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School of Music

How Music Genres Affect Test Anxiety Among Third-Grade Elementary Students

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by

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Abstract

This descriptive case study investigates the effects of classical, rap, electronic, and jazz genres of music played during a test administered to third-grade elementary students. Many studies focus on three main genres, such as classical, rock, and popular music, and not new, emerging popular music genres. With learning performance being a primary concern in education, it is beneficial to ascertain if different music genres affect anxiety in third-grade elementary students. Third-grade students serve as the population for this study; the sample involves 123 third-grade students from Chelsea Park Elementary School. This study implemented the State-Trait Anxiety Inventory for Children (STAI-CH) to evaluate the anxiety of third-grade students at CPES after listening to different genres of music while completing tasks. After analyzing the data collected from the STAI-CH survey, the researcher effectively identified significant relationships between variables of genres of music and anxiety.

Keywords: music genres, test anxiety, learning performance, relaxation, Pearson product-moment correlation coefficient, State-Trait Anxiety Inventory for Children, third-grade students

Dedication

This research study is dedicated to my family, friends, and teachers, who have encouraged me to pursue a master's in music education. Thank you for your encouragement throughout this journey. Thanks to you all, I can be the best possible self for my students.

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Chapter One: Introduction

Overview

This descriptive case study investigates the effects of classical, rap, electronic, and jazz genres of music on anxiety among third-grade students. Chapter one includes a background of music genres and how they affect anxiety, followed by a theoretical background for this study. The problem statement addresses the gap in the literature for this study. This study includes the purpose and significance statements. Lastly, the study supplies the thesis statement, research questions, hypotheses, and relevant definitions.

Background

Anxiety disorders found in America's youth have been following a rising trend from 2016 to 2023. 9.4 percent of children from 2016 to 2019 were diagnosed with anxiety disorders.[1] The Centers for Disease Control and Prevention reports that approximately 5.8 million children were affected by anxiety from 2016 to 2019. Children being diagnosed with anxiety rose from 5.5 percent in 2007 to 6.4 percent in 2011 to 1012.[2] People typically report both anxiety and depression together because of their similarity of symptoms. Anxiety can lead to depression among children. In 2023, Mental Health America (MHA) reported that 2.7 million children have severe depression, and 60 percent do not receive any mental health treatment. The anxiety children experience may even go unnoticed because they keep it to themselves or they prefer not to discuss it.

[1] Centers for Disease Control and Prevention, "Anxiety and Depression in Children: Get the Facts." Centers for Disease Control and Prevention. May 1, 2019. https://www.cdc.gov/childrensmentalhealth/features/anxiety-depression-children.html.

[2] Ibid.

Children of all ages can develop and experience anxiety disorders. Deborah C. Beidel and Sam Turner list three questions that are commonly asked by caregivers or parents when a child is diagnosed with anxiety:

1. "How did this condition develop?"
2. "Is it hereditary?"
3. "Is it because of something I did or didn't do?"[3]

These questions aim to understand the etiology of anxiety disorders. Beidel and Turner suggest that etiological pathways exist, and a combination of these factors is essential to understanding causation. Rachman gives empirical evidence to the acquirement of fear through three main pathways, "These include direct conditioning (i.e., the experience of an extremely traumatic episode resulting in fear behavior and anxiety), observational learning (i.e., observing someone else experience a traumatic event or otherwise manifesting fear behavior toward certain stimuli), and verbal information transfer (i.e., receiving information that certain situations are dangerous or should be feared)."[4]The process of acquiring fear is non-associative learning, which makes it impossible to trace specific conditions of anxiety or fear back to particular instances or events.[5] Different experiences and events contribute to the acquisition of anxiety through many different pathways. How one student develops test or general anxiety may have been acquired through a different path that varies from another student.

The rise of high-stakes testing accompanies the increase in anxiety disorders. The No Child Left Behind Act of 2001 has created atmospheres of high-stakes testing. NCBL testing affected schools, teachers, and administration because it could cause changes in funding and

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[3] Carla Mooney, *Academic Anxiety.* (1st ed. ABDO Publishing Company, 2021), 51.
[4] Ibid., 51–52.
[5] Ibid.

employment decisions.[6] The Every Student Succeeds Act, signed in 2015, replaced the NCLB Act 2001. The ESSA focuses on student success in college and careers. When the NCLB's objectives became challenging to accomplish with schools and educators, this law was signed to further the goals of the NCLB but focuses more on student success.[7] Natasha K. Segool's study comparing high-stakes and classroom testing shows that students experience higher levels of test anxiety during high-stakes testing than classroom testing.[8] On a state level, Alabama has implemented the Literacy Act of 2019, which requires third-grade students to read at the grade level by the end of their third-grade year. The Alabama Comprehensive Assessment Program (ACAP) Summative assesses a student's reading level.[9] Failure to demonstrate reading comprehension skills on this exam requires retention. These types of assessments add to the stress and anxiety students feel on an academic level.

Historical Background

Before 1980, doctors often diagnosed people who were struggling with stress or nerves as having anxiety.[10] Few people received the appropriate treatment for their anxiety disorders before 1980 due to little understanding of the subject by doctors. Marc-Antoine Croq states that anxiety was considered a symptom of neurasthenia, which ambiguously defines general anxiety.[11] Most early treatments of anxiety consisted of natural remedies, "…early treatments included herbs and balms, bathing in icy rivers and streams, applying extreme temperatures to

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[6] Natasha K. Segool, John S. Carlson, Anisa N. Goforth, Nathan von der Embse, and Justin A. Barterian, "Heightened Test Anxiety among Young Children: Elementary School Students' Anxious Responses to High-Stakes Testing." (*Psychology in the Schools* 50, no. 5 (March), 2013), 489.

[7] U.S. Department of Education, "Every Student Succeeds Act (ESSA)." U.S. Department of Education. 2015. https://www.ed.gov/essa?src=rn.

[8] Ibid., 495.

[9] Ibid.

[10] Mooney, *Academic Anxiety*, 14.

[11] Marc-Antoine Crocq, The history of generalized anxiety disorder as a diagnostic category. (*Dialogues in clinical neuroscience*, *19*(2), 2017), 107.

the body, and bloodletting with leeches.[12] Once anxiety disorders were officially recognized in 1980 by the American Psychiatric Association, effective treatments began, and this subject received attention from researchers. Anxiety is now recognized as a diagnosable mental disorder, which has intrigued researchers to discover effective treatments.

The recognition of anxiety disorders developed the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (*DSM-5*).[13] The DSM-5 helps diagnose different forms of anxiety and mental health disorders in patients. The publication of the DSM-5 by the American Psychiatric Association has helped diagnose specific types of anxieties, such as generalized anxiety disorder, separation anxiety disorder, selective mutism, specific phobia, social anxiety disorder, panic disorder, agoraphobia, substance-induced anxiety disorder, and other anxieties caused by medical conditions.[14] In the United States, anxiety is the most common mental health condition, affecting more than forty million adults, according to the National Alliance on Mental Illness (NAMI).[15] NAMI also reports that approximately seven percent of children aged three to seventeen experience anxiety and develop symptoms before age twenty-one.[16] A leading cause of anxiety among children and teens is academic stress or test anxiety. Test anxiety is found in the same category as generalized anxiety and is not considered a separate diagnosis.[17]

The three most common treatments for anxiety disorders after 1980 are psychotherapy, medications, and complementary health approaches or management techniques. These treatments improve both physical and emotional symptoms of anxiety disorders. Music has been an ongoing focus in psychotherapy and cognitive behavioral therapy. Music psychotherapy is "an action-

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[12] Mooney, *Academic Anxiety,* 14.
[13] Mooney, *Academic Anxiety,* 15.
[14] Ibid.
[15] Ibid., 16.
[16] National Alliance on Mental Illness, “Anxiety Disorders.” Nami.org. December 2017. https://www.nami.org/About-Mental-Illness/Mental-Health-Conditions/Anxiety-Disorders.
[17] Mooney, *Academic Anxiety,* 16.

oriented, experiential-based psychotherapy that uses music in either a receptive or expressive /active approach as the primary mode of communication within the therapeutic alliance."[18] The earliest music involvement in therapy began in the 1800s. The fields of medicine and music education affected the development of music therapy in the United States.[19] Music psychotherapy is rooted in psychotherapy's development. As psychotherapy developed, music psychotherapy mirrored its development. "Both professions developed out of clinical practice. Both integrated the concepts of the three primary psychological theories (psychodynamics, behaviorism, and humanism).[20] The development of music therapy brought different practices and disciplines into view, causing tension when some perceived music as both an art and a science. Kerry L. Berry states two primary beliefs about music therapy and its application:

1. "Music's ubiquitous presence enables its applications in therapeutic practice.
2. "Because music evokes an affective and physical response in people, it seemingly can be used to change behavior, such as mood states."[21]

The belief that music can positively affect people's lives has fueled the research on music genres and their effects on anxiety in various professions and disciplines.

Test anxiety occurs in students when their general anxiety begins to impact their academic performance. There is no known exact cause of test anxiety, but physical, genetic, or environmental factors can contribute to the development of test anxiety.[22] Research specific to the music therapy profession uses music during painful procedures and operations. Töres Theorell's study exhibits music's relieving effects in individualized situations, "Music, if

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[18] Rebecca Zarate, Music Psychotherapy and Anxiety: Social, Community and Clinical Contexts, 1st ed. (London: Jessica Kingsley Publishers, 2022), 19.

[19] Kerry L. Hyrniw Byers, *A History of the Music Therapy Profession: Diverse Concepts and Practices*. (Dallas, Texas: Barcelona Publishers, 2016), 9.

[20] Ibid., 11.

[21] Ibid., 13.

[22] Mooney, *Academic Anxiety,* 37.

individualized and adequately adapted to the problem, has documented pain and anxiety-relieving effects.[23] As music is valued as both an art and a science, various professions and disciplines continuously explore it from a psychotherapeutic point of view.

Societal Background

The Anxiety and Depression Association of America reports that 31.9% of children aged 13 to 18 years old are affected by anxiety disorders.[24] If adolescent anxiety goes untreated, students are at risk of missing social events, performing poorly in school, and participating in substance abuse. Other mental health disorders, such as depression, accompany the anxiety disorders experienced by children. Students who struggle with anxiety will most likely encounter difficulties with academics and high-stakes testing, which can affect their overall well-being. The Annie E. Casey Foundation reports the overall well-being of children in a state-by-state comparison found in the 2023 Kids Count Data Book. Chelsea Park Elementary School in Alabama students are the community relevant to this research study. The 2023 Kids Count Data Book ranks Alabama at number 45 in overall child well-being, placing it as the "worst." Despite being ranked in the lowest category for child well-being, Chelsea Park Elementary School scored 92 on the Alabama Department of Education Report Card.

Chelsea Park Elementary School serves 882 students from kindergarten to fifth grade. This school has academic growth of 100%, academic achievement of 83.24%, and progress in English language proficiency of 100%.[25] The student demographics of CPES are 79.7% white, 14.4% African American, 2.5% two or more races, 1.7% Asian, and 1.6% American

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[23] Töres Theorell, Psychological Health Effects of Musical Experiences: Theories, Studies, and Reflections in Music Health Science. (Dordrecht: Springer, 2014).

[24] Anxiety and Depression Association of America. “Anxiety Disorders - Facts & Statistics.” Anxiety and Depression Association of America. October 28, 2022. https://adaa.org/understanding-anxiety/facts-statistics.

[25] “Report Card - Alabama Department of Education.” n.d. Reportcard.alsde.edu. Accessed January 24, 2024. https://reportcard.alsde.edu/OverallScorePage.aspx?ReportYear=2023&SystemCode=059&SchoolCode=0200.

Indian/Alaska Native. For grade enrollments, the third-grade class makes up 16% of the school population. CPES is considered a low-poverty school and does not require Title 1 funding. The students of CPES have access to two on-site counselors to help with overall well-being. A student's parents can choose whether or not their child will receive counseling services; parents can opt out of counseling services offered at CPES.

Chelsea Park Elementary School students must demonstrate mathematics and English language arts proficiency in the Alabama Comprehensive Assessment Program (ACAP). This assessment is pertinent for third-grade students at CPES because students must be on or above a third-grade reading level before they can rise to fourth-grade. The Alabama Literacy Act requires all third graders to be on grade-level reading at the end of their third-grade year. Students who do not show proficiency are at risk of being retained. ACAP testing is considered high stakes, especially for third grade. Third-grade teachers experience anxiety preparing their students for success on this benchmark assessment.

Music is a graded, required core subject at CPES. All students attend music once a week for 30 minutes. Students participate in active listening to evaluate music through mood and emotion. These listening exercises are part of the music curriculum at CPES, and they serve to help accomplish the objectives of social-emotional learning (SEL), "SEL is a unifying concept for organizing and coordinating school-based programming that focuses on positive youth development, health promotion, prevention of problem behaviors, and student engagement in learning."[26] This learning program directly correlates with music and how it affects anxiety. Students respond to music and have opportunities to share how it made them feel and what they

[26] Scott Edgar, *Music Education, and Social Emotional Learning. Student Workbook : The Heart of Teaching Music*. (Chicago: Gia Publications, Inc., 2019), 14.

experienced when listening to specific genres or pieces. The connection between music and SEL is to develop musicianship and self-management, but not to take away from music education.[27]

Statement of the Problem

Researchers study the effects of music on cognitive abilities in various age groups and settings. Many studies concentrate on the advantages of music in secondary education and beyond. Research studies on elementary school children tend to focus on the "Mozart effect."[28] and how programs, such as the Démos program[29], show how classical music affects cognitive abilities. Literature regarding music's effects on elementary students shows reading, mathematics, and linguistics changes. There is a gap in the literature on how different genres of music can affect the test anxiety of elementary students. Alireza Malakoutikhah's study on music genres' effects on emotion tested four different genres of music, with three being popular and one being unfamiliar among undergraduate students.[30] If a research study has significant findings about music's alleviating effects of anxiety and relaxation among undergraduate students, it would be beneficial to ascertain if different genres of music would affect anxiety and learning performance in third-grade elementary students. The problem is that literature related to the topic of various genres of music affecting anxiety and learning performance is limited to popular genres such as classical, rock, and popular music.

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[27] Edgar, *Music Education, and Social Emotional Learning. Student Workbook : The Heart of Teaching Music*, 68.

[28] Mylène Barbaroux, Eva Dittinger, and Mireille Besson. "Music Training with Démos Program Positively Influences Cognitive Functions in Children from Low Socio-Economic Backgrounds." (*PLOS ONE* 14, no. 5 (2019), 1.

[29] Ibid.

[30] Alireza Malakoutikhah, Mahlagha Dehghan, Asma Ghonchehpoorc, Peiman Parandeh Afshar, and Amin Honarmand, "The Effect of Different Genres of Music and Silence on Relaxation and Anxiety: A Randomized Controlled Trial." (*EXPLORE* 16, no. 6 2020) 145.

Statement of the Purpose

This descriptive case study investigates the effects of classical, rap, electronic, and jazz genres of music played during a test administered to third-grade elementary students. This study will use a Pearson product-moment correlation to gather statistics through surveys and interviews. This study will administer surveys and questionnaires and conduct interviews to show possible correlations between genres and anxiety. The Alabama Literacy Act[31] aims to improve reading proficiency from kindergarten to third grade. The goal is for third-grade students to read at or above grade level by the end of third grade. This act puts great importance on improving the learning performance of third-grade students. The school setting's student population comprises 79.7 percent White, 14.4 percent Black, 6 percent Hispanic, 1.7 percent Asian, 1.6 percent American Indian/Alaska Native, and 2.5 percent two or more races. Students will be administered a test in the music room. After completing the task, students will answer a survey to evaluate anxiety levels. Music pieces from classical, jazz, rap, and electronic genres will be listened to during music class. These pieces from different genres will be employed with specific classes in a test setting to see how they affect anxiety. Surveys and questionnaires will indicate whether these pieces from various genres affected anxiety or not. The interviews will examine if different types of anxiety are present when listening to specific genres. This research study aims to show a possible correlation between the use of various genres of music and anxiety.

