A X R</td>
<td>4.648</td>
<td>2</td>
<td>2.324</td>
<td>2.230</td>
</tr>
<tr>
<td>Error 2</td>
<td>61.489</td>
<td>59</td>
<td>1.042</td>
<td></td>
</tr>
</tbody>
</table>

### TABLE 16

**SUMMARY OF ANALYSIS OF VARIANCE WITH REPEATED MEASURES OF MEAN DIFFERENCES FOR CHILDREN'S PERSONALITY QUESTIONNAIRE**

**ELEMENT Q4**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>Observed F</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>6.719</td>
<td>2</td>
<td>3.360</td>
<td>.626</td>
</tr>
<tr>
<td>Error 1</td>
<td>316.765</td>
<td>59</td>
<td>5.369</td>
<td></td>
</tr>
<tr>
<td>R</td>
<td>12.416</td>
<td>1</td>
<td>12.416</td>
<td>9.383*</td>
</tr>
<tr>
<td>A X R</td>
<td>10.024</td>
<td>2</td>
<td>5.012</td>
<td>3.788**</td>
</tr>
<tr>
<td>Error 2</td>
<td>78.073</td>
<td>59</td>
<td>1.323</td>
<td></td>
</tr>
</tbody>
</table>

*P<.01

**p<.05**
### TABLE 17
SUMMARY OF ANALYSIS OF VARIANCE
OF MEAN DIFFERENCES FOR ABSENCES

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect A</td>
<td>140.753</td>
<td>2</td>
<td>70.377</td>
<td>4.636*</td>
</tr>
<tr>
<td>Error</td>
<td>895.634</td>
<td>59</td>
<td>15.180</td>
<td></td>
</tr>
</tbody>
</table>

*p < .05

### TABLE 18
SUMMARY OF ANALYSIS OF VARIANCE
OF MEAN DIFFERENCES FOR TARDIES

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>7.050</td>
<td>2</td>
<td>3.525</td>
<td>1.253</td>
</tr>
<tr>
<td>Error</td>
<td>165.934</td>
<td>59</td>
<td>2.812</td>
<td></td>
</tr>
</tbody>
</table>

### TABLE 19
SUMMARY OF ANALYSIS OF VARIANCE
OF MEAN DIFFERENCES FOR DISCIPLINE REFERRALS

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1.125</td>
<td>2</td>
<td>.562</td>
<td>.298</td>
</tr>
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<td>Error</td>
<td>111.214</td>
<td>59</td>
<td>1.885</td>
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</tr>
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### TABLE 20

**MEANS AND STANDARD DEVIATIONS FOR CHILDREN'S PERSONALITY QUESTIONNAIRE, ELEMENT Q4**

<table>
<thead>
<tr>
<th></th>
<th>MEANS</th>
<th>STANDARD DEVIATIONS</th>
<th>NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CONTROL</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRE-TEST</td>
<td>3.682</td>
<td>1.427</td>
<td>22</td>
</tr>
<tr>
<td>POST-TEST</td>
<td>5.000</td>
<td>2.093</td>
<td></td>
</tr>
<tr>
<td><strong>E1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRE-TEST</td>
<td>4.905</td>
<td>2.022</td>
<td>21</td>
</tr>
<tr>
<td>POST-TEST</td>
<td>4.847</td>
<td>1.652</td>
<td></td>
</tr>
<tr>
<td><strong>E2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRE-TEST</td>
<td>4.158</td>
<td>1.834</td>
<td>19</td>
</tr>
<tr>
<td>POST-TEST</td>
<td>4.789</td>
<td>1.873</td>
<td></td>
</tr>
</tbody>
</table>

**CONTRAST BETWEEN GROUPS**

<table>
<thead>
<tr>
<th></th>
<th>t(based on pooled variance estimate)</th>
<th>df</th>
<th>t(based on separate variance estimates)</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PRE-TEST</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C X E1</td>
<td>-2.263</td>
<td>59</td>
<td>-2.281</td>
<td>41*</td>
</tr>
<tr>
<td>C X E2</td>
<td>-0.858</td>
<td>59*</td>
<td>-0.917</td>
<td>39</td>
</tr>
<tr>
<td>E1 X E2</td>
<td>1.332</td>
<td>59</td>
<td>1.225</td>
<td>38</td>
</tr>
<tr>
<td><strong>POST-TEST</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C X E1</td>
<td>0.248</td>
<td>59</td>
<td>0.249</td>
<td>41</td>
</tr>
<tr>
<td>C X E2</td>
<td>0.357</td>
<td>59</td>
<td>0.340</td>
<td>39</td>
</tr>
<tr>
<td>E1 X E2</td>
<td>0.113</td>
<td>59</td>
<td>0.121</td>
<td>38</td>
</tr>
</tbody>
</table>

