

**A STUDY OF THE EFFECT
OF BAROQUE CLASSICAL MUSIC ON
PRE-FIRST GRADERS' PERFORMANCE
ON A GROUP READING TEST**

THESIS

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Abstract

The purpose of this study was to determine if the playing of Baroque Classical music during the administration of a group reading test would affect the performance of Pre-first graders on the test.

Statistical analysis of control and experimental reading scores of Pre-first graders on the Gates-MacGinire Reading Test revealed the following results. The playing of Baroque Classical music during testing did not significantly affect reading scores. Although no statistically significant change in reading achievement occurred, a trend towards improvement was apparent. This trend was evidenced by an overall increase in stanine score among the students.

Small sample size and a sample not indicative of the general population were limiting factors of this study. Further investigation in this area is warranted.

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CHAPTER I

STATEMENT OF THE PROBLEM

In today's fast-paced society with its emphasis on high performance and "quick turnover," stress permeates the lives of everyone, from the high powered executive on the "red-eye" to New York, to the first grader struggling with the concept of reading. Stress is, in fact, the driving force behind the need to grow and develop, but it is the inability to manage this stress effectively which is at the root of many of our mental and physical disorders today (*Benson, 1975; Girdano, 1979*).

A state of relaxation, which is the antithesis of a stress-response, is the optimum mental and physical state to achieve in order to maximize productivity and relieve oneself of stress-related disorders. The effects of relaxation training on these stress-related disorders, and as a basic stress management tool have been well documented (*Benson, 1975*).

There are many different, possible components to a program of relaxation training. These components can be used singularly or in conjunction with each other and include such methods as meditation, guided imagery, autogenic training, progressive muscle relaxation, deep breathing, biofeedback, the Quieting Reflex and musical quietness.

Inherent in the terminology "Relaxation Training" is the idea that one must be schooled in one or more of the various methods in order to achieve the desired state of relaxation. The level of training necessary ranges from extensive, as is the case of biofeedback, to minimal, as in deep-breathing; to virtually non-existent for musical quietness.

It is exactly this "non-training" aspect of musical quietness that makes it appealing for use in the average classroom. The training involved in all of the other relaxation methods limits its accessibility and practicality for the majority of teachers and students. No one would argue that there is already too little time in the school day to accomplish anything more than is mandated by the curriculum. Conversely you would also be hard pressed to find someone to argue with the belief that relaxation training can have a positive effect on both teachers (*Alexandra, 1984; Frey, 1980*) and students (*Dendato, Diener, 1986; Frey, 1980; Hiebert, 1985; Oldfield; Petosa, 1986; Zenker, 1984; Zenker, Frey, 1985, Zenker, Fava; Slaughter, 1986; Zenker, 1986*).

In conjunction with the fact that relaxation training can be time consuming, *Koepen (1974)* also notes that children can be reluctant to practice these skills under the watchful eyes of their peers. Would it be possible to alleviate these two problems and still achieve the desired state of relaxation and subsequent educational benefits?

If we incorporated musical quietness into the school curriculum and the everyday school experience would we reduce the level of anxiety experienced by both the teachers and students and would this reduction in stress result in a subsequent use in performance levels?

Purpose

The purpose of this study is to determine if the relaxation technique of musical quietness, using classical music from the Baroque period, could affect the performance of pre-first grader students on a group reading test.

The Question to be answered is:

Does the playing of classical music from the Baroque period, during a group reading test, significantly affect student performance?

Need for the Study

The negative effects of excessive stress can be debilitating to anyone who has not taken measures to meet the demands of life in a more relaxed, receptive manner (*Benson, 1975; Girdano 1979*). The stress-response, which is the body's natural reaction to a challenge, is appropriate when one is faced with a bear attack, but inappropriate when one is given a reading test (*Benson, 1975*).

Teachers and students must take an active role in creating a learning environment that does not impede the performance of those functioning in that environment. Change and adaptation (i.e. learning), especially in the highly socialized environment of a school, is a potent stress response trigger. Teachers naturally strive to create non-threatening experiences for their students to learn from and those with the time, knowledge and administrative support may also incorporate actual relaxation techniques into their daily curriculum. Research has shown repeatedly that relaxation training can be a positive force in the classroom (*Alexandra, 1984; Dendato; Dierner 1986; Frey, 1980; Hiebert, 1985; Oldfield; Petosa, 1986; Zenker; Fava; Slaughter, 1986; Zenker 1986*).

