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THE PRESENCE OF TRANQUIL SOUNDS IN RELATION TO AUGMENTED
FOCUS AND CONCENTRATION

by.
Jennifer L. West

Submitted in partial fulfillment of the requirements of the
Master of Arts Degree
of
The Graduate School
at
Rowan University
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Approved by _____

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ABSTRACT

Jennifer West

THE PRESENCE OF TRANQUIL SOUNDS IN RELATION TO AUGMENTED FOCUS AND CONCENTRATION

2008/09

Dr. Roberta Dihoff

Master of Arts in School Psychology

The purpose of this investigation was to determine if the presence of tranquil sounds created augmented focus and concentration among undergraduate college students, who prefer silent learning environments. Participants were randomly selected from an undergraduate pool of students from a northeastern college in the United States. Student's focus and concentration was assessed using the *Personal Emotion Survey and Personal Habits Survey*. The Mann-Whitney test was used to compare the scores of those who prefer silent or prefer sounds in the environment to their scores on the *Personal Emotional Survey*. As we have found from past studies, music plays an important role in emotions, verbal abilities and educational benefits for disabled individuals. Since research is limited in the area of focus and concentration, the present study used implications from previous research to fill the gaps in past research. The results showed statistical significance within group four, in which participants who preferred sounds indicated feeling more focused while in the silent group.

ACKNOWLEDGEMENTS

This research is in dedication to my family, especially my mother and father, who have patiently stood alongside me, encouraging and supporting me through my toughest times.

Mom, you have provided me with the greatest knowledge, experience. You have been my courage, inspiration and drive to continue reaching my dreams in life.

Dad, you have always been the symbol of hard work and dedication in my eyes. You have shown me that the things we want most in life are worth working hard for.

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Chapter 1: Introduction

Need

Can tranquil sounds create an atmosphere for augmented focus and concentration needed for education? Focus and concentration plays a crucial role in our society. From the beginning of an individual's academic life, focus and concentration are needed for achievement and success. Focus and concentration are a necessary attribute, mandatory for reading, driving, education, and almost every other daily activity one performs.

Each individual varies in focus and concentration abilities. There are important factors that need to be considered in classrooms, in which readers of various types are combined together. Pressures from other students can create an intense environment in the classroom, in which a student might avoid reading to reduce embarrassment. Students with advanced reading skills can cause students with less developed reading skills to feel inferior, thus possibly causing the individual to reject learning reading skills. Though this research will not be addressing the pressures on students in classrooms, it will be examining the overall augmented focus and concentration, while reading in the presence of tranquil sounds.

Focus and concentration levels vary considerably on many levels. Many times, the student lacks interest in the literature and loses engagement. This results in a lack of comprehension and possibly refusal to learn necessary reading skills. Today, students are stimulated on more intense levels than ever before. With new portable technologies available, such as cell phones, iPods, gaming systems, and laptops, students are spending

increasingly longer periods stimulated. Many students use these devices to listen to music, while studying and working on class assignments. In classes or during instruction, many of these devices are not allowed. It would seem that if the use of music is beneficial for students while working outside of class, could its use create an advantage for students within the classroom?

Many researchers have been interested in similar topics and conducted studies to find relationships between music and reading abilities. The Mozart Effect has been a much-debated topic. Though studies have varied on their findings, Bowan, Punyanunt-Carter, and Cheah (2007) concluded that there were significant differences in listening abilities when participants listened to slow Mozart music before watching a taped lecture. Bowan et al. (2007) have provided research indicating that allowing students to prepare by listening to calming music before lecture could provide increased listening abilities, thus providing more advantages for learning. The topic of Mozart Effect will be discussed in later chapters.

Grant, Bredahl, Clay, Ferrie, Groves, McDorman, and Dark (1998) were interested in environmental context-dependency effects and felt these effects would be demonstrated during the types of tests and material typically encountered in schools. The participants were tested on short-answer questions and a multiple-choice test after reading a short article. The study context and test contexts were manipulated by both silence and background sounds. For instance, the researchers concluded that studying and testing in the same environment was more beneficial. The researchers discussed their assertion that studying in a silent environment would produce better scores for students on exams, due to the silent environment of academic classrooms.

