

**THE EFFECT OF BACKGROUND MUSIC
ON RETENTION OF VOCABULARY TERMS**

THESIS

**Submitted to the Graduate Committee of the
Department of Education and Human Development
State University of New York
College at Brockport
in Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Education**

**by
Lori Lomker Gearinger**

**State University of New York
College at Brockport
Brockport, New York
May 1998**

SUBMITTED BY:

Lori L. Gevinger 4/10/98

APPROVED BY:

Arthur E. Smith 4/15/98

Thesis Advisor Date

Susan Z. Begg 4/15/98

Second Faculty Advisor Date

Patricia E. Baker 4-15-98

**Director of Graduate Date
Studies**

ABSTRACT

The purpose of this study was to examine the effect of background music on studying and retention of vocabulary terms. Is music adversely affecting or enhancing our children's studying habits? Can music be stimulating the brain to positively affect concentration and retention?

The subjects consisted of 37 sixth graders. All of the subjects participated in the three different sessions. Three different vocabulary lists (10 words on each) were developed by the researcher. All of the vocabulary came directly from a novel called The View From Saturday by E.L.Konigsburg, a reading selection used within the students' reading class. In the first session the students studied the vocabulary lists without background music (control). During the second session, students studied to Mozart's Piano Concerto No. 21, C Major, K.467 and Mozart Serenade in G Major, K.525. During the last session students selected "Men In Black" by Will Smith and "I'll Be Missing You" by Puff Daddy. Students were exposed to all different kinds of music and to the testing and

studying format for several weeks prior to the actually sessions used for this study.

A analysis of variance of two-factor with replication showed a statistically positive difference in the test scores. The experimental group, with Mozart as background music, performed significantly better on the vocabulary tests compared with no music or preferred choice of music.

TABLE OF CONTENTS

	PAGE
Chapter I	
Statement of the Problem	2
Purpose	2
Need for the Study	2
Research Questions	8
Chapter II	
Review of the Literature	9
Purpose	9
Introduction	9
Historical Perspective	10
Music and Learning	13
Music and Study Habits	16
Different Types of Music	18
Musical Repetition	20
Music and Memory	20
Summary	21
Chapter III	
Design of the Study	22
Purpose	22
Null Hypothesis	22
Methodology	23
Analysis of the Data	27
Summary	27

TABLE OF CONTENTS (CONTINUED)

	PAGE
Chapter IV	
Findings and Interpretation of Data	28
Purpose	28
Analysis of the Data	28
Chapter V	
Conclusions and Implications	35
Purpose	35
Conclusions	35
Implications for the Classroom	37
Implications for Future Research	38
Final Statements	40
References	42
Appendices	42

LIST OF TABLES

Table	Page
1. Analysis of variance between the control group (no music) and the experimental group (Mozart and preferred music)	30
2. Analysis of Variance between Special Education Students and Regular Education students (including Academically Talented, skills lab, and Attention Deficit Disorder/ Hyperactivity Disorder)	31
3. Analysis of Variance between Studying in the Morning and Studying in the Afternoon	32

I wish to dedicate this thesis to my husband Steve and my mother Sandra for their ongoing support, patience and believing in me. For without them, none of this would have been possible. I also want to thank my dog Shasta, my cat Buster, my family members and many friends who never gave up hope for me to officially complete my masters program.

I wish to thank my students at Honeoye Falls-Lima Middle School for allowing me to conduct this study during their reading classes.

Lastly, I would like to thank all of my graduating classmates, especially Sheila Spiesz, and my professors for their support throughout my studies at SUNY Brockport.

Thank you

CHAPTER I

STATEMENT OF THE PROBLEM

Purpose of the Study

The purpose of this study was to examine the effect of background music on studying and retention of vocabulary terms.

Need for the Study

Music is used in a multitude of settings, including the enhancement of learning. Students are observed listening to music while completing their homework including pencil-and-paper tasks and reading passages while others prefer the solitude of the library. Some students are observed listening to head phones while others hide by themselves in a quiet corner (Avery, Eerkens, Hayashi, Owens, Tshako, & Yamashiro, 1996).

Extensive research has been conducted testing the effects of background music on concentration, test anxiety, productivity, reading and math performance, and attention. Results have been inconsistent and

controversial.

In 1976, Smith and Morris examined the music's impact on anxiety, concentration, and the performance of college students. They found that listening to stimulative or exciting music while taking a test increased the students' concern about their test performance. It also caused nervousness, tension, and uneasiness which interfered with their concentration. However, sedative music did not increase or decrease concern or tension, or interfere with the students' concentration.

Michel, Parker, Giorkas, and Werner (1982), conducted six different studies with seventh, eighth, and ninth graders who had reading levels two to four levels below grade level. They sought to determine if dichotic presentation of vocabulary words and their definitions in one ear and music in the other ear would result in improved vocabulary scores. In general, for most of the subjects, more gains were made when music was paired with words than when words were presented alone regardless of which ear was used.

Parente (1976), conducted a study testing whether preferred music was more or less distracting

than least preferred or quiet when taking the Stroop test. This researcher found that performance was better without music or most preferred than least preferred music. He also concluded that music does not affect people in the same way as noise when comparing his results with those done by Houston (1967, 1969).

Katsh and Merle-Fishman (1985), state that although particular pieces or types of music evoke common responses among people, personal preference is the single most important factor in determining a person's emotional response to music. They also state that a person's personality, mood at the time of listening, personal association to the words (if any), and physical environment are other factors to consider. Different people have different reactions to various kinds of music.