Unfortunately, because of the time and budget constraints, training teachers in relaxation techniques which they in turn must teach to their students, can make even the most liberal administrators (and teachers) wary. There is a need to examine the least time and cost-intensive relaxation techniques that are available today to find which are most

suited to creating a stable, relaxing school environment. Musical quietness is by far one of the simplest techniques to this end.

Limitations of the Study

By studying pre-first grade students who have already experienced some degree of failure in the typical kindergarten, it could be possible that this population may be overly anxious or many be shown in the future to have other learning difficulties not related to anxiety. Hence this sample is not indicative of the general population.

Furthermore, because of the unavailability of participants the sample size is unusually small for this type of study. A design which incorporated more than one class in a counter-balance design would have been preferable.

Also, because of the age of the students, the reading test given was a pre-reading evaluation. Although this test is a reliable and valid evaluative tool the students are utilizing visual and auditory discrimination without actually reading.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

This review of the literature examines research in the area of relaxation therapy in such diverse arenas as sport psychology, medicine and academics. Specific measures of anxiety and relaxation are also reviewed. This review of the literature is an attempt to show that while there is significant research in the areas of relaxation therapy, the effects of relaxation on learning, the effects of music on behavior; and the effects of music on learning, there is little research on the effect of playing relaxing music during a testing situation.

Relaxation Training

Hiebert (1985) hypothesized that it might be beneficial to implement relaxation training in a school setting before the onset of stress-related problems, thereby alleviating the need for a crisis-intervention approach. Using guidelines that he developed in 1980 for a self-instruction relaxation manual, Hiebert found that over a five week period nineteen 12th grade students were able to experience significant reductions in their state-anxiety, trait-anxiety and a wide range of stress-related symptoms (*Hiebert, 1985*).

Deep-muscle relaxation, combined with cognitive therapy to dispel irrational beliefs associated with testing and possible failure, was found to reduce anxiety in test-anxious college students (*Dendato; Diener, 1986*). Coupling this approach with study-skills training was also found to improve test performance (*Diener, 1986*).

Oldfield and Petosa (1986) found that the acquisition of relaxation skills positively influenced the ability of elementary students to be attentive in school and exhibit "on-task" behaviors.

Using deep breathing, muscle relaxation and visual imagery to lessen "internal distraction" and increase attention span *Zenker, Fava and Slaughter (1986)* were able to elicit a better quality of written responses from middle school students in the areas of length, content and handwriting. In addition, "students admitted that they felt more confident in their ability to concentrate on what they wanted to express" (p. 430).

In another study *Zenker (1984)* utilized the same relaxation techniques to help learning disabled students to attend to, and then to synthesize the retained information in the visual sequential-memory task of spelling. He found this method to be both practical and enjoyable for everyone involved.

Matthews and Quinn (1987) discovered that students practicing relaxation methods for either ten or twenty minute sessions before a high school typing class, both experience gains in the students' speed and accuracy while typing.

Noting the relationship between stress, anxiety and general poor performance in school, *Proeger and Myrick (1980)* were able to develop an experimentally tested deep muscle relaxation (DMR) program which includes the components of general goals, training objectives, arrangement of the setting, a training script, organization and facilitation of the DMR exercises, conducting group discussion and evaluating outcomes.

Because of this ease of administration self-report measures are invaluable in assessing the effects of relaxation training. *Crist, Rickard, Prentice-Dunn and Barker (1989)* were able to develop a 45 item questionnaire that measures physiological tension,

physical assessment and cognitive tension. Although they recommend further scientific evaluation of their self-report scale, initial results concerning reliability and validity are promising.

As an index of relaxation, *Fried (1987)* looked to breathing rate during biofeedback- assisted guided imagery. This study reported a decreased breathing rate, an indication of decreased metabolism (as shown by PETCO₂) and a change in EEG patterns similar to those found in "deep meditation" practitioners. These findings taken concurrently indicate a state of hypoarousal during relaxation that cannot be accounted for, or achieved by, the suggestion to "breathe slowly". Breathing rate of three to five breaths per minute that is achieved spontaneously by the subject is a good indication of the state of relaxation.

