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The Effects of Music on Employee Affect

Nolan J. McNulty

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The Effects of Music on Employee Affect



Honors Thesis

Nolan J. McNulty

Department: Psychology

Advisor: Susan Davis, Ph.D.

April 2015

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This thesis is concerned with the effect of music on mood in the workplace. Mood, or affect, is an important attribute in the working environment. For Example, positive affect is directly proportional to employee satisfaction, which can lead to more productivity and more efficiency. The mood of employees at a student café at the University of Dayton was assessed with and without background music while they worked. Data were collected over a two-week period from 20 student employees. Data included background questionnaires asking for demographic information such as music preference, music experience, and hours spent listening to music. The Positive Affectivity, Negative Affectivity Scale (PANAS-X) was distributed before and after each work shift in order to assess changes in affectivity scores. Each participant was exposed to both music and no-music conditions. The hypotheses were that music would enhance satisfaction in this work environment and that the music background of the participants would also affect work satisfaction.

I thank the University of Dayton Psychology department and the University of Dayton Honors Program for funding this study.



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Abstract

My thesis is concerned with the effect of music on mood in the workplace. Mood, or affect, is an important attribute in the working environment. For example, positive affect is directly proportional to employee satisfaction, which leads to more productivity and more efficiency. On the other hand, negative affect is inversely proportional to employee satisfaction. Poor employee satisfaction leads to less productivity and less efficiency. My goal was to see if music has an effect on the affect, or mood, of employees at Artstreet Café. Using both classical music (Ex: *Beethoven, Piano Concerto No. 4 3rd mvt*) and no-music as conditions, I attempted to determine if there was any significant change in affect. The study found no impact on affect, as measured by the General Positive Emotion General Negative Emotion, and Basic Positive Affect Scale. A main effect of music was discovered, but found GPE and BPA were higher in the no-music conditions, the opposite of the predicted hypothesis. However, the results are consistent with previous research that suggest music preference drives an effect of mood. Upon looking into background data, participants did not indicate a preference or appreciation for classical music. Future research that takes into account individual preferences for music could elicit a more accurate change in affect in the workplace.

Introduction

Employee satisfaction is an imperative element to a successful office, business, or organization. Satisfied employees drive business forward; increasing efficiency, productivity, and time on task (Lesiuk, 2005). Businesses invest a sizable amount of their budget on measuring, improving, and facilitating employee satisfaction. One way to measure employee satisfaction is to understand the moods of employees during working hours. Positive mood facilitates a more pleasant working environment, and in turn can lead to greater employee satisfaction. Negative and positive affect are vary as elements of mood. Individuals who score high in measures of negative affect are prone to experience a diverse array of negative mood states (anxiety, depression, hostility, and guilt). Individuals who score high in measures of positive affect are prone to describe themselves as cheerful, enthusiastic, confident, active, and energetic. Positive people tend to be more satisfied with their jobs, and this satisfaction in turn helps individuals maintain a positive level of general life satisfaction, further enhancing their positive affectivity (Landy & Conte, 2013).

Veit studied the influence of positive mood and its effects on job satisfaction. Results indicated that a positive mood induction (i.e., cookies, candy, and soft drinks given to the employees before a job satisfaction survey questionnaire administration) had a marginal effect upon one of the job satisfaction attitude components, job cognitions (Veit, 2007). That is, employees in Veit's study indicated that they thought positively of their job. The positive mood induction in Veit's case was treats. Illies and colleagues assessed the contributions of average levels of mood at work as well as those of job

beliefs to the prediction of job satisfaction, and examined the role of mood in mediating the relationship between measures of affectivity and job satisfaction. They found that pleasant mood at work and beliefs about the job made independent contributions to the prediction of job satisfaction (Illies et al., 2004). Positive affect was found to be directly proportional to employee satisfaction, which lead to more productivity and more efficiency. On the other hand, negative affect was found to be inversely proportional to employee satisfaction. Poor employee satisfaction lead to less productivity and less efficiency (Illies et al.).

