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The effects of music on anxiety and depression in emerging adults

Kendra Bartel
University of Central Florida



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THE EFFECTS OF MUSIC ON ANXIETY AND DEPRESSION IN EMERGING
ADULTS

by

KENDRA BARTEL

A thesis submitted in partial fulfillment of the requirements
for the Honors in the Major Program in Psychology
in the College of Sciences
and in The Burnett Honors College
at the University of Central Florida
Orlando, FL

Spring Term 2013

Thesis Chair: Chrysalis Wright

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ABSTRACT

The purpose of the current study was to observe how music affects the mood of those who suffer from anxiety and depression and those who do not. While previous research has examined this many of the previous studies have induced either physical pain or mood in participants in order to measure the impact of music. The current study, however, intends to examine how music affects mood without attempting to induce mood in participants. Six-hundred and seventy college students were given a questionnaire containing an anxiety questionnaire, depression scale, demographic questionnaire, and music listening questionnaire. Intercorrelations, ANOVAS, as well as linear regressions were performed on the data and results for the study were significant in that music was found to impact participant's anxiety and depression. Results of the current study indicate that participants' preference for alternative music and soundtracks/showtunes impacted their level of depression and anxiety.

TABLE OF CONTENTS

LIST OF TABLES.....	iv
CHAPTER ONE: INTRODUCTION.....	1
Physical Pain and Music.....	1
Mental Pain and Music.....	2
Limitations of Past Research and the Current Study.....	3
CHAPTER TWO: METHOD.....	4
Participants.....	4
Measures.....	4
Anxiety Questionnaire.....	4
Depression Scale.....	4
Demographic Questionnaire.....	5
Music Listening Questionnaire.....	5
Procedure.....	5
CHAPTER THREE: RESULTS.....	7
Anxiety and Depression among Participants.....	7
Intercorrelations of Study Measures.....	7
Music Genre, Anxiety, and Depression.....	8
Why do Participants Listen to Music?.....	9
How does Music Impact Anxiety and Depression?.....	9
CHAPTER FOUR: DISCUSSION.....	13
Significance of Study.....	14
Limitations of Study.....	14
Implications for Future Research.....	15
APPENDIX A: AP PROVAL OF EXEMPT HUMAN RESEARCH.....	17
APPENDIX B: TABLES.....	19
LIST OF REFERENCES.....	39

LIST OF TABLES

Table 1. <i>Anxiety among Participants</i>	20
Table 2. <i>Depression among Participants</i>	21
Table 3. <i>Significant Correlations with Depression</i>	22
Table 4. <i>Significant Correlations with Anxiety</i>	26
Table 5. <i>Descriptive Statistics for Music Genres</i>	30
Table 6. <i>Descriptive Statistics for Alternative Music</i>	31
Table 7. <i>Descriptive Statistics for Soundtracks/Showtunes</i>	32
Table 8. <i>Descriptive Statistics for Music Listening Habits</i>	33
Table 9. <i>Descriptive Statistics for Moods</i>	34
Table 10. <i>Regression Coefficients for Alternative Music and Anxiety</i>	35
Table 11. <i>Regression Coefficients for Alternative Music and Depression</i>	36
Table 12. <i>Regression Coefficients for Soundtracks/Showtunes and Anxiety</i>	37
Table 13. <i>Regression Coefficients for Soundtracks/Showtunes and Depression</i>	38

CHAPTER ONE: INTRODUCTION

The purpose of the current study was to observe how music affects the mood of those who suffer from anxiety and depression and those who do not. Much research has been conducted on the topic of music alone, while music therapy itself is highly used in the field of counseling psychology. According to the National Institute of Mental Health (2005), 18.1% of the United States adult population suffers from anxiety during any twelve-month period. Those with a severe case constitute 22.8% of the US adult population. For depression, adults with a twelve-month period constitute 6.7% of the population and those with a serious case constitute 30.4% of the population. The current study aimed to determine how music affects emerging adults suffering from anxiety and depression. While the range of music therapy is very broad, the current study intended to focus only on music listening habits.

Physical Pain and Music

Other studies have examined the physical effect of music on participants. Mitchell, MacDonald, Knussen, and Serpell (2007) looked into how participants with long-lasting chronic pain used music and found that many suffering from chronic pain use and enjoyed using music to help ease the pain. A similar study induced physical pain to investigate how music affected participants (Mitchell, 2006). Patients who selected their own music tolerated the pain much longer than those who had the relaxing music chosen by the experimenter and the control white music noise. Mitchell et al. (2007) also stated that pre-selected relaxing music chosen by the experimenter was able to increase the perceived control of patients' pain as well. This finding

states that relaxing music with specific relaxing qualities can be just as effective as patient selected music. Other studies have found that certain forms of music are able to reduce physiological responses to pain (Knight & Rickard, 2001; Lin, Hsieh, Hsu, Fetzner, & Hsu, 2011).

Mental Pain and Music

Pérez et al. (2012) compared music therapy and psychotherapy for patients suffering from depression and found a significant effect for the music therapy. Patients who were administered music therapy demonstrated a better improvement than those receiving psychotherapy. The study pointed out that depression is caused by low dopamine levels and low numbers of dopamine receptors in the brain. The research also stated that since music helps stimulate the areas of the brain involved with reward as well as emotion it can provide intense pleasure in these areas. In the end, this increases positive affect which helps reduce depression. A similar study done to see how music decreased or increased depression by Chan, Wong, and Thayala (2011) was done by conducting a series of investigations to determine how music impacted depressive symptoms in adults. The study concluded that depression decreased as a result of listening to music.