Relaxation and Sport Psychology

Stress in elite athletes in competitive situations is an area of interest among sport psychologists and trainers due to its dichotomous nature in relation to performance. Not enough stress reduces drive and competitiveness, while too much impedes performance.

When comparing the effects of post-hypnotic suggestion and relaxation with suggestion on competitive fencing anxiety and performance, *Wojcikiewicz and Orlick (1987)* found that both treatments reduced the perceived level anxiety among the athletes. Also, compared to the control group, both treatment groups rated the fencing task as less difficult, although no significant differences were found between the groups on fencing performance measures. A significant difference was found to exist between the athletes when broken down into high and low anxiety groups, with the low anxiety subjects

performing consistently better than the high anxiety subjects.

Greenspan and Feltz (1989), after reviewing psychological interventions with athletes in competitive situations, concluded that educational relaxation-based interventions and remedial cognitive restructuring interventions are, in general, effective in improving the performance of adult athletes in these situations. The different sports examined in the studies reviewed included gymnastics, basketball, ski-racing, tennis, shot-putting, figure skating, baseball batting, bowling, football, boxing and golf. The types of relaxation methods utilized included visual imagery (internal and external) progressive muscle relaxation, flotation tank immersion, EMG feedback and cognitive restructuring with rehearsal.

Murphy and Woolfolk (1987) examined the effects of cognitive interventions on competitive anxiety and performance of a fine motor skill accuracy task (putting a golf ball). Randomly assigned to the control and treatment groups were 61 undergraduates, 19 of which were rates as highly anxious in competitive sporting situations. The treatments consisted of a cognitive-behavioral relaxation-group and a "psyching-up" arousal group. When comparing levels of performance anxiety the relaxation group showed significant reductions in anxiety as well as a non-significant trend towards performance improvement. The arousal group failed to improve their performance.

Neiss (1988) also examined literature on the effects of arousal and relaxation on motor performance from a psychological perspective. Neiss found that categorizing all emotion (fear, anger, anxiety, sexuality, joy) as "arousal" (or being "psyched-up") is inappropriate because it discounts the role of cognition and groups all affect by the physiological state of arousal. The inability to differentiate between types of arousal (i.e.

fear and motivation) makes measurement and subsequent assignation of casualty on performance, suspect. Relaxation, with its concurrent psychological and physiological components, is a more valid state from which to determine causality. Neiss found, in the studies be reviewed, the suggestion that relaxation does indeed enhance motor performance in stressful situations. He recommends further vigorous study focusing on relaxation in relation to motor performance.

Relaxation and Medicine

Noting that the side effects of chemotherapy are aversive enough to cause patients to reject treatment altogether, *Burish and Jenkins (1992)* examined the effectiveness of using relaxation training and electromyographic (EMG) and skin-temperature (ST) biofeedback in conjunction with chemotherapy. They found that although EMG biofeedback and ST biofeedback alone did not produce positive results in reducing the side effects of chemotherapy, that when used in conjunction with progressive muscle relaxation training significant positive results were achieved (*Burish & Jenkins, 1992*). Progressive Muscle Relaxation Training with guided relaxation imagery alone, was also found to be an effective treatment in reducing the aversiveness of chemotherapy (*Burish & Jenkins, 1992*).

In examining changes after biofeedback and relaxation training for multiple-pain tension-headache patients, *LaCroix, Clark, Bock and Doxey (1986)* found significant levels of improvement in the patients. Comparing biofeedback, relaxation training and a combined treatment program they found similar levels of improvement across the experimental groups (*LaCroix, Clarke, Bock, & Doxey, 1986*).

Reflecting on the advent of Behavioral Medicine (the integration of behavioral and biomedical science) *Blumenthal (1985)* undertook the task of reviewing research on the major forms of relaxation and biofeedback and their applications for conditions such as pain, cardiovascular disorders and neurological abnormalities. He found that while relaxation is not a panacea for all medical problems it has proven to be a useful adjunct to traditional medical treatments. In fact, in some conditions, such as muscle-contraction headache, it is actually the treatment of choice.