Purpose

Past research has studied the use of music prior to completing a task (Bowen et al., 2007). The present study is focused on students' augmented focus and concentration while reading in the presence of tranquil sounds. Although the underlying purpose of the study is to examine the use of tranquil sounds in creating augmented focus and concentration while reading, its purpose is to fill the gap in past research, and become a useful technique. The goal of this study is intended to provide educators and students with an alternative technique of increasing focus and concentration, which can be implemented during the development and future use of reading. Ultimately, this study anticipates providing school psychologists and teachers with an alternative method of educating students to the fullest extent possible. Finally, this study aims to bring the use of musical stimulation, used by many students outside of class, into the classroom. As previous research has concluded, the context we study in can be beneficial to the environment we are tested in (H. M. Grant et al., 1998).

This study hypothesizes that undergraduate students will have augmented focus and concentration, in the presence of tranquil sounds in the background, while reading an article and answering subsequent questions. The null hypothesis states that there will not be a difference in augmented focus and concentration when tranquil sounds are present.

Operational Definitions

This study will be using some terms on a regular basis that need defining.

Demographic Questionnaire: A questionnaire that contains four questions relating to the demographic background of the participant.

Personal Emotion Survey: An 8 question Likert-scale survey that was used as a means of assessing the participant's emotions after reading the article.

Personal Habits Survey: An 10 question Likert-scale survey that was used as a means gaining knowledge about the participants learning and study habits.

Reading comprehension: a process of understanding content from text and using prior knowledge to draw inferences.

Reading Comprehension Assessment: The reading questionnaire is made up of six questions related to the "Recalled Memories from Shawn" article. The questionnaire is used as a means of examining the focus and concentration of the participant.

"Recalled Memories from Shawn": Is a fictitious article, which was used as a means of examining the focus and concentration of the participants. The article is comprised of a short narrative of a clients recalled memories during three sessions of therapy.

Tranquil sounds: naturally occurring sounds, such as ocean waves and raindrops with a solo violin and guitar playing, developed into in a peaceful listening CD.

Assumptions

Within this study, it is assumed that if tranquil sounds are found to increase focus and concentration while reading, then tranquil sounds could be applied in all classrooms and for all individuals. It is assumed that all students could benefit from tranquil sounds, but there is the possibility that there will be learners who prefer silence in classrooms and report variations in focus and concentration. Also, the present research assumed that the majority of undergraduate students use musical stimulation outside of classrooms. It should be understood, that there was no formal survey indicating the participants use of musical stimulation outside of class. Finally, the research assumed that if by chance

undergraduate students use musical stimulation, that the tranquil sounds would be comparable in stimulating them as well.

Limitations

As with any research plan, limitations are possible. This study will involve undergraduate college students who are attending college in the northeast United States. First, using a homogeneous population creates issues regarding generalization. Though the college consists of a diverse population, limiting this study to only undergraduate students at the northeastern United States college presents issues. Next, the measures used in the data collection were written solely by the researcher, in which limitations exists with the validity and reliability. As with any measure, validity and reliability play an important role in assuring that the tests are valid. Also, students may behave differently depending on the environment in which they are tested. Participants may detect that the study is measuring reading comprehension and change their normal skills to coincide with what they think the researcher is intending to measure. It is also possible that the participants will not answer the questions accurately, in which the researcher will remind them before each measure. Though this study tries to eradicate limitations, it is not without confines.

Summary

Reading comprehension and the use of music is a topic to which researchers have been increasingly studying. The following chapters will provide information on the limited area of literature that encompasses this arena of research, describe the

methodology of the study, summarize the results, and review the findings and implications for future research. Chapter two will demonstrate the use of current journal literature that relates to music, focus and concentration. Chapter three will describe the methodology of the research, which includes: the research design, participants, treatments, measures, and collection of data. Chapter four will summarize the results with graphs and tables. Finally, chapter five will review the results and provide conclusions, limitations, implications and recommendations for future research.

Chapter 2: Literature

Literature Review

The literature search was completed using various electronic databases (ERIC, PsycINFO, EBSCO Search and Academic Search Premier). The search presented large quantities of research regarding music in relation to behaviors, but resulted in limited research regarding the relationship of tranquil sounds to focus and concentration and reading comprehension. Different aspects of sounds have been studied in relation to human performance. For instance, many researchers have been interested in the use of irrelevant noise, relaxation and music, musical effects on human abilities, variations of introverts and extroverts, concentration, short-term memory, educational benefits and self-reported distractions. The use of background noise and music has been previously studied and illustrate differing results. The use of music is becoming apparent, with many new research studies discovering its benefits (Weinberger, 1998). The following literature contains various research related to different aspects of sounds, which had an impact on focus and concentration in relation to cognitive abilities.