Hunter, Schellenberg, and Griffith (2011) focused on how music altered the sad mood of participants. Using two experiments they concluded, “misery loves company.” Participants placed in a sad mood were more likely to hear sadness in the music and also preferred sad music to the more happy music option. Indeed, positive music induces positive feelings and has been shown to decrease anger (Krahe, 2012). Additionally, previous research has demonstrated that depressed individuals have a negatively biased emotional recognition toward music (Punkanen, Eerola, & Erkkila, 2011). This bias toward music, however, depends on the severity of the anxiety and depression. A similar study investigated major depression and impairment using

musical, vocal, and facial emotion recognition tasks and found that overall emotional processing is impaired in those suffering from depression (Naranjo et al., 2011).

Limitations of Past Research and the Current Study

While previous research examining the impact of music on physical and mental health has shed light on this crucial area, it is important to note a few limitations. Many of the studies have induced either physical pain or mood in participants in order to measure the impact of music. The current study, however, intends to examine how music affects mood without attempting to induce mood in participants.

Another limitation of past research is their examination of participant ethnicity. Most studies are completely lacking in this area. Instead, previous research simply looked at how music affected all of the participants overall. This leaves the question of how music may affect those of different ethnicities. The current study intends to make note of any differences found based on participants ethnic origin. It is important to note that research conducted by Werner, Swope, and Heide (2011) intended to research the differences and similarities across ethnic groups with the experience of music in self-reports of depression and found that there were differences based on ethnicity.

The current study aimed to compare how emerging adults with and without anxiety and depression feel music alters their mood. It was hypothesized that music would alter participants anxiety and depression.

CHAPTER TWO: METHOD

Participants

Six-hundred and seventy college students participated in the current study. Sixty three percent of participants ($n = 427$) were female and 36% ($n = 243$) were male. The majority of participants were White ($n = 478$, 71.3%) and African-American ($n = 74$, 11%) between the ages of 18-20 ($n = 548$, 81.8%).

Measures

Anxiety Questionnaire

Participants were asked thirty-three questions that measured their current anxiety level. Questions came from the Burns Anxiety Inventory (Burns, 1999) and asked if participants have had specific feelings, such as “feeling things around you are strange, unreal, and foggy” or “fears of cracking up or going crazy,” within the past week. Response options ranged from (0) *Not at all* to (3) *A Lot*. Questions were summed to derive a total anxiety measure that was used in analysis. Scores between 0 and 4 indicated minimal or no anxiety; scores between 5 and 10 indicated borderline anxiety; scores between 11 and 20 indicated mild anxiety; scores between 21 and 30 indicated moderate anxiety; scores between 31 and 50 indicated severe anxiety; and scores 51 or higher indicated extreme anxiety or panic. The minimum score was 33, the maximum score was 115, and the mean score was 52.73. Alpha reliability for the scale was .94.

Depression Scale

Participants were asked nineteen questions assessing level of depression. Questions came from Zung's (1965) self-rating scale for depression. Example questions include “I feel downhearted and blue.” Response options ranged from (1) *A little of the time* to (4) *Most of the*

time. Questions were summed to derive a total depression measure that was used in analysis. Scores between 21 and 45 were considered to be in the normal range; scores between 46 and 55 indicated mild depression; scores between 56 and 65 indicated moderate depression; and scores 66 or above indicated severe depression. The minimum score was 41, the maximum score was 68, and the mean score was 52.73. Alpha reliability for the scale was .71.

Demographic Questionnaire

Participants were asked twenty-three questions that assessed their age, ethnic origin, family origin, sex, educational expectations, current relationship status, and biological parents' relationship status.

Music Listening Questionnaire

Participants were asked forty-four questions to assess their music listening habits. Two questions, revised from Macdonald, Knussen, and Serpell (2007), asked how much they enjoy music and how often they listen to music. Participants were also asked a series of questions assessing reasons why they listen to music, such as "To express emotion" (Mitchell et al., 2001), how music makes them feel, and how often they listen to a certain genre of music (Chamorro-Premuzic & Furnham, 2007).

Procedure

The current study was submitted to the IRB for review. The IRB approved the study and considered it exempt. The approval letter can be found in Appendix A. The questionnaire was then entered into the Sona System at the University of Central Florida, which was used to collect data for the current study online.

All participants were recruited through psychology courses and received research credit or class extra credit for their participation. All participants read an explanation of research prior

to completing the online questionnaire. Participants took on average 12 minutes to complete the questionnaire. Participants were first asked questions to assess their level of anxiety and depression followed by general demographic questions and questions regarding their music listening habits.

Preliminary analyses indicated that missing data for the current study was less than 3% missing. Therefore, a simple mean substitution imputation method was used (Kline, 2005). This method involves replacing the missing data with the overall mean value for the variable. There is the possibility that replacing missing data in this manner can distort the distribution of the data. However, comparison of variable distributions before and after imputation indicated that this method had no detectable effect on the data. The new data set was used in analyses.

CHAPTER THREE: RESULTS

Anxiety and Depression among Participants

The anxiety and depression levels for participants were both surprising and somewhat expected. Overall, participants were found to be extremely anxious, scoring very high on the levels of anxiety. There were no scores reported less than 33. This means anxiety levels began in the severe range and continued to the extreme range. It was found that 54% ($n = 366$) of participants reported severe anxiety and 45% ($n = 304$) reported extreme anxiety (see Table 1).

The scores for depression were much more normally distributed compared to the anxiety scale. It was found that 35% of participants ($n = 240$) scored in the normal range, 48% ($n = 325$) had mild depression, 13% ($n = 93$) had moderate depression, and 1% ($n = 12$) had severe depression (see Table 2).