Katsh et al. (1985) discussed that people need to know which kinds of music help them concentrate and which may be too distracting. A piece of music with words, may be too distracting when reading a book but just right for looking through a magazine on a lazy afternoon. They also stated that stimulating music could help people balance their checkbooks but

relaxing music may help the same people study for a test.

It is clear that there are many factors that affect students' studying habits. One of the factors affecting today's youth is listening to different kinds of music. Today, children have portable compact disc, radio, and cassette players that go with them everywhere. Scholars who study the lives of people around the world tell us that music is present in all known cultures. According to Merriam (1964), "There is probably no other human cultural activity which is so pervasive as music, which reaches into, shapes, and often controls so much of human behavior" (p.218).

Music is used almost endlessly in our everyday lives. Music is heard on the television and radio, in places of business, at church, at sporting events, during concerts and dances, at home, and at school. People spend billions of dollars annually on tape recordings, compact disc players, portable cassette players, tickets to concerts, and musical instruments. Music is enjoyed by the young and old, rich and poor, male and female, and people from all walks of life (Davis, Gfeller, & Thaut, 1992).

This study sought to examine the effects music

has on sixth graders when they are studying vocabulary terms. Research has been conducted on the use of music in a variety of settings and for many years. It is certain that as culture changes, music also changes over time. Research with music needs to continue as changes over time take place.

As an educator, I have observed not only the changes in my own personal preferences for music but also how students' preferences change. A radio station will play the top ten songs but the top ten list changes each week. It may be due to over playing the songs on the radio and their uniqueness declining but also new songs evoke interest in the audience.

In school, I hear students talking with each other about new songs or bands that have come about. They often discuss what makes them interesting or unusual. Within a few weeks, the students are discussing another group and no longer speak of the previous discussed group. Musical arousal changes as students mature and develop but also is significantly affected by their peers' influences.

During my experiences as an educator, I have allowed students to listen to music while completing tasks. I have noticed that my anxious or excitable

students accomplish more work when they have their headsets on their head while working. They have told me that it helps them to focus on their work rather than the other distractions around them.

I have also observed the opposite with students who have difficulty concentrating on more than one thing at a time. The headsets tend to keep them focused on the music rather than the task they are trying to complete. From my observations, I believe that everyone is different in how they relate to music as a background noise. I wanted to conduct this research to look at different types of background music but also to analyze the differences in the subjects that I teach ranging from learning disabled to academically talented. I am interested in today's preferred music of sixth graders compared with the classical music of the past. From an historical perspective, studies indicated that subjects did not have statistically different results no matter what music they listened to or if they listened to music at all (Mitchell, 1949; Freeburne & Fleischer, 1952).

Research Questions

1. Is music adversely affecting or enhancing children's studying habits?
2. Is there a differential effect for special education students in their study habits while listening to music?

CHAPTER II

REVIEW OF THE LITERATURE

Purpose of the Study

The purpose of this study was to examine the effect of background music on studying and retention of vocabulary terms.

Introduction

Music is an integral part of who we are as individuals. Botwinick (1997) refers to Campbell, Campbell and Dickinson's (1996) statement:

Music is undoubtedly one of the oldest art forms, utilizing the human voice and body as natural instruments and means of self expression. It is an art that comes into the world with us. We live with our mother's heartbeat for nine months before we are born. We live with the rhythms of our own heartbeat and respiration and the more subtle rhythms of metabolic and brain wave activity. We are all inherently musical and can develop this capacity in ourselves and in others. (p. 51)

Historical Perspective

Since early civilizations, music has been used to heal the sick and weary. In tribal societies, the "medicine man" often applies the healing through magic and music. Preliterate societies vary in the style of music and the way the healing takes place and the musician/healer usually does not act alone. Choruses will help provide the comfort and recovery for the ill (Davis, Gfeller, & Thaut, 1992).

In ancient Greece, according to Davis et al. (1992) "music was regarded as a special force over thought, emotion, and physical health. Healing shrines and temples included hymn specialists" (p. 19). Greeks believed that music could directly influence a person's emotions and build his or her character. Greek philosophers that prescribed music included Plato, Aristotle, and Caelius Aurelianus (Davis, et al.,1992).

With the rise of Christianity in Western Civilization, hospitals were established but music was still regarded as a healing force with the sick. Hymns were believed to be effective against certain respiratory illnesses. During the Renaissance, music was used as a remedy for despair and madness but

doctors also prescribed it as medicine to their patients. Usually the rich could afford to attend the live performances and it became very popular with the spread of the Black Plague and other epidemics (Davis, Gfeller, & Thaut, 1992).

Music has been used in the United States since the late eighteenth century to treat physical and mental illnesses. Heller (1987) refers to an early article published in *Columbian Magazine* in 1789 by an anonymous author developing a case for using music to influence and regulate a person's emotional conditions. The author made a conclusion that a person's mental state may affect physical health. The author also stated that music was proven to be therapeutic. Another important point stated was that using music in treatment needs to be carried out by a trained person. The author did base his conclusions on anecdotal evidence.

The use of music in education began in the nineteenth century. In 1832, Perkins School for the Blind included music within its curriculum. At the American Asylum for the Deaf in Connecticut a successful music program was established from 1845 - 1850. Music also began to be developed for the

physically disabled students (Davis, Gfeller, & Thaut, 1992).