Irrelevant sounds and noise

Research regarding the use of background sounds varies with different findings. For instance, Boyle and Coltheart (1992) studied irrelevant sounds on reading comprehension. They examined participants responses to written sentences, both simple and complex, that contained some errors, in the presence of; irrelevant speech,

accompanied and unoccupied singing, instrumental music and silence. They found that irrelevant speech and other sounds did not impair the reading comprehension of the participants. They concluded that accuracy was impaired by the complexity of the sentences, but not by irrelevant sounds. However, in 1998, Banbury and Berry used office noise (with or without speech) in comparison to silence, while students completed comprehensive tasks. They found that undergraduate students who performed poorly on mental arithmetic tasks and recall tasks were due to the presence of office noise, regardless of whether speech was included. They attributed the lower scores of students who were in the noise group to the unpredictability and distracting feature of noise. They concluded that noise has a distracting quality that poses disruptions in performance.

Relaxation

Relaxation is an important function for individuals to become skilled at regarding all aspects of learning. Relaxation creates an environment for increased focus and concentration, which leads to better outcomes on various tasks. Carlson, Hoffman, Gray & Thompson (2004) were interested in the introduction of slow; rhythmic music to facilitate a relaxation response which could provide increased reading ability. The participants were third grade students from an urban, midwestern elementary school that attended a general education classroom. The study used a vibroacoustic chair, which had two speakers built into the chair that enabled the students to feel the vibrations of the music in their body, while completing a reading based task. The study used a pretest and posttest to determine their level of reading comprehension, word recognition and oral reading accuracy. The test concluded a statically significant positive impact for both

reading comprehension and recognition. The researchers found that the vibroacoustic chair combined with the music helped improve the reading performance of the students. They concluded that for students who were reading at a grade level above, most showed improvement more advanced than expected.

Musical Effects on Comprehension

Music has been a debated topic among many researchers regarding its effect on learning and comprehension abilities. Some researchers believe that music can increase ones abilities at performing a task, while others believe it poses detrimental and distracting effects. Etaugh and Michals (1975) examined 32 college students' tests on reading comprehension, while in the presence of one of two sound conditions, familiar music or silence. The researchers found that among female participants, their performance was inferior, when testing in the music condition as opposed to the silence. They also concluded that males' performance was equal during both conditions. However, the Mozart Effect has provided much research debating that listening to Mozart could make for better intelligence. In a 2007 study, Bowan et al., modified past research studies to examine the use of; slow and fast tempo Mozart music, rock and roll, silence and crossword puzzles, before listening to lecture to increase listening comprehension. The researchers found that allowing students to prepare by listening to calming slow Mozart music before lecture could provide increased listening abilities. The participants in the Mozart control group displayed an increase in test scores after watching the videotaped lecture, which showed that the music positively affected their listening readiness.

Variations of Introverts and Extroverts

Past research has found variations in performance of cognitive tasks in relation to introverts and extroverts in various aspects of sounds. The use of personality characteristics is an important feature that allows for utilization of special techniques for different learners. Furman & Strbac (2002) extended previous research findings. They were interested in both examining main effects for background sounds and silence for both introverts and extroverts and looking at the interaction of personalities in the presence of background music, noise and silence on three cognitive tasks. Seventy-six participants were used and completed the Eysenck Personality Questionnaire to determine their score for introversion and extroversion. The cognitive tasks consisted of; reading comprehension, prose recall and mental arithmetic, and were completed with a sounds condition of; music, noise or silence during each of the three tasks. The researchers concluded that a main effect was found in reading comprehension in the presence of background sound as compared with silence. Also, on only the reading comprehension task were introverts performance lower than extraverts when in the presence of background noise or music, but not in silence. This study provides evidence on the differences in performance on cognitive tasks when music and noise are introduced to introverts and extroverts.

Concentration

Concentration is an important aspect in performing tasks. Before completing a task, concentration is needed to prepare your mind so one can perform a task at an optimal level. A study by Tacano, Yokokura, Kajiwara, Pavelka, Tanuma, Uemura,

Hashiguchi & Sikula (2005) analyzed the rhythm of the music used by the Athena Olympic gold medal marathon winner, to concentrate on the race. Classical music is known to produce the $1/f$ noise, which has been found as an important aspect in concentration. Researchers analyzed the music and found that the music has a $1/f$ noise, which was effective for concentrating in runners for a long range of time. This provides evidence that different types of sounds can produce various effects on performance.