Intercorrelations of Study Measures

Intercorrelations for depression and anxiety can be found in Tables 3 and 4. Significant correlations were found between depression and race, gender, age, and reasons for listening to music. In particular, depression was related to participants listening to music to deal with difficult times, to enjoy it, to express emotions, to reduce loneliness, to change mood, to change mood in the company of others, to relieve stress, to relieve anxiety/depression, to set mood, and to serve as a distraction. Significant correlations were also found between depression and how music affected the participants' mood. There were also significant correlations found in the genres of music participants listened to (i.e., alternative music, trance/dance music, religious music) and depression.

Significant correlations were also found between anxiety and race, gender, how much they enjoyed listening to music, and how often they listened to music. Significant correlations were also found between anxiety and the reasons participants reported listening to music. In particular, anxiety was related to participants listening to music to deal with difficult times, to enjoy it, to express emotions, to reduce loneliness, to change mood, to change mood in the company of others, to relieve stress, to relieve anxiety/depression, to set mood, and to serve as a distraction. Significant correlations were also found between anxiety and how music affected the participants' mood. Finally, there were significant correlations found in what genres of music participants listened to (i.e., alternative music, trance/dance music) and anxiety.

Other significant correlations were found among race, age, gender, how much participants enjoyed listening to music, and how often they listened to music. The reasons why participants listened to music, how music affected their mood, and what genres of music they were most likely to listen to were found to correlate, as well.

Music Genre, Anxiety, and Depression

Descriptive statistics were conducted to see how often participants listened to the different music genres. The most popular music genre was rap/hip-hop with 20.9% ($n = 140$) of participants reporting that they listen to that genre of music frequently. This genre was followed by pop 15.8% ($n = 106$), rock music 14.2% ($n = 95$), and alternative music 13.6 % ($n = 91$).

Descriptive statistics for all music genres can be found in Table 5.

A series of analyses of variances (ANOVAs) were performed to determine what music genre those with anxiety and depression listened to the most. Eleven one-way ANOVA's were completed using each music genre (e.g., alternative music, rock music, pop) as the independent variable and depression as the dependent variable. Results were significant for alternative music,

$F(4, 669) = 2.59, p < .05$, and soundtracks/showtunes, $F(4, 669) = 3.06, p < .05$. With both music genres, the more participants reported listening to that type of music the more depressed they were. Descriptive statistics for alternative music can be found in Table 6.

Eleven additional one-way ANOVA's were also completed using each genre (e.g., alternative music, rock music, pop) as the independent variable and the anxiety as the dependent variable. For anxiety, none of the music genres were found to be significant. However, marginal significance was found for alternative music, $F(4, 669) = 2.10, p = .08$, and soundtracks/showtunes, $F(4, 669) = 1.98, p = .10$. With both music genres, the more participants reported listening to that type of music the more anxious they were. Descriptive statistics for soundtracks/showtunes can be found in Table 7.

Why do Participants Listen to Music?

Descriptive statistics were performed to assess why participants listened to music. The most common reasons were: to deal with difficult times ($n = 170$), to express emotions ($n = 171$), to help with physical activities ($n = 219$), to help feel relaxed ($n = 172$), to relieve stress ($n = 189$), and to relieve boredom ($n = 201$). Descriptive statistics for reasons for listening to music can be found in Table 8.

Descriptive statistics were also conducted to assess participants' moods when listening to music. Participants reported that they enjoyed listening to music at social events ($n = 426$) and that their memories could be associated with songs ($n = 415$). Participants also reported that they use music to relax ($n = 340$). Descriptive statistics can be found in Table 9.

How does Music Impact Anxiety and Depression?

Four linear regressions were conducted to determine how demographic characteristics of participants, alternative music or soundtrack/showtunes, reasons for listening to music, and how

participants felt music affected their mood impacted anxiety and depression. The first linear regression conducted was significant for anxiety, $F(17, 669) = 11.4, p = .05, R^2 = .23$. Gender, $t(17, 669) = 3.07, p = .05$, alternative music, $t(17, 669) = 2.02, p = .05$, listening to music to deal with difficult times, $t(17, 669) = 2.73, p = .05$, listening to music to relieve anxiety/depression, $t(17, 669) = 5.51, p = .05$, listening to music while happy, $t(17, 669) = -3.72, p = .05$, becoming emotional when listening to sad songs, $t(17, 669) = 2.2, p = .05$, using music to relax, $t(17, 669) = -2.34, p = .05$, concentrating on music in order to relax, $t(17, 669) = 2.59, p = .05$, and responding that music leads to anxiety, $t(17, 669) = 3.86, p = .05$, all contributed significantly to anxiety. The overall model accounted for 23 percent of the variance in how alternative music and music listening habits contributed to anxiety. Results of regression analyses can be found in Table 10.

A second linear regression was conducted to determine how the above variables impacted depression. Results were also significant, $F(17, 669) = 15.3, p = .05, R^2 = .29$. Gender, $t(17, 669) = 2.88, p = .01$, alternative music, $t(17, 669) = 2.46, p = .01$, listening to music to reduce loneliness, $t(17, 669) = 3.59, p = .01$, listening to music to help feel relaxed, $t(17, 669) = -3.53, p = .01$, listening to music to relieve anxiety/depression, $t(17, 669) = 6.54, p = .01$, listening to music when happy, $t(17, 669) = -4.56, p = .01$, listening to music when sad, $t(17, 669) = 2.64, p = .01$, becoming emotional when listening to sad songs, $t(17, 669) = 2.86, p = .01$, listening to music to relax, $t(17, 669) = -2.08, p = .05$, concentrating on music to relax, $t(17, 669) = 3.08, p = .01$, enjoying listening to music at social events, $t(17, 669) = -2.28, p = .05$, responding that music leads to anxiety, $t(17, 669) = 3.22, p = .01$, and responding that religious music makes me feel less alone, $t(17, 669) = -2.06, p = .05$, all contributed significantly to

depression. The overall model accounted for 29 percent of the variance in how the above variable contributed to depression. Results of regression analyses can be found in Table 11.