*P<.05
### TABLE 21
MEANS AND STANDARD DEVIATIONS FOR ABSENCES

<table>
<thead>
<tr>
<th>NUMBER</th>
<th>MEANS</th>
<th>STANDARD DEVIATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTROL</td>
<td>2.818</td>
<td>2.648</td>
</tr>
<tr>
<td>E1</td>
<td>2.857</td>
<td>2.726</td>
</tr>
<tr>
<td>E2</td>
<td>6.105</td>
<td>5.772</td>
</tr>
</tbody>
</table>

**CONTRAST BETWEEN GROUPS**

<table>
<thead>
<tr>
<th></th>
<th>t (based on pooled variance estimate)</th>
<th>df</th>
<th>t (based on separate variance estimates)</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>C X E1</td>
<td>- .033</td>
<td>59</td>
<td>- .048</td>
<td>41</td>
</tr>
<tr>
<td>C X E2</td>
<td>-2.694</td>
<td>59*</td>
<td>-2.283</td>
<td>39*</td>
</tr>
<tr>
<td>E1 X E2</td>
<td>-2.633</td>
<td>59</td>
<td>-2.237</td>
<td>38</td>
</tr>
</tbody>
</table>

*p<.05
The singular exception was noted in Table 16, the Q4 element of the Children's Personality Questionnaire, scaling from relaxed-score of 1 to tense-score of 10. The F-Observed for passage of time for element Q4 was higher than necessary to reach the .01 probability level. When comparing pre-test scores of the three groups, the only significant difference obtained was between the control group and E1. Comparison of the post-test scores of the three groups noted no significant difference to be present (Table 20). A significant change was present, however, between pre- and post-tests over all three groups and, when looking at the interaction between time and treatment, a significant difference was also observed. The noted movement seen would seem to support both hypotheses one and two.

Tables 17 through 19 summarize the one way analysis of variance for absences, tardies, and discipline referrals. For Tables 18 and 19, F-Observed was less than necessary to reach a(n) .05 probability level. Findings for these variables did not support hypotheses one and two.

For Table 17 (Absences), F-Observed was higher than necessary to reach the .05 probability level when considering the interaction of treatment and passage of
time. Movement in Table 17 did support hypothesis 1; however, direction of the movement was unexpected. Movement again was noted when the control group and group E2 were compared (Table 21), but the same movement was not seen in a comparison of the control group with group E1; therefore, findings did not support hypothesis two.
CHAPTER FOUR
Discussion and Conclusions

As noted earlier, a review of the literature supported a position that problems exist in our present educational methods. This same review also suggested that music might be one avenue to pursue when attempting to alleviate some of these problems, alleviation by means of reducing stress in the classroom. Such a reduction of stress, in turn, should free the student to maximize his/her potential within the learning setting.

In an effort to support the premise noted above, and over a period of months, this study introduced music into two classrooms - fulltime in one, intermittently in another - and used a third as a control, for which there was no music. An attempt was made to measure student productivity and emotional responses by looking at measures of academics, affect, and attendance. Results then were compared to determine if, indeed, they supported the premises upon which this study was based.

Two hypotheses were investigated. The first was that the measures of student achievement, attendance and affect would show more positive direction in the class receiving music continually than would student
achievement, attendance and affect in the classroom receiving the music intermittently or not at all. The second was that the gains in academic achievement, attendance and affect by students in the classroom receiving music intermittently would be greater than those by students in the classroom receiving no music.

One must view the overall picture before addressing each significant variable. In comparing the three groups on element Q4 of the Children's Personality Questionnaire (relaxed to tense), both groups with music, Group E1 (intermittent) and Group E2 (continuous), showed significantly less tension over the course of the study than did the group with no music. A difference was also seen between the group with continuous music and the other two groups. Group C (control) and group E1 (intermittent music) had significantly fewer absences than did group E2 (continuous music). Therefore, the classroom with continuous music did, in fact, show greater differences than did the classrooms with intermittent or no music, albeit in an unexpected direction. The classroom with intermittent music did show differences from the classroom with no music. These differences were not seen, however, in each individual dependant variable (attendance, tardiness, discipline referrals, the two
elements of the Stanford Achievement Test and each of the fourteen elements of the Children's Personality Questionnaire).

