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## A closer look at the interaction between music, personality and its effect on individuals' stress

### Abstract

With stress being a common occurrence in society, if left unchecked it can lead to dangerous situations, mentally and physically, for an individual. Music is a facet that has been employed to help manage stress. Hanser (1985) indicates classical music has been used as a tool for relaxation and stress reduction. However, differences in the Big Five personality traits have been linked to differences in the use of music as well. The strongest association between personality and music use is the positive correlation between Neuroticism and emotional use of music, indicating that less emotionally stable individuals seem to show greater music sensitivity (Costa & McCrae, 1992; Juslin & Sloboda, 2010). The purpose of this research is to find what genres of music regulate stress throughout the different Big Five personality traits. 121 students from Eastern Michigan University participated in the study. A pretest was given to each student to assess their perceived stress, music preferences, and personality traits. Upon completion of the pretest, participants were then randomly assigned to one of the six music groups: R&B/HipHop, Pop, Classical, Rap, Rock, and no music. Students were then asked to complete a stress inducing task within 15 minutes, consisting of a 100 piece puzzle. Upon completion of the study, participants were then given a post-test to evaluate their stress level associated with completing the stress inducing task. Subsequent to the post-test, participants were debriefed on the study, thanked, and released. It was hypothesized that (1) participants in the music group would report less stress than those in the no music group, with classical music having the least amount of perceived stress experienced. It was also hypothesized that those who identified with the personality trait Openness and Conscientiousness would report lower amounts of perceived stress, while those who identified with traits of Neuroticism and Extraversion would report higher levels of perceived stress. Results indicate that the hypotheses were substantiated.

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A Closer Look at the Interaction between Music, Personality and its' Effect on Individuals'

Stress

By

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### Abstract

With stress being a common occurrence in society, if left unchecked it can lead to dangerous situations, mentally and physically, for an individual. Music is a facet that has been employed to help manage stress. Hanser (1985) indicates classical music has been used as a tool for relaxation and stress reduction. However, differences in the Big Five personality traits have been linked to differences in the use of music as well. The strongest association between personality and music use is the positive correlation between Neuroticism and emotional use of music, indicating that less emotionally stable individuals seem to show greater music sensitivity (Costa & McCrae, 1992; Juslin & Sloboda, 2010). The purpose of this research is to find what genres of music regulate stress throughout the different Big Five personality traits. 121 students from Eastern Michigan University participated in the study. A pretest was given to each student to assess their perceived stress, music preferences, and personality traits. Upon completion of the pre-test, participants were then randomly assigned to one of the six music groups: R&B/HipHop, Pop, Classical, Rap, Rock, and no music. Students were then asked to complete a stress inducing task within 15 minutes, consisting of a 100 piece puzzle. Upon completion of the study, participants were then given a post-test to evaluate their stress level associated with completing the stress inducing task. Subsequent to the post-test, participants were debriefed on the study, thanked, and released. It was hypothesized that (1) participants in the music group would report less stress than those in the no music group, with classical music having the least amount of perceived stress experienced. It was also hypothesized that those who identified with the personality trait Openness and Conscientiousness would report lower amounts of perceived stress, while those who identified with traits of Neuroticism and Extraversion would report higher levels of perceived stress. Results indicate that the hypotheses were substantiated.

## Introduction

Stress is a persistent emotion among humans that essentially can have an effect on mental and physical health, making it vital to identify multiple ways to cope with stress. The use of music can be quite advantageous for individuals who identify with a Big Five Personality trait, by identifying which music genre can relieve stress in given situations and its cognitive uses. Music is a universal tool for many different activities; sports, relaxing, events and parties. It serves many purposes, among individuals of today; listening to music can be used to alleviate emotional effects of stress and anxiety; when a person is engaging in activities that calls for cognitive processing, such as, studying for a test, completing homework assignments, or while reading and writing. Engagement in musical activities while working is by no means a recent development. Historically, Western work songs have helped rhythmic synchronization in physical work tasks and relieved boredom in monotonous jobs (Haake, 2011). Music can be used as a helpful tool in a variety of ways for an individual. Music listening has been suggested to beneficially impact health via stress-reducing effects (Thoma et. al, 2013).

