

Spring 4-23-2020

## The Effect of Mozart's Music on Test Anxiety

Emma Blevins  
blevine@bgsu.edu

Follow this and additional works at: <https://scholarworks.bgsu.edu/honorsprojects>



Part of the [Educational Psychology Commons](#), and the [Science and Mathematics Education Commons](#)

---

### Repository Citation

Blevins, Emma, "The Effect of Mozart's Music on Test Anxiety" (2020). *Honors Projects*. 538.  
<https://scholarworks.bgsu.edu/honorsprojects/538>

This work is brought to you for free and open access by the Honors College at ScholarWorks@BGSU. It has been accepted for inclusion in Honors Projects by an authorized administrator of ScholarWorks@BGSU.

The Effect of Mozart's Music on Test Anxiety

Emma Blevins

with Professor Sandra Zirkes

April 23, 2020

EDTL 4160H

Bowling Green State University

**Abstract**

*Test anxiety is a multitude of negative responses to evaluation, which can have an adverse effect on student performance on examinations and student health. Research has found that listening to slow or classical music can help reduce student test anxiety by improving spatial-temporal reasoning, improving student focus, and reducing the physiological effects of anxiety. In my classroom, listening to Mozart's music was shown to have a positive effect on students' emotional well-being. However, the students in my classroom did not have a significant change in performance on mathematics exams when listening to Mozart's music.*

### **Introduction**

Have you ever felt nervous before taking an exam? Perhaps you had a physical response, such as sweating. Or maybe you just felt worried about potential failure. Either way, you have experienced what numerous students have before: test anxiety. Test anxiety is more common in school than most think. It has been estimated that 25-40% of the population has been affected by test anxiety (Cassady, 2010). Additionally, contrary to popular belief, test anxiety bears more consequences than simply causing nervousness during examinations. It has been shown to be associated with significantly lower test scores (Cassady & Johnson, 2002; Hembree, 1988; Lang & Lang, 2010), interfere with students' emotional and behavioral wellbeing, and negatively affect student attitudes towards school (Salend, 2011).

Test anxiety can be defined as a cluster of related responses—such as racing heart rate, fidgeting, or sweating—to evaluation (Cizek & Burg, 2006). Test anxiety is not the same as anxiety. Students with anxiety have trait anxiety, which means that their stress is an ongoing, stable characteristic (Cizek & Burg, 2006; Salend, 2011). Thus, students with anxiety will feel nervousness or stress even when they are not presented with an examination. However, students with test anxiety have state anxiety, which means that their stress is evident only in specific situations (Cizek & Burg, 2006; Salend, 2011). Therefore, test anxiety is only prevalent immediately before, during, or immediately after an examination.

Various methods have been identified to help students with test anxiety, such as teaching students study and test-taking skills. This has been found to be helpful because inefficient studying can exacerbate student test anxiety, while test-taking skills assist students in staying relaxed and focused during an examination (Salend, 2011). Additional methods include providing memory support (Hembree, 1988), employing technology-based testing, involving

students in the testing process, and considering a range of scoring methods (Salend, 2011).

Furthermore, the use of calming background music has been found to help students with test anxiety (Hembree, 1988; Lai et al., 2008), which is the method that I will be looking into.

Specifically, my research will investigate the effect of listening to music composed by Mozart during examinations on test anxiety and, consequently, test performance. I came to this decision because the composer of the music played does affect how students respond to the music (Ivanov & Geake, 2003) and Mozart's music has been linked to improved test scores and/or reduced anxiety in numerous studies (Lai et al., 2008; Su et al., 2017; Taylor & Rowe, 2012).

Additionally, I chose to look at Mozart because a study done by Shih, Huang, and Chiang (2012) found that music with lyrics are likely to reduce attention and performance. Moreover, Pring and Walker (1994) mentioned that music with lyrics has a disruptive effect on brain processes.

Therefore, I decided that listening to Mozart music in the classroom may assist students in reducing or overcoming their test anxiety while taking a test, which will in turn help them perform to the best of their ability on the examinations.

### **Review of Literature**

Within the body of research there are a number of studies which find that listening to background music provides various benefits, which can be linked to improving anxiety. These studies span across many grade levels and content areas. While these studies have been conducted in different regions and investigated the effect of background music on a large age range, all have been found to help student anxiety by improving spatial-temporal reasoning, improving student focus, and/or reducing the physiological effects of anxiety.