Music Therapy did not become a growing field until the middle of the twentieth century. At this point college began offering programs to train music therapists. Students were educated on ways that music can be used educationally and in hospitals. The National Association for Music Therapy was founded in 1950 and it focused its attention on improving educational and clinical training. As of 1990, there were more than 3000 registered Music Therapists (Davis et al.,1992).

Records indicate that formal research on the effects of music has been conducted since the early nineteen hundreds. Cantril and Allport (1935) reported that a majority of students study while listening to their radios(68 percent). Freeburne and Fleischer (1952) tested the effects of background music upon reading rate and reading comprehension. They had college students read a prepared selection of Russian history with four different types of music playing (classical, semi-classical, popular, and jazz). The control group read without music. After thirty minutes of reading, a fifty-item comprehension test

was given to all five groups. This experiment revealed no significant differences in the performance of the groups.

Mitchell (1949) found with ninety-one sixth grade students that the reading achievement of the whole group was not affected by a musical radio program. He also found that the students with I.Q.'s above 100 made a significant gain in reading achievement when listening to music. Students with I.Q.'s between 90 and 100 were slightly affected by the musical program and students with I.Q.'s lower than 90 were not affected by the music. Hall (1952) also found that 58% of 245 eighth and ninth graders, when tested on reading comprehension, their scores increased when music was played in the background. In contrast, Fogelson (1973) found the opposite when she played popular instrumental music during a reading test (Iowa Tests of Basic Skills) with eighth graders. The students' performance was lowered with the distraction.

Music and Learning

A long held and still widely accepted belief is

that environmental distracters negatively affect children's learning and performance but Cool, Yarbrough, Patton, Runde, and Keith (1994) found in a study with sixth graders data that supported the notion that attention is flexible and adaptable to the setting and type of task being performed. Treisman (1969) made the assumption that human capacity for informational input is finite and limited so the addition of distracters can adversely affect the memory capacity after she conducted several different studies related to man's selective attention. She also states a message that is heard that may be considered important, will be understood but an unimportant message may be selectively blocked out.

Kahneman (1973) noted that excessive amounts of stimulation, occurring as an environmental distraction, can overload the information-processing system and cause performance error. In addition, Aks and Coren (1990) found during a study with 272 university students, such overloading (visual and auditory distractions) should occur more often with individuals with learning disabilities or lower intellectual capacity as indicated by their scores on a series of tests including the Wonderlic Personality

Test, the Quick Test, the Wechsler Adult Intelligence Scale, and the Spelling Component Test.

Beentjes, Koolstra, and van der Voort (1996) surveyed eighth and tenth graders to find out how often they combined background media with their homework assignments and what kind of effect it had on their learning. Results indicated that the frequency with which students combined homework and media depended on the type of schoolwork, type of background media (audio or television), and the student's level of education. In general, the students reported that their performance on learning assignments (reading and studying) was impaired by the distracters, but on paper-and-pencil assignments, their performance somewhat increased with the distracters.

Cool, Yarbrough, Patton, Runde, and Keith(1994) conducted two small scale experiments with eleven, twelve, and thirteen year olds. In the first, each student worked alone on mathematics assignments under three distracter conditions: quiet, self-selected and self-regulated radio; and self-selected and self-regulated television. In the second experiment each student worked alone on reading assignments under

the same conditions as the first experiment. They found that the students tended to perform best in quiet and poorest with the television, but the differences found were not statistically significant in either experiment. The results may indicate that attention is flexible and adaptable.

There is a lack of current research studies that have been conducted recently. Many studies have focused on music being used in the medical profession and few have focused on the classroom implications.

Music and Study Habits

Research on the effects of music on learning has also looked at the subjects' prior and current study habits. Subjects who seldom studied with background music showed better comprehension when they learned in silence while those who frequently studied with music performed better in the presence of music (Etaugh & Ptasnik, 1982). Etaugh and Michals (1975) established that the more frequently students reported studying to music, the less music impaired their performance. They also detected that males studied to music more frequently than females. This

supported Wolf and Weiner's (1972) hypothesis that unfamiliar sounds are more distracting than familiar ones. Hilliard and Tolin (1979) concluded that scores on a reading comprehension task with familiar music playing in the background were higher than those with unfamiliar music playing.

Daoussis and McKelvie (1986) conducted a study with 48 undergraduate students. They classified them as either being easily aroused or as having low levels of arousal according to the Eysenck Personality Inventory. They discovered that subjects who possess low levels of arousal performed the same under different conditions (silence or various kinds of music) while subjects who are easily aroused performed best under silent conditions where they were least likely to become stimulated by any form of music. Low level arousal subjects also reported studying to music twice as frequently as easily aroused subjects. Both groups indicated that when they played background music, the volume was kept soft. This study indicates that the effects of music may depend on individual differences or personalities.

Different Types of Music

Music has been used in a variety of educational and therapeutic settings to enhance learning for normal and handicapped individuals. It has been effective in teaching academics and has been used to increase attentiveness. Belsham and Harman (1977) detected that instrumental rather than vocal appears to facilitate performance. In 1975, Peretti determined that classical music reduced anxiety during performance of a laboratory task, especially for females. De Mers (1996), conducted an experiment with 44 fifth grade students testing the effects of Mozart during a reading comprehension test. She found that the experimental group performed significantly better than the control group that was tested in a relatively quiet atmosphere.