The third linear regression was conducted to determine how the above variables replacing alternative music for soundtracks/showtunes impacted anxiety. Results were significant, $F(17,669) = 11.1, p = .05, R^2 = .23$. Gender, $t(17, 669) = 3.24, p = .01$, listening to music to reduce loneliness, $t(17, 669) = 2.80, p = .01$, listening to music to relive anxiety/depression, $t(17,669) = 5.48, p = .01$, listening to music when happy, $t(17, 669) = -3.58, p = .01$, becoming emotional when listening to sad songs, $t(17,669) = 2.20, p = .05$, listening to music to relax, $t(17, 669) = 2.28, p = .05$, concentrating on music to relax, $t(17,669) = 2.55, p = .01$, and reporting that music leads to anxiety, $t(17, 669) = 3.93, p = .01$, all contributed significantly to anxiety. The overall model accounted for 23 percent of the variance in how the above variable contributed to anxiety. Results of regression analyses can be found in Table 12.

The fourth and last linear regression was conducted using the same variables replacing alternative music for soundtracks/showtunes to determine how the variables impacted depression. Results were significant, $F(17, 669) = 14.8, p = .05, R^2 = .28$. Gender, $t(17,669) = 2.89, p = .01$, listening to music to reduce loneliness, $t(17, 669) = 3.59, p = .01$, reporting that listening to music can help them relax, $t(17, 669) = -3.48, p = .01$, listening to music to relieve anxiety/depression, $t(17, 669) = 6.55, p = .01$, listening to music when happy, $t(17, 669) = -4.47, p = .01$, listening to music when sad, $t(17, 669) = 2.76, p = .01$, becoming emotional when listening to sad songs, $t(17, 669) = 2.87, p = .01$, listening to music to relax, $t(17, 669) = -1.98, p = .05$, concentrating on music to relax, $t(17, 669) = 3.03, p = .01$, enjoying listening to music at social events, $t(17, 669) = -2.08, p = .01$, reporting that music leads to anxiety, $t(17, 669) = -3.30, p = .01$, and reporting that religious music makes me feel less alone, $t(17, 669) = -2.30, p =$

.01, all contributed significantly to depression. The overall model accounted for 28 percent of the variance in how the above variable contributed to depression. Results of regression analyses can be found in Table 12.

CHAPTER FOUR: DISCUSSION

The current study hypothesized that music would alter participants anxiety and depression. Results for the study were significant in that music was found to impact participant's anxiety and depression. The many variables that were pertaining to music were significantly correlated with levels of anxiety and depression. Previous studies have found similar results in that music altered participant's mood, as well as increase and/or decrease depression levels (Chan, Wong, & Thayala 2011; Hunter, Schellenberg, & Griffith 2011; Krahe, 2012).

The anxiety and depression rate for the current study was rather high. Fifty four percent of participants reported severe anxiety and 45% reported extreme anxiety. For depression it was found that 35% of participants scored in the normal range, 48% had mild depression, 13% had moderate depression, and 1% had severe depression. The participants in the current study showed results of having both anxiety and depression at the same time. Comorbidity is very common amongst mental illness and it has been found that around 50% of those with anxiety and depression have comorbidity and that anxiety and depression are also the most common disorders involved in comorbidity (Hofmeijer-Sevink et al., 2001).

Results of the current study indicate that participants' preference for alternative music and soundtracks/showtunes impacted their level of depression. With both music genres, the more participants reported listening to that type of music the more depressed they were. Results were similar for participants' anxiety level. However, results were only marginally significant. It is theorized that higher depression and anxiety rates were found for the alternative music category because it was one of the top most listened to genres in the study. Soundtrack/showtunes may also fall in line with this due to participants including movie watching or show watching in with their music listening habits. It could also be that music related to alternative music as well and

soundtracks/showtunes helped the participants' relieve their anxiety and depression by making them happier or less anxious.

Results also indicated that participants listened to music to change their emotions or honing in on the particular emotion they were feeling at the time and that music also helped them relax. Results also showed that many of the variables put participants in to a certain mood. These variables are tied to anxiety and depression because anxiety and depression often cause sad moods or anxiousness that people will focus on or want to escape from. The fact that participants were using music as a coping mechanism to feel better or focus in on emotions tied to anxiety and depression supports this study's hypothesis that music does impact anxiety and depression.

Significance of Study

The current study is significant considering the current levels of anxiety and depression reported among emerging adults in the United States today (NIMH, 2005). Anxiety and depression are specific areas of concern presently. The current study aimed to see if music could alter anxiety and depression, without inducing or taking measures to alter the mood of participants. Additionally, the current study examined race of participants as a potential contributing factor. However, it was not found to impact anxiety or depression in the current study. This is important to consider when much of past research in this area has overlooked potential ethnic differences.

Limitations of Study

Limitations of this study include that it was conducted at one University in the Southeastern United States. Results therefore cannot be generalized to emerging adults who reside in other areas of the United States. The participants also ranged mainly from the ages of 18-20, therefore the results cannot be generalized to those who fall in to an age category above or

below. The questionnaire was also completed in an online setting and was a self-report measure where the participants could not be monitored. It is quite possible that participants were not 100% truthful when answering the questionnaire. Also, it was found that with respect to effect sizes, some specific links were marginal in terms of statistical significance. Therefore the results as they pertain to how music impacts anxiety hold less validity.