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[31] "Shelby County Schools." n.d. Www.shelbyed.k12.Al.us. Accessed August 10, 2023. https://www.shelbyed.k12.al.us/page/alabama-literacy-act.

Significance of the Study

Music has demonstrated positive benefits for cognitive abilities among primary and secondary education students. Patrick K. Cooper suggests that music has positive cognitive benefits, "Despite potential spurious findings early on, research on the cognitive benefits of music training has continued and for noble reasons; a proven cognitive intervention for schoolchildren in a domain as enjoyable and sociable as music has immense utility in academic settings."[32] This study will add to the literature that has already suggested that music has cognitive benefits for learning performance among elementary students. If a positive correlation exists between background music and anxiety among third-grade elementary students, it helps provide evidence to other studies that have already seen a correlation. Research studies claim that music elicits benefits that are worth studying. A Study researching the effects of a Cognitive-Behavioral Therapy music intervention program yielded positive results regarding test anxiety and learning performance, "Thus, test anxiety among pupils can be better managed using the music-based CBT intervention program to enable the children to grow better academically and contribute to the community they belong to."[33] A study concerning background music and surgical trainees demonstrates a higher performance when listening to preferred music during training tasks, "Our study showed that medical students performed surgical simulation tasks significantly better while listening to their most preferred genre of music compared to their least preferred genre of music regardless of the order in which the tasks were completed."[34] This research study shows that music improves tasks that are not necessarily rooted in a music

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[32] Patrick K. Cooper "It's All in Your Head: A Meta-Analysis on the Effects of Music Training on Cognitive Measures in Schoolchildren." (*International Journal of Music Education.* 38, no. 3 2020), 322.

[33] Christian S. Ugwuanyi, I. O. Okeke Chinedu, and Matthias U. Agboeze. "Management of Test Anxiety among Pupils in Basic Science using Music-Based Cognitive Behavior Therapy Intervention: Implication for Community Development." (*Journal of Rational-Emotive & Cognitive-Behavior Therapy* 39, no. 3 09, 2021), 302.

[34] Kellen Gil, Maddie Jones, Tyler Mouw, Mazin Al-Kasspooles, Tejal Brahmbhatt, and Peter J. DiPasco, "Satisfaction or Distraction: Exposure to Nonpreferred Music May Alter the Learning Curve for Surgical Trainees." (*Journal of Surgical Education* 77, no. 6 2020), 1375.

classroom. Examining how music affects the cognitive abilities of third-grade students during testing can provide additional evidence of its impact, which is a subject that researchers have extensively studied.

Research Questions

Music is a way for people to express their feelings and can help them cope with a problem or issue. With test scores of elementary students being a primary concern in education, it would be beneficial to ascertain if different genres of music affect test anxiety, which could affect test scores.

RQ1: Is there a difference in test anxiety among third-grade students after listening to various music genres (classical, rock, rap, and electronic)?

RQ2: What genres of music will students consider acceptable or unacceptable as background music when completing tasks among third-grade elementary students?

RQ3: Is there a relationship between third-grade student anxiety and their music preference?

RQ4: How do students describe their pre-test anxiety when listening to specific music genres (classical, rock, rap, and electronic)?

Hypotheses

H_0: There is no difference between test anxiety among third-grade students and various music genres (classical, rock, rap, and electronic).

H1: The genre of classical music will affect the test anxiety of third-grade students in a positive way over other genres. In a study conducted to research if classical or rock music affected the accuracy of the Stroop test, results show that the classical music genre provides a

significant "positive effect, with the classical condition group having the highest accuracy score out of the three conditions. The rock condition had the lowest accuracy score."[35]

H2: There is no relationship between third-grade student anxiety and their music preference.

H3: Students will describe their pre-test anxiety as stress when listening to specific music genres (classical, rock, rap, and electronic).

Definition of Terms

1. **Alabama Literacy Act**—Enacted in 2019, third-grade students are expected to achieve a third-grade reading level by the end of the year. The school will retain students who fall below this level. Students who have disabilities, are English language learners, have an individual education or 504 plan, or receive reading intervention may be promoted to fourth grade below a third-grade reading level due to reasonable cause exemptions. Students can only be held back once in third grade.
2. **No Child Left Behind**—Enacted in 2001, this act addressed the achievement gap in American schools. It expanded the federal government's role, including holding schools accountable for academic achievement. In 2001, the government implemented this act, which introduced high-stakes testing. The Every Student Succeeds Act replaced it in 2015.
3. **The Alabama Comprehensive Assessment Program**—This standards-based assessment provides parents with information about their student's progress toward mastery of the Alabama Course of Study Standards. This assessment is a benchmark for third-grade students to indicate whether they are retained or promoted to fourth grade.

[35] Ibid., 1516.

4. **Every Student Succeeds Act—** The Obama administration signed this legislation into law in 2010. It requires schools to teach academic standards that prepare students for college and careers, thus dedicating itself to preparing students for their future. The ESSA continues to further the goals of academic achievement that the NCLB began in 2001.

Core Concepts

Test anxiety, also known as academic anxiety, this anxiety is found under the category of generalized anxiety. Students who experience academic or test anxiety have difficulty focusing on completing schoolwork. The worrying can become so intense that a student's fear of failure prevents them from progressing in schoolwork. This type of anxiety can make students think negatively about themselves and form negative behaviors.[36]

Etiology is referred to as the possible pathways of causation that anxiety can take to affect a child. Anxiety cannot always occur the same way one child experienced it to another. Various combinations of symptoms create multiple pathways for anxiety to develop among children.[37]

George Beard coined the term neurasthenia, which began as a vaguely defined illness. Life stress can cause Neurasthenia, which exhausts the nervous system. In 1869, the definition of Beard's neurasthenia evolved into manifestations of anxieties such as pantaphobia or the fear of everything.[38]

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[36] Mooney, *Academic Anxiety,* 18.

[37] Deborah C. Beidel, and Samuel M. Turner. *Childhood Anxiety Disorders: A Guide to Research and Treatment*. (New York: Routledge, 2005), 51.

[38]Crocq, The history of generalized anxiety disorder as a diagnostic category, 107.

Health professionals use the DSM-5 manual to diagnose mental health conditions. The DSM-5 is the fifth and most current edition. Signs and symptoms are listed to help diagnose conditions and distinguish them from each other.[39]

Music psychotherapy is "an action-oriented, experiential-based psychotherapy that uses music in either a receptive or expressive/active approach as the primary mode of communication within the therapeutic alliance."[40] It uses music as a transformative model to help clients in their therapeutic processes.

Social-emotional learning (SEL) is a collective vision that coordinates school-based programs to focus on health promotion, problem behavior prevention, positive youth development, and student engagement in learning. SEL aims to help all students, not just a particular group. This type of learning is cross-curricular across different subjects.[41]

Cognitive Behavioral Therapy (CBT) is rooted in learning theory and combines mental and behavioral approaches. CBT comprises three waves: behavioral therapy, cognitive therapy, and mindfulness skills. CBT interrelates behavior, thoughts, and feelings to create change in a client.[42]

Summary

Diagnosed anxiety disorders among children are on the rise. On a national level, 5.8 million children from 2016 to 2019 were affected by a type of anxiety.[43] Many children with anxiety go untreated or may even go unnoticed because symptoms are not visible. Every child

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[39] Ibid.

[40] Zarate, Music Psychotherapy and Anxiety: Social, Community and Clinical Contexts, 19.

[41] Edgar, *Music Education, and Social Emotional Learning. Student Workbook : The Heart of Teaching Music*, 14

[42] Robin A. Chapman, *Integrating Clinical Hypnosis and CBT : Treating Depression, Anxiety, and Fears*. (New York, NY: Springer Publishing Company, 2014), 11.

[43] Centers for Disease Control and Prevention, "Anxiety and Depression in Children: Get the Facts." Centers for Disease Control and Prevention. May 1, 2019. https://www.cdc.gov/childrensmentalhealth/features/anxiety-depression-children.html.

develops anxiety through different pathways of etiology. The symptoms may be similar, but the anxiety itself may be caused by a single incident or by classical conditioning. A child's anxiety may develop through many encounters with fear, which correlates to Watson and Raynor's (1920) study of classical conditioning.[44] Children may acquire anxiety after a series of fearful events or after one traumatic experience.

Treatments for anxiety had natural beginnings before being formally recognized in 1980. Among the various kinds of anxiety, children and adults most often experience generalized anxiety disorder or GAD. Generalized anxiety includes test or academic anxiety. With high-stakes testing and academic scores being a concern for school districts, managing test anxiety among students is imperative. The Chelsea Park Elementary School students experience high-stakes testing through the Alabama Comprehensive Assessment Program (ACAP). Third-grade students must show proficiency in reading through this exam. The school will retain students who are reading below grade level. Test anxiety is prevalent during the time of this exam. Shelby County Schools encourages teachers to implement social-emotional learning (SEL) into their classrooms to aid in self-management, self-awareness, relationship skills, social awareness, and responsible decision-making.[45] Social and Emotional Learning integrates active listening and reflection into the music classroom. The combination of SEL and music pieces or genres may affect a child's perception of anxiety.

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[44] Beidel, and Turner, *Childhood Anxiety Disorders: A Guide to Research and Treatment*, 53.

[45] Edgar, *Music Education, and Social Emotional Learning. Student Workbook : The Heart of Teaching Music*, 16-17.

Chapter Two: Literature Review

Music serves many purposes in individuals' daily lives. Susan Hallam states, "Individuals use music to change moods and influence emotions. It can potentially support emotional stability and optimism and reduce anxiety."[1] Music psychotherapy is an experimental approach to help positively transform a client's negative experiences, such as anxiety and stress.[2] This study investigates whether different music genres affect third-grade elementary students' test anxiety. Because music psychotherapy is music-centered, it helps show that music can affect a person's anxiety. Kenneth Bruscia also identifies "the experimental-based forms of music psychotherapy as transformative therapy, which, as he explains, is the music experience itself that leads to change."[3] The sources listed in this section identify different methods of measuring cognitive ability and how music affects individuals in daily life and therapeutic settings.

Theoretical Framework

Stress is a topic found in social and biological sciences. The term is widespread and has gained popularity in the field of research. People have described stress and anxiety as an "illness" since the 14th century. As time progressed, stress and anxiety became concerned with individual differences. Richard Lazarus and Susan Folkman developed the cognitive appraisal theory, which describes how people react differently to stress, "Although certain environmental demands and pressures produce stress in substantial numbers of people, individual and group differences in the degree and kind of reaction are always evident."[4] There is a direct correlation between a person's interpretation of an event and their emotional response.

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[1] Susan Hallam, *Psychology of Music*. (Milton: Taylor & Francis Group, 2018), 57.

[2] Rebecca Zarate, Music Psychotherapy and Anxiety: Social, Community and Clinical Contexts, (1st ed. London: Jessica Kingsley Publishers, 2022), 17.

[3] Ibid.

[4] Richard S. Lazarus and Susan Folkman. *Stress, Appraisal, and Coping*. (New York: Springer Pub. Co., 1984), 22.

Lazarus states that two person's characteristics determine appraisal. Commitments and beliefs are two-person characteristics that influence cognitive appraisal in three ways, "by (1) determining what is salient for well-being in a given encounter; (2) shaping the person's understanding of the event, and in consequence his or her emotions and coping efforts; and (3) providing the basis for evaluating outcomes."[5] Commitments are a person's goals, values, and morals. People may approach or stay away from situations that can benefit or harm them. Lazarus states that people who have more outstanding commitments have more significant psychological stress than those who do not, "The greater the strength of a commitment, the more vulnerable the person is to psychological stress in the area of that commitment."[6] The exact strength of commitment can also cause greater vulnerability to seek coping mechanisms.

Beliefs are a person's cognitive configurations formed personally and through cultural notions. Beliefs help give meaning to a person's environment, "In appraisal, beliefs determine what is fact, that is, "how things are" in the environment, and they shape the understanding of its meaning."[7] Primitive beliefs are unquestionable, while higher-order beliefs are learned through sensory experiences and can be fallible. Higher-order beliefs tend to be met with caution when believing external authorities. Regarding the cognitive appraisal theory, a sudden belief change can impact appraisal.

Albert Bandura's social learning theory states that individuals learn behavior by observing, imitating, and modeling it. This theory also describes the role of cognition when people react to their environment. While momentary memory is a short influence, these memories can have lasting effects on behavior, "In other words, if a reaction to a behavior is significantly positive or negative, then it is likely to be remembered well and therefore be either

[5] Ibid., 55.
[6] Ibid., 59.
[7] Ibid., 64.

repeated (if the reaction is positive) or avoided (if it is negative)."[8] Bandura suggests that human behavior is rehearsed in the mind and paired with learned actions that produce the behaviors. Regarding music, Bandura's social learning theory could explain why people interact with or avoid certain music or genres. People with highly positive experiences with certain songs or genres are likelier to engage with them again. Conversely, if an experience with a song or genre is negative, it may be avoided.

[8] Jacqueline Allan, *An Analysis of Albert Bandura's Aggression : A Social Learning Analysis*. (London [England: Routledge, 2017), 35.

The Psychology of Music

Kenneth Bruscia states that music therapy is a complicated discipline to define. Brynjulf Stige and Gary Ansdell challenge that music therapy is best defined locally because it varies across cultures.[9] Bruscia describes music therapy as a theoretical, working definition that uses a therapist's musical experiences to improve a client's health. Music therapy uses facets of musical experience, which can be physical, emotional, spiritual, relational, or mental.

Robin A. Chapman discusses the approach to Cognitive Behavioral Therapy, which can effectively alleviate anxiety, depression, and fear in patients. Research-based studies have developed hypotheses to examine music's effects on reducing anxiety and stress through CBT. CBT uses images and thoughts deemed troubling by a patient to create methods to change or alter negative experiences. The development of CBT emerged through learning theory and clinical practice.[10] Initially, CBT relied on behavior observations without considering emotions or feelings. Albert Bandura's social learning model changed the observation approach to CBT, "This model influenced researchers and clinicians, resulting in the development of today's CBT. This approach incorporates cognitions, imagery, and automatic thoughts and beliefs."[11] Cognitive Behavioral Theory is rooted in cognition, behavior, and mindfulness. Patients learn to alter their behaviors by changing their thoughts or responses to situations through learning-based strategies such as coping mechanisms, words, or images.[12]

A person's interpretation of music explains the impact, significance, and influence that music has in their life. Susan Hallam states that music is "culturally and individually defined."[13]

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[9] Kenneth E. Bruscia, *Defining Music Therapy*. (Third edition. Gilsum, NH: Barcelona Publishers), 2014,8.

[10] Robin A. Chapman, *Integrating Clinical Hypnosis and CBT: Treating Depression, Anxiety, and Fears*. (New York, NY: Springer Publishing Company, 2014), 3.

[11] Ibid.

[12] Ibid., 11.

[13] Susan Hallam, *Psychology of Music*. (Milton: Taylor & Francis Group, 2018), 1.

Hallam shares that music has a positive effect on people who experience stress and anxiety. People listen to music to change their environments and to influence the emotions of the self and others. Music also can manipulate behavior and feelings. Hallam explains that music is not only implemented for focused listening but can help people overcome intense emotion and enhance overall well-being, “We can use music, amongst other things, to reduce stress, to overcome powerful emotions, to generate the right mood for going to a party, to reminisce or to stimulate concentration, overall, to promote our well-being.”[14] Just as music can positively affect emotions and negative experiences, music can also negatively impact behavior and thoughts through negative thoughts, speech, and lyrics.

Music can be employed in multiple settings to help with human feelings and emotions. Töres Theorell shares that music can enhance or reduce stress and anxiety. Theorell believes that humans need music to survive, and they can experience it best in group settings, "There is contemporary research that makes it likely that music strengthening group cohesiveness may prolong life even today, although the mechanisms are different and not well explored. Such discussions also show how difficult it is to scientifically "isolate" the independent effect of music per se. Music is always presented in a given context (acoustics, smells, light, and social environment)."[15] Music preference affects cultures and groups of people. Different cultures may prefer specific genres of music over others, and music’s function may also vary from culture to culture.