In Denver, during the 1970's, a series of tests was done using plants and music. For many weeks similar plants were exposed to Bach, rock, and Eastern religious music. It was interesting that the roots and leaves of the plants exposed to the Indian music were the largest and healthiest compared to the other groups. The plants exposed to the Bach were larger

than normal plants. The plants exposed to the rock were smaller than the normal plants. Biochemical research has proven that certain foods release good brain chemicals. It is also possible that sound food may provide similar nutrition. There may be junk music just like there is junk food. Just as the plants responded negatively during testing with some music, types of music may not be healthy for us. There is also probability that certain music has no effect on some people but brings about various effects on others both positively and negatively (Campbell, 1983).

Because of the strong connection between music and emotions, a classroom with music can help create a positive emotional environment that is conducive to learning. Music can be used or created to express humor but can also be used to heighten suspense, sadness, tragedy, or joy of stories from history and literature (Botwinick, 1997). Quiet songs calm and comfort over-stimulated children. Teachers can create a climate of joy, understanding, and acceptance with songs. Music can take the edge off of transitions within the classroom (Handy, 1994).

Musical Repetition

A device which has been recognized as essential to music is repetition. Instrumental music that is without repetition puts a strain on the audience. Music critics believe the need for repetition is necessary for pleasure of music. The audience finds pleasure when the music lacks repetition for a moment and then a familiar pattern returns. Mozart wrote in a letter to his father, " I began with two violins only, piano for the first eight bars followed instantly by a forte; the audience, as I expected, said 'hush' at the beginning, and when they heard the forte, began at once to clap their hands." Mozart used familiar patterns within his concertos which pleased his audiences (Feder, Karmel, & Polluck, 1990).

Music and Memory

Morton, Kershner, and Siegel (1990) reported, in their study with 10-12 year old males, that prior exposure to music reduced distractibility and increased their memory capacity. They concluded that children with short-term memory difficulties due to anxiety or personality, may benefit from exposure to

music prior to short-term memory tasks.

Summary

Time spent doing something quietly with soft background music playing can reduce tension and anxiety which leads to increased concentration and retention. Listening to ceremonious pieces of instrumental music with strong and simple melodies can lead children to relax and feel an inner quiet which enhances increasing achievement (Frey, 1980). According to Strauss (1985):

There is nothing more emotionally powerful than music. It expresses all of our emotions and sets us free within our souls. Music can be used for more than pleasure. It can rest and relax us at the deepest levels of our being. (pg. 8)

CHAPTER III

DESIGN OF THE STUDY

Purpose of the Study

The purpose of this study was to examine the effects of background music on studying and retention of vocabulary terms.

Null Hypotheses

1. There will be no statistically significant differences between the mean test scores of studying vocabulary terms without music(control) and studying with music(experimental).
2. There will be no statistically significant interactions between types of music and length of time between studying and testing.
3. There will be no statistically significant differences between Special Education students and Regular Education students, including academically talented, skills lab, and Attention Deficit Disorder and Attention Deficit Hyperactivity Disorder.

4. There will be no statistically significant differences between studying in the morning and studying in the afternoon.

Methodology

Subjects:

The subjects consisted of 37 heterogeneously grouped sixth grade students (13 girls and 24 boys) in a blended program. The school was located in suburban western New York. In addition to 19 regular education students, five were defined as academically talented, nine were classified special education and six received support services such as reading, writing, study skills, or math lab. Four of the regular education students were diagnosed with Attention Deficit Disorder or Attention Deficit Hyperactivity Disorder.

Materials/Instruments:

Three different vocabulary lists (10 words on each) were developed by the researcher. They were

selected by the researcher based on her familiarity of the sixth grade students and the chosen novel. All of the vocabulary came directly from a novel called The View From Saturday by E.L.Konigsburg, a reading selection used within the students' reading class.

Two classical selections were used as background music. They were Mozart Piano Concerto No. 21, C Major, K.467 (7:48 minutes) and Mozart Serenade in G Major, K.525 (4:26 minutes) were used as background music in the second study session. It was necessary, for the purpose of this study, to use two Mozart selections that would fulfill the requirement of ten minutes

To determine the preferred choice of music, a survey was developed by a group of math students during their statistics unit project. The results of their survey indicated the most preferred selection of music and the number of students that study at home with background music.

According to the results of this survey, 17 out of 37 students (46%) preferred Will Smith, 13 out of 37 students (35%) preferred Puff Daddy, and 7 out of 37 (19%) preferred other choices. Their music selections "Men In Black" by Will Smith and "I'll Be Missing You"

by Puff Daddy were played in the background of the third vocabulary studying session.

Procedures:

The first vocabulary list was distributed to all students to study, without any background music. The teacher read the list out loud so that students would not have decoding limitations and students were allowed to ask questions about any of the words prior to the study session. They were given seven minutes to study the words and their definitions alone and an additional three minutes to quiz a classmate. At the end of the ten minutes, the lists were collected by the teacher/researcher. Students were then given a test with the list of vocabulary words. Students were asked to write, in their own words, the correct definition next to each word. Students were not expected to worry about correct spelling. They were given half credit for partial definitions. They had ten minutes to complete the test. Students were again tested the following day and seven days later to see if the definitions were retained over time. Each of the three tests had the words in a different order to avoid

repetition with the list's sequence.