The Uses of Music Inventory, developed by Chamorro-Premuzic and Furnham (2007), is perhaps the most complete analysis of reasons people have for listening to music. They found that reported motives for listening to music tend to fall into three categories: emotional use of music (the extent to which music is used to regulate emotions); cognitive use of music (the extent to which an individual listens to music in an intellectual manner); and background use of music (the extent to which an individual enjoys music while working, studying, or socializing). According to a study done by Peter Scheufele, listening to classical music was associated with reductions in autonomic activity and self-reported tension and improved performance of

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surgeons (Allen and Blaskovich, 1994). Similarly, listening to classical music in another study reduced self-reported fatigue, sadness, and tension (McCraty et al., 1998).

Differences in the Big Five personality traits have been linked to differences in uses of music. The strongest association between personality and music use is the positive correlation between neuroticism and emotional use of music, indicating that less emotionally stable individuals seem to show greater music sensitivity and, therefore, often use music to influence their mood state (Costa & McCrae, 1992; Juslin & Sloboda, 2010). Additionally, openness is positively related to cognitive use of music, explained in terms of higher need for cognition. Extraversion is significantly positively correlated with background use of music, in line with findings that extraverts are under-aroused compared to introverts (Eysenck & Eysenck, 1985) and thus seek arousing background stimuli (Chamorro-Premuzic et. al, 2005).

### Method

#### **Design and Procedure**

Participants were made aware of the study through their psychology courses by one of the experimenters presenting the research study during class sessions, along with SONA, an online recruiting and research management system that is used to allow students to obtain research participation credit for their psychology courses. Once participants signed up for the study through SONA, they were then given the location and the allotted time at and place for participation in the study. Upon arrival to the study, participants were given an informed consent form, explaining the purpose of the study, procedure, and confidentiality. Once consent was granted by the participant, they were then given a pre-test to assess their perceived stress, music preferences, and personality traits. After the pre-test was completed, participants were then asked

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to complete as much of the task (100 piece puzzle) within fifteen minutes, while one of the six music genres played in the background; Rock, Rap, R&B/HipHop, Pop, Classical, and No music. The music genre was randomly assigned to each participant. The experimenter left the room, while the participant attempted to complete the task. Once their fifteen minutes had gone by, the experimenter returned to the room where the individual was instructed to stop what they were doing and return to the laptop to take the post-test. The post-test was given to evaluate the individual's perceived stress while engaging in the activity. Conclusion of the study consisted of debriefing the participants, which involved letting them know that they were not expected to be able to complete the task within the allotted time, and that this was not in any way a form of assessing their cognitive abilities. They were also given debriefing form with the experimenter's contact information. Participants were then thanked and released.

### **Participants**

Participants were Eastern Michigan University students, who were recruited through psychology courses and the psychology department's online recruiting site for studies; SONA. Of the participants, 60.5% were females and 39.5% were male. The ethnicity of the participants varied from 30.3% African American, 50.4% Caucasian, 10.9% Hispanic, 5% Asian/Pacific Islander, and 1.7% Native American and other. The ages ranged from 16 to 48, with 90% being between the ages of 18 to 23. The participants that completed all parts of the study received extra credit in their psychology course, if eligible for it.

### **Measures**

In the beginning of the survey, there were three questions that asked the participants to identify their demographic, including age, race, and gender.

### **Perceived Stress Scale**

A 10-item scale was designed to assess an individual's stress that they may have experienced over the past month. The scale was scored on a five point scale from 0 = Never to 4 = Very often. A person that identified with a higher score on this scale indicates that they have experienced a higher level of perceived stress. The assessment contains six items that are scored to represent negative attitudes and there were also four items, questions 4,5,7, and 8 that were reversed scored to assess positive attitudes. A sample item from the stress scale included: "In the last month, how often have you felt that you were unable to control the important things in your life?".