Relaxation and the Learning Disabled or Hyperactive

Learning disabled students typically exhibit many behaviors indicative of the anxiety they experience from being in an educational situation. This anxiety is, of course, detrimental to their already compromised learning capabilities. Any hyperactivity amongst these students further exacerbates their difficulties. Hyperactive students who do not manifest the characteristics of the learning disabled are still at a disadvantage when it comes to attending to, and performing in, a school setting.

Brandson, Eason and Smith (1986) used behavioral relaxation training with three boys, aged eight through ten, who were identified as learning disabled with hyperactivity. After training they found a dramatic decrease in the number of unrelaxed behaviors for all three subjects. Also, the relaxation training facilitated their performance on an attention demanding motor task.

Four learning disabled students (male, aged twelve to fifteen years) were able to significantly improve their oral reading performances by listening to relaxation-tapes immediately prior to reading (*Margolis; Pica, 1987*). The tapes, "Peace, Harmony and

Awareness," consisted of instruction in progressive muscle relaxation; guided imagery, positive self-talk and relaxing music.

Omizo, Cubberly, Semands and Omizo (1986) were also able to achieve positive results using biofeedback and the "Peace, Harmony and Awareness" tapes. Their sample of 48 hyperactive male children (ages nine to eleven) performed significantly better on a paired-associate memory task after relaxation training.

Relaxation and Reading

Gentile and McMillan (1987), observing that a purely skill based approach does not alleviate anxiety for the student who views reading as threatening, recommend teaching self-regulating relaxation skills so as to offset any fight or flight stress response that will impede the learning process.

Didget (1983) found that techniques of deep muscle relaxation and guided imagery to be effective in reducing anxiety in her sample of third grade students. Although a trend towards an improvement in reading achievement was noted, this was not a statistically significant finding.

Zenker and Frey (1985), using visual imagery combined with deep breathing or muscle relaxation, were able to effect a statistically significant improvement in narrative prose reading comprehension in their sample of below average (IQ and achievement) 10th grade students.

Bradley and Thalgott (1987) found that the anxiety associated with reading that can impede progress for the dyslexic student can be alleviated through relaxation, visualization and a supportive classroom environment.

Russo (1984) notes that although severely anxious students can be identified and referred for professional help, it is the larger group of mildly anxious students and teachers who could also greatly benefit from a reduction in their anxiety while faced with the evaluative (testing) process. *Russo (1984)* advocated a multimodal approach with components such as study skills counseling, role playing, memory support techniques, positive imagery, behavioral contracting and cue-controlled relaxation techniques.

Interestingly, even young children can innately perceive the benefits of relaxation for everyone as demonstrated by the comment of one third grader, who, after six group sessions in relaxation training remarked, "Why don't you have these groups for teachers?" (*Kochendorfer, & Culp, 1979, p. 124*).

Music

Can music "soothe the savage beast?" While there is no research to directly confirm or refute this claim there is a plethora of research on what music, in fact, can do. *McCarthy (1985)* found that the components of music such as rhythm, melody, harmony, dynamics, form and mood are all qualities that the classroom teacher can utilize to help promote language development.

Hitz (1987) uses music to promote creative problem solving by encouraging children to become involved, take risks, accept divergent opinions and answer and participate within set boundaries.

Within the realm of speech-language therapy *Zoller (1991)* advocates the use of music not only as a nonverbal form of communication but also for its ability to relax; develop body image, vocabulary and concepts; establish word and phrase rhythms; and

exercise breath, vocalization and articulation.

In the world of pediatric medicine music can be a tool to assist children in relaxing during medical procedures. *Pfaff (1986)* found the music of George Winston, Steve Halpern and various Baroque composers to be useful as a auditory focal point, or distractor, when treating young cancer patients.

When examining the effect of music on pulse-rate, blood-pressure and final exam scores *Blanchard (1979)* found that both classical music and rock and roll minimized the nervous states of the students taking the exams and that these same students earned higher grades than their peers who had no musical accompaniment.