In the next session (eight days later than the first), the second vocabulary list was distributed, following the same procedures as the first, however Mozart was playing softly in the background during the full ten minutes. In the last session (eight days later than the second session), students received the third list, following the same procedures, however a preferred choice of music was playing softly in the background. Both music sessions were played at the exact same volume. The survey was administered to find the preferred choice of music before the second session.

Before the actual studying and testing procedures were administered, students had exposure to studying similar vocabulary lists with different kinds of music. They also were tested using the same approach as used in this study. This allowed familiarity with the music, studying, and testing approach so as to not affect the results found. Also, all three lists were distributed prior to students having exposure to the vocabulary within the context of the novel.

Analysis of the Data

The results of the tests were calculated and charted quantitatively according to the type of setting, time of test, time of day, and type of student. Comparisons between studying without music, studying with Mozart, and studying with their preferred music were calculated.

An analysis of variance was used to compare the mean test scores of no music (control) and Mozart and preferred music preference (experimental).

Summary

This study was an attempt to find a relationship between playing of background music and studying and retaining vocabulary terms. It was theorized that sixth graders learn and remember more vocabulary terms in a room with low background music playing, specifically Mozart, than in a relatively quiet classroom.

CHAPTER IV

FINDINGS AND INTERPRETATION OF DATA

Purpose of the Study

The purpose of this study was to examine the effect of background music on studying and retention of vocabulary terms.

Analysis of the Data

The first null hypothesis of this study states that there will be no statistically significant difference between the mean test scores of studying vocabulary terms without music(control) and studying with music(experimental).

A two-factor with replication analysis of variance was used to compare the mean vocabulary test scores between the control group(studying without music) and the experimental groups (studying with Mozart and preferred music), between different types of subjects, and studying in the morning and the afternoon. The same students were used for all studying and testing sessions therefore they were of

equal ability.

The results of the analysis of variance showed that there was a statistically significant difference between the study sessions and therefore rejected the null hypothesis, indicating that background music did affect students' retention of vocabulary terms (See Table 1). This study also showed that there was no statistically significant interactions between types of music and length of time between studying and testing.

Table 1

Analysis of variance between the control group (no music) and the experimental groups (Mozart and preferred music).

	No Music	Mozart	Preferred	Total
TRIAL 1				
Subjects	37	37	37	111
Sum	302	334.5	263	899.5
Mean	8.16	9.04	7.10	8.10
Variance	2.66	1.88	9.69	5.29
SD	1.63	1.37	3.11	2.30
TRIAL 2				
Subjects	37	37	37	111
Sum	261	309	201.5	771.5
Mean	7.05	8.35	5.44	6.95
Variance	5.27	3.60	11.08	7.95
SD	2.29	1.89	3.32	2.82
TRIAL 3				
Subjects	37	37	37	111
Sum	230	278	189	697
Mean	6.21	7.51	5.10	6.27
Variance	6.17	6.15	9.40	8.08
SD	2.48	2.48	3.06	2.84
TOTAL				
Subjects	111	111	111	
Sum	793	921.5	653.5	
Mean	7.14	8.30	5.88	
Variance	5.26	4.20	10.64	
SD	2.29	2.05	3.26	
Source of Variation				
	<i>df</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Sample	2	15.20	4.88	3.02
Columns	2	26.03	3.26	3.02
Interaction	4	0.38	0.81	2.39
Within	324			

This study also showed there was no significant difference between the special education students and the other four groups therefore the null hypothesis was not rejected (See Table 2).

Table 2

Analysis of Variance between Special Education Students and Regular Education Students (including academically talented, skills lab, and Attention Deficit Disorder/Hyperactivity) Disorder

GROUPS	Subjects	Mean	Variance	SD
Academically Talented	5	8.8	1.2	1.09
Special Education	9	7.33	3.31	1.82
Regular Education	11	8.81	2.16	1.47
ADD or ADHD	5	8.2	3.7	1.92
Skills Lab	7	8	2.41	1.55

Source of Variation	df	F	P-value	F crit
Between Groups	4	1.26	0.30	2.66
Within Groups	32			

This study showed that there was a statistically significant difference between studying in the afternoon and studying in the morning therefore rejected the null hypothesis (See Table 3).

Table 3**Analysis of Variance Between Studying in the Morning and Studying in the Afternoon**

	Morning	Afternoon	Total	
NO MUSIC				
Mean	8	8.12	8.06	
Variance	2	2.98	2.41	
SD	1.41	1.72	1.55	
MOZART				
Mean	9.34	8.68	9.01	
Variance	0.69	3.29	2.04	
SD	0.83	1.81	1.42	
PREFERRED MUSIC				
Mean	8.5	5.59	7.04	
Variance	4.1	13.97	10.92	
SD	2.02	3.73	3.30	
TOTAL				
Mean	8.61	7.46		
Variance	2.48	8.31		
SD	1.57	2.88		
Source of Variation				
Sample	2	6.88	0.001	3.09
Columns	1	6.99	0.009	3.94
Interaction	2	4.39	0.015	3.09
Within	90			

Summary

A two-factor with replication analysis of variance was used to compare the test scores of the control group and the experimental (Mozart and preferred music) groups. The data results show that these groups were equal in ability because they were the same subjects for all three sessions. The analysis rejected the null hypothesis, indicating that Mozart used as background music positively affected the test scores of vocabulary terms and the preferred music negatively affected the test scores. It also indicated that there was no statistically significant interaction between the types of music and the length of time between studying and testing.