Rebecca Zarate describes music psychotherapy as transformative therapy centered on Kenneth Bruscia's ideas. Brucia's philosophy shows that music therapy is also a personal process

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[14] Ibid., 42.

[15] Töres Theorell, *Psychological Health Effects of Musical Experiences: Theories, Studies, and Reflections in Music Health Science*. (Dordrecht: Springer, 2014), 2.

for a client to improve their symptoms of stress and anxiety.[16] Zarate expresses concern for the prevalence of anxiety, stress, and depression in the United States, "For example, Chisholm and colleagues expressed concern that when treatment of anxiety is not scaled up to fit the rate of its prevalence, "more than 12 billion days of lost productivity (the equivalent of more than 50 million years of work) are attributable to depression and anxiety disorders every year, at an estimated cost of US$925 billion."[17] Anxiety and depression are top-rated mental health disorders in the United States. Zarate describes music expectation and prediction as two concepts that are part of the developing theory of music psychotherapy: “Both highlight the constant flux of auditory structures during the music experience, and the brain response is dependent on the structure of the music.”[18] Music expectation and prediction concepts cause the brain to respond to music.

[16] Rebecca Zarate, *Music Psychotherapy and Anxiety: Social, Community and Clinical Contexts*. (1st ed. London: Jessica Kingsley Publishers, 2022), 20.

[17] Ibid., 11.

[18] Rebecca Zarate, *Music Psychotherapy and Anxiety: Social, Community and Clinical Contexts*, 108.

Related Literature

Many studies have examined how music affects cognitive ability and the Attention Training Technique.[19] Few studies have researched how multiple genres affect test ability in third-grade students, which has established a gap in the literature. Researchers study only popular music genres, such as classical, rock, and pop, in various fields and populations. Researchers have studied the effect of background music on medical students during tasks to determine whether music influences the assigned tasks. The related studies listed here show that music has significantly affected anxiety and task-oriented studies. There are some studies, however, that show no significant effects. The information in these sources will help guide the research process due to their relevance to music alleviating anxiety.

Music's Effect on Anxiety and Cognitive Function

Anna Birman and Christopher Ferguson's study tests different genres of music for medical students during laparoscopic exercises. Results of this study show little to no significance of music's effect on mood and performance during laparoscopic training exercises. This study had one significant finding related to choosing preferred music, "The only exception regarded a planned contrast found that participants who could choose their own music performed better on the Long-Delay Free Recall test than participants in the rock music group."[20] While this result provided evidence for the second hypothesis that choosing music will enhance

[19] Kaori Usui, Issaku Kawashima, Nozomi Tomita, Toru Takahashi, and Hiroaki Kumano. "Effects of the Attention Training Technique on Brain Activity in Healthy University Students Assessed by EEG Source Imaging." (Psychological Reports. 125, no. 2, 2022).

[20] Anna R Birman, and Christopher J Ferguson. "Impact of Different Genres of Background Music on a Memory Test." (Journal of Individual Differences. 43, no. 4, 2022), 192.

performance on memory tests, the result is not generalizable due to sample size. Background music had no impact on mood, contradicting previous studies.

Gong Chen et al. conducted a study to examine if a proposed scoring model implemented to select songs for music therapy would be effective over outdated methods of music selection. The State-Trait Anxiety Inventory was used to collect participants' anxiety levels as a pre and post-test. This study shows that the proposed scoring model for song selection is effective in therapeutic practices. These results align with the results of studies conducted by Grocke and Wigram, which show patterns of accuracy and suitability.[21] (cite pg. 4307) Throughout the study, participants' anxiety decreased through the proposed scoring method of song selection, which utilized songs with high therapeutic power.

Thomas Fergus and Christine Limbers conducted a study to examine if the Attention Training Technique intervention could reduce the test anxiety of eighth-grade students. Fergus and Limbers focus on the harmful effects of test anxiety, which causes negative emotionality and concentration while testing.[22] Three intervention groups of sixteen to eighteen students received ATT, while one group of thirty-four received the music-listening control. This research study supports ATT intervention for adolescents with strong metacognitive beliefs: "ATT yielded greater test anxiety reductions than a control for those students at post-intervention, with effects remaining at a 3-week follow-up."[23] This study affirms that ATT could be a viable intervention method for students experiencing anxiety in school settings.

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[21] Gong, Zhejiang Hu Chen, Nianhong Guan, and Xiaoying Wang. "Finding Therapeutic Music for Anxiety Using Scoring Model." (International Journal of Intelligent Systems 36, no. 8, 2021), 4307.

[22] Thomas A. Ferguson, and Christine A. Limbers. "Reducing Test Anxiety in School Settings: A Controlled Pilot Study Examining a Group Format Delivery of the Attention Training Technique among Adolescent Students." (*Behavior Therapy* 50, no. 4, 2019), 804.

[23] Ibid., 812.

Andrew Kim's study uses the Stroop Test to examine the effects of the arousal-and-mood hypothesis. The Stroop Test examines cognitive processes and creates cognitive interference.[24] Kim uses Mozart's "Sonata for Two Pianos in D major, K. 448," which is also implemented in Frances Raucher's "Mozart Effect."[25] The idea was to ascertain if different music genres affect the Stroop Test results. This study organized participants into three groups: the classical condition group, the rock condition group, and the control group. Out of the three groups examined, the classical condition group had the highest accuracy on the Stroop Test, while the rock group had the lowest accuracy.[26] The rock-conditioned group's results were statistically insignificant compared to the control group.

In Ulrich Kirk's research study, jazz, piano, and lo-fi were assigned to three randomized groups of adults to examine their effects on cognitive ability. Researchers randomly assigned three groups of one hundred twenty healthy adults to each listen to a specific type of music. The participants completed tasks while the assigned genre of music played in the background. The results of this study ascertain that familiar and unfamiliar music influences cognitive ability. Familiar music led to higher reaction times but did not have attentional differences between unfamiliar music and the no-music control group. Jazz, piano, and lo-fi genres of music are practical when utilized as focus music as a non-invasive intervention to enhance cognitive performance.[27]

Alireza Malakoutikhah conducted a research study to determine if different types of music such as rock, pop, Western classical, Persian traditional, and silence could affect stress,

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[24] Andrew Kim, "The Effect of Music on Accuracy in the Stroop Test*." (Psychology in the Schools* 59, no. 8, 2022), 1513.

[25] Ibid., 1514.

[26] Ibid., 1516.

[27] Ulrich Kirk, Christelle Ngnoumen, Alicia Clausel, and Clare Kennedy Purvis. "Effects of Three Genres of Focus Music on Heart Rate Variability and Sustained Attention." (Journal of Cognitive Enhancement. 6, no. 2, 2022), 156.

anxiety, and relaxation.This study excluded lyrical music and focused on instrumental form in all genres. The results did not indicate any significant changes between all genres tested despite results from previous studies claiming music's psychophysical effects through listening.[28] One limitation of this research study was that participants did not get to choose a preferred music genre. However, one strength of this study was the random assignment of genres to participants unaware of what they would listen to in the first session.

Before Malakoutikhah's research study on music genres affecting music's psychophysiological effects, Malakoutikhah conducted a similar study that tested pop, rock, western classical, Persian traditional music genres, and silence to ascertain if they affect anxiety and relaxation. The results of this study indicate that all genres, except rock, reduced stress and state anxiety. Compared to silence, the four music genres tested did not have a more relaxing effect or reduce anxiety.[29] Participants experienced increased relaxation with each genre and silence provided, but they did not prefer any particular one over the others.

Peter Myhr's study aimed to ascertain whether the Attention Training Technique (ATT) impacts stress. This study suggests that ATT influences students' stress responses; it also studied ATT's effects on metacognition, which did not show any significant effects. Myhr's study contributes to the literature related to ATT and its effectiveness in non-clinical samples. Before

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[28] Alireza Malakoutikhah, Mahlagha Dehghan, Asma Ghonchehpour, Peiman Parandeh Afshar, and Mohammad Ali Zakeri. "A Randomized Controlled Trial on the Effects of Different Music Genres on Physiologic Parameters and Emotion." (Irish Journal of Medical Science. 2022), 2321.

[29] Alireza Malakoutikhah, Mahlagha Dehghan, Asma Ghonchehpoorc, Peiman Parandeh Afshar, and Amin Honarmand. "The Effect of Different Genres of Music and Silence on Relaxation and Anxiety: A Randomized Controlled Trial." (*EXPLORE* 16, no. 6, 2020), 379.

commencing the weekly ATT intervention, the researchers assessed the participants' stress and meta-worry using Lazarus and Folkman's model.[30]

Lisa Katharina Nees and Philipp Grozinger conducted a research study to ascertain if music influences performance during surgical procedures. Participants of this study performed laparoscopic training exercises with background music from one genre of music. The genres employed for this study included hip-hop, classical, rock, mixed radio, and silence. Exposure to music improved performance, with the classical music genre providing the best performance, "Compared with exposure to mixed radio music or to rock, significantly better performance could be demonstrated for exposure to classical music in Exercise B, with an average exposure time of 127 s needed (§ 21.4; $p < 0.05$)."[31] Classical and hip-hop genres of music have beneficial effects on training performance during laparoscopic training exercises at a sound pressure level of 70 decibels.[32]

A study conducted by Emilia Parada-Cabaleiro et al. examined the effects of anxiety reduction in classical, Turkish, and electroacoustic music genres. The classical music genre amplified the perception of a calming effect, while the electroacoustic genre decreased calm perception. The Turkish music genre did not have any significant findings regarding calm perception. The results of this study indicate that music familiarity may affect relaxation and calm perception, "Pachelbel's Canon, known by all the participants, increased the self-perception of calm, as already shown in previous work also considering the STAI scale. Electroacoustic music, totally unfamiliar to the listeners, decreased their self-perception of calm, which confirms

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[30] Peter Myhr, Timo Hursti, Katarina Emanuelsson, Elina Löfgren, and Odin Hjemdal. "Can the Attention Training Technique Reduce Stress in Students? A Controlled Study of Stress Appraisals and Meta-Worry." (*Frontiers in Psychology*, no. 10, 2019), 2.

[31] Lisa Katharina Nees, Philipp Grozinger, Natalie Orthmann, Nathalie Rippinger, André Hennigs, Christof Sohn, Christoph Domschke, Markus Wallwiener, Joachim Rom, and Fabian Riedel. "The Influence of Different Genres of Music on the Performance of Medical Students on Standardized Laparoscopic Exercises." (*Journal of Surgical Education* 78, no. 5, 2021), 1709.

[32] Ibid., 1714.

that the considered sample in particular, and electroacoustic music in general, promotes negative emotional states."[33]

Seyyedeh Shohreh Taheri and Mansoure Shahriair Ahmadi aimed to ascertain if music affected the anxiety of visually impaired second-grade students. The study tested twenty-eight students and found that music and play affect anxiety in visually impaired second-grade students. The most significant evidence of this correlation was found in the experimental group, "Comparing the pre-test and post-test of the experimental group, the results showed that play and music had an effect on anxiety, depression, and self-esteem of children with visual impairment."[34] The self-esteem variable showed a significant difference between the experimental and control groups. This study provides evidence to support music's functionality in therapeutic settings.

H. E. Stanton grouped the students in their research study according to their test anxiety scores. This study shows that background music was compelling as students entered the room and received information about the task. Results indicate that background music during the test did not continue to improve learning performance, but it did not become disruptive. Background music before administering a task appears to cause a relaxation effect. However, the music should not continue during the task engagement because it did not provide significant results.[35]

Kaori Usui examined the Attention Training Technique on healthy individuals to study neurocognitive effects. Selective attention, switching attention, and divided attention are three phases implemented to improve attentional control functions throughout this study relating to

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[33] Emilia Parada-Cabaleiro, Anton Batliner, and Björn W Schuller. "The Effect of Music in Anxiety Reduction: A Psychological and Physiological Assessment." (Psychology of Music. 49, no. 6 2021).

[34] Seyyedeh Shohreh Taheri, Mansoure Shahriari Ahmadi, and Hasanpasha Sharifi. "Effectiveness of Play and Music on Anxiety, Depression, and Self-esteem in Secondary School Students With Visual Impairment." (The Scientific Journal of Rehabilitation Medicine. 10, no. 5, 2021) 977.

[35] H. E. Stanton, "Music and Test Anxiety: Further Evidence for an Interaction." (*The British Journal of Educational Psychology* 45, no. 1, 1975) 82.

Cognitive Attentional Syndrome and Cognitive Control Training.[36] (cite pg. 864) The Results provide evidence that ATT practice influences changes in brain activity. One should exercise caution when generalizing these results due to the small sample size. Martin Vasilev studied lyrical versus instrumental music to examine what makes background music distracting. Using lyrics in song versus instrumental music shows that participants found lyrics distracting when reading short paragraphs. Instrumental music did not improve reading time but did not cause distraction during the reading. Three out of four experiments demonstrated that lyrical music increased reading times. The increased reading times with lyrical music can be explained by language-related interference, "The increase in reading times in lyrical compared to instrumental music can be readily explained by both semantic and phonological interference theories, which assume that either the semantic or phonological content of the lyrics is processed inadvertently and causes interference with the main task due to the use of shared processes. Critically, both theories assume that this interference is language-related."[37]

Adrian Wells researched the Attention Training Technique with relaxation-induced anxiety in patients who have generalized anxiety and panic disorder. These patients also have elevated levels of self-focus and attention. The results of Wells' study suggest that anxiety decreased when participants utilized an external focus promoted by ATT while self-reporting. The autogenic training caused an increase in panic attacks and anxiety at a frequency above

[36] Kaori Usui, Issaku Kawashima, Nozomi Tomita, Toru Takahashi, and Hiroaki Kumano. “Effects of the Attention Training Technique on Brain Activity in Healthy University Students Assessed by EEG Source Imaging.” (Psychological Reports. 125, no. 2, 2022) 864.

[37] Martin R. Vasilev, Licia Hitching, and Sophie Tyrrell. "What Makes Background Music Distracting? Investigating the Role of Song Lyrics Using Self-Paced Reading." (*Journal of Cognitive Psychology*, 2023) 19.

baseline levels.[38] Results are consistent with findings that ATT can eliminate anxiety and panic attacks while autogenic training intensifies anxiety and panic attacks.

Ashrafalsadat Hakim conducted a study to ascertain if listening to twenty minutes of non-verbal music would reduce anxiety among hospitalized children. The results of this study indicate that exposure to non-verbal music for twenty minutes a day significantly reduced anxiety in hospitalized children, "Daily listening to non-verbal music for 20 minutes after the second and third days significantly reduced the anxiety score and the number of breaths per minute of hospitalized children ($P \leq 0.01$)."[39] This study is significant in helping improve the conditions of deterioration that hospitalized children suffer. Hospitalized children experience damage to their biological and physiological development.[40] These damages and anxiety hospitalized children experience can cause prolonged recovery times. This study's results prove that listening to music can reduce stress and is a non-invasive method. The subjects listened to twenty minutes of Johann Sebastian Bach's nonverbal music.

Hui-Ling Lai's study ascertained if classical music intervention decreased anxiety among nursing students. Thirty-eight students were randomly selected to participate in the study. Results of this study indicate that music intervention may be effective in reducing anxiety and stress, "Classical music intervention is an effective nursing intervention in decreasing test anxiety in nursing students."[41] The classical music genre is a non-invasive method to help reduce anxiety in trial-based settings. Lai measured physiological measures of heart rate and finger temperature.

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[38] Adrian Wells, "Panic Disorder in Association with Relaxation Induced Anxiety: An Attentional Training Approach to Treatment." (*Behavior Therapy* 21, no. 3 1990) 276.

[39] Ashrafalsadat Hakim, Seyedeh Shima Hosseini Kaldozkhi, Ashraf Tashakori, and Saeed Ghanbari. "The Effect of Non-Verbal Music on Anxiety in Hospitalized Children." (*BMC Pediatrics* 23, no. 1, 2023), 1.

[40] Ibid.

[41] Hui-Ling Lai, "A Preliminary Study of Music Effects on Nursing Students' Test Anxiety." (*International Journal for Human Caring.* 10, no. 2 2006), 85.