#### **Effect on Spatial-Temporal Reasoning**

Spatial-temporal reasoning is “the ability to visualize spatial patterns and mentally manipulate them over a time-ordered sequence of spatial transformations” (Taylor & Rowe, 2012, p. 51). Spatial-temporal reasoning is therefore important for creating and conceptualizing solutions to problems in mathematics (Taylor & Rowe, 2012). Improving spatial-temporal reasoning can help students with examination anxiety because it can help increase self-competence, which can increase student effort and reduce test anxiety (Lang & Lang, 2010).

Improving spatial-temporal reasoning has been found to be possible by listening to background music. In a study done by Taylor and Rowe (2012), 128 undergraduate students were looked at to see if listening to Mozart music would improve their math assessments. These students were split into two groups: those who tested in silence (59 of the students) and those who tested while listening to Mozart (69 of the students). To make sure there were no outside factors, all of the students took the same trigonometry class. This means that the students were all taught the same way with the same homework and the same tests. For the study, the students were tested in their trigonometry classroom. Therefore, the students who tested in “silence”

were still tested with the usual school background noises they would experience during any test. The students were given six trigonometry tests throughout the semester and the mean scores of these tests were taken.

Analysis of the test results in the study found that the students who listened to Mozart while taking the mathematics examinations did significantly better than those who tested in silence. Therefore, it was concluded that listening to Mozart music impacts spatial-temporal reasoning, which can improve achievement in mathematics.

A study done by Ivanov and Geake (2003) also looked at spatial-temporal reasoning in students. However, their focus was on fifth and sixth grade students, which more closely correlates with my research. Ivanov and Geake studied 76 students in fifth and sixth grade from a primary school in Melbourne, Australia. These students ranged from ten to twelve years old and were distributed across three mixed ability classes. Each of these three classes were randomly allocated into one of the three treatment conditions: listening to Mozart, listening to Bach, or listening to background noise. The spatial-temporal reasoning of the students was measured using an age-normed Paper Folding Task (PFT), which asked students to look at a piece of paper that was folded multiple times and had a hole punched through the folded portion and imagine what it will look like when it is unfolded. The students were given the PFT during normal school hours in the students' regular classroom. The students who listened to either Mozart or Bach listened to the music throughout the testing time, while the control group simply received the normal background noise that is present in the school.

After the students had completed the PFT, the results were analyzed for each treatment condition. Results from the PFT showed that students who listened to Mozart music performed significantly better on the PFT than those who listened to background school noise. Therefore,

even though Taylor and Rowe (2012) and Ivanov and Geake (2003) looked at a very different age range, their findings support the same conclusion: background music positively impacts spatial-temporal reasoning.

Spatial-temporal reasoning helps students with anxiety by increasing their self-competence. However, a doubt in ability is not the only consequence of anxiety. Students with anxiety have also been found to have attentional bias (Graham, Robinson, & Mulhall, 2009). Attentional bias can negatively affect the students' attentional resources (Graham, Robinson, & Mulhall, 2009), which can make the students perform worse on tests. Therefore, by improving student focus we can reduce the effects that examination anxiety has on students' attentional resources, which will improve their performance on cognitive tasks, such as exams.

### **Effect on Student Focus**

Multiple studies have been conducted to see if music positively impacts student focus. One such study was carried out by Graham, Robinson, and Mulhall (2009). In their study, they looked at 35 participants, most of whom were university undergraduates, between the ages of 18 and 50. To determine student focus, the researchers created two lists of words. One list consisted of 40 threatening words, while the other list was comprised of 40 neutral words. The words were determined to be either threatening or neutral through previous work done by other researchers. The words contained on each list were printed in five ink colors and the participants had to name the color the word was printed in when the words were presented in randomized order. The participants completed the color-naming of the words under four conditions: processing the threatening words in silence, processing the threatening words while listening to music, processing the neutral words in silence, and processing the neutral words while listening to

music. Time was measured between the color-naming of the first word and completion of the final item.

The time it took for each participant to complete the list under each of the conditions was recorded and then analyzed by the researchers. The study found that listening to music significantly decreased the response latency for threatening words. Graham, Robinson, and Mulhall tied these results to current findings that indicate that task-irrelevant mental activity may improve one's focus of attention and therefore one's performance on cognitive tasks. Thus, the study found that music may allow for students to become more focused on a task.