Although mood can lead to employee satisfaction and to efficiency and productivity, my thesis will focus solely on mood and the mood induction effect of music. Research has suggested that music is the language of emotion (Fiske, 1996). Music has been shown to have an altering effect on mood because of the unique emotions that individuals experience while listening to music. Some believe that these mood states occur as a result of the projection of many individual past experiences and beliefs (with an emotional basis) onto the experience of the tonal-rhythmic events presented in music (Lesiuk, 2005). In other words, people relate the emotions they feel from music to their past experiences and beliefs. Consequently, music listening results in experiencing measurable emotional responses, such as thrills, shivers, laughter, tears, and relaxation. Music, according to Goldstein and Panksepp, elicits a peak experience that provides a cathartic outlet, allowing listeners to impose their own 'emotion-stories' on music experiences, and is psychologically beneficial (Goldstein & Panksepp, 1995).

Specifically, this thesis study will focus on the effects of music on mood in a work setting. A number of studies have looked at the relationship between music and mood in a professional setting (Oldham et al., 1995). The present study will look at music and mood in a food service setting.

The employees who will be assessed in the present study are employees at ArtStreet Café, a student-run café on the campus of the University of Dayton. Tasks at work include: making Panini's, cleaning counters, taking orders from customers, and making smoothies. There will be a wide range of reported daily music listening time, from no time spent to nearly the entire day. There is an expected wide range among the employees of formal music education experience, ranging from around 0-15 years. It's expected that some employees will play musical instruments and prefer music when they perform tasks (e.g., while writing, reading, driving). A background questionnaire will be distributed to everyone before the experiment begins. The questionnaire will be distributed to determine the musical background information about each participant. The questionnaire will also help in understanding the results; that is, the expectation is that the results of the experiment may be explained by a music background of the employees.

The study is an experimental field study using a repeated-measures design. While attempting to capture natural interaction that occurs between the employees and music listening in the workplace, I hoped to minimize the interactions with customers and fellow employees. The dependent variable of responses to an affect scale was obtained during work shifts for a total of 2 weeks. State Affect is defined as the extent to which an individual displays enthusiasm for life (Watson & Tellegen, 1985). The latest version of

the Positive and Negative Affect Schedule (PANAS-X) questionnaire (Watson et al., 1988) was administered to every associate before and after the music or no-music condition. See Appendix A for the PANAS-X.

Method

Over a span of 2 weeks, I distributed background questionnaires (see appendix C) to 18-20 employees. After the employees signed their informed consents (see attached Appendix F), they completed the questionnaires. The questionnaires determined demographic variables such as music preference, music experience, and hours spent listening to music. Each participant was exposed to both music and no-music conditions. The participants were assigned to each of their music condition or their no-music condition based on particular shift schedule (e.g., music condition will be carried out on a 2-hour Monday shift, and no-music condition will be carried out on the following 2-hour Monday shift). The study was a repeated measures design, as each employee was exposed to both music and no-music conditions. The background data I collected was designed to explain any effects of music. For example, the music background of the participants may reduce or increase their work satisfaction. A copy of the Positive Affectivity, Negative Affectivity Scale (PANAS-X; see attached Appendix A) was distributed before and after each work shift in order to assess changes in affectivity scores. My hypothesis is that when in the music condition participants will show a change in affect during their shifts. When not in the music condition, participants will show no change in affect.

Results

As can be seen in Figure 1, there seems to be a greater decrease in General Positive Emotion (GPE) from the administration of the PANAS-X from before to after the work shift for those participants in the music condition than for the participants in the no-music condition. However, this apparent difference or interaction was not statistically significant as tested by a complex Analysis of Variance, $F(1, 9) = 5.255, p > .05$. That is the change in GPE for music, while appearing greater, is actually no greater than that change in GPE for the no-music condition. There was, on the other hand, a significant result from the analysis of a main effect of music, although not in the direction of the prediction, $F(1, 9) = 1.005, p < .05$, such that GPE scores are higher when music is heard while working, regardless of when GPE is measured. That is, overall, GPE was higher when music was not present than when it was. The combined mean for GPE in the music condition is $M = 21.5$ ($SD = 3.83$). The combined mean for GPE in the no-music condition is $M = 22.95$, ($SD = 2.94$).