Finally, the two genres that were found to be significant for depression and marginally significant for anxiety are very broad genres. Whenever examining music genres it is important to consider that listeners may define music genres differently based on particular songs, bands, or music artists. Also, some artists may overlap in music genres based on particular songs. The same applies to the soundtracks/showtunes option. It is not known what types of soundtracks the participants were listening to or what showtunes. In this case it is also important to note when using a showtunes option many showtunes contain different music genres themselves. Soundtracks may also include different music genres. One soundtrack or set of showtunes may contain musical selections that would fall into a category of rock while others may fall into a category of classical music. The current study did not assess which soundtracks/showtunes participants were listening to and this could be a confounding variable in the data.

Implications for Future Research

Future research can narrow down the genres by listing bands, singers, shows, and movies to get a better and more detailed idea of what type of music, lyrics, and meanings participants are gaining from the certain genres. Future research can also further examine exactly how music is tied to anxiety and depression to generate a larger source of knowledge in this area. It could also be used to create a better music therapy program for those who suffer from anxiety and

depression. A new type of therapy could be created based on the results of how music listening preferences and habits affects participants.

APPENDIX A: APPROVAL OF EXEMPT HUMAN RESEARCH



University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Approval of Exempt Human Research

From: **UCF Institutional Review Board #1
FWA00000351, IRB00001138**

To: **Chrysalis L. Wright and Co-PI: Kendra L. Bartel**

Date: **August 14, 2012**

Dear Researcher:

On 8/14/2012, the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review: Exempt Determination
Project Title: Music and its' Influence on Mood
Investigator: Chrysalis L. Wright
IRB Number: SBE-12-08587
Funding Agency:
Grant Title:
Research ID: N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Signature applied by Joanne Muratori on 08/14/2012 01:05:06 PM EDT

A handwritten signature in black ink that reads 'Joanne Muratori'.

IRB Coordinator

APPENDIX B: TABLES

Table 1. *Anxiety among Participants*

	Score	%	<i>n</i>
No anxiety	0-4	0	0
Borderline anxiety	5-10	0	0
Mild anxiety	11-20	0	0
Moderate anxiety	21-30	0	0
Severe anxiety	31-50	54.4	366
Extreme anxiety	51 +	45.6	304

Table 2. *Depression among Participants*

	Score	%	<i>n</i>
Normal	21-45	35.8	240
Mild depression	46-55	48.5	325
Moderate depression	56-65	13.7	93
Severe depression	66 +	1.7	12

Table 3. Significant Correlations with Depression

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
1. Depression		.08*	.15**	-.06	.19**	-.12**	.14**	.29**	.13**	.09*	.08*	.30**	.11**	.2**
2. Race	.08*		.01	.09*	.00	-.01	-.02	.06	.01	.07	-.01	.08*	.01	-.05
3. Gender	.15**	.01		.06	.14**	.05	.14**	.12**	.09*	.06	.01	.11**	.01	.10**
4. Age	-.06	.09*	.06		-.05	-.01	-.03	-.2*	-.04	.09*	-.07	-.04	-.07	-.03
5. Difficult Times	.19**	.00	.14**	-.05		.10**	.52**	.45**	.45**	.18**	.44**	.49**	.37**	.26**
6. Enjoy It	-.12**	-.01	.05	-.01	.10**		.1**	.05	.15**	.07	.26**	.12**	.19**	.08*
7. Express Emotions	.14*	-.02	.14**	-.03	.51**	.1**		.35**	.35**	.2**	.40**	.38**	.4**	.23**
8. Reduce Loneliness	.29**	.06	.12**	-.2*	.45**	.05	.35**		.44**	.24**	.37**	.49**	.36**	.42**
9. Change Mood	.13**	.01	.09*	-.04	.44**	.15**	.35**	.42**		.3**	.47**	.50**	.52**	.33**
10. Change Mood With Others	.09*	.07	.06	.09*	.18**	.07	.2**	.24**	.3**		.24**	.27**	.32**	.22**
11. Relieve Stress	.08	-.01	.01	-.07	.44**	.26**	.40**	.37**	.47**	.24**		.64**	.47**	.3**
12. To relive Anxiety/Depression	.30**	.08*	.11**	-.04	.49**	.2**	.39**	.5**	.50**	.27**	.64**		.45**	.36**
13. Set Mood	.11**	.01	.01	-.07	.37**	.19**	.4**	.36**	.52**	.32**	.47**	.45**		.36**
14. Serve As Distraction	.2**	-.05	.10**	-.03	.26**	.08*	.23**	.42**	.33**	.22**	.3**	.36**	.36**	
15. Happy Song	-.08**	-.00	.20**	-.03	.24**	.20**	.17**	.13**	.22**	.13**	.18**	.16**	.23**	.07