While Graham, Robinson, and Mulhall's (2009) study looked at a wide age group, their findings are still supported by previous research done with elementary school children. Hallam and Price (1998) looked at the effect of background music on a group of children in a school for students with emotional and behavioral difficulties between the ages of nine and ten. For the study there were two phases. In phase one, students were given a book of math problems within their level of achievement and asked to complete it during class. Four trials were conducted with music that was determined to be calming in a study done by another researcher and then four trials were conducted without the background music. After one week, the students moved into phase two. In phase two, the students were given a book with new problems that were still in their level of achievement. Then, the students completed three trials without music and three trials with music. Before each session, the students were asked to sit quietly and complete as many math problems as they could in a given span of time. During the session, the researchers recorded the number of correctly completed math problems and the number of times the classroom rules were broken.

The study found that the students had performed better on their math task when the background music was present. The students in the class usually talked to one another instead of doing their work. However, the introduction of the calming background music seemed to improve their behavior and their focus on the task at hand. While the music did not make the students stop talking, it did lead to the students talking while working instead of working while talking. Thus, the calming background music was found to positively impact the focus of elementary school children.

### **Effect on Physiological Responses to Anxiety**

In addition to the cognitive effects of anxiety, such as self-doubt and the depletion of attentional resources, there are also the physiological effects of anxiety. There is a large range of physiological effects, but I will be discussing only three: increased blood pressure, body temperature, and pulse rate. These three factors indicate that a student is feeling anxiety. Therefore, a decrease in blood pressure, body temperature, and pulse rate indicate that a student has moved into a state of relaxation and has had a reduction of anxiety. This move into a relaxation state has been shown to occur in various studies as a result of listening to background music.

One such study was conducted by Lai et al. (2008). This study wanted to determine the effect that slow, also called *lento*, music has on examination anxiety. The study looked at 38 students in an English class for nursing majors. These students were randomly split into two groups: the music-then-silence group and the silence-then-music group. The two groups received the exact same test in the same classroom. The test was comprised of 80 questions that had to be completed in 40 minutes. Each test that was administered was for 20% of the students'

grades. During the examination the students would either listen to music or be in silence for the entire 40 minutes and then they would repeat the examination a week later, but with the opposite intervention. The student's state of anxiety was measured using the State-Trait Anxiety Inventory (STAI) Scale, examination anxiety was measured using the Test Anxiety Inventory (TAI), and student pulse rates were measured. Each of these was measured before and after the examination.

From analyzing the answers from the STAI Scale and the TAI before and after the examination, it was concluded that listening to *lento* music significantly reduced the students' examination anxiety and their state of anxiety. This conclusion was supported by the finding that listening to *lento* music decreased the pulse rates of the students, which indicates a sense of relaxation.

While Lai et al. (2008) found that listening to background music can decrease pulse rates during examinations, a study done by Savan (1999) went further. Along with looking at pulse rates, Savan also looked at systolic blood pressure, diastolic blood pressure, and body temperature. In Savan's study a class of students ranging from eleven to twelve years old, who were identified as having special educational needs and emotional and behavioral difficulties, were studied. They were observed during twenty science lessons, each one being 40 minutes long. Ten successive science lessons were observed and recorded when a tape of Mozart's music was being played and ten when there was no background music provided. Three teachers were to observe the students and record many different behavioral parameters, such as work output, task completion, neatness, and concentration. These were scored out of ten with a one being the least favorable and a ten being the most favorable. Additionally, the physiological measurements—which included systolic and diastolic blood pressure, body temperature, and

pulse rate—were recorded. These were recorded at the start of the lesson, 20 minutes into the lesson, and one hour after the end of the lesson.

The study found that there was a significant drop in all of the physiological parameters when the Mozart music was being played. This means that the students' blood pressure, body temperature, and pulse rate were all decreased during the examination when they were listening to music. Thus, the playing of Mozart music led to the students feeling a decrease in anxiety and an increase in relaxation.

In conclusion, many studies have found that different types of calming or *lento* background music can improve students' examination anxiety. These studies span across many ages and content areas. While my study will also be looking at the effect that background music has on examination anxiety, it is important to note that it will be a bit more limited. I will only be researching the effect of Mozart's music on the examination anxiety of seventh grade students in my mathematics classrooms.