At first glance, it would seem that greater absences in group E2, the class receiving music continually, would contradict the hypotheses. Such may not be the case, however, if at least two questions are addressed. The first might be somewhat moral in context: Should music be used in a classroom where consistent student attendance is important, actually mandated by District policy, especially if there is a possibility that this very music could reduce stress and provide the student with a sense of being free, which might then be translated by the student as a willingness to accept any consequences which might attend the act of "cutting" class.

One then might question if the increase in absences in fact does refute the hypotheses. Lorin Hollander (1987) has suggested that the concern of today's classroom is with the stifling of creativity and turning students into analytical, shallow and predictable human beings. She believes that we may be destroying the creativity and humanity of our children and has insisted that the psychological and spiritual importance of music is to heal the neurotic distortion
of the creative and emotional processes. One could then question whether, in unleashing the creativity in these children, one also is unleashing some of their bonds to blind obedience. Perhaps a decrease in stress and an increase in creativity cannot be accomplished without a corresponding increase in freedom and an increased willingness to take chances, that is, to challenge the school's policy on attendance.

If one agrees with Hollander (1987), one then might wonder why the absences did not occur in group E1 (intermittent music). This specific type of music, the classical music introduced in chapter one, with 60 beats per minute (Halpern & Savary, 1985), was chosen because it supposedly induced a relaxed state in the body while leaving the mind alert and able to concentrate. However, as soon as people concentrate intently, relaxation disappears and stress returns (Ostrander, Schroeder & Ostrander, 1979). Those students with intermittent music constantly would be in a flux; music would induce relaxation and keep students from an increase in tension over time. But periods of no music would bring students "back down" and inhibit any great release which might occur.

A different choice in music might have a totally different effect. Ostrander, Schroeder and Ostrander...
(1979) documented actual physiological changes while students listened to music with the sixty beats per minute, included in these changes were slower heartbeats, lower blood pressure, decreased Beta and increased Alpha brain waves. This choice of music was based upon Hermetic philosophy that a certain set of mathematical ratios, if used in the sound of music, would resonate with the life forces of the universe and enhance life. It was believed that these forces could enable the individual to harmonize, to heal him/herself, and to "tune in" to the energies of the planet and amplify awareness. The "magic" of music would seem to be the ability to transform the environment by changing the individual's state of mind.

In a related area, some experimentation has been attempted with plants grown in scientifically controlled chambers (Ostrander, Schroeder & Ostrander, 1979). Different types of music piped into the chambers elicited different types of growth patterns. Plants in chambers with Baroque music grew rapidly, while those with country-western music did not respond; and those with rock music shriveled and died. Might growth patterns in children follow similar patterns with different types of music? It would be of interest to know if academic achievement, indeed, can be
influenced by different types of music present in the classroom.

A third question which has arisen concerns the relationship between attendance and achievement. When observing a significant increase in absences, one might expect to see a corresponding decrease in achievement, based upon diminished involvement with instructional time. However, no such decrease was noted by group E2 in this study. One might consider that, by itself, to be a positive result. Did exposure to music provide the student with that degree of relaxation, or freedom from tension, which permitted motivation for increased attention to academics? The writer believes this to be so, though a final answer would depend upon further research. That a similar finding was not present for the group receiving music on an intermittent schedule is again attributed to the "now-you-hear-it-now-you-don't" concept. There was no opportunity for "gestalt," or closure; rather than wholism, there was fragmentation, thus inhibiting maximal motivation.

A second set of results which, unto themselves, did not support the stated hypotheses, but did reflect positive direction, was the results for element Q4 of the Children's Personality Questionnaire. A lower score on this element is characteristic of children who
are relaxed, tranquil, composed, unfrustrated and who have low drive. The higher score is characteristic of individuals who are tense, frustrated, overwrought, and who have high drive. Editors of the particular instrument used in this study (Porter & Cattell, 1975) consider element Q4 to be one which reflects general anxiety and is abnormally high in character disorders, chronic disability and psychosis. They postulated that it describes excitement and tension and reflects undischarged drive. Since the control group, with no music, showed significantly more tension, it would appear that students in classrooms receiving music—both continuously and intermittently—were able to overcome stress and to eliminate the build-up of tension over time. Results of element Q4 would tend to support the ideas of Lorin Hollander (1987) and Emily Cary (1987), emphasizing the use of music as a progressive blend of scientific, artistic and physical disciplines which trains students and enables them to work toward "unpredictable outcomes," preparing them for academic, social, and career problem-solving challenges.