Much like the results found for General Positive Emotion, a similar effect was found for General Negative Emotion (GNE). As can be seen in Figure 2, there seems to be a greater decrease in GNE from the administration of the PANAS-X from before to after the work shift for those participants in the music condition than for the participants in the no-music condition. However, this apparent difference or interaction was not statistically significant as tested by a complex Analysis of Variance, $F(1, 9) = 2.425, p > .05$. That is the change in General Negative Emotion for music, while appearing greater, is actually no greater than that change in GNE for the no-music condition. However, unlike

for the GPE analyses, neither was there a significant result from the analysis of a main effect of music, $F(1, 9) = .772, p > .05$, that is, GNE scores are not higher when music is heard while working, regardless of when GNE is measured. That is overall; GNE was similar when music was not present to when it was. The combined mean for GNE in the music condition is $M=22.0$ ($SD = 2.24$). The combined mean for GNE in the no music condition is $M=20.9$ ($SD = 4.00$).

Consistent with the results found for both General Positive Emotion and General Negative Emotion, a similar effect was found for Basic Positive Affect. As can be seen in Figure 3, there appears to be a greater decrease in Basic Positive Affect (BPA) from the administration of the PANAS-X from before to after the work shift for those participants in the music condition than for the participants in the no-music condition. However, this apparent difference or interaction was not statistically significant as tested by a complex Analysis of Variance, $F(1, 9) = 1.674, p > .05$. That is the change in Basic Positive Affect for music while appearing greater is actually no greater than that change in BPA for the no-music condition. Neither was there a result from analysis of a main effect of music, $F(1, 9) = .496, p > .05$, such that BPA scores are no higher when music is heard while working, regardless of when BPA is measured. The combined Means for BPA in the music condition is $M=12.13$, ($SD = 3.82$). The combined Means for BPA in the no music condition is $M=12.66$, ($SD = 2.26$).

Consistent with these results as a possible explanation is what can be seen in the Figure 4. In the music experience questionnaire, participants rarely reported an appreciation for classical music. If you look at the figure, you can see that 24% percent

indicated enjoyment from pop music, by far the greatest preference. However, only 5% percent indicated enjoyment from classical music.