### **Methodology**

This research was conducted in two sixth-grade mathematics classrooms at a junior high in Sylvania, Ohio. These mathematics classes are grouped by ability, with both classes being Math II. Class 1 had 27 students with 15 boys and 12 girls. Class 2 had 26 students with 11 boys and 15 girls. The research took place on October 10, 2019. Before beginning the research, the students took a survey on their feelings, thoughts, and physical responses to taking exams (Artifact A). This survey looked at physical, emotional, and cognitive responses students have to taking exams to help determine if students had test anxiety.

After taking the pre-survey, students took a mathematics exam on unit rates. Class 1 and Class 2 received the same exam. Class 1 took this exam with no background music, while Class 2 took the exam listening to pieces of Mozart. The pieces of Mozart played (Artifact C) were selected from a list used in Taylor and Rowe's (2012) research and were played aloud through a speaker during the entire class period.

Class 2 then took a post-survey (Artifact B) after completing their examination listening to Mozart. This survey asks students about their feelings of listening to Mozart's music during the exam to help determine the effect of Mozart's music.

The data was analyzed using both quantitative and qualitative methods. For the qualitative analysis, open-ended questions were used in the pre-survey to determine which students had test anxiety. For quantitative analysis, Class 1 and Class 2's exam scores were compared using a t-test to determine if listening to Mozart's music had an effect on test anxiety and, consequently, test performance. Additionally, responses on the post-survey were analyzed to see how students felt about listening to Mozart's music during the exam.

## Results

### Pre-survey

Both Class 1 and Class 2 were given a survey before the beginning of the research period. The survey administered had questions addressing students' feelings, thoughts, and physical responses to taking exams. Student responses to this survey were used to determine if students had test anxiety. Students were determined to have test anxiety if they reported having negative feelings before taking an exam,—which include feeling nervous, worried, and/or scared—having negative thoughts before taking an exam, and having a physical response to taking an exam and/or their mind going blank when they start a test. In Class 1 seven students were determined to have at least mild symptoms of test anxiety, while in Class 2 six students were found.

### Exam Scores

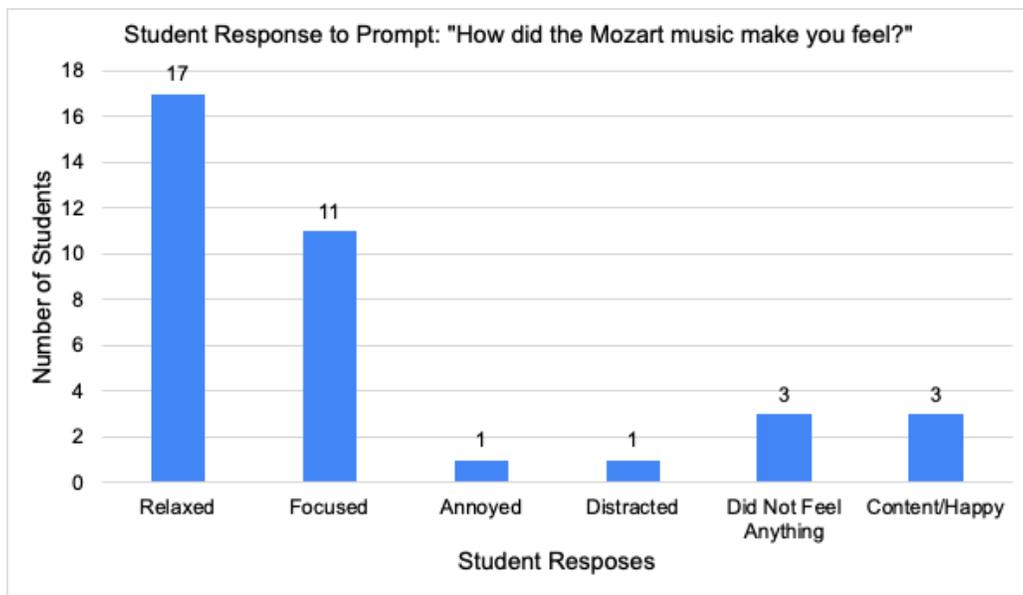
Class 1 took an exam on unit rates with no background music, while Class 2 took the same exam listening to music composed by Mozart. The exam given was out of 22 points. The table below shows the mean and standard deviation of the exam scores, which were used to run a t-test.