Results of the study suggest that music intervention could effectively reduce anxiety and stress.[42] The study had experimental groups listen to forty minutes of classical music and a control group that received the same test without music intervention.

Jennifer L. Lilley et al. studied whether music influences test anxiety and performance. The motivation for this study was to help students who experience high-stress levels during undergraduate studies. The results of this study indicate that calm music improved performance, "These findings are consistent with those from other studies showing that calm music reduces anxiety and promotes relaxation, whereas faster-paced music increases tension levels."[43] The results from this study are consistent with findings from other studies ascertaining if calm music reduces anxiety versus obnoxious music. This study also found that certain types of music can heighten anxiety. Regarding test performance, this study shows that obnoxious music affected performance, "In particular, test scores were significantly lower for participants who listened to the obnoxious music than for participants who listened to the calm music, and this effect was most pronounced for participants whose grades were threatened based on their test performance."[44]

In a study by Maryam Naderi, Ahmadali Hemmati Jeshni, and Jahangir Mehr Afsha, test anxiety and academic performance were examined to find if music affected these two areas among third-grade students. The results of this study indicate that music had a positive effect on reducing anxiety and promoting academic performance: "The results showed that music and anxiety and academic performance are related. So that music can reduce anxiety and increase the

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[42] Lai, "A Preliminary Study of Music Effects on Nursing Students' Test Anxiety." 85.

[43] Jennifer L. Lilley, Crystal D. Oberle, and Jon G. Thompson. "Effects of Music and Grade Consequences on Test Anxiety and Performance." (*Psychomusicology* 24, no. 2, 2014), 187.

[44] Lilley, Oberle, and Thompson, "Effects of Music and Grade Consequences on Test Anxiety and Performance." 188.

student's academic performance."[45] Music can be a non-invasive tool in schools to enhance academic performance and reduce student anxiety. Participants participated in an anxiety pre-test and post-test, and researchers utilized these scores to examine the first hypothesis of this study. The scores from the anxiety test indicate that music had a significant effect on anxiety reduction.

Suzanne Galal's study ascertained whether music intervention reduced test anxiety among pharmacy students. Results of this study indicate that musical intervention helped reduce anxiety and decrease State-Trait Anxiety scores. Students in healthcare backgrounds encounter rigorous schooling, which leads to higher anxiety. Pharmacy students need to have stress and anxiety management techniques due to the nature and demands of the program. In this study, Galal indicated that both actively playing an instrument and passively listening to music reduced anxiety, "The use of music appears to have helped reduce test anxiety, even after one brief musical intervention, regardless of whether students passively listened to music or actively played music."[46] This study adds to the literature that using instruments could be beneficial and a promising area for future research. The results of the musical intervention were presented after one use and demonstrated that music can reduce stress and anxiety.

Regarding hemodialysis patients, Francesco Burrai examined the effects of music therapy to ascertain if it can reduce anxiety among patients. While the evidence of the study is low with low confidence, other studies validated that the framework and structure still provide some evidence that music intervention reduces anxiety. Other studies have also reported that the music therapy intervention did not disclose whether specific genres or styles affected the results. Also,

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[45] Maryam Naderi, Ahmadali Hemmati Jeshni, and Jahangir Mehr Afsha. "The Effect of Music on Test Anxiety and Academic Performance in Third Grade Students of Elementary School in Shiraz I District." (*International Journal of Education and Management Studies* 5, no. 3, 2015), 235.

[46] Suzanne Galal, Deepti Vyas, Rachelle Kisst Hackett, Ed Rogan, and Chloe Nguyen. "Effectiveness of Music Interventions to Reduce Test Anxiety in Pharmacy Students." (*Pharmacy* 9, no. 1, 2021), 8.

recommendations to this study suggest using a music therapist, “No RCTs used a trained music therapist, so it is impossible to establish at this time whether these interventions are more effective than listening to prerecorded music or live music.”[47] Severe limitations to this study affected the results. The sample size was too small, and the data collection was imprecision and inconsistent.

Shida Kazemi et al. studied whether music could reduce stress and anxiety among hospitalized children. This study results from this because hospitalization can be stressful for children. Several studies indicate that music significantly reduces anxiety, making it an additional non-invasive approach that researchers have used to alleviate anxiety, "Various studies have mentioned the physiological and psychological effects of music on hospitalized children; besides, music therapy is a low-cost non-pharmacological treatment."[48] This study's results show no differences in attitude anxiety before and after the intervention. However, there was a significant difference in the reduction of anxiety levels in the intervention group. This study validates the use of music therapy with hospitalized children to reduce anxiety.

Musical Experience, Culture, and the Brain

Donald A. Hodges writes about the brain and its connection to human experience. The brain and human experience cannot be separated when trying to understand. Hodges explains the brain's plasticity and how musicians are great examples of this feature: “Musicians are good models for plasticity, as the brains of adults who have received significant musical training are

[47] Francesco Burrai, Emma Forton Magavern, Valentina Micheluzzi, Cristiano Magnaghi, Luigi Apuzzo, and Elena Brioni. “Effectiveness of Music to Improve Anxiety in Hemodialysis Patients.” (*Holistic nursing practice.* 34, no. 6, 2020): 324–333.

[48] Shida Kazemi, Shima Kazemi, Koosha Ghazimoghaddam, Sima Besharat, and Leila Kashani. "Music and Anxiety in Hospitalized Children." (*Journal of Clinical and Diagnostic Research* 6, no. 1, 2012), 94.

different from those who have not."[49] Neuroscientists have found that early musical training can lead to short or long-term changes in the corpus callosum in the brain. Hodges also states that vibration, sound, and music are at the center of the disciplines of biology, anthropology, philosophy, education, psychology, sociology, physics, and music.[50] Because music is everywhere in all societies and cultures, Hodges states that people "inherit a brain predisposed to be musical."[51]

Robert Zatorre describes the auditory pathway from sound processing from the ears to the auditory cortex. The brain responds to stimuli through the non-lemniscal path, which quickly delivers information to higher levels of the brain. Higher-level sound processing is less predictable than lower-level processing, which is predictable. Zatorre describes the importance of music and language through both hemispheres of the brain, "An enormous amount of evidence, from both lesion studies and various imaging techniques, points to preferential processing of some elements of language and music to the left and right hemispheres, respectively."[52] Zatorre's research demonstrates that music and language do not constitute unitary constructs.; Understanding neural specializations, perceived as communication signals, requires auditory cues.[53]

Zatorre also focuses on the brain's reward system, known as affective neuroscience. Affective neuroscience focuses on behavior cognition affected by the brain's reward system. The striatum comprises many components that make up the brain's reward system. There is no direct input from auditory areas to the striatum, "As mentioned earlier in this chapter, there is little or

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[49] Donald A Hodges, Music in the Human Experience: An Introduction to Music Psychology. (United Kingdom: Taylor & Francis, 2019).

[50] Ibid.

[51] Ibid.

[52] Robert J Zatorre, *From Perception to Pleasure: The Neuroscience of Music and Why We Love It*. (New York, NY: Oxford University Press, 2024), 171.

[53] Ibid.

no direct anatomical input from auditory areas to the ventral striatum. Hence, the indirect pathways linking auditory cortical areas to the striatum are critical. The topography of these inputs suggests different functional properties for the ventral versus dorsal pathways."[54] The reward system connects music and learning. Music provides positive responses that also enable learning. Music preference, however, matters in the reward system, "Thus, preferred music is generally better remembered, but this effect is stronger in those with greater reward responses to music."[55] The effects of the reward system vary from person to person due to differences in personality factors and music reward sensitivity.

Patrik Juslin focuses on the importance of music and emotions. Juslin states that music exists in all human cultures, just as Hodges and Zatorre have indicated that music exists in all societies and throughout human experiences. Many factors affect human behavior and emotional responses, "To complicate matters, human behavior is influenced by a large number of factors, such as the current stimulus (at this very moment, the text you are reading), our genes, our body, and it are needed (e.g., hunger, thirst, sleep), our thoughts and emotions, the social situation, the culture we were brought up in, previous life experiences, and personality traits."[56] Music can influence mood and emotions. Juslin's statement does not justify all situations regarding music and emotion. The principles of psychology can elucidate plausible explanations for how music and emotion are related, as Uslin's statements explain.[57]

John Sloboda shares how cultural and societal differences may impact music cognition. Sloboda believes that people are born with inherited musical behavior, "The basic structures that make musical behavior possible are inherited, for we are born with all the equipment that is ours

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[54] Ibid., 182.
[55] Ibid., 258.
[56] Juslin, Patrik N. *Musical Emotions Explained: Unlocking the Secrets of Musical Affect*. (First edition. Oxford: Oxford University Press, 2019), 29.
[57] Ibid., 514.

to use."[58] Regarding music and intelligence, the two areas do not show a correlation. Leta Hollingworth's study concluded that "intellectually superior children are not superior in music sensitivity, for the tests are not symptomatic of intellectual development above that required for understanding and executing the tests."[59] Sloboda explains the difficulty of measuring musical talent and intelligence due to the lack of instrumentation and testing a small sample size of the population. Sloboda's publication of *Exploring the Musical Mind* in 1955 helped fill a gap in literature on musical talent and intelligence.

Continuing the topic of music's effect on societies, Daniel Levitin proposes that combining music and knowledge leads to the survival and fitness of societies. The many features that contribute to the creation of a song aid in knowledge transmission, "In music, the mutual reinforcing cues of meter, accent structure, melodic contour, prosody, rhythm, and rhyme, create constraints on lyrics that preserve them with far greater accuracy than is found in non-musical oral memory."[60] Music can have multiple functions and can be employed in more than one category when transmitting information. All cultures utilize knowledge songs to transmit information universally, "Levitin examined corpora of recorded music from contemporary preliterate subsistence cultures from every continent and found that knowledge songs were ubiquitous, transmitting information about *identification of plants and animals*, *kinship*, *daily routines*, *food preparation*, *healing practices*, *practical skills (e.g., fishing, hunting, trapping, and hut building)*, *tribal history*, and *prescribed behaviors*."[61] Levitin asserts that music can also

[58] John A Sloboda, *Exploring the Musical Mind: Cognition, Emotion, Ability, Function*. (Oxford; Oxford University Press, 2005), 161.

[59] Ibid., 47.

[60] Daniel J Levitin, "Knowledge Songs as an Evolutionary Adaptation to Facilitate Information Transmission through Music." (*Behavioral and Brain Sciences* 44, 2021), 1.

[61] Ibid., 2.

serve as a language for conveying important information in addition to being perceived as a form of emotional communication.

Levitin explains that a common interpretation of musical ability focuses on innate musical talent, often believed to be genetic. The neuroanatomical view of music commonly assumes that the brain's right hemisphere localized musical processing, while the left hemisphere localized language processing. This idea is no longer valid because music is not situated in one spot in the brain, "The sounds of different musical instruments (timbres) are processed in well-defined regions of posterior Heschl's gyrus and superior temporal sulcus (extending into the circular insular sulcus). Tempo and rhythm are believed to invoke hierarchical oscillators in the cerebellum and basal ganglia."[62]Focusing on and remembering music is connected to more advanced brain areas. Levitin explains that listening activates the reward system, which correlates with Zatorre's research in this area.

Oliver Sacks describes music on the brain, focusing on imagery and imagination. Researchers had conducted experiments to investigate how participants' expectation of sound affects their subsequent experience of silence, "Physiological confirmation of such "filling in" by involuntary musical imagery has recently been obtained by William Kelley and his colleagues at Dartmouth, who implemented functional MRI to scan the auditory cortex while their subjects listened to familiar and unfamiliar songs in which gaps of silence had replaced short segments."[63] The subjects of this study did not notice the mental imagery occurring when expecting sound and being met with silence. When participants encountered gaps of silence in familiar songs, these gaps “induced greater activation in the auditory association areas than did

[62] Daniel J Levitin, “What Does It Mean to Be Musical?” (*Neuron.* 73, no. 4 2012), 633.

[63] Oliver W. Sacks, 2007. *Musical Hallucinations: And Other Tales of Music and the Brain*. (New York: Knopf, 2007), 33.

silent gaps embedded in unknown songs."[64] Sacks explains that involuntary musical imagery occurs with repeated exposure to known pieces or songs.

Sacks also describes music as much more to people than involuntary imagery. People hear songs and associate them with days or objects. Music can evoke memories and experiences on a deeper level. Various systems process musical imagery within a person's mind: "These systems, it seems, are as sensitive to stimulation from internal sources—memories, emotions, associations—as to external music."[65] To Sacks, music may not be able to fully explain its connection to the nervous system or emotions, but music itself has unusual qualities. Even without sound, people unknowingly play music in their heads.

Stephen Davies describes music's importance is understood through people and society. Understanding music involves the cognitive dimension: "It is necessary to note that the enjoyment we get from art often has a cognitive dimension rather than a visceral thrill because this is crucial to explaining the attraction of artistic tragedies, horrors, and other negatively charged works dealing with the darker or more bizarre and disgusting aspects of existence."[66] Davies' explanation demonstrates that negatively charged art can still impact the brain's reward system. Describing art as pleasurable indicates that it provides sensations of feeling good. The explanation of art being rewarding indicates the negative associations that can still be considered rewarding in art or music. Davies states that viewing art as pleasurable is to view it in a generic sense. Also, people are a magnificent species in Davies' view because people desire to be artists or appreciators in all societies, "We are driven to be artists and art appreciators, as is testified by

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[64] Ibid.
[65] Ibid., 39.
[66] Stephen Davies, *The Artful Species: Aesthetics, Art, and Evolution*. (First edition. Oxford: Oxford University Press, 2012).

the place accorded to art in every society and epoch. Were we not so compelled, we would be less than fully human."[67] People need the arts of society to be fully human.

Along with Stephen Davies' ideas about the arts being essential to humanity, Isabelle Peretz claims that musical engagement is a fundamental human trait. Music is enjoyable at all ages of a person's life stage. Peretz's study of congenital amusia shows that a lack of music appreciation can occur from disconnections of core systems, "The study of congenital amusia reveals how the disconnection of core systems in a distributed neural network on the right side of the brain can give rise to a severe impairment in perceiving, producing, and, to a large extent, appreciating music."[68] Amusics may be relieved of pitch deficiencies through the brain's reward system. Executive functions for pitch are less effective than the reward system approach.[69] Peretz's study of cognitive amusia can help other mental disorders that have similar neurobiological principles.

Summary

The extent of research has mainly focused on how the music genres of Western classical, pop, and rock affect anxiety and attention-based tasks in medical and therapeutic settings. While research has shown that there is a correlation between different genres and anxiety, it has not demonstrated how other popular music genres affect test anxiety. Also, some studies focused on only instrumental music; it would be beneficial to know if lyrical music, found within different genres, influences anxiety. Identifying the genres that require further testing helps determine which genres to evaluate with third-grade students. The literature shows that music is effective in anxiety-based studies and how familiar and unfamiliar music affects results.

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[67] Ibid.

[68] Isabelle Peretz, "Neurobiology of Congenital Amusia." (*Trends in Cognitive Sciences* 20, no. 11, 2016), 865.

[69] Peretz, "Neurobiology of Congenital Amusia.", 865.

Many studies discussed in the literature review highlight the possibility of music being a non-invasive, effective method for reducing anxiety among all ages. From medical students to students at elementary school, studies show that music therapy is a viable option for reducing stress and anxiety.[70] Gaps in the literature show that some genres receive more attention than others in research studies. Classical music gets the most research and typically reduces anxiety significantly. Exploring lesser-known or emerging genres is essential to determine if other music genres can reduce anxiety among elementary school students.

The psychological and physiological effects of music demonstrate how it can impact individuals' brains. During both active and passive listening, the brain activates numerous areas. Some studies have shown that actively playing instruments has caused participants to reduce anxiety and stress. With the literature studied, it is necessary to test multiple genres and periods of silence to determine their impact on reducing test anxiety among third-grade students. Determining if the classical music genre, new genres, and silence will demonstrate significant findings in reducing test anxiety will be beneficial.