Applegate and Hamm (1985) used music in the accelerated learning resource room not only to calm and relax students but also to increase alertness and arousal level, focus attention, increase on-task behavior and improve student interest and motivation. Much of the music used was from the Baroque and classical periods, with composers such as Vivaldi, Pachelbel and Bach, although contemporary instrumental music was also utilized. (*Applegate & Hamm 1985*)

Wolfe (1983) found that when computing math problems with a musical background of popular music, the subjects in the treatment group of the loudest volume (80-90 dB) reported the greatest sense of distraction. However, there was no significant difference in the number of math problems completed among treatment groups.

Similarly, *Raburn and Tyson (1982)* did not find background music to be a significant distraction during film, filmstrips or lecture presentation for either male or female students of both visual and non-visual perceptual types. The researchers were surprised by the finding that music appeared to actually increase the performance of the

non-visual perceptual type students about which they hypothesized that the music served as an attention focus for the material presented (*Raburn & Tyson 1982*).

Davidson and Powell (1986) also found that music could help focus attention. Their results indicate that the use of easy-listening background music was effective in increasing the on-task performance of children in an elementary science class.

Using the State-Trait Anxiety Inventory, *Alexandra (1984)* was able to document a reduction in stress levels for four out of four teachers of the emotionally handicapped by using a combination of guided imagery and musical quietness. More importantly, these teachers carried this training out of the experimental situation and into their real lives and were able to experience benefits in the home and classroom (*Alexandra, C. 1984*).

When comparing the level of stress reduction using four different genres of music (rock, jazz, minimalism, classical) and a silent condition during biofeedback training, *Marshall and Tomcala (1981)* were unable to find a statistically significant difference among the treatments. All subjects achieved a similar level of stress reduction as measured by muscle tension, regardless of the genre of music used during the treatment. They hypothesized that this unexpected result was either the results of the novelty of the single treatment exposure, the lack of control for extraneous variables in the study, or a true condition wherein there is no difference in stress reduction between the music genres (*Marshall & Tomcala 1981*).

Matthews and Quinn (1987) were able to increase typing achievement (as measured by speed and accuracy) by a program which included a combination of deep breathing, guided imagery and classical music selections.

Rauscher, Shaw and Ky (1993) compared the conditions of silence, a relaxation tape and a selection of Mozart on subjects performing abstract/spatial reasoning tasks taken from the Stanford-Binet Intelligence Scale. They found that the subjects who listened to the music selection performed significantly better than the other two groups.

MUSIC AND READING

Using deep breathing, visualization and musical quietness *Hill (1986)* theorized that teachers can access right-brain, holistic conceptualization in students as well as the more traditional left-brain sequential logic. Hill makes note of an unpublished study where significantly more meanings of 100 previously unknown prefixes, suffixes and rootwords were remembered under the relaxation condition.

Frey (1980), who was able to raise reading achievement and lower anxiety among disabled readers through autogenic training, advocates the use of "simpler" relaxation techniques such as musical quietness.

Diaz-Lefebvre (1989) found that Baroque classical music was useful in helping the adult learner to concentrate on, and retain, information when reading a study-guide and answering the end-of-chapter questions. Students indicated that they found this learning format to be "soothing" (*Diaz-Lefebvre, 1989*).

Using music as a background for reading *Mulliken and Henk (1985)* found that students performed best during the classical music treatment and least well during the rock music treatment. The silent condition performance was not as good as with the classical music but better than with the rock music.

Contrary to Mullihan and Henks' results, *Telfer and Kann (1984)* found that

reading with either television noise or music, was detrimental to fourth and eighth grade students' reading achievement. Similarly, *Etaugh and Ptasnik (1982)* found that college students also performed better when studying in a silent condition in comparison to studying with preferred music. The presence of words in either the rock or "preferred" music categories is something to be considered when contributing these forms of music with a negative impact on reading performance.

Finally, *Render, Hull and Moon (1984)*, studying the effects of guided relaxation and Baroque music on college students' test performance found that there was no significant difference in test scores between the use of relaxation prior to testing, playing of music during testing or the combination of relaxation and music.