A two-factor with replication analysis of variance was used to compare the test scores of the special education students and the regular education students. The data showed that there was no significant difference between special education students and regular education students (academically talented, skills lab, and attention deficit children). Special education students scored slightly but not significantly

lower than the other groups of students on all three tests therefore the null hypothesis was not rejected, indicating that students performed the same in all groups.

A two-factor with replication analysis of variance was used to compare the test scores of students studying in the morning and students studying in the afternoon. The data showed that there was a significant difference between studying during the morning and studying in the afternoon. The null hypothesis was rejected, indicating that students performed better in the morning compared to the afternoon.

CHAPTER V

CONCLUSIONS AND IMPLICATIONS

Purpose of the Study

The purpose of this study was to examine the effect of background music on studying and retention of vocabulary terms.

Conclusions

This study investigated the effect of background music on studying of vocabulary terms. The null hypothesis was rejected and a statistical significance was found. Test scores were highest in the experimental group listening to Mozart as background music and lowest in the experimental group listening to preferred musical selections. The students were preconditioned to the different styles of music but also to the studying and testing procedures. The Mozart appeared to enhance their retention of terms while studying. The results also indicated that the vocabulary studied while listening to Mozart was retained longer than the other two studying sessions.

This study also found that students with learning disabilities that are labeled as such do slightly but not significantly poorer on a test after studying for ten minutes with or without music than students that are considered regular education. Also this study determined with this small sample that studying and testing in the morning is significantly better than studying and testing in the afternoon.

This study was completed with a small sample of students over a short period of time. Study habits prior to the study varied with each individual. Different ways of studying and habits may have changed and developed over the course of the study. The attempt was made to enhance overall retention through the use of background music. The experimental group was only exposed to three kinds of music, two of which they helped to pick.

Future testing should look at more individualized studying procedures where the students truly choose their preferred music for and by themselves. Perhaps if the students were studying alone with headsets on and their own choice of music, their overall academic performance may have improved. Also they may have not been distracted by other students' reactions of the

music being played. Having control over the volume of the music may also be a key factor in determining the overall effectiveness. In this study the tape player was placed in the center at the front of the room. The students seated closer to the player may have different results than students seated farther away.

According to my observations, I think students did better with Mozart because it consisted of instrumental music. The preferred music had words sung with the instrumental and I observed students singing the words to the songs while studying. I therefore concluded that the extraneous words interfered with the list of vocabulary they were expected to remember at the end of the session.

Implications for the Classroom

The classroom teacher may want to allow students to wear their walkmans while partaking in studying kinds of activities. It may allow students to concentrate better and therefore enable the students to have better retention of the material to be learned.

It also may prove to lessen the other distractions that the students may experience around them. The students enjoyed having the music played and requested background music to be played at other times of the day as well, during individual tasks, group activities and testing times.

The music in the classroom may allow students to feel less anxious and therefore they may attend to activities better. It also provides a more relaxed atmosphere. In this study, music (specifically Mozart) positively affected the overall atmosphere of the classroom. Students cheered when music was going to be played and were disappointed when it was turned off. Music is heard in many places other than school; why not extend it to the learning environment especially when it proves to be beneficial to the success of the children?

Implications for Further Research

Is background music the key to helping students concentrate better while studying and therefore improve the retention of the material learned? Does

music help all different types of children focus better? Could music help learning disabled or attention deficit disorder children have more success with learning tasks? Does the students' choice of music make a difference with the learning that takes place? Does the time of day affect the best learning with music playing as background? Does the task affect the usefulness of the music being played? Will the music of the future generations have different results than the preferred music of today? Does the background music depend on the type of music (classical, jazz, rock, alternative)played? Would the type of music have different effects on different tasks? Does the age of a person affect the way music impacts learning? Could music have different effects with younger or older children? Future research needs to address these questions.

There are a lot of unanswered questions. These questions may continue to be researched for many years to come because music and culture are always changing. One thing that was learned from this research is that music (Mozart specifically) did enhance students learning and retention. Did it also increase the students overall understanding of the

novel from which the words were chosen? Music should be kept in the regular classrooms as an enhancer to the current curriculum and more expansion of the overall effects should continue to be addressed and developed.

Final Statements

The findings of this study showed that retention of vocabulary increased with the playing of Mozart as background music. It also showed that long term retention was better with the Mozart than the students' preferred music and no music at all. The students enjoyed having the music playing in the classroom. It helped them to stay on task and concentrate better. Every classroom teacher should consider softly play background music during class time.

This study also allowed students to experience different types of music being played in their regular classroom. Some of the students found themselves enjoying Mozart even though they had not had exposure to it in the past. Because music is so much a

part of our everyday lives, it should be incorporated by educators. This study suggests that music can have a positive effect and educators should look towards ways of combining it into their everyday teaching plans.

References

Aks, D., & Coren, S. (1990). Is susceptibility to distraction related to mental ability? Journal of Educational Psychology, 82(2), 388-390.

Avery, S., Eerkens, B., Hayashi, A., Owens, R., Tshako, M., & Yamashiro, J. (1996). Effects of music volume and tempo on reading comprehension. URL address: <http://darkwing.uoregon.edu/~hayashi/>

Beentjes, J. Koolstra, C., & van der Voort, T. (1996). Combining background media with doing homework: Incidence of background media use and perceived effects. Communication Education, 45, 59-65.