[70] Xiaomin Zhang and Jinliang Qin, "Empirical Analysis of the Alleviation Effect of Music On Test Anxiety of College Students." (*Revista Argentina De Clínica Psicológica* 29, no. 1, 2020), 338.

Chapter Three: Methods

Introduction

This descriptive case study aims to ascertain whether music genres affect test anxiety among third-grade students. Many studies have tested music genres in various settings, and these musical interventions provide evidence that music significantly affects performance in training exercises. The State-Trait Anxiety Inventory for Children measures anxiety levels among children and provides evidence of its presence or absence. The research study will use this survey and the interviews to gather data.

Design

The research design is a descriptive case study. Descriptive case studies allow for various data collection procedures and include detailed information.[1] The independent variables will be music genres and silence, and the dependent variable will be anxiety level. This study will use a correlation analysis, a specific research design that studies the relationship between two quantitative variables.[2] The following three research studies exhibit the effectiveness of a correlational analysis. Brett Jones and Miranda Sigmon's study on the MUSIC Model indicated a relationship between the constructs of the MUSIC Model components and grade levels, which validates the use of inventory in this program.[3] Tianjiao Li's study examined the relationship between low enthusiasm in college students and music selection in courses, and the results show

[1] John W. Creswell and J. David Creswell, Research Design: Qualitative, Quantitative, and mixed Methods Approaches, 5th ed. (Los Angeles: SAGE, 2018), 51.

[2] Ibid., 11.

[3] Brett D. Jones, and Miranda L Sigmon. "Validation Evidence for the Elementary School Version of the MUSIC® Model of Academic Motivation Inventory." (Revista electrónica de investigación psicoeducativa : REIPE = Electronic journal of research in educational psychology / 14, no. 1, 2017): 155–174.

a positive correlation between personal preference and enthusiasm.[4] Deniz Beste's research study about music teacher personalities and burnout resulted in a significant relationship between burnout and teacher personalities.[5] A correlation analysis allows for identifying relationships between variables but cannot determine the causality of variables.[6] A confounding variable[7] may influence the study's variables, making them appear casually related when not.

Questions and Hypotheses

The following research questions aim to ascertain whether music genres and silence affect test anxiety among third-grade students. The STAI-CH survey will gather information about students' anxiety before and after music intervention, and interviews will collect information regarding preference and type of anxiety experienced.

RQ1: Is there a difference in test anxiety among third-grade students after listening to various music genres (classical, rock, rap, and electronic)?

RQ2: What genres of music will students consider acceptable or unacceptable as background music when completing tasks among third-grade elementary students?

RQ3: Is there a relationship between third-grade student anxiety and their music preference?

RQ4: How do students describe their pre-test anxiety when listening to specific music genres (classical, rock, rap, and electronic)?

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[4] Tianjiao Li, "Selection of Audio Materials in College Music Education Courses Based on Hybrid Recommendation Algorithm and Big Data." (Journal of Physics: Conference Series 1774, no. 1, 01, 2021).

[5] Deniz Beste CEVIK KILIC, "The Relationship Between the Burnout Levels of Music Teachers and Their Personalities." (International Education Studies 11, no. 2, 2018).

[6] Pritha Bhandari, "Correlational Research | Definition, Methods and Examples." Scribbr. 2021. https://www.scribbr.com/methodology/correlational-research.

[7] Ibid.

Hypotheses

H_0: There is no difference between test anxiety among third-grade students and various music genres (classical, rock, rap, and electronic). To test this hypothesis, the researcher used a matching test with selected songs from the selected genres.

H2: The genre of classical music will affect the test anxiety of third-grade students in a positive way over other genres. To ascertain if classical music affects anxiety positively, the researcher played a piece during the matching test to gather information on effectiveness.

H3: There is no relationship between third-grade student anxiety and their music preference. Due to the nature of previously conducted studies, the researcher sought to ascertain if preference and anxiety do not correlate.

H4: Students will describe their pre-test anxiety as stress when listening to specific music genres (classical, rock, rap, and electronic). The researcher conducted interviews to comprehend the different kinds of anxiety that individuals might experience during musical intervention.

Participants and Setting

The study will select third-grade students, ages 8-9, from Chelsea Park Elementary School as the sample. There are approximately 131 students in third grade at CPES. The study will report the demographics of male and female students. This study will cover students who are American Indian, Asian, Hispanic, African American, White, Hawaiian, and students of two or more races. The demographic information will be collected through a voluntary self-reporting method, ensuring the privacy and confidentiality of the participants. CPES is in the top 10 percent of Alabama schools' math and reading/language arts proficiency. Nineteen percent of students at CPES are considered economically disadvantaged.

The sampling procedure used in this research study is non-probability

sampling[8] through convenience sampling. The music teacher researcher finds recruiting third-grade classes at CPES convenient for this research plan. A minimum of twenty-five participants in independent groups is required to provide sufficient statistical power.[9] Third-grade homeroom classes will identify participants by gender and race. The researcher will select the participants of this study through permission from parents of third-grade students at CPES. The researchers will introduce this study to the parents of third-grade elementary students at CPES by sending them a letter. Parents may request that their students opt out of this study.

One third-grade class will serve as the control group in the study groups and receive silence. The six other third-grade classes will be assigned a classical, rock, rap, or electronic music genre to listen to while performing tasks. The groups identified in this study are conveniently assigned based on homeroom teacher and when they meet for music with the researcher. Students attend music once per week with the researcher.

This study will occur in the CPES music room, where students attend music once a week. This ample space will have all the required materials, such as sound equipment, to play music from different genres. The third-grade classes that meet in this room will represent sixteen percent of the school's population. Participants will listen to a selected piece from the studied genres and participate in a matching test.

Researcher Positionality

I currently teach music at Chelsea Park Elementary School. My philosophy is that every student deserves a comprehensive music education. My goal is to prepare students for success in secondary music programs at the middle and high school levels. I also want to ensure that

[8] Shona McCombes, “Sampling Methods | Types, Techniques & Examples.” Scribbr (June 22, 2023). https://www.scribbr.com/methodology/sampling-methods/.

[9] Ibid.

students can find a way to enjoy and relate to music even if they decide they do not want to sing or play an instrument. Also, teaching music is a culturally diverse subject area. My students come from different walks of life and cultures, and I want to ensure they see themselves in my curriculum. My elementary musical experience may differ for every student I teach. It is my goal to provide differentiated experiences for all learners. The participants of this research study participated in music sessions with me once a week for thirty minutes. Due to the nature of state testing in elementary school, I want to find possible ways to alleviate test anxiety among third-grade students. ACAP testing is a significant benchmark for third-grade students. Passing the ACAP test promotes third-grade students to the fourth grade, while failure results in retention. This test causes high anxiety and stress among students. It is beneficial to ascertain if music affects test anxiety.

Instrumentation and Data Collection Method

The instrument to collect data will be the State-Trait Anxiety Inventory for Children, constructed with validity and reliability measures.[10] This survey aims to evaluate how listening to various music genres affects the anxiety levels of third-grade students. Charles Spielberger's State-Trait Anxiety Inventory is used to assess state anxiety and trait anxiety. The survey comprises forty questions that have the participants self-assess. Researchers can evaluate participants' anxiety daily or in temporary situations.

The following three research studies demonstrate the effectiveness of the STAI-CH survey method. Andrew Kim's study shows evidence that music genres affect cognitive processes significantly, particularly during the Stroop Test. Before administering the Stroop Test,

[10] Pritha Bhandari, "Questionnaire Design | Methods, Question Types & Examples." Scribbr (June 22, 2023). https://www.scribbr.com/methodology/questionnaire/.

the researchers collected participants' demographic data through a survey.[11] Alireza Malakoutikhah et al. administered the Self-Assessment Manikin questionnaire before and after the music genre intervention. The results of this study indicate no significant findings between music genres and physiological parameters.[12] Lisa Katharina Nees et al. exposed participants to different genres of music during laparoscopic exercises. After the intervention occurred, participants responded to a short paper-based survey. Results indicated that classical and hip-hop music significantly affected training exercises.[13]

The explanation for the reliability of the STAI-CH lies in the test-retest reliability coefficients and Cronbach's alpha. Cronbach's alpha evaluates internal consistency. If scores are .70 and above, the score is considered good. Charles D. Spielberger describes the STAI-CH's internal consistency as "reasonably good."[14] Two popular measures of trait anxiety in children support the validity of the STAI-CH's correlation: "Evidence of the concurrent validity of the STAIC T-Anxiety scale is shown by its correlation with the two most widely used measures of trait anxiety in children—the Children's Manifest Anxiety Scale and the General Anxiety Scale for Children."[15] Previous studies have demonstrated the validity of the STAI-CH through mean scores on S-Anxiety items. The STAI-CH T-Anxiety scale correlated .75 with the *Children's Manifest Anxiety Scale* and .63 with the *General Anxiety Scale for Children,* providing evidence of validity.

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[11] Andrew Kim, "The Effect of Music on Accuracy in the Stroop Test." (Psychology in the Schools 59, no. 8, 2022).

[12] Alireza Malakoutikhah, Mahlagha Dehghan, Asma Ghonchehpour, Peiman Parandeh Afshar, and Mohammad Ali Zakeri. "A Randomized Controlled Trial on the Effects of Different Music Genres on (Physiologic Parameters and Emotion." Irish journal of medical science, 2022).

[13] Lisa Katharina Nees, Philipp Grozinger, Natalie Orthmann, et al. "The Influence of Different Genres of Music on the Performance of Medical Students on Standardized Laparoscopic Exercises." Journal of Surgical Education 78, no. 5 (2021): 1709–16.

[14] Charles Donald Spielberger, and Richard L Gorsuch, State-*Trait Anxiety Inventory for Children*, 1973, 15.

[15] Ibid., 16.

The STAI-CH survey comprises twenty questions. It consists of the S-Anxiety and T-Anxiety subscales with sample items that include: I feel upset, I feel relaxed, I worry too much, and I notice my heart beats fast.[16] Each response to the STAI-CH stem questions is worth different points. Scores can range from a minimum of twenty to a maximum score of sixty, which indicates the presence and absence of anxiety among children. The survey will be scored through averages using mean, median, and mode on scatterplot graphs.

The administration of the STAI-CH recommends the S-Anxiety subscale, followed by the T-Anxiety subscale. The survey prompts children to answer questions before, during, or after a task. Repeated administration of these surveys results in higher reliability in experimental studies. The STAI-CH survey takes ten minutes to administer. The researcher acquired a license to conduct the survey and purchased copies of it. Utilizing this instrument requires IRB approval. The STAI-CH's copyright holder only permits the inclusion of sample items in the appendix of this study.

As part of this research study, the researcher will conduct interviews to gather data. Open-ended questions, which are pre-formulated, are utilized to gather responses from participants:

1. How did the electronic genre affect your anxiety? (the genre is interchangeable).
2. What types of anxiety did you experience listening to these genres of music?
3. Which genre made you feel less anxious and why?
4. Which genre made you feel the most anxious and why?
5. What are your favorite genres of music to listen to?

[16] Copyright © 1970 by Charles D. Spielberger. All rights reserved in all media. Published by Mind Garden, Inc. www.mindgarden.com.

Intelligent verbatim transcription excludes filler words while transcribing interviews.[17] The researcher will record the interviews and transcribe them manually. Data for transcription will be kept securely and organized on a flash drive.

Datasets will achieve saturation when they reach 100 percent. The denominator remains fixed and represents the number of interviews conducted. As the interviewer conducts interviews, the numerator changes and moves closer to the denominator.[18] Thematic analysis analyzes interviews by converting qualitative data into codes categorized as themes. Through thematic analysis, data patterns become evident. The repetition of specific ideas and concepts helps to identify patterns of meaning.

Procedures

Acquiring the IRB's approval requires supporting documents to be submitted, including consent forms, recruitment forms, permission forms, and instrumentation materials, in Appendix A. Parental consent and child assent forms are required for third-grade elementary students to participate in this research study. Forms will be distributed and sent home for parents to review and opt out if they choose to do so. Appendix A will include consent forms. Administration of an STAI-CH does not require training or certification. This survey contains instructions from the copyright holder for the license holder to follow.

The procedures and steps required to collect data are in a specific order. The sample for this study will be administered consent and assent forms to participate in this research study. Upon collecting the consent forms, the researcher will assign the participants to five groups: classical, rock, rap, electronic, and silent. The third-grade classes will come to the music room at CPES to

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[17] Raimo Streefkerk, "Transcribing an Interview | 5 Steps & Transcription Software," *Scribbr*, last modified June 22, 2023, https://www.scribbr.com/methodology/transcribe-interview/.

[18] Greg Guest, Emily Namey, and Mario Chen. 2020. "A Simple Method to Assess and Report Thematic Saturation in Qualitative Research." (*PLoS One* 15, no. 5 May), 4.

complete the STAI-CH pre-test (10 minutes). Students will then take a matching test with music intervention or silence (10 minutes). After completing the matching test (10 minutes), students will take a post-test STAI-CH. After conducting both surveys, the researcher will select ten students to answer interview questions. Data will be collected and examined manually and kept in a locked filing cabinet. Data from STAI-CH surveys will be displayed as a Pearson product-moment correlation on a scatterplot graph to identify relationships between variables. Data from interviews will be coded through thematic analysis to find common themes and patterns.

Data Analysis

The researcher will use Pearson product-moment correlation to analyze the data. This data analysis technique will effectively determine whether there are relationships between the variables of music genres and the anxiety of third-grade elementary students. In a Pearson product-moment correlation, r determines if there is a positive or negative relationship. If $r = -1$, the linear relationship is negative; if $r = 1$, the linear relationship is positive. Suppose there is no linear relationship, $r = 0$. This data analysis technique also determines if the relationship between two variables is significant. If $p \neq 0$, the researcher can reject the null hypothesis, but if $p = 0$, the researcher cannot dismiss it.[19] This study seeks to find correlations between variables so that this technique will be beneficial. It can show the strength and direction of linear relationships.[20] Mehmet Kayhan Kurtuldu's study analyzed the anxiety levels of music teacher candidates during piano exams. During the piano exams, the researcher utilized the relational research approach to identify relationships between variables.[21] This study's sample size will include approximately

[19] Shaun Turney, "Pearson Correlation Coefficient (r) | Guide & Examples." (Scribbr, June 22, 2023). https://www.scribbr.com/statistics/pearson-correlation-coefficient/.

[20] Ibid.

[21] Mehmet Kayhan Kurtuldu, "Correlation of Piano Lesson Success of Music Teacher Candidates with Their Piano Exam Anxiety Levels and Their Opinions on Causes of Anxiety." (International journal of music education. 41, no. 2, 2023): 303–317.

123 students, sufficient to achieve a median effect size with .7 power, $\alpha = .05$. To determine the central tendencies of a set of data; the researcher will analyze various statistical measures such as variance, co-variance, standard deviation, and correlation. To find the correlation coefficient, the researcher divides the co-variance by the standard deviations of the two variables. This information is then applied to a scatterplot to find linear trends. X will be the genre of music, and y will be the participant's anxiety level. The relationship of variables on the scatterplot must be linear. The Y variable should be independent of errors. There are equal variances and normality of errors. The report includes the Pearson product-moment correlation, probability value, and degrees of freedom.[22] Multiple graphs will present each music genre and third-grade students' anxiety levels. After testing all genres, the data will reveal how each genre affected anxiety. When reporting effect size with high significance, researchers report it as either $r=1$ or $r=-1$. On the other hand, if the effect size has no effect, it is reported as $r=0$. This study will report rejecting or failing to reject null hypotheses through $p=0$ or $p\neq0$.

The researcher will conduct interviews to identify common themes. Words and phrases from the interviews will be labeled and coded for analysis. The interviews will be analyzed through thematic analysis to identify common themes, concepts, and patterns. First-round coding will establish codes for the data from the interviews. These codes serve as a reference when coding important terms and themes into categories. Creswell describes three categories into which codes tend to get organized.[23] The research study will organize the codes into expected codes, surprising codes, and unusual or conceptual interests. The first coding round begins with a basic categorization, where the codes are loosely analyzed. Subsequent rounds of coding will reanalyze the codes and focus on pattern coding.