In summary research has proven a wide range of relaxation-techniques to be effective in reducing anxiety related to numerous stressful situations. To a lesser degree relaxation has been shown to enhance performance, academic and otherwise. One of these techniques, musical quietness, is a useful adjunct to other relaxation - therapies as well as an effective method on its own.

CHAPTER III

DESIGN OF THE STUDY

Purpose

The purpose of this study was to determine if the relaxation technique of musical quietness, using classical music from the Baroque period, could affect the performance of pre-first grade students on a group reading test.

Methodology

Seventeen pre-first grade students from a suburban, western New York elementary school served as the sample population.

Instruments

- 1) Gates MacGinitie Reading Test, Form K, Level Pre was used as a pre-reading evaluation by measuring the understanding of literacy concepts, reading instruction, relational concepts, oral language concepts and letters and letter-sound correspondences.
- 2) Mad about Baroque compact disc Polygram Classics and Jazz NY, New York.

Selections:

Handel: The arrival of the Queen of Sheba
Pachelbel: Canon in D
Mouret: Rondeau
Bach: Jesu, Joy of Man's Desiring

Null Hypothesis

There will be no statistical significant difference between the mean reading score of treatment (music) and control testings as measured by the Gates-MacGinite Reading Test.

Procedure

The seventeen student pre-first grade class served as the sample population. Over an eight day span the students were tested with one subtest per day from the Gates-MacGinite Reading Test. Each student was given twice, once as a control test, once as an experimental test. The subtest used (one, two, three or four) and the condition for testing (control/silence, experimental/music) were chosen randomly (Appendix A).

At the beginning of each testing day (9:10 a.m.) students were seated quietly at their desks. For the duration of the testing students desks were arranged in a manner to discourage distraction. Immediately prior to testing (including instruction time) music was either begun, or omitted, depending on the control/experimental testing schedule. The condition of music, or silence, was continued throughout the individual testing period.

Following completion of the control and experimental testings a statistical analysis was done on the data gathered. An independent t test was run on the total raw scores.

CHAPTER IV

FINDINGS AND INTERPRETATION OF DATA

Purpose

The purpose of this study was to determine if the relaxation technique of musical quietness, using classical music from the Baroque period, could affect the performance of pre-first grader students in a testing situation.

Analysis of Data

An independent t test was run on the Gates-MacGinite scores revealing that the performance on the control and experimental testings did not differ significantly. The null hypothesis was not rejected because of this finding.

Table I

t test of Differences Between Performances of Control and Experimental Groups on the Gates-MacGinite Reading Test

Paired t test
Hypothesized Difference = 0

	Mean Diff	DF	t value	P value
test 1, test 2	-1.588	16	-1.266	.2237

Descriptive Statistics

		Mean	Std Dev	Std Error	Count	Minimum	Maximum
Control Testing	test 1	70.294	7.183	1.742	17	57.000	79.000
Experimental Testing	test 2	71.882	5.765	1.398	17	63.000	79.000

$T_{crit}^{(16, .05)} = 2.120$

CHAPTER V

CONCLUSION AND IMPLICATIONS

CONCLUSIONS

The results of this investigation indicate that the relaxation technique of Musical Quietness does not have a statistically significant effect on performance on a silent, group reading test.

Although Musical Quietness did not have a statistically significant effect on the performance of the students there was an observable trend towards a positive, not negative, effect. Of the seventeen students who participated, ten students raised their scores on the experimental testing condition over the control testing condition. This improvement ranged from an additional two to ten points with five students increasing their scores by five or more points. These gains translated into seven students raising their scores by one full stanine during the experimental testing condition.

On the other hand, five students scores decreased during the experimental testing of these five students. Three had reductions of only one point; one a reduction of two points; one reduction of four points and one reduction of thirteen points. These reductions translated into only two students lowering their scores by one full stanine.

Two students retained the same score for both the control and experimental testings.

Taken as a group, the control testing yielded the results of three students scoring in the second stanine; six scorings in the third stanine and eight scoring in the fourth stanine. The experimental testing gave us no students scoring in the second stanine; seven scoring in the third stanine and ten scoring in the fourth stanine.