Belsham, R., & Harman, D. (1977). Effect of vocal versus non-vocal music on visual recall. Perceptual and Motor Skills, 44, 857-858.

Botwinick, J. (1997). Developing musical/rhythmic intelligence to improve spelling skills. (CS012727) Edison Township Schools, New Jersey. (ERIC Document Reproduction Service No. ED 405 548)

Campbell, D. (1983) Introduction to the musical brain. St. Louis, MO: MMB Music.

Campbell, L., Campbell, B., & Dickinson, D. (1996) Teaching and learning through multiple intelligences. Needham Heights, MA: Allyn & Bacon.

Cantril, H., & Allport, G. (1935). The psychology of radio. New York: Harper and Brothers.

Cool, V., Yarbrough, D., Patton, J., Runde, R., & Keith, T. (1993). The effects of radio and television distractor on children's performance on mathematics and reading assignments. Journal of Experimental Education, 62(3), 181-194.

Davis, W., Gfeller, K., & Thaut, M. (1992). An introduction to music therapy. Dubuque, Indiana: Wm.C. Brown Publishers.

DeMers, A. (1996). The effect of background music on reading comprehension test scores. Master's thesis, State University of New York College at Brockport, Brockport, New York.

Daoussis, L., & McKelvie, S. (1986). Musical preferences and effects of music on a reading comprehension test for extroverts and introverts. Perceptual and Motor Skills, 62, 283-289.

Etaugh, C., & Michals, D. (1975). Effects on reading comprehension of preferred music and frequency of studying to music. Perceptual and Motor Skills, 41, 553-554.

Etaugh, C., & Ptasnik, P. (1982). Effects of studying to music and post-study relaxation on reading comprehension. Perceptual and Motor Skills, 55, 141-142.

Feder, S., Karmel, R., & Polluck, G. (1990) Psychoanalytic explorations in music. Madison, CT: International Universities.

Freeburne, C., & Fleischer, M. (1952). The effect of music distraction upon reading rate and comprehension. Journal of Educational Psychology, 43, 101-109.

Frey, H. (1980, May) Improving the performance of poor readers through autogenic relaxation training. The Reading Teacher, 928-932.

Fogelson, S. (1973). Music as a distractor on reading test performance of eighth grade students. Perceptual and Motor Skills,36, 1265-1266.

Hall, J. (1952). The effect of background music on the reading comprehension of 278 eighth and ninth grade students. Journal of Educational Research, 45, 451-458.

Handy, S. (1994). M.O.R.E.:Musically oriented relevant experience: A guide: Activities to support the music learning connection. Hilmar, CA: National Educational Network.

Hilliard, M., & Tolin, P. (1979). Effect of familiarity with background music on performance of simple and difficult reading tasks. Perceptual and Motor Skills, 49, 713-714.

Houston, B. (1969). Noise, task difficulty, and Stroop color-word performance. Journal of Experimental Psychology, 82, 403-404.

Houston, B. & Jones, T. (1967). Distraction and Stroop color-word performance. Journal of Experimental Psychology, 74, 54-56.

Kahneman, D. (1973). Attention and effort. Englewood Cliffs, NJ:Prentice Hall.

Katsh, S. & Merle-Fishman, C. (1985). The music within you. New York: Simon and Schuster.

Merriam, A. (1964). The anthropology of music. Evanston, IL:Northwestern University Press.

Michel, D., Parker, P., Giokas, D. & Werner, J. (1982). Music therapy and remedial reading:Six studies testing specialized hemispheric processing. Journal of Music Therapy,14 (4), 219-229.

Mitchell, A. (1949). The effect of radio programs on silent reading achievement of ninety-one sixth grade students. Journal of Educational Psychology, 42, 468-470.

Morton, L., Kershner, J., & Siegel, L. (1990). The potential for therapeutic applications of music on problems related to memory and attention. Journal of Music Therapy, 27(4), 195-208.

Peretti, P. (1975). Changes in galvanic skin response as affected by musical selection and academic discipline. Journal of Psychology, 89, 183-187.

Parente, J. (1976). Music preference as a factor of music distraction. Perceptual and Motor Skills, 43, 337-338.

Strauss, S. (1985). Inner rhythm. San Francisco: Chase Publications.

Treisman, A. (1969). Selective attention in man. British Medical Bulletin, 20, 12-26.

Wolf, R., & Weiner, F. (1972). Effects of four noise conditions on arithmetic performance. Perceptual and Motor Skills, 35, 928-930.

Appendix A

Novel: The View From Saturday Vocabulary List #1

1. **elimination (n)** - condition of removing something.
Example: Each contest had been an elimination round.
2. **decorum (n)** - conforming to social standards or being decent. Example: Suzie's bedroom decorum was perfect for her slumber party.
3. **brawn (n)** - muscles or strength.
Example: They were reminded that the academic bowl was for brains not brawn.
4. **waddling (v)** - walk with a rocking gait like a duck.
Example: When turtles push their way out of the sand and start waddling towards the water's edge, they look like a bunch of wind up toys from Toys"R"Us.
5. **incandescently (adj.)** - glowing with heat, so as to give off light.
Example: Mrs. Olinski knew that Nadia Diamondstein was not only incandescently beautiful but was also a star.
6. **bated (adj.)** - shortness or less of something.
Example: She waited with bated (and visible) breath.
7. **derive (v)** - to trace origin or descent of.
Example: Calligraphy is derived from what language?
8. **domiciles (pl. n)** - homes.
Example: Many of the domiciles in Century Village do not have family rooms with desks.
9. **dictatorial (adj.)** - bossy and overbearing.
Example: Mrs. Sharkey who taught sixth grade math accused Mrs. Olinski of being dictatorial.
10. **ironic (adj.)** - contrast between what you expect to happen and what really happens. Example: "Isn't it ironic that my father is getting married while I'm in the process of getting divorced?"