	n	Mean	Standard Deviation
Class 1	27	16.56	2.41
Class 2	26	16.15	2.95

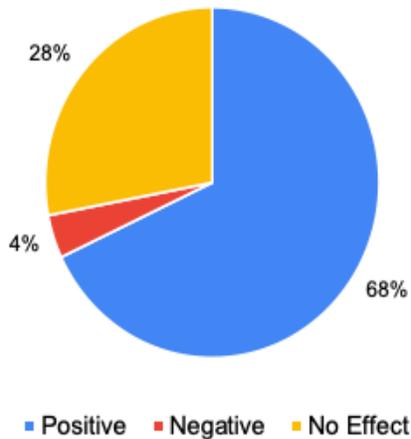
From the t-test, a p-value of 0.5813 was calculated, which shows that these results are not statistically significant.

**Post-Survey**

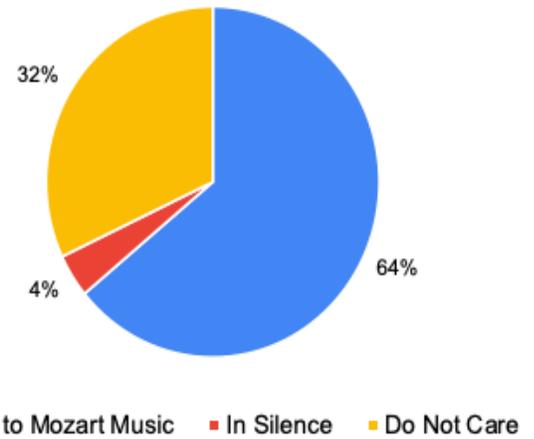
After taking the exam on unit rates while listening to music composed by Mozart, Class 2 took a post-survey. The survey administered asked questions addressing students' feelings during the examination, how the music affected their performance on the examination, and if students would rather listen to music when taking an exam or take it in silence. The graphs below show student responses to the survey.



Percentage of Students Who Felt Listening to Mozart's Music Had a Positive vs. Negative Effect on their Exam Performance



Percentage of Students Who Prefer to Listen to Mozart During Test vs. Taking Exam in Silence



Overall, students reported having positive feelings towards listening to Mozart music while taking their examination. Only one student reported feeling annoyed and distracted while listening to the music during the examination. Additionally, only one student reported that Mozart's music had a negative effect on their performance and would rather take their exam in silence. A majority of the class (68%) stated that the music had a positive effect on their performance and 64% of the class stated that they would rather listen to Mozart music than take their exam in silence.

Of the six students who were determined to have test anxiety in Class 2, two reported that they felt relaxed listening to the music, two reported feeling focused, one reported feeling annoyed and distracted, and one reported feeling nothing. Additionally, of the six students with test anxiety, four reported that the music had a positive effect on their exam performance, one reported it had a negative effect, and one reported that it had no effect. Therefore, a majority of the students with test anxiety (4 out of 6) reported that listening to music composed by Mozart during their exam provided them with positive feelings and had a positive effect on their exam performance. Finally, of the students with anxiety, three reported that they would like to listen to Mozart music while taking exams, one reported wanting to take the exam in silence, and two reported that they did not care either way.

### Conclusions

The results showed that the difference in exams scores between Class 1 and 2 were not statistically significant. Thus, students listening to music composed by Mozart did not affect student performance on examinations. However, a majority of students (68%) reported that they believed listening to Mozart's music actually had a positive effect on their performance. Additionally, 64% reported that they prefer listening to Mozart music during exams, while only 4% reported that they would rather take their exam in silence.

In my classroom in the future I would like to provide students with the opportunity to take their exams while listening to Mozart's music. For students who prefer to take the exam in silence, there is a back room where students can go or they can take their exam in the teacher office, which is adjacent to my classroom. This is because, while the data shows that Mozart's music did not have an effect on student exam performance, a majority of the students still had positive feelings towards taking the exam while listening to music. Seventeen students reported feeling relaxed, 11 reported feeling focused, and only 1 student reported feeling annoyed or distracted. Therefore, even if it did not help student performance, it did have a positive effect on students' emotional well-being.