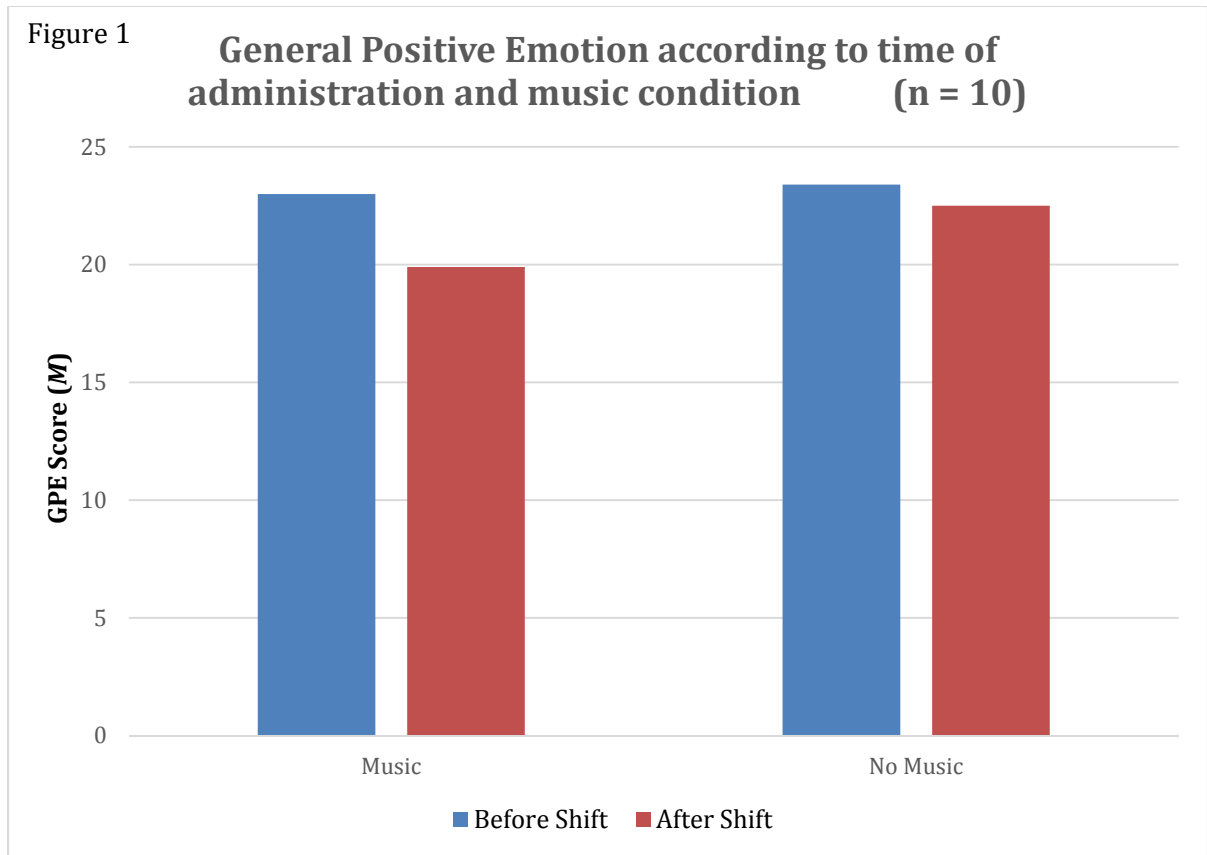


Figure 1. The general positive emotion score means based on music and no music conditions with PANAS-X administration before and after work shift

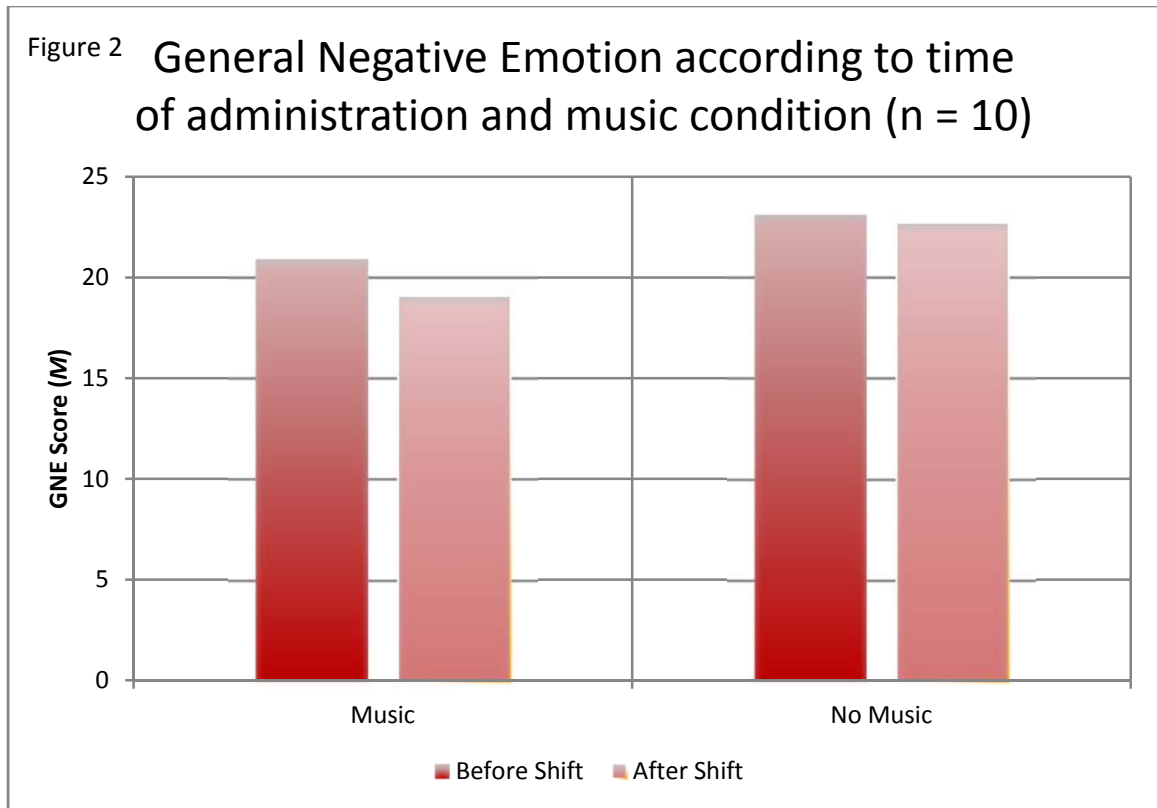


Figure 2. The General Negative Emotion score means based on music and no music conditions with PANAS-X administration before and after work shift