Verbal Processing

Memory is an important factor when students are beginning to learn reading skills. For a student to become a good reader, they must ultimately comprehend what they have read. Though research has been limited in this area, some researchers have found significant effects for various types of music in association with short-term memory. Pring and Walker (1994) were interested in the use of background music in verbal processing. The researchers partly replicated a previous research by Salame and Baddeley (1989), which examined the relationship between long-term memory and working memory, in which participants heard instrumental music. The current study used instrumental music and unvocalized nursery rhymes while under conditions of silence or articulatory suppression. Their research proved that hearing music that was learned in association with words had a much more significant effect on short-term memory than instrumental music. The researchers also found that the number of digits recalled was most negatively impacted by the nursery rhyme music rather than the instrumental or classical music.

Educational Benefits for Those with Learning Disabilities

Music has a calming effect that has been studied and proven to calm and focus children with special education needs, in which an enhancement in learning and a decrease in arousal was found (Črnčec, Wilson and Prior, 2006). Many researchers have been interested in studying the impacts of sensory-based interventions on children with autism (Orr et al., 1998). Various kinds of music can produce differing emotions depending on the beat, tone and speed. Entrainment is a way of changing ones brainwaves to produce changes in consciousness. Rhythmic entrainment uses externally produced rhythms that are designed to re-entrain the body to its normal rhythmic pattern (Orr et al., 1998). In 1998, Orr, Myles & Carlson studied the impact of entrainment on an 11-year-old girl with autism, named Melanie. Melanie had a history of behaviors that were not functional for the classroom environment. Though the behaviors were not consistent, she experienced increased and decreased behaviors that were unpredictable and mainly consisted of head jerking and screaming. The study occurred in a self-contained classroom that was a part of a large special educational department medical center, for children with autism. The study evaluated the usefulness of rhythmic entrainment as a calming technique. The study observed Melanie, while she completed her daily schedule in the classroom. During the classroom time, Melanie listened to entrainment music played on a tape recorder for 20 minutes. The authors studied the frequency of head jerking and screaming with and without rhythmic entrainment. Interestingly, in the study the researchers measured the number of head jerks and screaming, which varied depending of changes in Melanie's schedule. When Melanie endured changes in her schedule, such as a doctor's appointment, she appeared resistant

and reacted intensely with head jerks and screaming, which included tantrums. They found that Melanie's anticipation of her schedule would produce head jerking, while the actual schedule change would produce tantrums. They concluded that the entrainment was effective for Melanie when she encountered moderate levels of stress and was unable to help her become calm after they became more severe stressors, such as actual changes in her schedule. Orr et al. (1998) believe that rhythmic entrainment may be useful with individuals with autism and other developmental disorders to control their behavior.

Emotional Reactions

Music has been found to create positive emotions in individuals in their everyday lives. Juslin, Liljeström, Västfjäll, Barradas and Silva investigated student's reactions to musical experiences from their everyday life. The researchers used thirty-two students who were required to carry a palmtop computer with them and complete a questionnaire when prompted that recorded their emotional response. When prompted, participants were asked whether or not their emotional reaction was in the presence of music. The study found that happiness-elation and nostalgia longing were more frequent among students who were in the presence of music. On the other hand, they found that anger-irritation, boredom-indifference and anxiety-fear were reported more often in nonmusical experiences. Juslin et al., 2008, concluded that musical emotions were largely involved in positive emotions than nonmusical ones. This study continues to show how music experienced in the environment can produce positive emotions and feelings.

Self-Reported Distractions

Flowers and O'Neill (2005) examined listening distractions among one hundred and eighteen middle school students. The researchers used an excerpt from *The Jungle Book* and a violin solo from "Preludio" as distractors. The middle school students were asked to listen to music on the computer and click the mouse when they became distracted. They were then asked to rate their familiarity of the music using a rating scale. Children reported being more distracted while listening to "Preludio" a violin solo, then an excerpt from *The Jungle Book* by Kiplin, even though the students reported liking the "Preludio" more. Conclusions suggest that students might have fewer distractions while listening to a story than music. The story telling may have kept the students attention, while the music may have allowed for their imagination to wonder and led to more distractions.

Summary of findings

In this chapter the use of music was examined through past research. Music has had a significant impact on human research regarding concentration, relaxation and improvements in cognitive processing abilities. As we have found from past studies, the use of music has played an important role in education. Music has also had interesting effects on individuals regarding distraction abilities. Since research was limited in the area of education, the present study was used to fill the gaps in past research. Previous findings have provided researchers, educators and psychologists with information of the usefulness of music and tranquil sounds in various environments and situations.