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[22] Shaun Turney, "Pearson Correlation Coefficient (r) | Guide & Examples."

[23] John W. Creswell and J. David Creswell, Research Design: Qualitative, Quantitative, and mixed Methods Approaches, 5th ed. (Los Angeles: SAGE, 2018), 270.

The researcher analyzes interviews to identify themes, topics, and patterns to initialize the first coding stage. The researcher must review transcripts, highlight meaning units, and write reflective notes.[24] During the construction phase, the researcher categorizes the codes collected from the initialization phase into different categories. The categories begin large-scale until scrutinized to a deeper meaning or abstract level. Codes are then labeled and put into categories with similar meanings.[25] The reification phase requires immersion, distancing, relating to established knowledge, and stabilizing.[26] At this point in the thematic analysis, coding is almost fully developed. The researcher needs to distance themself and fully immerse themself in the developed codes. The researcher must analyze both from different angles to prevent a limited data view. To stabilize codes, the researcher must show connections to each other to describe a phenomenon.[27] The researcher writes the fully developed codes in a narrative format during the finalization stage. The narrative form begins with the raw data, which develops into abstract ideas gathered through thematic analysis.

The researcher will use various techniques to implement practical methods in qualitative investigation and provide credibility through thematic analysis. Collecting data from different classes allows for credibility through data triangulation.[28] If a site wishes to transfer the findings, the researcher will provide the site with detailed descriptions of this study. Well-documented research procedures provide dependability. If the research process is logical and documented, readers can judge reliability.[29] Upon completing the research study, the researcher confirms by drawing sound conclusions and articulating the path to arrive at them. This process ensures the

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[24] Mojtaba Vaismoradi et al. "Theme Development in Qualitative Content Analysis and Thematic Analysis." (*Journal of Nursing Education and Practice* 6, no. 5 January 2016), 103.

[25] Ibid., 105.

[26] Ibid., 106.

[27] Ibid., 107.

[28] Lorelli S. Nowell et al. "Thematic Analysis: Striving to Meet the Trustworthiness Criteria." (*International Journal of Qualitative Methods* 16, no. 1, October 2017), 3.

[29] Ibid.,

validity and reliability of the study's findings, thereby enhancing its credibility. Achieving credibility, transferability, and dependability leads to comfortability.

Summary

In summary, this research study will implement the STAI-CH and interviews to collect participant data. The STAI-CH will provide evidence of how music genres affect test anxiety among third-grade students. The interviews will provide insight into the preferred genres and the types of anxiety that people experience. Data collected from this research study will add to existing literature on how music affects test anxiety.

Chapter Four: Results

This chapter discusses the results of this research study. First, the researcher addresses the central tendency measures, followed by assumption testing. The researcher exhibits the results from the STAI-CH surveys on scatterplot graphs for each genre tested. The thematic analysis map represents the codes from interviews. Full transcripts of each interview can be found in Appendix C. The researcher discusses the data collected for each research question. One hundred eleven participants participated after the recruitment phase. The researcher created five intervention groups based on convenience sampling. The five groups accessed a genre of music while completing the matching test.

Measures of Central Tendency

The researcher divided the results of the STAI-CH S-Anxiety scores into two groups: pre-intervention and post-intervention anxiety. The mean of pre-intervention anxiety is 30, the median is 30, and the mode is 31, 28, 27. Pre-intervention anxiety from all test groups is considered relatively low. Two scores of 53 and 54 were recorded and indicated high levels of anxiety. These two scores are the outliers of the pre-intervention anxiety. The mean of the post-invention STAI-CH is 29, the median is 29, and the mode is 20. The outliers of this group are 50 and 52. These results indicate a slight reduction in anxiety scores when examining the measures of central tendency.

Assumptions Testing

In conducting a Pearson product-moment correlation, the researcher followed four assumptions:

1. “The two variables (the variables of interest) must be via a continuous scale.

2. The two variables of interest should have a linear relationship, which you can check with a scatterplot.
3. There should be no spurious outliers.
4. The variables should be normally or near-to-normally distributed."[1]

The results of the STAI-CH are placed on scatterplot graphs to demonstrate linear relationships between pre and post-intervention anxiety. In order to show a significant positive relationship, r must equal 1. To show a significant negative relationship, $r = -1$. If $r = 0$, there is no linear relationship. Pearson's r establishes the p-value of the graphs. The p-value for this research study is set to $\alpha = 0.05$. The researcher fails to reject the null hypothesis if the $p > 0.05$. If the $p < 0.05$, the results are statistically significant, and the null hypothesis is rejected. Table 1 displays the r and p scores for each genre.

The results of the STAI-CH all indicate weak positive correlations between pre-intervention and post-intervention anxiety, except for the rock genre, which shows a moderate positive correlation. The rock genre graph illustrates significant variable X and Y scores tend to correlate. This indicates that there is most often little to no change in anxiety in the rock genre. Across all genres, there are little to no changes in pre- and post-anxiety through the administration of the STAI-CH. Figures 1 through 5 show the weak positive correlations between pre- and post-intervention anxiety. Table 1 exhibits the correlations for all genres tested.

[1] Fein, Erich C., John Gilmour, Tanya Machin, and Liam Hendry. 2022. *Statistics for Research Students*. *Usq.pressbooks.pub*. University of Southern Queensland, 2002.

Table 1. Correlation Table

Correlations			
Silence			
		Pre-Survey Anxiety S-Scores	Post-Survey Anxiety S-Scores
Pre-Survey Anxiety S-Scores	Pearson Correlation	1	0.300
	Sig. (2-tailed)		0.165
	N	23	23
Post-Survey Anxiety S-Scores	Pearson Correlation	0.300	1
	Sig. (2-tailed)	0.165	
	N	23	23
Classical			
		Pre-Survey Anxiety S-Scores	Post-Survey Anxiety S-Scores
Pre-Survey Anxiety S-Scores	Pearson Correlation	1	0.200
	Sig. (2-tailed)		0.337
	N	25	25
Post-Survey Anxiety S-Scores	Pearson Correlation	0.200	1
	Sig. (2-tailed)	0.337	
	N	25	25
Rock			
		Pre-Survey Anxiety S-Scores	Post-Survey Anxiety S-Scores
Pre-Survey Anxiety S-Scores	Pearson Correlation	1	.680**
	Sig. (2-tailed)		0.001
	N	20	20
Post-Survey Anxiety S-Scores	Pearson Correlation	.680**	1
	Sig. (2-tailed)	0.001	
	N	20	20
**. Correlation is significant at the 0.01 level (2-tailed).			
Rap			
		Pre-Survey Anxiety S-Scores	Post-Survey Anxiety S-Scores
Pre-Survey Anxiety S-Scores	Pearson Correlation	1	0.031
	Sig. (2-tailed)		0.896
	N	20	20
Post-Survey Anxiety S-Scores	Pearson Correlation	0.031	1
	Sig. (2-tailed)	0.896	
	N	20	20
Electronic			
		Pre-Survey Anxiety S-Scores	Post-Survey Anxiety S-Scores
Pre-Survey Anxiety S-Scores	Pearson Correlation	1	0.407
	Sig. (2-tailed)		0.054
	N	23	23
Post-Survey Anxiety S-Scores	Pearson Correlation	0.407	1
	Sig. (2-tailed)	0.054	
	N	23	23

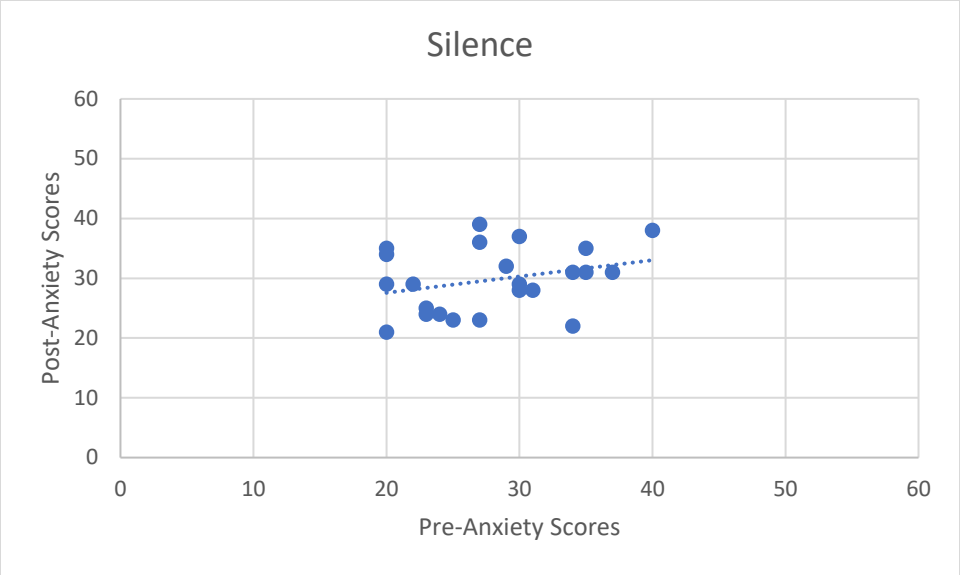

Figure 1. Silence STAI-CH Scores

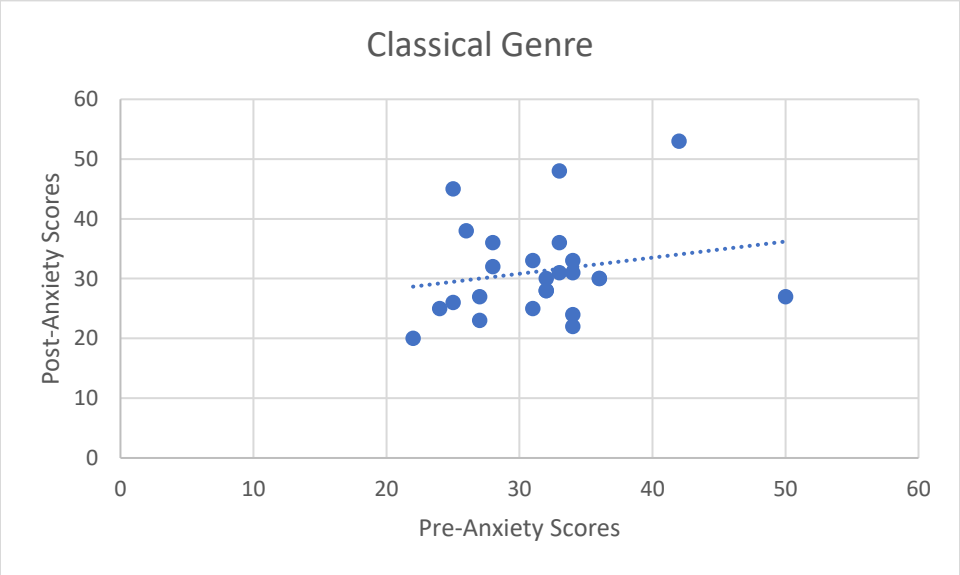

Figure 2. Classical Genre STAI-CH Scores

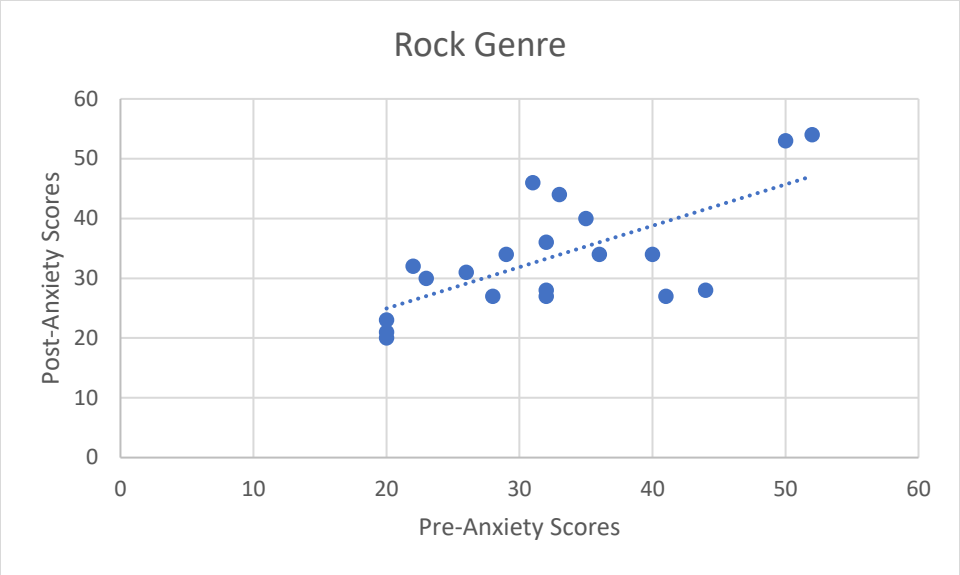

Figure 3. Rock Genre STAI-CH Scores

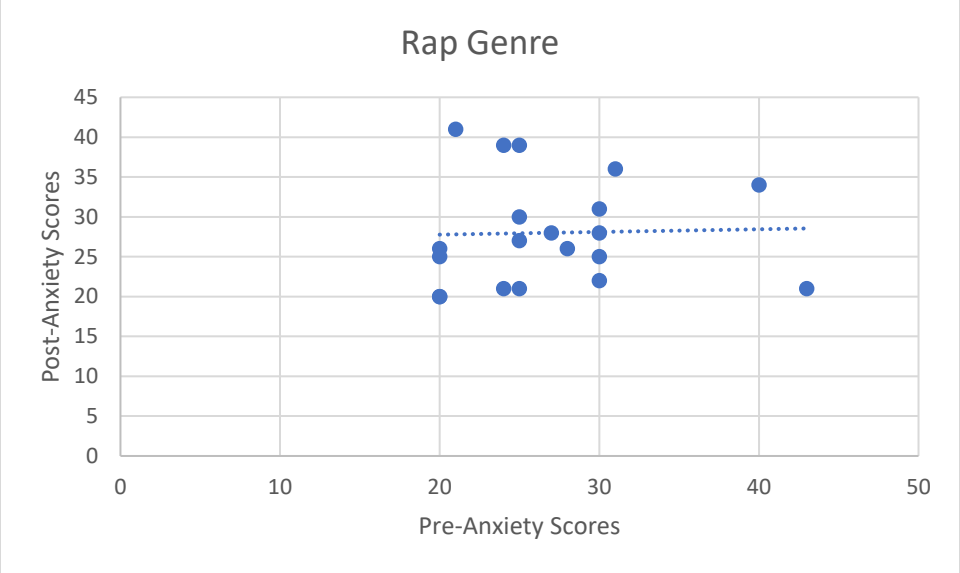

Figure 4. Rap Genre STAI-CH Scores

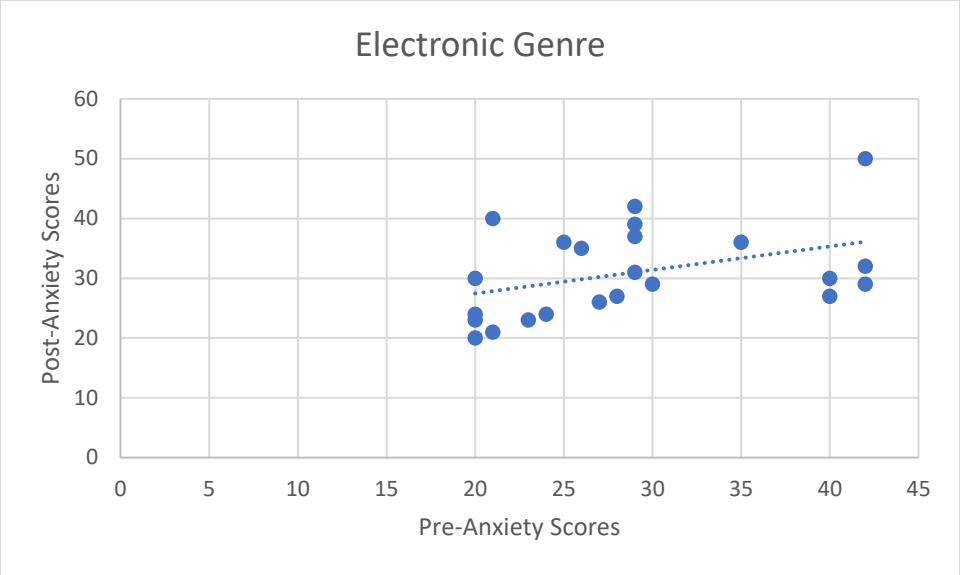

Figure 5. Electronic Genre STAI-CH Scores

Null Hypothesis

H_0: There is no difference between test anxiety among third-grade students and various music genres (classical, rock, rap, and electronic).