It is interesting to note that the three lowest scoring students on the control test all increased their scores on the experimental test while the three highest scoring students on the control test

either retained or lowered their scores on the experimental test. The need for a pre-test STATE-TRAIT Anxiety Inventory appears to be indicated here so that a correlation between anxiety level (high or low) and the effect of Musical Quietness (positive or negative) could be established.

Although this study did not yield statistically significant results, the positive trend towards improved performance is worth noting. This trend is most dramatically illustrated by impressive improvement in the stanine rank of the students.

It appears that the lower performing students on the control test were affected more by the use of Musical Quietness during the experimental test. This finding could indicate that the lower performers were more anxious and hence most affected by the relaxation technique. Perhaps the low-anxiety students were not as affected by the relaxing music and therefore did not improve their scores.

The decrease in some of the high-performers score during the experimental testing poses a problem. It is possible that the "focused", high-performers were distracted by the music or that some other variable was at work.

It should be noted that the one student who experienced a decrease in stanine rank underwent a dramatic (13 point) drop in raw score on the experimental test. This was highly unusual. The other student who dropped in stanine rank only lost one point on the experimental test but being on the cusp between the third and fourth stanine dropped in rank because of it.

In summary, the general overall performance of the students increased, if not dramatically. Variations on the sample size and type of sample used might alleviate the design flaws thereby allowing statistical significance to be achieved.

Implication for Research

The results of this study, while not statistically significant, do indicate a general trend towards improved performance on a silent, group reading test while playing Baroque classical music. Because of this trend it would be advisable to undertake further research with musical quietness.

The different variables that should be addressed in this experimentation are numerous.

The sample used should be large enough to more adequately represent the general population. Students of different ages and ability levels should be examined as well as students from urban and rural school districts.

The anxiety level of the students should be established so that testing results could be viewed in relation to that anxiety level. A correlation between musical quietness and improved performance for both high and low anxiety students would strengthen the viability of using the technique in the average classroom.

Variations on the presentation of musical quietness should be examined. For example, the use of Baroque classical music throughout the day, not just limited to the testing period.

The actual type of test used is also open for scrutiny. The examination of individual subtests and the effect of musical quietness could yield important information on the areas most affected (positively or negatively) by the technique.

Similarly, it would be useful to document the effects of musical quietness on the other content areas and aspects of the school curriculum. Both anxiety level and performance of teachers

and students, should be examined. While performance did not significantly improve in this study, establishing a correlation between anxiety reduction and musical quietness could be incentive enough to use this simple, inexpensive technique in the classroom.

Implications for Classroom Practice

Based on the findings of this study it appears that incorporating Musical quietness into the classroom could have a positive effect on the performance of students during testing situations. This is especially true for students who are low-performers on tests.

Musical quietness seems to be less effective with high-performers who are possibly already relatively relaxed.

Because this relaxation technique is not detrimental to performance, nor is it costly or complicated to implement, utilization in the classroom should be still considered.

Further research into the effect of Musical quietness on anxiety level and performance may produce results which will substantiate the theory that this relaxation technique is a viable alternative for the classroom teacher who wishes to reduce anxiety and heighten the performance of her students.

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APPENDIX A

Testing schedule

	<u>Subtest</u>	<u>Condition</u>
Thursday 10/14	1	silence
Friday 10/15	3	music
Monday 10/18	4	music
Tuesday 10/19	3	silence
Wednesday 10/20	1	music
Thursday 10/21	4	silence
Friday 10/22	2	silence
Monday 10/25	2	music

APPENDIX B

Table of Raw Scores and Stanines

Student	Control Test	Control Stanine	Experimental Test	Experimental Stanine	Score Differential
1	59	2	66	3	+7
2	72	3	74	4	+2
3	79	4	78	4	-1
4	64	3	63	3	-1
5	65	3	75	4	+10
6	68	3	74	4	+6
7	73	4	72	3	-1
8	73	4	76	4	+3
9	57	2	63	3	+6
10	69	3	74	4	+5
11	78	4	74	4	-4
12	68	3	70	3	-2
13	77	4	77	4	N/A
14	79	4	79	4	N/A
15	78	4	65	3	-13
16	61	2	63	3	+2
17	75	4	79	4	+4