**IRB Synopsis of Proposal**

Effects of Music and Anxiety on Student Academic Performance and Heart Rate

1. The source of subjects for this study will be undergraduate college students at Texas State University in psychology classes. The number of expected participants will be roughly 60 male, 60 female totaling to 120 participants and representing a wide array of ethnic backgrounds. The estimated age range will be between 18 and 25 years of age. Outliers will be anticipated from nontraditional students that exceed the given age range. The assumption will be that the participants are in normal to good health with relatively stable personality traits and low baseline anxiety levels. The criteria for exclusion are that participants must be at least 18 years old and can have no outstanding heart problems.

2. At the appropriate time during class, I will give a synopsis of the study and read the consent form, which includes an explanation of the study’s procedures and tests. I will then ask student if they have any questions about the study. A sign-up sheet will then be passed around the classroom where they will give their name and indicate which time slot they are able to participate. This method of recruiting participants is the most common in the Department of Psychology. Note that although other people will see a given student’s name, writing one’s name on the sign-up sheet does NOT reveal anything about the person other than his or her agreement to show up and possibly participate in this study. Upon arrival to the testing room, participants will sign a consent form and be given a copy for their own records.

3. The first section of this study will gather basic demographic (sex, ethnicity, age, employment status), academic (GPA, major, year of expected graduation, etc.), health (weight and height, medication and disorders that affect blood pressure), and anxiety (general level of anxiety currently felt) information about each participant. The demographic portion of the survey includes questions that are asked in nearly every psychology study. The academic portion of the survey includes questions that will be used to judge if a participant has any scholastic advantage over other participants. The performance test will primarily measure mathematic skills, and if a student is a math major, has a 3.99 GPA in chemistry, or somehow has higher than average math abilities, the student will most likely have a gain over the other participants. The health portion of the survey includes questions that are all frequently asked in studies that address blood pressure. It is important to know, for example, that a higher-than-normal blood pressure reading may be due to a greater weight-to-height ratio than to a higher level of anxiety. The anxiety portion of the survey includes questions from the commonly-used State-Trait Anxiety Inventory (STAI) to measure their level of anxiety. The participants’ anxiety levels are being evaluated before the test to assess the possibility of having a subject with abnormally high/low anxiety levels in any condition. This complete survey will take approximately 15 minutes of the participants’ time.

The participants will be monitored by a blood pressure machine (Dinamap PRO, model 100V2). Using a standard blood pressure cuff, this instrument will record the participant’s heart rate and blood pressure throughout the entire course of the experiment.

The participants will be placed into one of six conditions as shown in the table below.

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| **1** *Warn subjects*  Harsh, obnoxious music | **2** *Warn subjects*  Light, calm music | **3** *Warn subjects*  No music |
| **4** *Console subjects*  Harsh, obnoxious music | **5** *Console subjects*  Light, calm music | **6** *Console subjects*  No music |

The first factor is labeled in italics and will consist of either warning or consoling the participants about the performance test. To “warn subjects” means the students will be told their numerical score on the performance test affects the amount of extra credit they will receive, based on the parameters given by their professors, so they should do their best. They will also be informed that the test is of considerable difficulty. The students will actually be receiving a fixed amount of extra credit points that will not change but are told false information to create an atmosphere of mild anxiety. The deception is necessary to ensure that a required minimal level of stress is induced. By warning the participants that the test will pose a challenge *and* that their extra credit can be compromised by their performance grade, the situation presents two stressors that can increase their level of anxiety. There will be much precaution taken to ensure that the participants do not endure any form of long-term discomfort or stress that will inhibit them from normal functioning following the testing procedure. It is important to create conditions that are as close as possible to those encountered in real exams for real courses, because a primary goal of this study is to examine the effects of another factor (music) in potentially relieving anxiety and helping students do better on their exams. Participants will receive a complete and sincere debriefing at the conclusion of the study. “Console Subjects” will consist of informing the participant that no matter what the numerical score is, the amount of extra credit will be the same. The student will be told to not worry about the difficulty of the test, just to do their best.