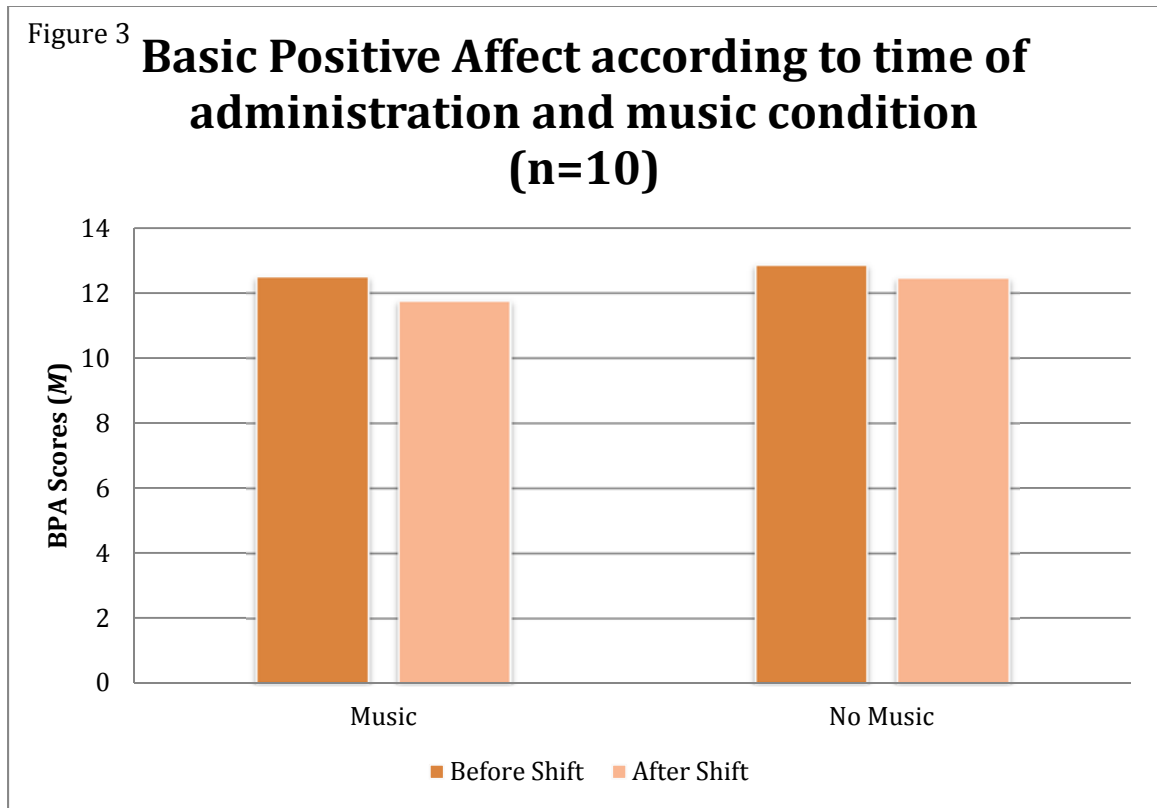


Figure 3. The Basic Positive Affect score means based on music and no music conditions with PANAS-X