* $p < 0.05$, ** $p < 0.01$

Table 3 cont. *Significant Correlations with Depression*

	1	2	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
16.Sad Song	.20**	.06	.18**	-.10**	.37**	.06	.35	.25**	.15**	.11**	.25**	.27**	.23	.13**
17.Emotional	.22**	.04	.27**	-.06	.39**	.02	.34**	.25**	.25**	.1*	.21**	.26**	.24**	.07
18.Relax	-.11**	.01	-.02	-.05	.18**	.21**	.19**	.15**	.22**	.13**	.44**	.29**	.3**	.15**
19.Concentrate to Relax	.18**	-.01	.01	-.07	.05	-.01	.07	.13**	.12**	.09*	.02	.10**	.12**	.14**
20.Distracton	.10**	.03	.06	-.07	-.06	-.05	-.03	.05	.02	-.02	-.07	-.03	-.15**	.01
21.Enjoy At Social Event	-.2*	-.02	.18**	.01	.09*	.17**	.1*	.04	.11**	.14**	.15**	.16**	.13**	.09*
22.Relate	.1*	-.06	.24**	-.12**	.26**	.09*	.25**	.16**	.20**	.08*	.13**	.20**	.22**	.14**
23.Involved	-.01	-.02	.21**	-.05	.06	.04	.05	.13**	.14**	.14**	.06	.12**	.13**	.11**
24.Anxious	.18**	-.03	-.02	-.03	.04	-.12**	.03	.12**	.08**	.04	-.03	.03	.06	.08
25.Less Alone	-.03	-.06	.15**	-.01	.06	-.05	.09*	.06	.17**	-.02	.05	.04	.07	.04
26.Alternative	.11**	.07	.06	-.09*	.16**	.1*	.13**	.08*	.11**	.02	.1*	.10**	.05	.08*
27.Trance/Dance	.10**	.05	-.04	-.00	.05	.06	.00	.07	.09*	.04	.06	.09*	.08*	.08*
28.Religious	-.08**	-.12**	.1*	.05	.03	.00	.06	.02	.06	-.03	-.00	-.02	.02	.00

* $p < 0.05$, ** $p < 0.01$

Table 3 cont. *Significant Correlations with Depression*

	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.
1.Depression	-.08*	.20**	.22**	-.11**	.18**	.10**	-.1*	.1*	-.01	.18**	-.03	.11**	.10**	-.08*
2.Race	-.00	.06	.04	.01	-.01	.03	-.02	-.06	-.02	-.03	-.07	.07	.05	-.12**
3.Gender	.20**	.18**	.27**	-.02	.01	.06	.18**	.24**	.21**	-.02	.15**	.06	-.04	.1*
4.Age	-.03	-.10**	-.06	-.05	-.07	-.07	.01	-.12**	-.05	-.03	-.02	-.09*	-.00	.05
5.Difficult Times	.24**	.37**	.32**	.18**	.05	-.06	.09	.26**	.06	.04	.06	.16**	.05	.03
6.Enjoy It	.20**	.06	.02	.21**	-.01	-.05	.17**	.09*	.04	-.12**	.05	.1*	.06	.00
7.Express Emotions	.17**	.35**	.34**	.19**	.07	-.03	.1*	.25**	.05	.03	.09*	.13**	.00	.06
8.Reduce Loneliness	.13**	.25**	.25**	.15**	.13**	.05	.04	.16**	.13**	.12**	.06	.08*	.07	.02
9.Change Mood	.22**	.15**	.25**	.22**	.12**	.02	.11**	.20**	.14**	.08*	.12**	.11**	.09*	.06
10.Change Mood With Others	.13**	.11**	.1*	.13**	.09*	-.02	.14**	.08*	.14**	.04	-.02	.02	.04	-.03
11.Relieve Stress	.18**	.25**	.21**	.44**	.02	-.07	.15**	.13**	.06	-.03	.05	.1*	.06	-.00
12.To relive Anxiety/Depression	.15**	.27**	.26**	.29**	.10**	-.03	.16**	.20**	.12**	.03	.04	.10**	.09*	-.02
13.Set Mood	.23**	.23**	.24**	.3**	.12**	-.15**	.13**	.22**	.13**	.06	.07	.05	.08	.02
14.Serve As Distraction	.07	.13**	.07	.15**	.14**	.01	.09*	.14**	.11**	.08	.04	.08*	.08*	.00
15.Happy Song		.4**	.29**	.26**	.09*	-.04	.28**	.29**	.19**	-.03	.07	.12**	.06	.04

* $p < 0.05$, ** $p < 0.01$

Table 3 cont. *Significant Correlations with Depression*

	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.
16.Sad Song	.4**		.50**	.19**	.10**	-.02	.13**	.35**	.14**	.04	.08*	.13**	-.02	.02
17.Emotional	.29**	.50**		.18**	.06	.00	.15	.35**	.15**	.09*	.11**	.11**	.04	.03
18.Relax	.26**	.19**	.18**		-.07	-.15**	.32**	.16**	.14**	-.09*	.07	.12**	.07	.02
19.Concentrate to Relax	.09*	.10**	.06	-.07		.14**	-.02	.08*	.11**	.24**	.12**	-.01	.08*	.08*
20.Distracton	-.04	-.02	.00	-.15**	.14**		-.10**	.02	.03	.13**	.02	-.03	-.05	-.01
21.Enjoy At Social Event	.28**	.13**	.15**	.32**	-.02	-.10**		.25**	.25**	-.12**	-.04	.13**	.13**	-.12**
22.Relate	.29**	.35**	.35**	.16**	.08*	.02	.25**		.29**	.05	.08*	.11**	-.05	.02
23.Involved	.19**	.14**	.15**	.14**	.11**	.03	.25**	.29**		.11**	.16**	-.05	.02	.04
24.Anxious	-.03	.04	.09*	-.09*	.24**	.13**	-.12**	.05	.11**		.16**	-.00	.08*	.1*
25.Less Alone	.07	.08*	.11**	.07	.12**	.02	-.04	.08*	.16**	.16**		-.08*	-.10**	.7**
26.Alternative	.12**	.13**	.11**	.12**	-.01	-.03	.13**	.11**	-.05	-.00	-.08*		.15**	-.1*
27.Trance/Dance	.06	-.01	.04	.07	.09*	-.05	.13**	-.05	.02	.08*	-.10**	.15**		-.11**
28.Religious	.04	.01	.02	.02	.08*	-.01	.12**	.02	.04	.1*	.7**	-.1*	-.11**	