A majority of the students who were determined to have test anxiety (4 out of 6) also showed improved emotional well-being when listening to Mozart's music. This is because these students reported feeling relaxed and focused—instead of feeling nervous, worried, or scared as they stated they felt when taking an exam in their pre-survey. These students also stated that listening to Mozart music had a positive effect on their performance.

Therefore, listening to music composed by Mozart during exams does not affect student performance on examinations. However, it is shown to have a positive effect on students'—both regular and those with test anxiety—emotional well-being.

### **Limitations**

When conducting this research, there are a few limitations to consider. Due to unforeseen circumstances, students were required to complete the school year online, rather than in the normal classroom setting. Therefore, only half of the data was able to be collected. Data from Class 1 listening to Mozart music while taking an exam, while Class 2 took the same exam in silence was to be collected. These exams scores would then be compared using a t-test to look for statistical significance. Additionally, Class 1 was to complete the post-survey. This would have provided more data that would have made my data analysis more reliable.

Additionally, the math classes in the junior high are grouped by ability. The classes that were studied were both Math II. This means that these students perform at the average level in math for their grade. Therefore, my data cannot be applied to low-performing or high-performing students in mathematics.

### Annotated Bibliography

Cassady, J. C., & Johnson, R. E. (2002). Cognitive test anxiety and academic performance.

*Contemporary Educational Psychology, 27*(2), 270-295. doi: 10.1006/ceps.2001.1094

Researchers Cassady and Johnson investigated the impact that cognitive anxiety, emotionality, and test procrastination had on student performance on three exams and students' self-reported performance on the Scholastic Aptitude Test. The study found that test anxiety is associated with significantly lowered exam scores and lowered Scholastic Aptitude Test scores. Thus, the study shows that test anxiety can negatively impact student performance.

Cassady, J. C. (2010). Test anxiety: Contemporary theories and implications for learning. In J. C.

Cassady (Ed.), *Anxiety in schools: The causes, consequences, and solutions for academic anxieties* (pp. 7-26). New York, NY: Peter Lang.

In this chapter of his book, Cassady discusses test anxiety in general: who is affected by it, the different types of test anxiety, the various beliefs and behaviors that come with test anxiety, and the number of people who are affected by test anxiety. By knowing these different parts of test anxiety, I am able to understand fully what test anxiety entails and how much it will impact my students.

Cizek, G. J., & Burg, S. S. (2006). What test anxiety is ... and isn't. In R. Livsey, P. Cappello, S.

Robinson, & T. Manza (Eds.), *Addressing test anxiety in a high-stakes environment: Strategies for classrooms and schools* (11-26).

This source defined test anxiety as a cluster of related responses to evaluation.

Additionally, it provided misconceptions centered around test anxiety, such as test anxiety is the same as anxiety. By knowing these, I will be able to look for and identify

test anxiety in my own classroom.

Graham, R., Robinson, J., & Mulhall, P. (2009). Effects of concurrent music listening on emotional processing. *Psychology of Music, 37*(4), 485-493.

doi:10.1177/0305735608099689

Graham, Robinson, and Mulhall studied the effect that listening to music has on the response latency for naming the color a threatening word is printed in. Participants in the study were asked to name the color each word in a list of 40 threatening words were printed in while listening to music and listening to no music. Additionally, they had to repeat this process with a list of 40 neutral words. The study found that listening to music decreased the response latency for threatening words, which could be due to the music relaxing the attentional mechanisms that detect threat and an increase in focus. I hope to also see this decrease in feeling threatened and an increase in student focus in my study.

Hallam, S., & Price, J. (1998). Can the use of background music improve the behaviour and academic performance of children with emotional and behavioural difficulties? *British Journal of Special Education, 25*(2), 88-91. doi:10.1111/1467-8527.t01-1-00063

Researchers examined the effect that listening to background music had on the behavior and performance of children with emotional and behavioral difficulties. Students in the study were provided two booklets of arithmetic problems, with the first one being completed over the span of eight sessions—four sessions listening to calming music and four without music—and the second one was completed in six sessions—three sessions with calming music playing and three without music. During each session the number of correctly completed math problems and the number of times the rules were broken were recorded. The study found that listening to calming music improved the performance of

these students on math tasks and that student behavior improved, since students were more focused and on task. Thus, the study showed that listening to background music can improve student focus.