### **Music Preference Survey**

The music preference survey was a 9 item scale that was created specifically for this study to assess how often participants listened to music on a weekly basis, which genres of music they prefer to listen to, and what genre the participant listens to when experiencing certain emotions. The first question of the survey was an open-ended question that asked participants to identify the estimated hours of listening to music per week, another sample item from the music preference survey consisted of asking participants how often they listen to a certain music genre. Questions 2-6 were scored on a 10 point Likert scale: 1 = Not at all to 10 = All the time. The purpose in using this measure was to determine the preferences of the music genres that were being used within the study.

### **Personality Survey**

The personality survey consisted of a 20 item questionnaire, used to assess personality in regards to the Big Five Personality Inventory. The five personality traits were measured by four

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questions for each personality trait: Openness (questions 2,3,9, and 16), Agreeableness (questions 7,12,15, and 20), Conscientiousness (questions 4,6,10, and 18), Extraversion (questions 1,5,11, and 13), and Neuroticism (questions 8,14,17, and 19). Each question within the survey was measured on a 5-point Likert scale; 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. Sample items from this survey, included questions, such as, "I am open to new ideas and change". There were a few items that were reversed scored as well.

### **Post Test**

The post-test survey was given after participants completed the stress provoking task, in order to assess their perceived stress levels from the task given. The post-test consisted of 12 items that were measured using a 7-point Likert scale, to measure perceived stress, along with the participants attitudes towards the puzzle and the music genre that they were assigned to. A sample item from the post-test: "How much did you enjoy the music (songs) that you listened to?" and "During the task, I got tense and easily irritated". There were also reversed scored items within the post-test.

### **Results**

Obtaining of the results was first done through downloading through SurveyMonkey, an online survey development website. Once downloaded from SurveyMonkey, the results were then processed through SPSS. There were a total of 119 participants, after omitting two participants that did not complete a few items on the post-test blank. Once reverse scores were accounted for, composite scores for each scale were calculated for each of the measures.

The hypotheses of the study were:

***Hypothesis 1a:*** Participants in the music groups will report feeling less stressed than the participants in the control group.

***Hypothesis 1b:*** Individuals in the classical group will report the lowest amount of perceived stress.

***Hypothesis 2a:*** Those who identify with the personality trait of Openness and Conscientiousness will report lower amounts of perceived stress.

***Hypothesis 2b:*** Those who identify with Neuroticism and Extraversion will report greater amounts of perceived stress.

The primary hypothesis of the study was that listening to certain music genres affects the stress levels of individuals with different personality traits. A one-way Analysis of Variance (ANOVA) test was used to measure the 12-item post-test assessment for the individuals who did listen to music compared to those who did not through this statistical test. Table 1 shows that participants who listened to music were significantly less stressed after the task given than those who did not listen to music,  $F(1, 117) = 15.968, p < .001$ . The mean score of the music group was 3.35, while the no music group's mean score was 4.28. Results proved *Hypothesis 1a*, (*i.e. participants in the music groups will report feeling less stressed than the participants in the control group*) to be correct.

To test for the different music genres effect on stress, from the measures given through the post-test, a one-way ANOVA test was used as well. Looking at Table 2, results show that the hypothesis that individuals in the classical group will report the lowest amount of perceived

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stress, was true. Individuals within the Classical music genre were significantly less stressed while attempting to complete the task, with a mean score of 3.14, while the no music group had a higher mean score of 4.29, indicating that the no music group experienced more stress after completion of the task. Rap music genre showed to be second in experiencing more stress with a mean score of 3.65.

With the primary hypothesis being to see how listening to certain music genres affects individuals of different personality traits' stress levels, a Pearsons Correlation was used to examine this hypothesis. As shown in Table 3, there were no significant correlations between personality and levels of stress. Also hypothesized was that specific traits of the Big Five Personality traits would interact with the different music genres that participants were randomly assigned to. In order to investigate this hypothesis, a multiple regression analysis was used to determine if music and personality could indicate the stress levels of the participants after the task was given. Dummy codes were given for whether or not participants listened to music or not (1 = yes music; 0 = no music). Results shown in Table 4 indicate that Openness and Extraversion did not have a significant interaction with music; Extraversion with a *p value* of .678 and Openness with a *p value* of .501. When it comes to Conscientiousness and Neuroticism, results showed that there was a significant interaction with music; higher Conscientiousness with music points toward lower perceived stress (*p value* = .017), and an individual who identifies being higher in Neuroticism with music (*p value* = .030) indicates higher perceived stressed.