This hypothesis compared pre and post-test anxiety among third-grade students through music intervention. All five groups were assigned a genre of music, and one group was assigned silence. The silent group had 23 participants, the classical group had 25 participants, the rock group had 20 participants, the rap group had 20 participants, and the electronic group had 23 participants, creating a sample size of N=111. Table 1 shows the r and p values for each genre. The scatterplot graphs of the Pearson product-moment correlation show a weak positive correlation for silence, classical, rap, and electronic genres of music. The scatterplot graph of the Pearson product-moment correlation for the rock genre shows a moderate positive correlation, r = 680. The results of the rock genre indicate a significant correlation, p = 0.001. This correlation shows a tendency for high X and Y scores to go together and vice versa. The significance of the silence, classical, rap, and electronic genres was insignificant at $p < 0.5$. The rock group was

considered significant at $p < 0.5$ by showing the tendency of high-value pairs of X and Y variables and vice versa. There are no significant differences in anxiety across the five groups of this research study. Therefore, the researcher failed to reject the null hypothesis.

Hypothesis 1

H1: The genre of classical music will affect the test anxiety of third-grade students in a positive way over other genres. In a study conducted to research if classical or rock music affected the accuracy of the Stroop test, results show that the classical music genre provides a significant "positive effect, with the classical condition group having the highest accuracy score out of the three conditions. The rock condition had the lowest accuracy score."[2]

Figures 2 and 3 show that anxiety before and after the musical intervention was not significantly different between classical and rock genres. Interviews also show that third-grade students found “Sonata for Two Pianos in D Major, K. 448” too fast and stressful to listen to while taking the matching test. Six of the ten interview participants indicated that “Sonata for Two Pianos in D Major, K. 488” caused stressful thinking. Interview participants were asked, “which genre made you feel most anxious and why?” The direct quotes for interview question four can be found below:

P1: “The classical one because of how fast it was.”

P2: “The classical because I just don't really like the sound because it was too fast.”

P3: “I would say classical because of the fast parts to it. When it goes too fast, it gets on my nerves and makes feel like I have to go fast.”

P4: “Probably the classical because I did not know what was going to happen next.”

[2] Ibid., 1516.

P7: “The most anxious was classical. To me, I don't like things that go too fast because I don't think that fast.”

P8: “Classical because it makes me feel like I'm getting squished.”

Each quote expresses how a fast tempo can cause feelings of stress and fear of the unknown.

Hypothesis 2

H2: There is no relationship between third-grade student anxiety and their music preference. Due to the nature of previously conducted studies, the researcher sought to ascertain if preference and anxiety do not correlate.

Third-grade students who participated in the interviews declared that preferred music caused them to be relaxed, happy, and calm. Figure 6 shows the thematic analysis of themes relating to familiarity. Students who enjoyed the music they listened to felt content with the research process. Unfamiliarity with songs and genres seems to cause a stress response. There appears to be a relationship between a student’s music preference and the emotions they experience listening to a preferred genre. When participants were asked which genres made them feel less anxious and why, P1 and P2 preferred genres they enjoyed listening to:

P1: "Probably the rap one because it was funny and it felt normal like a kids song that I listen to. It was something I could dance to.”

P2: The rap because it was funny and I liked listening to it.”

P2 mentioned that their favorite music genre to listen to is rap which correlates with the answer given for question three. P1’s favorite music genre is country which was not tested in this research study.

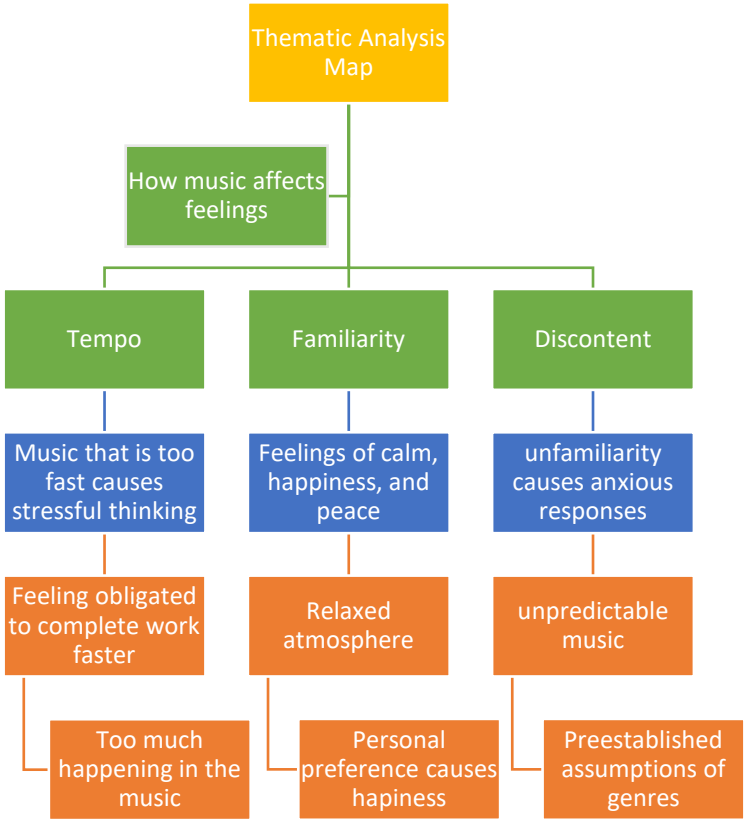

Figure 6. Thematic Analysis Map

Hypothesis 3

H3: Students will describe their pre-test anxiety as stress when listening to specific music genres (classical, rock, rap, and electronic).

Through thematic analysis, students described their pre-test anxiety as stress. Multiple students from the interviews found music with faster tempos to be stress-inducing. The classical music genre was defined as the most stressful based on the fast piano playing throughout the piece. Students felt pressure to work faster due to the tempo and piano playing of Mozart's "Sonata for Two Pianos in D Major, K. 448." Students described their anxiety as stress with genres that were not preferable. The researcher observed that interview participants experienced difficulty describing their feelings while listening to music. When asked what types of anxiety

you experienced listening to these genres of music, the participants rarely described anxiety or stress:

P1: "The classical genre was fast, like the piano. So I was like, how do we keep up with that? I couldn't do that if I played piano. I didn't really feel any different types."

P2: “The rock genre, I didn't really like because of the sound.”

P3: “I liked hearing the musics. Some were really funny. The anxiety was ok because like I am used to hearing music while I work.”

P4: “I felt excited and happy and connected to the songs.”

P5: “Excited.”

P6: “Happy, calm, and excited.”

P7: “I was just like kind of silly.”

P8: “It made me feel like I had to go really fast.”

P9: “A little bit nervous. The rock one. Excitement from the electronic. The rap one made me feel kind of relaxed.”

P10: “Like a little peaceful, um like the rock one.”

Summary

The data analysis shows that different genres of music had little to no effect on third-grade elementary students. However, results from the thematic analysis show that students enjoy music that is preferred. Also, the elements of music itself seem to present evidence that alters emotional responses to music. The classical music genre was perceived as distracting and busy due to its fast tempo. Some students felt pressure to complete their matching test faster due to the fast tempo. This result correlates with findings from studies in the literature review, claiming

classical music has little to no effect on anxiety. The researcher found that the results of this study do not have statistical significance.

Chapter Five: Conclusion/Discussion

In this section, the researcher summarizes the study and discusses findings, prior research, limitations, recommendations for future studies, and implications for practice.

Summary of Study

This study wanted to ascertain whether silence, rock, rap, classical, and electronic music affect the anxiety of third-grade students at CPES. The researcher recruited potential participants through letters and parental opt-out. After collecting the opt-out forms, one hundred-eleven participants participated in this study. Each class was assigned a music genre to listen to while completing a matching test. Participants' pre-anxiety was assessed through the STAI-CH survey before the intervention took place. Participants then took a post-anxiety STAI-CH survey after the intervention took place.

The results of this study indicate that music genres have little to no effect on anxiety. Silence, classical, rap, and electronic music showed a slight positive correlation. However, the results for these genres were insignificant at $p > 0.5$. The rock genre displayed a moderate positive correlation that was significant at $p < 0.5$. Through a Pearson product-moment correlation, scatterplot graphs represent all pre- and post-STAI-CH survey scores. Ten participants agreed to interview after the intervention took place. The interviewees suggest that personal preference and familiarity can influence music's effect on anxiety. The researcher translated the interview responses into codes. Through thematic analysis, the researcher translated these codes into themes.

Music's effect on anxiety is more than just choosing a song and listening to it. This study shows that preference and familiarity could affect music more than choosing specific genres to test.

Summary of Findings and Prior Research

The findings of this research study indicate that music genres have little to no effect on the anxiety of third-grade students. Silence, classical, rap, and electronic music were insignificant at $p > 0.05$. The rock genre is significant with $p = 0.001$. one hundred twenty-five participants are required for results to have significant sample power. One hundred eleven participants participated, giving insignificant sample power. Interview responses indicate that tempo causes stressful thinking. This code was associated with the classical genre. Prior research from Andrew Kim's study indicates that classical music enhances mood, arousal, and accuracy on the Stroop test.[1] Kim's study used Mozart's "Sonata for Two Pianos in D Major, K. 448" to determine whether classical music would enhance accuracy. While this piece revealed positive significant results for Kim's study, it did not yield positive significant results in this research study. The participants of this study stated that the classical genre was too fast and required faster thinking, which resulted in stress.

Hui-Ling Lai's study on music's effects on nursing students' testing anxiety indicates that classical music significantly lowered test anxiety.[2] Lai's study also included measures of heart rate and finger temperature. The researcher measured anxiety scores using the Spielberger State-Trait Anxiety Inventory and the Test Anxiety Inventory. During a classroom-based trial, the nursing students were exposed to classical music for forty minutes. The thirty minutes of intervention for third-grade students did not prove to be significant in anxiety reduction.

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[1] Andrew Kim, "The Effect of Music on Accuracy in the Stroop Test.*" (Psychology in the Schools* 59, no. 8, 2022), 1513.

[2] Hui-Ling Lai, "A Preliminary Study of Music Effects on Nursing Students' Test Anxiety." (*International Journal for Human Caring.* 10, no. 2 2006), 85.

Limitations

The researcher identified limitations to this research study. Only one hundred eleven participants participated in this study, and one hundred twenty-five participants were needed to achieve a significant sample size. Participants' parents signed opt-out forms if they wanted their students to refrain from participating with no consequences. – students did not participate due to opt-out forms. While the results of this study showed slight to moderate significance with each tested genre, the sample size does not have substantial power. The – students who did not participate could have added valuable data at a significant power.

This study's participants are in third grade. Piaget's stages of development explain that seven to eleven-year-olds belong to the concrete operational stage. The students of this research study have yet to think abstractly. The interviews show that participants experienced difficulty explaining their feelings. The participants defined anxiety in terms they could understand. Also, the participants needed words on the STAI-CH defined while filling it out. This study could have had different results if conducted with older participants. It may be beneficial to find a survey that third graders easily understand.

The five groups of participants experienced songs from only four genres of music. The pieces utilized represent the four genres selected for the intervention. Interview participants shared other genres they enjoy listening to that were not part of this research study. It would be beneficial to include genres of music that participants enjoy listening to. The study primarily focuses on testing the genres tested multiple times. In this study, the participants expressed their enjoyment of country and jazz music, which the researcher excluded. Including songs that appeal to personal preference could give more insight into how music affects anxiety.

The songs utilized as intervention are not considered therapeutic. The music therapy discipline identifies therapeutic songs to help patients deal with stress, anxiety, and life's challenges. The results could vary if the pieces chosen for intervention had therapeutic qualities or research. The researcher chose songs that represented genres but did not consider the therapeutic aspect of each song. Also, participants appreciated songs that they could relate to. Participants had an easier time listening to Anthony Broughton's "Clean Up Rap Song" and the Beatles' "Yellow Submarine" because they were used to how these songs sounded. Some participants knew these songs when the intervention began. Personal preference and therapeutic aspects may be able to offer more insight into how music affects anxiety.

The researcher implemented the STAI-CH as a paper survey. Students at CPES are used to using Chromebooks for diagnostic and state tests. If the researcher had administered the STAI-CH electronically, participants would have found it easier to respond to the questions. The researcher has noticed that students enjoy lessons that include technology or Chromebooks. The electronic format of the STAI-CH could have made it easier for participants to focus on answering the questions. Students at CPES are used to spending ample time on Chromebooks, and this format would have been something they are used to. The participants would have felt less anxious if they had familiarly received the content.

Recommendations for Future Study

It would be beneficial to ascertain if personal preference changes anxiety. This study did not use the preferred genres of participants. Preference could indicate significant results in affecting anxiety. Prior research measured anxiety with surveys but also included measures of heart rate, body temperature, and accuracy of the assigned task. The data from accuracy, heart rate, and body temperature could show the physiological effects of anxiety. The third-grade

participants stated that they had a difficult time defining anxiety. Having physiological and STAI-CH responses may provide more consistent results.

The researcher recommends testing song tempos to determine whether they affect anxiety. Participants described the classical genre as too fast and crowded. The songs used in this study were not from a music therapy repertoire resource list. It may be beneficial to use songs from the music therapy discipline to ascertain if therapeutic songs affect anxiety, mood, and emotion. The participants of this study desired music that was calm and aided in focus. The songs chosen for each genre did not provide a calm experience for most participants.

Implications for Practice

The results of this study indicate that music's effect on anxiety is more than selecting a genre or song. The researcher of this study teaches music to the participants. The relationship between teacher and student could affect the anxiety experienced in a study of this nature. Also, personal preference appears to influence the emotions and anxiety of participants. Every participant has different tastes in music, and using only four genres with silence does not cover the participants' personal preferences. Music may function differently in each individual's life. Participants familiar with the songs in this study responded in an energetic, dance-like manner, while they met unfamiliar songs with confusion and stress.

Summary

This study cannot make generalized statements about how music genres affect the anxiety of third-grade students. Due to its small sample size, it represents a small slice of society. However, it does show the possibility that music is perceived differently from person to person. Background music may help one student focus but may not help every student. The songs chosen for this study provide evidence that music can initiate a physical or emotional reaction.

Participants who enjoyed the genres utilized danced and were visibly happy. Participants who did not enjoy the genres utilized did not have a physical response. Anxiety may not have been significantly affected, but the songs chosen did create responses, both physically and emotionally.

Overall, participants felt the most at ease or calm listening to music they preferred, but they also felt overwhelmed by unfamiliar music. Preference demonstrates how music can elicit a physical and emotional response or change. The songs chosen for this study affected each participant differently. The results do not show significant generalized claims for music's effect on anxiety. However, the results show familiarity and preference make a difference during background listening. Music has become easily accessible, which allows for an "individualized" approach, "it has become a soundtrack to everyday life, and thus a central part of personal development and identity for many people."[3] In future studies, it would be beneficial to investigate if music preference affects emotions.

This study did not observe significant correlations between anxiety and classical, rock, rap, and electronic genres. Silence yielded insignificant results. However, Participants stated that the classical music piece was too fast and caused stressful thinking. Country and jazz genres are two genres that participants would have liked to listen to. At a local level, the genres tested provide weak positive correlations that are not statistically relevant to society.

[3]Shuai Zhang et al. "Can Music-Based Movement Therapy Improve Motor Dysfunction in Patients with Parkinson's Disease? Systematic Review and Meta-Analysis." (*Neurological Sciences* 38, no. 9, 2017) 2.