Hembree, R. (1988). Correlates, causes, effects, and treatment of test anxiety. *Review of Educational Research*, 58(1), 47-77. doi:10.2307/1170348

Hembree conducted a meta-analysis of 562 studies of test anxiety. In his meta-analysis, Hembree concluded that test anxiety causes poor performance in students, lowers student self-esteem and increases other forms of anxiety. Furthermore, Hembree provides multiple treatments that have been shown to be effective in reducing test anxiety.

Ivanov, V. K., & Geake, J. G. (2003). The mozart effect and primary school children.

*Psychology of Music*, 31(4), 405–413. doi:10.1177/03057356030314005

Ivanov and Geake studied the effect that listening to Mozart and Bach's music has on the spatial reasoning abilities of upper-primary school students. The students in the study were split into three groups and were asked to complete a Paper Folding Task (PFT). The first group completed the PFT while listening to Mozart, the second completed it while listening to Bach, and the third group completed it in silence. The study found that listening to Mozart music significantly improved the spatial reasoning abilities of the students and therefore improved their performance on the PFT. Furthermore, Bach's music was found to have a similar effect.

Lai, H., Chen, P., Chen, C., Chang, F., Chang, H., & Peng, T. (2008). Randomized crossover trial studying the effect of music on examination anxiety. *Nurse Education Today*, 28(8), 909-916. doi:10.1016/j.nedt.2008.05.011

Researchers looked at the effect that slow music had on test anxiety in nursing students.

Students in the study took two exams: one while listening to music and one taken in silence. In the study, students state of anxiety, examination anxiety, and pulse rates were all measured. The study determined that listening to slow music increased student relaxation and decreased students' examination anxiety and state of anxiety. In my study, I hope to also see these results.

Lang, J. W. B., & Lang, J. (2010). Priming competence diminishes the link between cognitive test anxiety and test performance: Implications for the interpretation of test scores.

*Psychological Science, 21*(6), 811-819. doi:10.1177/0956797610369492

Researchers conducted two studies to look at the effect that priming competence had on the relationship between test anxiety and test performance. In the first study, German secondary- and vocational-school students worked on a booklet of several questionnaires, completed a priming task (if they were in the priming condition group), then took a test-performance measure, which was the computerized version of the verbal-analogies subtest of the Wilde Intelligence Test-2 battery. The second study was much the same, except in the second study students were also asked to fill out two questionnaires about their level of task engagement and worry-related thoughts during the exam and the test-performance measure that was used was the German version of the Wonderlic Personnel Test. The results of the studies showed that an increase in perceived competence improved the performance and heightened task engagement of the students who had high cognitive test anxiety. Thus, the study showed that heightened self-competence can reduce anxiety and improve test performance in students.

Pring, L., & Walker, J. (1994). The effects of unvocalized music on short-term memory. *Current Psychology, 13*(2), 165-171.

Pring and Walker studied the effect that listening to music, specifically nursery rhymes without the words that are usually associated with them, had on the recall of digits. It was found that listening to instrumental music that has been associated with words has a negative effect on concurrent verbal processing. Thus, it was determined that music with lyrics has a disruptive effect on brain processes, which is why I chose for the students in my study to listen to Mozart's music.

Salend, S. J. (2011). Addressing test anxiety. *TEACHING Exceptional Children*, 44(2), 58-68. doi:10.1177/004005991104400206

In this article, Salend provides information about students with test anxiety. The article includes possible physical, behavioral, and affective symptoms of test anxiety.

Furthermore, the article discusses possible triggers of test anxiety and methods for teachers to help students overcome test anxiety. Information from this article can be used to help with the identification of students with test anxiety and to understand why students might be feeling test anxiety.

Savan, A. (1999). The effect of background music on learning. *Psychology of Music*, 27(2), 138-146. doi:10.1177/0305735699272005

In Savan's study, seventh grade students who were identified as having special educational needs and emotional and behavioral difficulties were observed in a science classroom. The students were observed for twenty science lessons, with Mozart music being played in the background for ten of them. Students behavior and response to tasks, systolic and diastolic blood pressure, body temperature, and pulse rate were all recorded for each of the lessons. The study found that when listening to Mozart music there was an improvement in behavior and a drop in the physiological parameters. Therefore, the

study shows that Mozart's music can increase relaxation and reduce anxiety—since lowered blood pressure, body temperature, and pulse rates indicate relaxation—which is what I am hoping to find in my study as well.