The second factor (in regular print) is music that will be played for 5 minutes before the test is administered. Music that is considered to be somewhat harsh and obnoxious will be played to disturb the participant from the test and mildly increase anxiety. Music that is calm and tranquil will support an environment that eases anxiety and stimulates effectiveness and clear-thinking. No music will serve as a control that matches the conditions experienced by students when taking real exams in their courses. While this music is playing, participants will read a short passage on mathematical reasoning, to simulate a studying environment. After the 5 minutes, participants will re-take the State-Trait Anxiety Inventory to assess the level of anxiety that they felt while listening to the music or sitting in silence.

The performance test will be a revised California High School Exit Examination (CAHSEE): Mathematical Reasoning. The revision will include added questions from college algebra, pre-calculus, and introductory calculus to increase the difficulty to that of a collegiate level. Five new questions will be added to the test giving a total of 25 multiple choice questions. The participants will be given 10 minutes to complete the test. After completing the test, participants will once again be given the State-Trait Anxiety Inventory to assess the level of anxiety that they felt while taking the test.

4. The participants may feel a mild increase in their levels of anxiety if they are placed in the “warn subjects” and/or “harsh, obnoxious music” categories. There is a slight chance that a participant may become anxious, regardless of condition, when given the performance test. Individual reactions to this study cannot be pre-determined but are considered in formulating this research design. The discomfort will last only throughout the course of the study and should be alleviated during the thoughtful debriefing process. An alternative method to this procedure would be to not threaten the extra credit amount but still warn subjects that the test is difficult. The reason this method will not be employed is because the likelihood that the alternative condition will induce a practical amount of anxiety is very small. The participants will not feel obligated to try their best on the performance test and will not experience much anxiety concerning the matter. The psychological discomforts that pose a risk will be justified in the construction of a more accurate environment from which to study. Another alternative method to this procedure is to play music and monitor anxiety and blood pressure while students are taking a real exam for one of their courses. The reason this method will not be employed is because there may be a chance that the music or monitoring of blood pressure may negatively impact their performance on the exam, and their grade in a course should absolutely not be affected by their participation in this study.

The participants may feel minor discomfort from the blood pressure cuff during recordings, but this discomfort is expected to be minimal and very short-lasting, and the participant will be allowed to remove the cuff at any time. Unfortunately, there are no alternatives to the blood pressure cuff for collecting this data.

The participants may feel that their trust is violated during the debriefing process. For those who were in the “warn subjects” condition, the deception may trouble the participants. I understand that presenting false information will pose discomfort to the participant when the debriefing reveals the lie, but this design is used to maximize construct validity of measurements of heart rate and anxiety. Participants in the “console subjects” condition will be informed of the withheld information in the debriefing process and too may experience a violation of trust when I explain the more complete details of the study. Justification for the deception will be rationalized further in #6, but I must emphasize that the deception will pose no physical or psychological harm, will produce only a short period of discomfort, and could ultimately benefit students in the future.

5. If any participant is to experience a level of discomfort they deem even slightly unbearable, the procedure will stop instantly. An immediate debriefing of the experiment will be initiated and the student will be free to leave. Depending on the severity of the participant’s condition, haste action will be taken to escort him/her to the Student Health Center, show them the nearest couch, to bring them a cup of water, or whatever their request may be to alleviate their distress.

After each participant completes the surveys and test, he/she will receive a thorough and appreciative debriefing, during which time they will also be given contact information of the researcher, the IRB, and local mental health providers in case the study evoked any distress for which they need comforting.

To protect confidentiality, the participant’s name will only appear on the consent form. The subject will be issued a number that will be used throughout the remainder of the experiment. This number will appear on the surveys and performance test as a tool for data analysis. The number will not appear on the consent form, so that participants’ data may not be matched to their names. The consent forms will be locked in a cabinet in Dr. Crystal Oberle’s office. All other surveys, tests, and data will be locked in a separate cabinet, away from the consent forms, in Dr. Oberle’s office as well. If this study is to be published, the participants’ names will not be printed and their identity will remain confidential. After five years, all information concerning this study will be disposed of through a paper shredder.