Appendix B

Name:

Vocabulary List #1 Test

1. **ironic -**
2. **incandescently -**
3. **waddling -**
4. **decorum -**
5. **bated -**
6. **brawn -**
7. **dictatorial -**
8. **derive -**
9. **domiciles -**
10. **elimination -**

Appendix C

Name:

Vocabulary List #1 Test #2

1. waddling -
2. ironic -
3. incandescently -
4. elimination -
5. bated -
6. brawn -
7. dictatorial -
8. decorum -
9. derive -
10. domiciles -

Appendix D

Name:

Vocabulary List #1 Test #3

1. dictatorial -
2. bated -
3. waddling -
4. brawn -
5. elimination -
6. domiciles -
7. incandescently -
8. derive -
9. decorum -
10. ironic -

Appendix E

Novel: The View From Saturday

Vocabulary List #2

1. paraplegic (n)- person who is physically disabled or handicapped.
Example: Mrs. Olinski was a paraplegic.
2. feeble (adj.) - weak.
Example: When the bus stopped, in a feeble attempt to postpone the inevitable, I pretended to be looking for something.
3. accessible (adj.) - capable of being reached.
Example: We must make Sillington House handicapped accessible before we are ready for occupancy.
4. sprawl (n) - relaxed, ungraceful position.
Example: Before I could resume my seat occupied sprawl, the kid was standing in the aisle next to my seat.
5. itinerant (adj.) - traveling.
Examples: Mrs. Sillington used to always feed the itinerant farmhands supper.
6. suffragette (n) - woman fighting for women's right to vote.
Example: My triple great grandmother was a suffragette and she was arrested.
7. parceled (v) - divided or split.
Example: None of the residents liked the idea of having the Sillington Place parceled off as a subdivision.
8. sarcasm (n) - bitterness in one's voice.
Example: Dad was so preoccupied with time that he did not even notice the sarcasm in my voice.
9. hovered (v) - remain in one place.
Example: He hovered over me.
10. pathetic (adj.) - sad or calling forth sympathy.
Example: Afternoon talk shows on television are pathetic.

Appendix F

Name:

Vocabulary List #2 Test

1. hovered -
2. itinerant -
3. suffragette -
4. sarcasm -
5. accessible -
6. paraplegic -
7. feeble -
8. parceled -
9. pathetic -
10. sprawl -

Appendix G

Name:

Vocabulary List #2 Test #2

1. parceled -
2. feeble -
3. accessible -
4. paraplegic -
5. itinerant -
6. sprawl -
7. suffragette -
8. sarcasm -
9. hovered -
10. pathetic -

Appendix H

Name:

Vocabulary List #2 Test #3

1. feeble -
2. accessible -
3. itinerant -
4. hovered -
5. suffragette -
6. paraplegic -
7. parceled -
8. pathetic -
9. sarcasm -
10. sprawl -

Appendix I

Novel : The View From Saturday

Vocabulary List #3

1. trajectory (n) - curved path of a body hurled horizontally in space. Example: Its sound rocketed forward, and the laughter that followed traveled the same trajectory.

2. ambled (v) - walk slowly.
Example: He ambled down his row towards the front of the room.

3. vanquished (adj.) - conquered or defeated.
Example: Soon the vanquished seventh graders chose to cheer for the sixth grade.

4. profound (adj.) - deep in feelings.
Example: The victory was so profound that there was a chance that the sixth grade might beat the seventh grade.

5. mediocre (adj.) - medium excellence or ordinary.
Example: Mrs. Sharkey thought the seventh grade class was mediocre.

6. tolerance (n) - patience with others.
Example: Mrs. Olinski had great tolerance for mischief.

7. maneuvered (v) - swift strategic movements like used by troops. Example: Mr. Singh maneuvered her wheelchair to a table in the back of the dining room.

8. vulgar (adj.) - crude or unpolished.
Example: It was her vulgar language that got her in trouble.

9. malice (n) - harm or spite.
Example: There is a mean quality to malice.

10. debut (n) - first appearance on stage.
Example: Alice's mother was about to make her big debut.

Appendix J

Name:

Vocabulary List #3 Test

1. malice -
2. vulgar -
3. debut -
4. mediocre -
5. ambled -
6. vanquished -
7. trajectory -
8. profound -
9. tolerance -
10. maneuver -

Appendix K

Name:

Vocabulary List #3 Test #2

1. vulgar -
2. malice -
3. trajectory -
4. maneuver -
5. tolerance -
6. profound -
7. vanquished -
8. ambled -
9. debut -
10. mediocre -

Appendix L

Name:

Vocabulary List #3 Test #3

1. debut -
2. maneuver -
3. tolerance -
4. malice -
5. vulgar -
6. trajectory -
7. mediocre -
8. vanquished -
9. ambled -
10. profound -