* $p < 0.05$, ** $p < 0.01$

Table 4. *Significant Correlations with Anxiety*

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1.Anxiety		.09*	.16**	-.09*	-.10*	.16**	-.11**	.15**	.27**	.17**	.09**	.09*
2.Race	.09*		.01	-.09	-.04	.00	-.01	-.02	.06	.01	.07	-.01
3.Gender	.16**	.01		.11**	.04	.14**	.05	.14**	.12**	.09*	.06	.01
4.Enjoy Music	-.09*	-.09	.11**		.49**	.25**	.36**	.22**	.11**	.15**	.07	.24**
5.Listen to Music	-.10**	-.04	.04	.49**		.09	.29**	.05	.06	.09*	.03	.12**
6.Difficult Times	.16**	.00	.14**	.25**	.09*		.10**	.51**	.45**	.45**	.18**	.44**
7.Enjoy it	-.11**	-.01	.05	.36**	.29**	.10**		.10**	.05	.15**	.07	.26**
8.Express Emotions	.15**	-.02	.14**	.22**	.05	.51**	.10**		.35**	.35**	.20**	.40**
9.Lonliness	.27**	.06	.18**	.11**	.06	.45**	.05	.35**		.44**	.24**	.37**
10.Change Mood	.17**	.01	.09*	.15**	.09*	.45**	.15**	.35**	.44**		.30**	.47**
11.Change Mood with Others	.09*	.07	.06	.07	.03	.18**	.07	.20**	.24**	.30**		.24**
12.Relieve Stress	.09*	-.01	.01	.22**	.12**	.44**	.26**	.40**	.37**	.47**	.24**	

* $p < 0.01$, ** $p < 0.05$

Table 4 cont. *Significant Correlations with Anxiety*

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
13.Relieve anxiety/depression	.29**	.08*	.11**	.16**	.10**	.49**	.12**	.38**	.49**	.50**	.27**	.64**
14.Set Mood	.11**	.01	.01	.20**	.13**	.37**	.19**	.40**	.36**	.52**	.37**	.47**
15.Distractio	.21**	-.05	.10**	.09*	.04	.26**	.08*	.23**	.42**	.33**	.22**	.210**
16.Feel Sad3	.16**	.06	.18**	.23**	.18**	.37**	.06	.35**	.25**	.15**	.11**	.25**
17.Emotional	.21**	.04	.27**	.19**	.15**	.32**	.02	.34**	.25**	.25**	.10*	.21**
18.Memories	.10**	-.00	.21**	.20**	.22**	.24*	.10*	.19**	.17**	.18**	.10**	.16**
19.Relax	-.08*	.01	-.02	.40**	.41**	.18**	.21**	.19**	.15**	.22**	.13**	.44**
20.Concentrate to Relax	.17**	-.01	.01	-.02	-.01	.05	-.01	.07	.13**	.12**	.089*	.02
21.Distractio	.12**	.03	.06	-.18**	-.08*	-.06	-.05	-.03	.05	.02	-.02	-.07
22.Anxious	.20**	-.03	-.01	-.17**	-.08	.04	-.12**	.03	.12**	.08*	.04	-.03
23.Alternative Music	.10**	.07	.06	.21**	.17**	.16**	.10**	.13**	.08*	.11**	.02	.10*
24.Trance/dance	.08*	.05	-.04	.020*	.04	.05	.06	.00	.07	.11*	.04	.06

* $p < 0.01$, ** $p < 0.05$

Table 4 cont. *Significant Correlations with Anxiety*

	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.
1. Anxiety	.29**	.11**	.21**	.16**	.21**	.10**	-.08*	.17**	.12**	.20**	.10**	.08*
2. Race	.08*	.01	-.05	.06	.04	-.00	.01	-.01	.03	-.03	.08	.05
3. Gender	.11**	.01	.10**	.18**	.27**	.21**	-.02	.01	.06	-.02	.06	-.04
4. Enjoy Music	.16**	.110**	.09*	.23**	.19**	.20**	.40**	-.02	-.18**	-.17**	.21**	.10*
5. Listen to Music	.10**	.13**	.04	.18**	.15**	.22**	.41**	-.01	-.08*	-.08	.17**	.04
6. Difficult Times	.49**	.37**	.26**	.37**	.32**	.24**	.18**	.05	-.06	.04	.16**	.05
7. Enjoy it	.12**	.19**	.08*	.06	.02	.01*	.21**	-.01	-.05	-.12**	.10*	.06
8. Express Emotions	.38**	.310**	.23**	.35**	.34**	.19**	.19**	.07	-.03	.03	.13**	.00
9. Lonliness	.49**	.36**	.42**	.25**	.25**	.17**	.15**	.13**	.05	.17**	.08*	.07
10. Change Mood	.50**	.52**	.33**	.15**	.25**	.18**	.22**	.12**	.08	.08*	.11**	.09*
11. Change Mood with Others	.27**	.32**	.22**	.11**	.10*	.10*	.13**	.07*	-.02	.04	.02	.042
12. Relieve Stress	.64**	.47**	.30**	.25**	.21**	.16**	.44**	.02	-.07	-.03	.10*	.06