Chapter 3: Methodology

Participants

The participants for this research were selected from the undergraduate pool of students from a college located in a suburban region of the northeast United States. All undergraduate students were invited to participate, but it was not made mandatory. Students assigned to participate in the study, as part of their degree requirement, but were not given compensation for their participation. The participants were recruited using the Sona system. The Sona system manages human subject pools on their online system. Participants were given a brief description of the study from the Sona System before assigning their participation. Students making up the undergraduate population at the college are diversified in race, ethnicity, socio-economic status and gender.

College Toolkit is a site that presents student statistics and demographic information from colleges (<http://www.collegetoolkit.com>). In 2008, the college's total attendance status for undergraduate students was fulltime (7,843) and part time (1,063). The total number of full time undergraduate student demographics was: Caucasian (3,414), African American (295), Hispanic American (247), Asian American (179), Not specified (110), and American Indian (16). Full-time undergraduate student gender was male (3,859) and female (3,984).

Measures

The present study used four measures to collect information from the participants. The Demographic Questionnaire was used to collect information regarding the participant's age range, gender, socio economic status and activities that they enjoy. The questionnaire was used as a means of collecting data that was most representative of the participants. The questionnaire took approximately two minutes for the participants to complete. Next, the *Personal Habits Survey* is a ten question Likert-scale and was used as a means of gaining knowledge about the participants learning and study habits. The survey took participants approximately five minutes to complete. The article "Recalled Memories from Shawn" is a fictitious reading article was used as a means of distracting the focus and concentration of the participant. The article is comprised of a short narrative of a client's recalled memories during three sessions of therapy. This article took participants approximately 5 minutes to read. Following the article, participants were given a Reading Comprehension Questionnaire, which consisted of six multiple-choice questions. The questionnaire took about 3 minutes for the participants to complete. The questionnaire was not used in the results of the research, in which its purpose was to distract the participant's attention away from the actual intent of the study. Finally, the *Personal Emotion Survey* is an eight-question Likert-scale measure. It was used to assess the participant's feelings and emotions after reading the article. The survey took approximately 3 minutes to be completed by the participants. Each participant's surveys and questionnaires were placed in a manila folder that was located at their seat. Each of the measures were created by the researcher and pose limitations to the research due to the validity of the measures, which is described in the Limitations section. With limited

research in this particular area, each of the measures used were unique to this area of research.

Procedure

Before arriving at the research room, each participant was given a brief description of the research on the Sona system. Depending on the group assignment (experimental or control) the participants received tranquil sounds or silence in the background. Tranquil sounds were played from the Body & Soul *Relaxing Moods* CD (2008). The group assignment was divided, in which every other group received the tranquil sounds. Upon arrival, the students were asked to sit in an assigned seat where a manila folder was present. Participants were told that the manila folder was going to be used to collect their surveys and questionnaires during the study. Participants were given an informed consent form, in which each individual and the researcher signed indicating their participation and knowledge of their rights during and after the research. Once the participants gave authorization to participate, the consent forms were collected. The participants were then given the Demographic Questionnaire, and were read audibly the instructions. After completing the questionnaire, participants were instructed to remain seated and turn over their questionnaire. Next, the students were given the *Personal Habits Survey*. Each participant was instructed on the directions and was asked to answer as accurate as possible. Afterward, the participants were told that they would be reading an article related to the field of psychology and answering questions following their completion. Each participant received the “Recalled Memories” article and was asked to take their time and read the article thoroughly. Accompanying was the Reading

Comprehension Questionnaire, which was given once every participant had completed the reading article. The researcher then handed out the *Personal Emotion Survey*. When the surveys were handed out, participants were asked to answer the survey questions as accurately as possible. After the participants completed the final survey, they were given a debriefing letter. While each participant spent a few minutes reading the debriefing letter, the researcher again explained the intended purpose of the study. Also, the debriefing time was used to answer any questions the participants had regarding their participation and how to receive information about the results of the study. The participants were also given the chance to withdrawal their participation after reading the feedback form without being penalized.