### Discussion

The purpose of the study was to see how music interacts with personality and individuals' stress levels. This study supports previous research in regards to the effects that music can have

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on individual's stress. This study has taken it a step further with looking at how music interacts with personality traits as well. Results have shown that individuals in the music groups reported to be significantly less stressed than those in the no music group. Classical music also has been used as a tool for relaxation and stress reduction, resulting in self-reported behavioral and physiological changes that are related to reduced stress (Hanser, 1985). Consistent with the hypothesis, the Classical genre results showed to have a significant lower amount of perceived stress compared to the Rap and no music group. Those who identified as higher in Conscientiousness, showed a significant result in relation to music. Results show that those individuals experienced less stress. This finding supports the hypothesis that those who identified with the personality trait of Conscientiousness will report lower amounts of perceived stress. Results do not support the hypothesis that those who identified as the personality trait of Openness will report lower amounts of stress; instead there was no significance in the result. Opposed to what was expected in regards to Neuroticism having a higher amount of perceived stress was shown to be inconsistent with the results. Neuroticism's outcome showed to have lower perceived stress.

There have been few studies that have examined the effects of several music genres on a person's stress levels linked with their personality trait. Many studies have only looked at the music genres of Classical and Rock, while not much research has been done looking at Rap, R&B/HipHop, and Pop music genres. This study addresses the previously unknown of how different music genres impact an individual's ability to perform a cognitive task and their personality trait, to determine their level of experienced amounts of stress.

Seeing that music is a widely used tool during many tasks and activities it would be helpful for people who are constantly faced with tasks that require their concentration, focus, and

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memory. Implications of this study show that while doing a task that calls for a person's use of their cognitive skills (Classical music would be a better option for those who need to stay on task, focus and experience less stress while completing the task. Specifically, this study can be helpful for students who are continuously given tasks that require the use of their concentration and memory, such as studying, reading, mathematical problems, etc. Individuals who are aware of their personality type will be able to use a specific music genre to mediate their stress levels while partaking in stressful tasks.

Limitations of the study consisted of the use of lyrics. Using lyrics within the study could have brought upon unwanted feelings for the participants, which could have resulted in an experience of higher stress levels. Unwanted feelings could be evoked by the explicit nature of some of the lyrics within a song or love songs that were used could bring up unwanted feelings in the participant, if they have experienced or are experiencing a difficult time in their personal romantic relationship. To solve this limitation, lyrics could be removed from the song, using the instrumental version of songs. With the study having a total of 120 participants, the results could have had greater value if there was an equal and larger amount of participants. This could have made a difference in some of the findings that were found to be insignificant.

This study can be taken a step further with looking specifically at which music genre evokes higher and lower amounts of stress in each of the Big Five personality traits. With there being an inconsistency in gender, gender differences could be looked at in further research in this area, determining if stress levels from different music genres has a correlation to gender types. Further research based on the implications of this study can be looking at the given music genre preference of the participant in relation to an assigned music genre that is not their preference, to see if the individual will experience higher amounts of perceived stress while attempting to

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complete a task that calls for concentration and cognitive use. Other music genres, such as Jazz and Country can also be used in the study to determine if there are any significant results regarding stress levels. The task of the study could also be changed to see if there are higher amounts of stress reported based on the level of difficulty of the task given.

With music being used as a universal tool for a multitude of activities among students, including studying, homework, physical exercise and casual reading it is essential to know which music genre is more suitable for an individual to experience less stress while trying to complete a task. It is not uncommon for students to have music playing in the background as they are partaking in completing a task that calls for their cognitive use. To know which music genre is conducive to creating less stress for an individual of a certain personality trait while completing the task would be especially helpful for students, employees and others involved in stress related activities.