* $p < 0.01$, ** $p < 0.05$

Table 4 cont. *Significant Correlations with Anxiety*

	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.
13.Relieve anxiety/depression		.45**	.36**	.27**	.26**	.20**	.29**	.10**	-.03	.03	.10**	.09*
14.Set Mood	.45**		.36**	.23**	.24**	.20**	.30**	.17**	-.15**	.06	.05	.08*
15.Distracton	.36**	.36**		.13**	.07	.13**	.15**	.14**	.01	.08	.08*	.08*
16.Feel Sad3	.27**	.23**	.13**		.50**	.28**	.189**	.10**	-.02	.04	.13**	-.01
17.Emotional	.26**	.24**	.07	.50**		.37**	.18**	.06	.00	.09*	.11**	.04
18.Memories	.20**	.110**	.13**	.28**	.37**		.27**	.04	-.04	-.01	.13**	.06
19.Relax	.29**	.30**	.15**	.19**	.18**	.27**		-.07	-.15**	-.09*	.12**	.07
20.Concentrate to Relax	.10**	.12**	.14**	.10**	.06	.034	-.07		.14**	.24**	-.01	.08*
21.Distracton	-.03	-.15**	.01	-.02	.00	-.04	-.15**	.14**		.13**	-.02	-.05
22.Anxious	.01	.06	.08	.04	.09*	-.01	-.09*	.24**	.13**		-.00	.08*
23.Alternative Music	.10**	.05	.08*	.13**	.11*	.13**	.12**	-.01	-.03	-.00		.15**
24.Trance/dance	.09*	.08*	.08*	-.00	.04	.06	.07	.08*	-.05	.08*	.15**	

* $p < 0.01$, ** $p < 0.05$

Table 5. *Descriptive Statistics for Music Genres*

	<i>%</i>	<i>n</i>
Alternative Music	13.6	91
Rock	14.2	95
Pop	15.8	106
Metal	2.8	19
Rap/Hip-hop	20.9	140
Dubstep	5.8	39
Trance/dance	5.4	36
Techno	2.7	18
Religious	5.2	35
Soundtracks/Showtunes	5.2	35
Instrumental (Jazz, classical, folk)	5.5	37

Table 6. *Descriptive statistics for Alternative Music*

	Anxiety		Depression	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Never	50.28	12.36	48.51	5.83
Rarely	51.55	14.87	47.89	6.33
Sometimes	51.50	14.61	48.63	6.16
Often	54.29	16.39	49.66	6.75
Almost always	55.37	15.04	50.38	7.31

Table 7. *Descriptive statistics for Soundtracks/Showtunes*

	Anxiety		Depression	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Never	54.28	16.28	49.74	7.11
Rarely	51.46	15.27	47.80	6.00
Sometimes	51.02	13.97	48.94	6.31
Often	55.02	14.46	49.64	6.49
Almost always	54.03	14.99	50.77	6.60

Table 8. *Descriptive Statistics for Music Listening Reasons*

	<i>%</i>	<i>n</i>
Difficult times	25.4	170
Enjoy	.1	1
Express emotions	25.5	171
Reduce loneliness	.1	1
Change mood	18.7	125
Physical activities	32.7	219
Change mood in company	.1	1
Feel relaxed	25.7	172
Relieve stress	28.2	189
Relieve anxiety/depression	.1	1
Relive boredom	30	201
Enhances imagination/creativity	.1	1
Help focus	14.6	98
Set mood	.1	1
Distraction	16.1	15

Table 9. *Descriptive Statistics for Music Listening Moods*

	%	<i>n</i>
Affects mood	41.9	281
Listen to happy song	46.9	314
Listen to sad song	29	194
Feel emotional	28.5	191
Memories	61.9	415
Relax	50.7	340
Concentrate to hard	3.4	23
Music while working	48.2	323
Distraction	10.7	72
Social events	63.6	426
Helps think	23	154
Relate	49.6	332
Feeling involved	15.4	103
Anxious	.9	6
Less alone	11.3	76

Table 10. *Regression Coefficients for Alternative Music and Anxiety*

	<i>Anxiety</i>
Race	.053
Gender	.118*
Age	-.045
Alternative music	.072**
Reduce loneliness	.112*
Feel relaxed	-.064
Relieve anxiety/depression	.244*
Happy song	-.149*
Sad song	.056
Emotional	.094**
Memories	.041
Relax	-.102**
Concentrate to hard	.094*
Enjoy music at social events	-.043
Involved	-.043
Anxious	.142*
Mood 15	-.011
R^2	.23
F	11.4

* $p < .01$, ** $p < .05$

Table 11. *Regression Coefficients for Alternative Music and Depression*

	<i>Depression</i>
Race	.032
Gender	.106*
Age	-.033
Alternative	.085*
Reduce loneliness	.141*
Relaxed	-.151*
Relieve anxiety/depression	.279*
Happy song	-.176*
Sad song	.109*
Emotional	.118*
Memories	.001
Relax	-.087**
Concentrate to hard	.108*
Enjoy music at social events	-.086**
Involved	-.059
Anxious	.114*
Less alone	-.072**
R^2	.29
F	15.3

* $p < .01$, ** $p < .05$

Table 12. *Regression Coefficients for Soundtracks/showtunes and Anxiety*

	<i>Anxiety</i>
Race	.060
Gender	.125*
Age	-.053
Soundtracks/showtunes	-.032
Reduce loneliness	.115*
Relaxed	-.056
Relive anxiety/depression	.244*
Happy song	-.144*
Sad song	.058
Emotional	.095**
Memories	.673
Relax	-.099**
Concentrate to hard	.093*
Enjoy music at social event	-.035
Involved	-.056
Anxious	.144*
Less alone	-.015
R^2	.23
F	11.1

* $p < .01$, ** $p < .05$

Table 13. *Regression Coefficients for Soundtracks/showtunes and Depression*

	<i>Depression</i>
Race	.204
Gender	.506*
Age	.061
Soundtracks/showtunes	.191
Reduce loneliness	.086*
Relaxed	.125*
Relieve anxiety/depression	.281*
Happy song	-.173*
Sad song	.114*
Emotional	.118*
Memories	.280
Relax	.311**
Concentrate to hard	.106*
Enjoy music at social events	-.078**
Involved	-.006
Anxious	.117*
Less alone	-.081**
R^2	.28
F	14.8

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