Hypothesis

The goal of this research was to determine if a relationship exists between tranquil sounds and augmented focus and concentration while reading. The present study's purpose is to provide educators with an alternative method of allowing students to reach their full potential. The hypothesis states that undergraduate students from the northeastern college will have augmented focus and concentration, while tranquil sounds are present in the background when compared to those who received silence while reading. The null hypothesis states that there will not be a difference in augmented focus and concentration when the tranquil sounds are present. This study consisted of one independent variable: group 1 (tranquil sounds) is experimental and group 2 (silent) is controlled. The dependant variable is the response score on the *Personal Emotion Survey* after reading the article and answering the questions.

Analysis

This study was interested in determining if undergraduate students at the northeastern college would have augmented focus and concentration while in the presence of tranquil sounds while reading. To compare augmented focus and concentration in the presence of tranquil sounds or silence, the Mann-Whitney test was performed. This test was used to determine if a difference existed between each group on the *Personal Emotion Survey*.

Summary

In chapter 3, the method of the research was reviewed in which the participants, measures, procedure, hypothesis and analysis were discussed. The data collected from the *Personal Habits Survey* and *Personal Emotion Survey* were used to prove or disprove the hypotheses. Though the measures used in this research lack validity and reliability, this study found results that were interesting for educators and supported prior research. This chapter provided information that can be used by future researchers for replication purposes. The following chapters will present the analysis of results, summary and conclusions of this research study.

Chapter 4: Analysis of Results

Introduction

This study was interested in examining the presence of tranquil sounds in relation to augmented focus and concentration among undergraduate students while reading. The four groups were assigned after the data was completed, in which the following criterion was used for group assignment (see table 4.1). Group one participants were those who preferred silence and were in the tranquil sounds group. Group two participants were those who preferred sounds and were in the tranquil sounds group. Group three participants were those who preferred silence and were in the silent group. Group four participants were those who preferred sounds and were in the silence group. To determine if a relationship existed, the Mann-Whitney test was used on groups one, two, three and four.

Table 4.1 Group Assignments of Participants

Group One	Group Two	Group Three	Group Four
Received Tranquil Sounds	Received Tranquil Sounds	Received Silence	Received Silence
Preferred Silence (n = 6)	Preferred Sounds (n = 3)	Preferred Silence (n = 6)	Preferred Sounds (n = 3)

The purpose of this investigation was to determine if the presence of tranquil sounds created augmented focus and concentration among undergraduate college students, using either silent and tranquil sounds groups while reading. The participants preferred environment was assessed using the *Personal Habit Survey*, in which a score of twelve or above indicated they prefer sounds in the environment. Student's focus and concentration was assessed using the *Personal Emotion Survey*, in which a score of twelve or above indicated focus and concentration. A Mann-Whitney test was used to compare the scores of those who prefer silent learning environments or sounds in the environments to their scores on the *Personal Emotional Survey*.

The participants totaled eighteen undergraduate students from the northeastern United States college, who were recruited using the SONA system. The experimental group included nine participants while the control group included nine as well. The participants varied on their sexual orientation of which thirteen were males and five were females (see graph 4.1). Participants varied in age, in which they identified ages; 18-20 (11), 21-24 (3), and 25-28 (4).

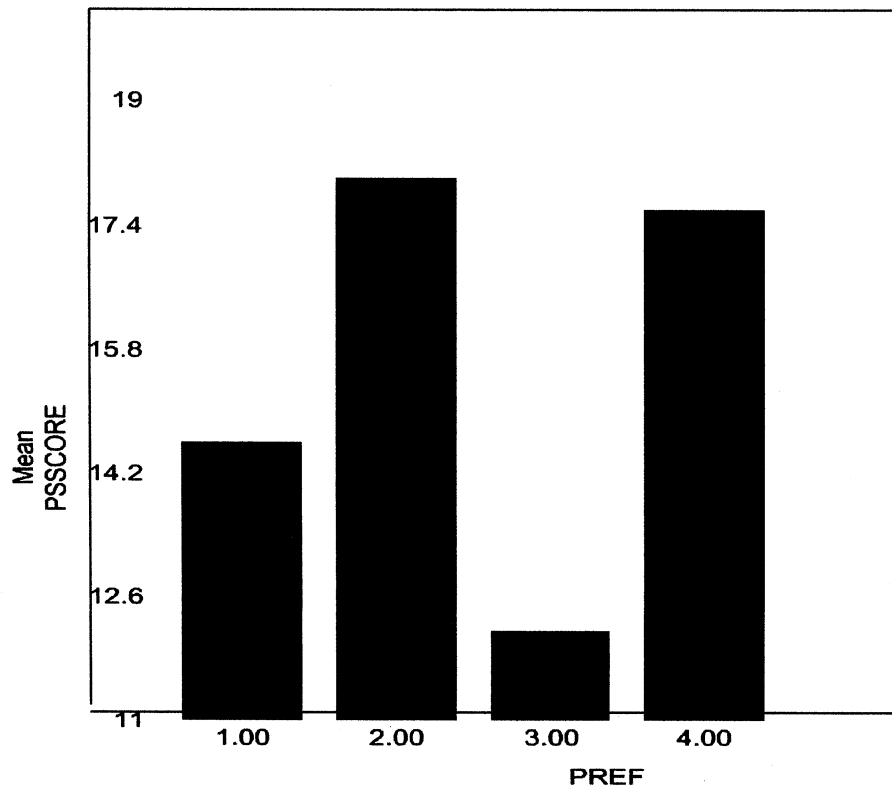
Graph 4.1 Sexual Orientation of Participants