Appendix A

IRB Approval

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

May 9, 2024

Amy Summersett
Nathan Street

Re: IRB Approval - IRB-FY23-24-1544 How Music Genres Affect Test Anxiety Among Third-Grade Elementary Students

Dear Amy Summersett, Nathan Street,

We are pleased to inform you that your study has been approved by the Liberty University Institutional Review Board (IRB). This approval is extended to you for one year from the following date: May 9, 2024. If you need to make changes to the methodology as it pertains to human subjects, you must submit a modification to the IRB. Modifications can be completed through your Cayuse IRB account.

Your study falls under the expedited review category (45 CFR 46.110), which is applicable to specific, minimal risk studies and minor changes to approved studies for the following reason(s):

7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies. (NOTE: Some research in this category may be exempt from the HHS regulations for the protection of human subjects. 45 CFR 46.101(b)(2) and (b)(3). This listing refers only to research that is not exempt.)

For a PDF of your approval letter, click on your study number in the My Studies card on your Cayuse dashboard. Next, click the Submissions bar beside the Study Details bar on the Study Details page. Finally, click Initial under Submission Type and choose the Letters tab toward the bottom of the Submission Details page. Your stamped consent form(s) and final versions of your study documents can be found on the same page under the Attachments tab. Your stamped consent form(s) should be copied and used to gain the consent of your research participants. If you plan to provide your consent information electronically, the contents of the attached consent document(s) should be made available without alteration.

Thank you for your cooperation with the IRB, and we wish you well with your research project.

Sincerely,

G. Michele Baker, PhD, CIP
Administrative Chair
Research Ethics Office

Site Permission

Request to Proceed with a Professional Study
Shelby County Schools

Applicant's Name: Amy Summersett

University Association: Liberty University

Date of Submission: April 29th, 2024

✓ 1. **IRB Approval**

- Must contain signature of approval or evidence of application for approval

✓ 2. **Abstract of Study, including Methodology**

- Documentation to explain the study

✓ 3. **Cover Letter, Memorandum, etc.**

- Consent form explaining the study to the participant that clearly states person does NOT have to participate in the study; that participation is strictly voluntary

✓ 4. **Copy of Survey or Interview Questions, if applicable**

✓ Approved** _____ Denied

Explanation (if needed):

Signature of Superintendent or Designee : [redacted]

Date of Approval/Denial: 5/7/24

**If approved, the researcher may contact administrator(s) of schools, if applicable.

- The administrator has the final decision as to whether or not he/she will allow for the study to be conducted at his/her site.

Additional Comments:

Parental Opt-Out

Title of the Project: How Music Genres Affect Test Anxiety Among Third-Grade Elementary Students
Principal Investigator: Amy Summersett, Graduate Student, School of Music, Liberty University

Invitation to be Part of a Research Study

Your child is invited to participate in a research study. To participate, he or she must be a 3rd-grade student at Chelsea Park Elementary School. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to allow your child to take part in this research project.

What is the study about and why are we doing it?

The purpose of the study is to ascertain if listening to different genres of music affects test anxiety among third-grade students. Classical, rap, rock, and electronic genres of music will be played in the background while completing tasks.

What will participants be asked to do in this study?

If you agree to allow your child to be in this study, I will ask her or him to do the following:

1. Participate in an in-person, State-Trait Anxiety Inventory for Children presurvey that will take no more than 10 minutes.
2. Participate in an in-person matching test while listening to music from different genres that will take no more than 10 minutes.
3. Participate in an in-person, State-Trait Anxiety Inventory for Children post-survey that will take no more than 10 minutes.
4. Participate in an optional in-person interview that will take no more than 5 minutes.

How could participants or others benefit from this study?

Participants should not expect to receive a direct benefit from taking part in this study.

Benefits to society include alleviating anxiety through listening to music and finding which genres affect anxiety. Benefits to music education include possible test-taking methods to reduce test anxiety. Benefits to literature include evidence to support whether new or popular genres affect test anxiety

What risks might participants experience from being in this study?

The expected risks from participating in this study are minimal, which means they are equal to the risks your child would encounter in everyday life.

This study has the possibility of psychological stress from being asked to listen to music from different genres. To reduce risk, I will choose pieces or songs that are not associated with intense emotions, monitor participants, discontinue the interview if needed, and contact you.

I am a mandatory reporter. During this study, if I receive information about child abuse, child neglect, elder abuse, or intent to harm self or others, I will be required to report it to the appropriate authorities.

How will personal information be protected?

The records of this study will be kept private. Published reports will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher will have access to the records.

- Participant responses to the State-Trait Anxiety Inventory for Children will be anonymous and interviews will be kept confidential by replacing names with codes.
- Interviews will be conducted in a location where others will not easily overhear the conversation.
- Data will be stored on a password-locked computer and in a locked file cabinet. After three years, all electronic records will be deleted, and all hardcopy records will be shredded.
- Recordings will be stored on a password locked computer for three years and then deleted. The researcher will have access to these recordings.

Is the researcher in a position of authority over participants, or does the researcher have a financial conflict of interest?

The researcher serves as a teacher at Chelsea Park Elementary School. To limit potential or perceived conflicts, responses to the surveys and test will be anonymous and interview participants will be kept confidential by replacing names with codes. This disclosure is made so that you can decide if this relationship will affect your willingness to allow your child to participate in this study. No action will be taken against an individual based on her or his decision to allow his or her child to participate in this study.

Is study participation voluntary?

Participation in this study is voluntary. Your decision whether to allow your child to participate will not affect your or his or her current or future relations with Liberty University or Chelsea Park Elementary School. If you decide to allow your child to participate, she or he is free to not answer any question or withdraw at any time without affecting those relationships.

What should be done if a participant wishes to withdraw from the study?

If you choose to withdraw your child from the study or your child chooses to withdraw, please inform the researcher that your child wishes to discontinue his or her participation, and your child should not submit the study materials. Your child's responses, apart from anonymous survey responses that can no longer be identified for deletion, will not be recorded or included in the study.

Whom do you contact if you have questions or concerns about the study?

The researcher conducting this study is Amy Summersett. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her at [redacted] You may also contact the researcher's faculty sponsor, Dr. Nathan Street, at [redacted]

Whom do you contact if you have questions about rights as a research participant?

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the IRB. Our physical address is [redacted]; our phone number is [redacted], and our email address is [redacted]

Disclaimer: The Institutional Review Board (IRB) is tasked with ensuring that human subjects research will be conducted in an ethical manner as defined and required by federal regulations. The topics covered and viewpoints expressed or alluded to by student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University.

Your Opt-Out

If you would prefer that your child NOT PARTICIPATE in this study, please sign this document, and return it to your child's teacher by April 12th.

_____
Printed Child's/Student's Name

_____
Parent/Guardian's Signature Date

Child Assent

Child Assent to Participate in a Research Study

What is the name of the study and who is doing the study?
The name of the study is How Music Genres Affect Test Anxiety Among Third-Grade Students and the person doing the study is Amy Summersett

Why is Amy Summersett doing this study?
Amy Summersett wants to know if listening to music can help ease anxiety.

Why am I being asked to be in this study?
You are being asked to be in this study because you are in 3rd grade at Chelsea Park Elementary School.

If I decide to be in the study, what will happen and how long will it take?
If you decide to be in this study, you will Take a survey about how you feel which will take 10 minutes. Then, you will take a matching test while listening to music which will take 10 minutes. You will take another survey about how you feel after the matching test which will take 10 minutes. You may also be asked to interview, which will take 5 minutes.

Do I have to be in this study?
No, you do not have to be in this study. If you want to be in this study, then tell the researcher. If you don't want to, it's OK to say no. The researcher will not be angry. You can say yes now and change your mind later. It's up to you.

What if I have a question?
You can ask questions any time. You can ask now. You can ask later. You can talk to the researcher. If you do not understand something, please ask the researcher to explain it to you again.

Signing your name below means that you want to be in the study.

_____

Signature of Child Date

Amy Summersett

[redacted]

Dr. Nathan Street

[redacted]

Liberty University Institutional Review Board

[redacted]

Appendix B: Data Collection Instruments

STAI-CH Permission

Permission Letter

mind garden

www.mindgarden.com

To Whom It May Concern,

The above-named person has made a license purchase from Mind Garden, Inc. and has permission to administer the following copyrighted instrument up to that quantity purchased:

State-Trait Anxiety Inventory for Children

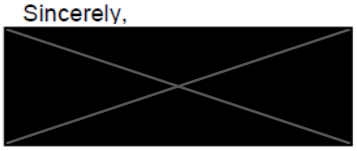
The license holder has permission to administer the complete instrument in their research, however, only four sample items from this instrument as specified below may be included in the research write-up, thesis, or dissertation. Any other use must receive prior written permission from Mind Garden. The entire instrument form may not be included or reproduced at any time in any other published material. Please understand that disclosing more than we have authorized will compromise the integrity and value of the test.

Citation of the instrument must include the applicable copyright statement listed below.

Sample Items:

I feel upset
I feel relaxed
I worry too much
I notice my heart beats fast

Sincerely,



Robert Most
Mind Garden, Inc.
www.mindgarden.com

Interview Questions

1. How did the electronic genre affect your anxiety? (the genre is interchangeable).
2. What types of anxiety did you experience listening to these genres of music?
3. Which genre made you feel less anxious and why?
4. Which genre made you feel the most anxious and why?
5. What are your favorite genres of music to listen to?

Genres and Song Choice for Intervention

Classical: “Sonata for Two Pianos in D major, K. 448” by Mozart

Rock: “Yellow Submarine” by the Beatles

Rap: “Clean Up Rap Song” by Anthony Broughton

Electronic: “Everchild” by Ace Buchannon

Appendix C: Interview Transcripts

Interview #1

Interviewee: P1

Interviewer: IN

[Begin Transcript 00:00:01]

IN: How did the rap genre affect your anxiety?

P1: The rap genre didn't really do anything, but it was funny. I wanted to dance to it.

IN: What types of anxiety did you experience listening to these genres of music?

P1: The classical genre was fast, like the piano. So I was like how do we keep up with that? I couldn't do that if I played piano. I didn't really feel any different types.

IN: Which genre made you feel less anxious and why?

P1: Probably the rap one because it was funny and it felt normal like a kids song that I listen to. It was something I could dance to.

IN: Which genre made you feel the most anxious and why?

P1: The classical one because of how fast it was.

IN: What are your favorite genres of music to listen to?

P1: Country music.

[End Transcript 00:02:06]

Interview #2

Interviewee: P2

Interviewer: IN

[Begin Transcript 00:00:01]

IN: How did the rap genre affect your anxiety?

P2: It was funny.

IN: What types of anxiety did you experience listening to these genres of music?

P2: The rock genre, I didn't really like because of the sound.

IN: Which genre made you feel less anxious and why?

P2: The rap because it was funny and I liked listening to it.

IN: Which genre made you feel the most anxious and why?

P2: The classical because I just don't really like the sound because it was too fast.

IN: What are your favorite genres of music to listen to?

P2: Rap genre.

[End Transcript 00:02:07]

Interview #3

Interviewee: P3

Interviewer: IN

[Begin Transcript 00:00:01]

IN: How did the classical genre affect your anxiety?

P3: It kind of helped but at the same time it was fast and made me feel faster, but at the same time there were calm parts that helped.

IN: What types of anxiety did you experience listening to these genres of music?

P3: I liked hearing the musics. Some were really funny. The anxiety was ok because like I am used to hearing music while I work.

IN: Which genre made you feel less anxious and why?

P3: I would say the Yellow Submarine because it was slow and made me feel calm

IN: Which genre made you feel the most anxious and why?

P3: I would say classical because of the fast parts to it. When it goes too fast, it gets on my nerves and makes feel like I have to go fast.

IN: What are your favorite genres of music to listen to?

P3: I would say probably piano or jazz music.

[End Transcript 00:02:28]

Interview #4

Interviewee: P4

Interviewer: IN

[Begin Transcript 00:00:01]

IN: How did the classical genre affect your anxiety?

P4: It just made me feel calm because it went slow and fast and made me feel relaxed

IN: What types of anxiety did you experience listening to these genres of music?

P4: I felt excited and happy and connected to the songs

IN: Which genre made you feel less anxious and why?

P4: Less anxious, probably the electronic genre.

IN: Which genre made you feel the most anxious and why?

P4: Probably the classical because I did not know what was going to happen next.

IN: What are your favorite genres of music to listen to?

P4: I like the violin, guitar, piano, flute, and clarinet is fun.

[End Transcript 00:01:19]

Interview #5

Interviewee: P5

Interviewer: IN

[Begin Transcript 00:00:01]

IN: How did the rock genre affect your anxiety?

P5: Calm.

IN: What types of anxiety did you experience listening to these genres of music?

P5: Excited.

IN: Which genre made you feel less anxious and why?

P5: The rock genre because the voice was different.

IN: Which genre made you feel the most anxious and why?

P5: The Rap one because it went way too fast.

IN: What are your favorite genres of music to listen to?

P5: Classical music.

[End Transcript 00:01:51]

Interview #6

Interviewee: P6

Interviewer: IN

[Begin Transcript 00:00:01]

IN: How did the rock genre affect your anxiety?

P6: It made me feel happy, excited, and dancing.

IN: What types of anxiety did you experience listening to these genres of music?

P6: Happy, calm, and excited.

IN: Which genre made you feel less anxious and why?

P6: Piano classical because it was calm.

IN: Which genre made you feel the most anxious and why?

P6: The rap one because it was fast and rapping.

IN: What are your favorite genres of music to listen to?

P6: Piano classical and rock.

[End Transcript 00:00:52]

Interview #7

Interviewee: P7

Interviewer: IN

[Begin Transcript 00:00:01]

IN: How did the electronic genre affect your anxiety?

P7: Not really that much, but that one makes me think of a stressful game that makes me stressful and I don't like it.

IN: What types of anxiety did you experience listening to these genres of music?

P7: I was just like kind of silly.

IN: Which genre made you feel less anxious and why?

P7: Ooh, the second one, the rap genre. That one made me feel like I could be relaxed.

IN: Which genre made you feel the most anxious and why?

P7: The most anxious was classical. To me, I don't like things that go too fast because I don't think that fast.

IN: What are your favorite genres of music to listen to?

P7: I like smooth country music. It makes me feel more relaxed. I also like things that talk about different things.

[End Transcript 00:02:07]

Interview #8

Interviewee: P8

Interviewer: IN

[Begin Transcript 00:00:01]

IN: How did the electronic genre affect your anxiety?

P8: It made me feel like it was a game that I had to finish and run super fast.

IN: What types of anxiety did you experience listening to these genres of music?

P8: It made me feel like I had to go really fast.

IN: Which genre made you feel less anxious and why?

P8: I say, um, the rap one because it didn't make me feel like the other ones. It made me feel better.

IN: Which genre made you feel the most anxious and why?

P8: Classical because it makes me feel like I'm getting squished.

IN: What are your favorite genres of music to listen to?

P8: Trumpet music. Basically jazz. Violin music.

[End Transcript 00:03:15]

Interview #9

Interviewee: P9

Interviewer: IN

[Begin Transcript 00:00:01]

IN: How did the classical genre affect your anxiety?

P9: Pretty sure calm.

IN: What types of anxiety did you experience listening to these genres of music?

P9: I little bit nervous. The rock one. Excitement from the electronic. The rap one made me feel kind of relaxed.

IN: Which genre made you feel less anxious and why?

P9: Probably the electronic because the beats.

IN: Which genre made you feel the most anxious and why?

P9: Probably rock because it doesn't really sound like rock, and it makes me nervous whether it's rock or not.

IN: What are your favorite genres of music to listen to?

P9: Probably rap, pop, hip hop, and country.

[End Transcript 00:01:51]

Interview #10

Interviewee: P10

Interviewer: IN

[Begin Transcript 00:00:01]

IN: How did the classical genre affect your anxiety?

P10: Calm and nice.

IN: What types of anxiety did you experience listening to these genres of music?

P10: Like a little peaceful, um, like the rock one.

IN: Which genre made you feel less anxious and why?

P10: Electronic because um it makes me frightened.

IN: Which genre made you feel the most anxious and why?

P10: Like, the Yellow Boat because it's like the waves.

IN: What are your favorite genres of music to listen to?

P10: Like, country, hip hop.

[End Transcript 00:01:54]

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