Appendix A

Table 1

*Overall estimated marginal means, standard deviations, F statistic, and p value of music and no music for posttest items that measure stress: 1, 3, and 8.*

Analysis	Music Groups	No Music Group	F	p <
Total Post-Stress Measure	3.35 (.96)	4.28 (.89)	(1, 117) 15.968	.001

Table 2

*Mean reported posttest stress by music genre.*

No Music	Rock Music	R&B/Hip Hop	Pop	Rap	Classical
4.29 (.89) <i>20</i>	3.59 (1.132) <i>21</i>	3.23 (.709) <i>20</i>	3.24 (.839) <i>20</i>	3.65 (1.022) <i>19</i>	3.14 (1.023) <i>19</i>

Note: Standard deviations are in parentheses and number by condition is in italics. When Pre-stress as reported on the mean response to the perceived stress scale was used as a covariate, the Total Post-Stress difference by music type remained significant,  $F(5, 111) = 8.365, p < .001$ .

Table 3

*Correlations between overall post-stress total and specific items with Extraversion, Conscientiousness, Openness, and Neuroticism reports.*

	Overall Posttest Average	Q1. How Stressed are you now?	Q3. How tense and easily irritated did you feel during task?	Q8. How stressed did you feel during the task?
Extraversion	.085 (.356)	.067 (.469)	-.060 (.522)	-.002 (.979)
Openness	-.066 (.479)	-.046 (.620)	-.130 (.159)	-.050 (.586)
Conscientiousness	.017 (.857)	.110 (.236)	.042 (.652)	.072 (.435)
Neuroticism	.114	.079	.116	.091

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(.217) (.397) (.213) (.324)

Note: Correlations are all bi-variate, observed alphas are in parentheses.

Table 4

*Regression analyses of music and no music comparisons, personality traits, and the condition (music, no music) interaction.*

Predictors	Beta	t value	p value
Music	-.071	-.104	.918
Extraversion	.205	.832	.407
Music X Extraversion	-.307	-.417	.678
	<i>B</i>	<i>t</i>	<i>p</i>
Music	-.684	-1.356	.178
Openness	-.210	-.962	.338
Music X Openness	.363	.675	.501
	<i>B</i>	<i>t</i>	<i>p</i>
Music	-2.112	-2.877	.005
Conscientiousness	-.589	-2.309	.023
Music X Conscientiousness	1.831	2.420	.017
	<i>B</i>	<i>t</i>	<i>p</i>
Music	-.990	-3.224	.002
Neuroticism	-.253	-1.392	.167
Music X Neuroticism	.748	2.196	.030

Note: The independent regression for music vs. no music conditions on posttest stress was  $\beta = .347, t(117) = 3.996, p = .001$ .

References

Chamorro-Premuzic, T., Fagan, P., and Furnham, A. (2010). Personality and uses of music as predictors of preferences for music consensually classified as happy, sad, complex, and social. *Psychology of Aesthetics, Creativity, and the Arts*, 4, 205-213.

Costa, P. T., & McCrae, R. R. (1992). The revised neo personality inventory manual. *Odessa: Psychological Assessment Resources*.

Haake, A. (2011). Individual music listening in workplace setting: An exploratory survey of offices in in the UK. *Musicae Scientiae*, 15, 107-129.

Hanser, S. B. (1985). Music therapy and stress reduction research. *J. Music Ther.* 22, 4, 193–206.

Scheufele, P. M. (2000). Effects of progressive relaxation and classical music on measurements of attention, relaxation, and stress responses. *Journal of Behavioral Medicine*, 23(2), 207-228. Retrieved from <http://ezproxy.emich.edu/login?url=http://search.proquest.com/docview/619460939?accountid=10650>.

Thoma, M. V., la Marca, R., Brönnimann, R., Finkel, L., Ehlert, U., & Nater, U. M. (2013). The effect of music on the human stress response. *PLoS ONE*, 8(8) Retrieved from <http://ezproxy.emich.edu/login?url=http://search.proquest.com/docview/1449311236?accountid=10650>.