Results

To test the hypotheses, the Mann-Whitney test found significance in the relationship between the *Personal Emotion Survey* and *Personal Habits Survey* in students who preferred sounds in the environment and their indication of increased focus and concentration while in group four. The mean score for participants in group one was 14.6 (n=6), group two 18 (3), group three 12.16 (n=6), and the mean score for group four was 17.6 (n=3) (graph 4.2).

Graph 4.2 Mean Score on *Personal Emotional Survey*



The results were statistically significant when groups three and four were compared, in which the z value was -2.213 , indicating a difference between the two groups (table 4.2).

Table 4.2 Test Statistics for Groups Three and Four

	PSSCORE
Mann-Whitney U	.500
Wilcoxon W	21.500
Z	-2.213
Asymp.Sig. (2-tailed)	.027
Exact Sig. [2*(1-tailed Sig.)]	.024 (a)

a Not corrected for ties

b Grouping Variable: PREF

Summary

In this experiment, the researcher attempted to find a difference between those who were introduced to tranquil sounds or silence and their level of focus and concentration while reading. The results of the Mann-Whitney test provided data that does not support the hypothesis. Students in group four showed increased focus and concentration when exposed to the silence group. Since there were significant results found among group four, it provides an interesting recommendation for future research. Chapter five will provide detailed results of the relationship and support for previous research in this area, as well as future recommendations and conclusions from the present research.

Chapter 5: Summary

Summary

The purpose of this study was to examine the presence of tranquil sounds in relation to augmented focus and concentration among undergraduate students while reading. Past research has studied the use of music prior to completing a task (Bowan et al., 2007). The present study examined student's focus and concentration levels while reading in the presence of tranquil sounds or silence. Although the underlying purpose of the study was to examine the use of tranquil sounds in relation to augmented focus and concentration while reading, it is anticipated that the findings will contribute to the gap in past research.

Review of Results

After the Mann-Whitney test was used to determine if a relationship existed between groups, significance was found. As chapter four demonstrated, the data provided various results when the groups were compared, in which group four showed significance ($Z = 2.213$). Group four consisted of students who preferred sounds in the background, but resided in the silence group, in which they showed increased focus and concentration. Though this finding was in support of the null hypothesis, it provides interesting findings for future research.

Though research has been limited in the area of education with the intent of examining the use of sounds in the environment, much of the past research was in support

of increased skills in the presence of music. Though our research did not support the positive effects of music, it did support research that found music as an inhibitor while completing tasks. Prior research has found similar results when comparing environments with music to those in silence. Consistent with the present studies findings, Etaugh and Michals (1975) examined 32 college students' tests on reading comprehension, while in the presence of one of two sound conditions; familiar music or silence. The researchers found that among female participants, their performance was inferior, when testing in the music condition as opposed to the silence.

Findings by Flowers and O'Neill (2005), found that children reported being more distracted while listening to "Preludio" a violin solo, then an excerpt from *The Jungle Book* by Kiplin, even though the students reported liking "Preludio" more. They suggest that students might have fewer distractions while listening to a story than music. The story telling may have kept the students attention, while the music may have allowed for their imagination to wonder and led to more distractions. Similar to the present findings, tranquil sounds may have allowed for the participants mind to wonder, in which more distractions were present. Though, this is an assumption of the results for the present study, a similar style of music was used in which violin sounds were present.