Shih, Y., Huang, R., & Chiang, H. (2012). Background music: Effects on attention performance. *Work-a Journal of Prevention Assessment & Rehabilitation, 42*(4), 573-578.

doi:10.3233/WOR-2012-1410

Researchers studied the effect that listening to music with lyrics and music without lyrics had on attention performance. In the study college students between the ages of 20 and 24 were given a Chu Attention Test in a quiet environment. Then, the students were split into two groups with one group taking the Chu Attention Test while listening to music with lyrics and the other one taking the test while listening to music without lyrics. The study found that music with lyrics negatively affected attention performance, which is why I decided to play Mozart music in my study.

Su, Y., Kao, C., Hsu, C., Pan, L., Cheng, S., & Huang, Y. (2017). How does mozart's music affect children's reading? the evidence from learning anxiety and reading rates with e-books. *Educational Technology & Society, 20*(2), 101-112.

Researchers looked at the effect that listening to Mozart's piece K.488 had on student anxiety and reading. The study looked at senior-grade students in an elementary school in Southern Taiwan. The students were split into two groups and group one was asked to read a book while listening to Mozart music, while group two read a different book without Mozart music. After finishing their books, the two groups completed a learning anxiety scale and a reading comprehension test. Then, the two groups switched books and interventions. In the study it was found that listening to Mozart's music lowered

students' anxiety. I hope to find that listening to Mozart music also lowers student anxiety in my study.

Taylor, J. M., & Rowe, B. J. (2012). The "mozart effect" and the mathematical connection.

*Journal of College Reading and Learning*, 42(2), 51.

doi:10.1080/10790195.2012.10850354

Undergraduate students in a trigonometry class were studied to determine the effect that listening to Mozart music has on outcome assessments in mathematics classrooms. In the study, students were given six tests over the course of a semester, with one group listening to Mozart music while taking the exam and the other group taking the exam in silence. The study found that listening to Mozart music increased spatial-temporal reasoning in students, which improved student scores on math outcome assessments.





- Negative (My emotions make me do worse on exams)
- My emotions do not affect how well I do on exams

4. Do you have physical responses to taking exams? If so, what are they? (Examples: sweating, shaking legs up and down, feeling nauseous, etc.)

5. What do you think about right before you are about to take an exam?

6. Do you ever feel that your mind goes blank when you start a test? Please explain.

**Artifact B: Post-survey**

1. How did the Mozart music make you feel? (select all that apply)

- Relaxed
- Focused
- Annoyed
- Distracted
- It did not make me feel anything
- Other: \_\_\_\_\_

2. Please rate how much the Mozart music affected how you did on your exam.

1	2	3	4	5
It did not affect how well I did at all				It greatly affected how I did

3. Was the effect of the music positive (helped you) or negative (harmed you)?

- Positive (The music helped me do better on my exam)
- Negative (The music made me do worse on my exam)
- The music did not affect how I did on my exam

4. Would you now rather listen to Mozart music while taking your exams or would you rather take your exams in silence?

- I would like to listen to the Mozart music while I take my exams
- I would like to take my exams in silence
- I do not care. Either option is fine.

**Artifact C: List of Mozart Pieces**

1. Serenade in G Major: Eine Kleine Nachtmusik, K. 525: II. Romance: Andante
2. Sonata for Piano and Violin in G, K.301: 2. Allegro
3. Piano Sonata No. 11 in A major, K. 331, Rondo Alla Turca, "Turkish March"
4. Quartet in F Major for Oboe, Violin, Viola and Cello, K.370: I. Allegro
5. Flute Quartet No. 1 in D Major, K. 285: I. Allegro
6. String Quartet No. 14 in G Major, K. 387: III. Andante cantabile
7. Divertimento in D Major, K. 136, "Salzburg Symphony No.1": II. Andante
8. Clarinet Quintet in A Major, K. 581 for Bass Horn, Two Violins, Viola, and Cello:  
Larghetto
9. String Quartet in C Major, No. 4, K. 157: I. Allegro
10. String Quartet No. 17 in B-Flat Major, K. 456 – 'The Hunt': II. Menuetto. Moderato
11. Sonata No. 8 in A Minor for Piano, K. 310: II. Andante cantabile, con espressione
12. Violin Sonata No. 26 in B-Flat Major, K. 378: II. Andantino sostenuto e cantabile