6. The participants will leave the experiment with a better understanding of the effects of preconceived notions about future tasks and how it affects performance. A student’s anxiety levels have a strong dependence on how their academic work is perceived (Chambel & Curral, 2005); if the perception is negative, students lose motivation to do their best. Participants will also learn how music affects their academic abilities. Music has been found to reduce the amount of stress in working adults and positively increase their psychological state (Smith, 2008); but what are the effects of “negative music”? This experiment will assess the results of previous studies and offer new approaches to the study of music on academic performance.

Although the data will reveal an overall pattern as to how these variables affect students, each individual will exhibit a result that they can gain insight from for their own studying habits. Music (and its different types) could be used as a motivating or de-motivating tool for the studying process before a test. The student’s perception of a future test can affect how they prepare and, ultimately, take the test. The students will have the opportunity to evaluate their numerical grade from the performance test during the debriefing process and can possibly discover a more effective way to succeed in their academic and professional life.

If the study produces a significant trend, the results could be used by professors and universities to aid in approaching the testing atmosphere and how prior information given to students before exams is administered. Producing an atmosphere that promotes effectiveness in students will increase their personal and academic standards creating not only a better student, but a better professor and a better university. If students acquire a more efficient studying mechanism, their stress and anxiety will inevitably decrease. This will in turn offer more energy to devote to the demands of college, increasing the student’s individual echelon of academic prowess.

A higher level of anxiety can significantly increase blood pressure in individuals (Marazziti et al. 2007) thereby interfering with student performance. This study could possibly give a new way to approach the physiological effects (more specifically, heart rate and blood pressure) of anxiety. From the results of this experiment, a more effective tool for minimizing stress and anxiety could be found to help those with heart conditions or any other pre-disposition that makes anxiety more detrimental. The benefits to health psychology from the findings of this experiment can offer a pathway for the future with therapeutic methods assessing anxiety and stress. Music is a growing interest in the reducing tension, stress, and anxiety in the work place and employing this trend in the collegiate environment should produce the same positive effects.

To review, the benefits attained from this experiment are a greater understanding of the effects of perception on anxiety levels and performance; a more in depth understanding of the effects of music on performance and anxiety levels; possible personal insight to achieving academic success; enlightening professors and universities on more effective learning strategies; and a new pathway for reducing anxiety in an academic setting. As well as these benefits mentioned above, experience gained from conducting independent research will give lifelong knowledge to the research process and will help in standing out in graduate applications.

7. The students will receive extra credit for the psychology class they signed up in. The amount of extra credit will vary as it will be decided by the professor the amount the student is allotted. If the student does not want to participate, extra credit can still obtained by choosing a portion of an article from a given selection and discuss the relationship between at least two of any of these topics: anxiety, stress, blood pressure, music, and academic performance. The student shall write no longer than a page but no shorter than half a page. The amount of extra credit received will be equal to the amount given to participants. The time spent on the alternative assignment will be approximately equal in length of participation in the experiment.

8. The minor risks involved (slight increase in anxiety during the study from the music and warning, and during the debriefing from the perceived violation of trust; mild discomfort from the blood pressure cuff) will be outweighed by the findings this study will produce. What can be learned from the results about the effects of anxiety and music on academic performance and heart rate can produce new approaches to the classroom and to people suffering from mild to chronic anxiety. There are many Americans who suffer from a heart condition and there are even more individuals who suffer from the constant stress and anxiety-producing aspects of everyday life. If this study produces any significant data, these results can be used to assess the ongoing problems of the heart and anxiety for those with demanding lives. Everyone is affected by some level of anxiety and any technique that could possibly reduce it would make a valuable contribution to the understanding of anxiety. Those suffering from a more chronic anxiety could benefit by utilizing the practices used in this experiment as well.

9. No external sites or agencies will be used.

10. This study is original research required for the independent study course offered by the psychology department. The study will be supervised by Dr. Crystal Oberle.

11. A letter of approval from Dr. Crystal Oberle will be included in the IRB application.

12. This study has not been reviewed by another IRB.

13. I, Jennifer Lilley (jl1492@txstate.edu), am the only undergraduate with access to the results throughout the entire process of the study. In addition, Dr. Crystal Oberle will also have access to these records for experimental purposes only. After the study in complete, only Dr. Oberle will have access to the experimental data. Upon publication in a journal, readers of the journal will discover the results of the study, but participants’ confidentiality will be maintained as discussed in #5 above.