Maslow (1968) endows the creative individual with characteristics such as boldness, courage, freedom, spontaneity, perspicuity, integration, and self
acceptance; all of which are achieved by healing the split in a person and making him/her more unified. He visualizes these splits as within the individual and causing a civil war, setting one part of the person against another part. The individual cannot be creative and achieve, without first integrating his/her entire personality to stress wholeness, health and self-actualization.

Music would seem to be a factor which can be instrumental in healing the split, releasing the sense of freedom, and enhancing creativity. Padus (1986) introduced research supporting the idea that individuals respond to music on a physiological level, which would seem that one might expect all children to react in a similar fashion to the music. Different circumstances and treatment should not effect the physiological response.

It is felt that hypotheses one and two have been supported by the findings of this research, when academic achievement and the measure of affect are considered. It might be that, in future research, those conducting a similar study might have to evaluate the needs of the students in order to determine whether attendance is of primary concern or whether it is of low-order importance when searching for imagination and
multidimensional thinking. That it might be considered expendable receives considerable support when results of this study are reviewed and it is noted that academic achievement did not decrease as absences from the classroom increased.
REFERENCES


York: Macmillan.


Learning and Teaching, 9(2), 151-157.


Rockville, Maryland: Aspen.


APPENDIX A

Permission is hereby granted to Rebecca Kooym (316 Harvard, Las Vegas, NV 891 to include Sections 4 and 5 (pages 13-14-15-16) adapted from Children's Personality Questionnaire Handbook in the dissertation appendix*

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These consist of pages:

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</tr>
<tr>
<td>Appendix E</td>
<td>77-78</td>
</tr>
</tbody>
</table>
# STUDENT BEHAVIOR RECORD

**BEHAVIOR CODE DESCRIPTORS:**

A. **Student/Teacher** -- e.g.: disobeying, talking back, uncooperative, disrupting, etc.

B. **Student/Student** -- e.g.: fighting, aggravating conflicts, hurting others, name calling, squabbling, interfering, etc.

C. **Student/Rules** -- e.g.: playing in restroom, not lining up, running in halls, out of class, chronic tardy, breaking rules, etc.

<table>
<thead>
<tr>
<th>DATE</th>
<th>DESCRIPTION OF BEHAVIOR</th>
<th>CORRECTIVE ACTION TAKEN</th>
<th>BY WHOM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Student Signs:
  - [x] [ ] Request for Parent Conference mailed.
  - [ ] Conference held on [ ]

- Student Signs:
  - [x] [ ] Student/Teacher/Principal conference held.

- [ ] Required Parent Conference Mailed.
  - [ ] Child Detained in Office.
  - [ ] Child sent home.

*I acknowledge having reviewed my child's record and discussing it with the teacher.*

**Summary of Conference:**

Signed:
Dear Parent/Guardian:

My name is Rebecca Kooyman and I am a graduate student at U.N.L.V., completing my doctorate in education of the gifted. Presently, I am researching the influence of music on students in the classroom.

Your child is enrolled in one of the classrooms with which I will be working. I would like your permission to use his/her records for the 1986-1987 school year in my study, particularly those related to attendance and tardiness. I would also like your permission to have the Children's Personality Questionnaire administered. This is a non-clinical test designed to measure different aspects of personality and is intended specifically for elementary-age students. All test results and other information will be coded so that no child's results will be known to anyone. All results will be used for statistical comparisons only.

There will be no change in any of your child's classroom schedules or structure.

Thank you for your cooperation. Should you have any questions, you may contact me at 878-9097.

Sincerely,

Rebecca Kooyman

Child's Name

I give permission for my child to respond to the Children's Personality Questionnaire and for his/her records to be reviewed for this study. I understand that at no time will my child's responses to the Questionnaire be made public.

Parent's Signature Date

I would prefer not to have my child be given the Children's Personality Questionnaire or for his/her records to be used in this study.

Parent's Signature Date