Also, previous research has concluded, the context we study in can be beneficial to the environment we are tested in (H. M. Grant et al., 1998). This research provides interesting support for our current findings. Students in group four who indicated on the *Personal Habit Survey* that they preferred environments with sounds, actually scored as more focused and concentrated while in the silence group. It is interesting that students, who believed silent environments were distracting, indicated feeling more focused on the

Personal Emotional Survey. Similar to the research by H.M.Grant et.al (1998), the students in group four in the present study, may have been use to studying in silent environments, even though they believed it was more distracting, and thus they indicated feeling more focused while in the silent group.

Limitations

As with many experiments limitations are present. During the data collection process there were some incidents that may have affected the results. On day three of data collection, the silent group was directed to another room for data collection. The room was inside of the teacher's conference room, in which the secretaries were residing outside. During the length of time the participants were completing the surveys, the secretaries voice was clearly heard in the room. Participants were aware of the noises and even commented during the feedback period of the study. This distraction may have affected the results of the silence group's focus and concentration level during the study.

Another important aspect of limitation that needs to be addressed was the measures used. The *Personal Habits Survey* and *Personal Emotional Survey* were both created by the researcher to examine the participants preferred learning environment and focus and concentration level. The two measures were created solely by the researcher, in which concerns with validity and reliability are apparent. Since the measures lack validity and reliability, the data needs to be taken within context. Validity is the degree to which the test is measuring what it was intended to measure. Reliability is the consistency of a test, in which the present measures lack. With each of the measures being created by the researcher, validity and reliability are a significant limitation within

this body of research. Since the purpose of this study has had little research in prior years, the creation of the measures was warranted.

The results of this experimental design are difficult to generalize, since only a small population of undergraduate students at the suburban northeastern United States College was studied. The participants included eighteen undergraduate students from various majors. This small number of participants reduces the generalization of these research findings.

Conclusions

This study was interested in examining the use of tranquil sounds in relation to augmented focus and concentration among undergraduate students while reading. Though this study did not find support for the research question, it was able to conclude interesting results. This study, as with others, has both strengths and weaknesses within it. Some of the important strengths of the research were the diverse population of students studied. Student's ages ranged from eighteen to twenty-four, which allowed the study to be generalized to the majority of student populations. Also, the suburban college is made up of students from varying ethnic and racial backgrounds, which also allowed for generalization. On the other hand, some of the weaknesses may have played a significant role in the results of the study. Some important weaknesses include the small number of participants and validity and reliability of the measures. Using a small number of participants creates issues when generalizing the findings to larger populations. The two measures used in the research were created by the researcher, in which they lack validity and reliability.

The results of this research were in support of the null hypothesis, which states that there would not be a difference in focus and concentration when tranquil sounds were presented. Within the results of this research, significance was found regarding group four. Participants in group four were those who preferred sounds in the environment, but indicated augmented focus and concentration while residing in the silence group. This provides interesting questions for students who prefer sounds in the environment. Those students in group four answered the *Personal Habit Survey* questions as background noise is never distracting. It is interesting to see that students who preferred sounds in the background would have augmented focus and concentration while in the silent group.

Implications for Future Research

Future research in this field should replicate this study using a larger population, in which the results may provide significance in various groups. This study examined the use of tranquil sounds within the context of examining augmented focus and concentration among college students. Future research could examine the use of tranquil sounds in relation to behavioral modification techniques for children. It seems most appropriate for future researchers to use the same population of students, but it would be interesting to examine younger students as well. It would be interesting to look at elementary school and middle school populations, since those years of schooling are when the foundation of reading skills are built. Also, students are becoming more accustomed to using music devices during their daily lives, in which tranquil sounds in the classroom may show benefits for those students.

Focus and concentration plays a crucial role in our society. From the beginning of an individual's academic life, focus and concentration are needed for achievement and success. Focus and concentration are a necessary attribute, mandatory for reading, driving, education, and almost every other daily activity one performs. Though this study found significance for the null hypothesis, future research may provide new information to the significance tranquil sounds could have in relation to augmented focus and concentration.

Recommendations

This study was intended to examine the use of tranquil sounds in relation to augmented focus and concentration while reading. Though this research was not in support of the hypothesis, past research has shown positive effects of music. Future research should use larger populations of students in various areas to report results that are most generalizing. This current study has provided information for a topic that has been recently debated among researchers. It is anticipated that future research will contribute to the debate and hopefully provide support for this studies hypothesis.

Teachers should be aware of the topic of using music in classrooms, since much of the research to date is in support of musical stimulation. Providing possible advantages for some students while learning could provide achievements that ordinarily were overlooked. Individual student vary considerably and their unique ways of learning should be recognized.

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