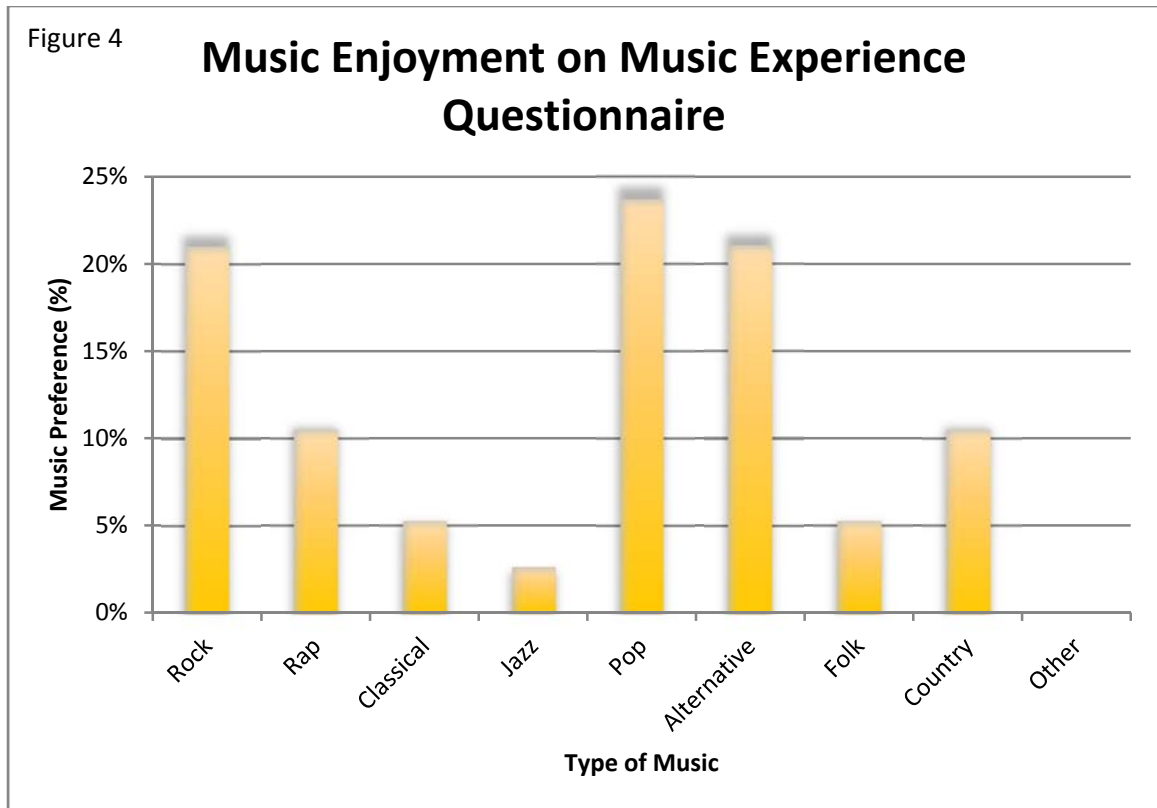


Figure 4. Music enjoyment based on Music Experience Questionnaire administered before work shifts.

Conclusion

The results of music effecting the General Positive Emotion, General Negative Emotion, and Basic Positive Affect do not support the original hypothesis. That is, the results do not indicate a change in affect based on experience of music. Originally, a positive change in mood was predicted when employees were exposed to music more so than when employee were not exposed to music. The results do not show any significant change in affect regardless of the presence of music. The measures of mood found in the PANAS-X, GPE, GNE, and BPA, were all found to be unaffected by the condition of classical music and condition of no music. The results show no relationship between music and any of the measures of mood (GPE, GNE, BPA), regardless of the timing of administration of the PANAS-X. Although not statistically significant, the results did yield a main effect of music, but in the opposite of the predicated direction. That is, employees showed higher scores of General Positive Emotion when in the no-music conditions, the opposite of my predication. These results, although not statistically significant, are congruent with previous research. Consistent with these results as a possible explanation is what can be seen in Figure 4. In the music experience questionnaire, participants rarely reported an appreciation for classical music. Looking at the figure, one can see that only 5% of employees enjoy classical music, and a resounding number of employees enjoy alternative and pop and other genres of music. These results are also consistent with results reported by Haake (2011) that indicate mood improves only with music that employees select as preferred. Haake further states that

appreciation is dependent more the listener's fondness than on the type of the music, an indication of preference being driven by familiarity.

The study presented can provide a better understanding for the role of music in a work setting. The effects music has on employee mood can lead to greater understanding of moods in the workplace, and can lead to a stronger initiative to improve on employee satisfaction. This study can lead companies to understand that moods are important for an effective workforce, and altering those moods through music is possible.

The results showed a lack of statistical significance in the interaction of music and three measures of mood found in the PANAS-X, the GPE, GNE, and BPA. The results also showed a lack of statistical significance in main effect of music. The lack of statistical significance can be caused by issues of uncontrolled variables. The number of participants was too low to achieve statistical significance. The sample size was 10 was much smaller than the sample sizes found in previous research (e.g., Chen et al., 2012). The sample size was based on worker availability and was very limited by the number of workers in a college campus café. Another limitation was the type of workplace used for the study. The atmosphere of a sandwich café is not strictly comparable to work settings used in previous research. Most of the research on employee moods has been conducted in traditional office settings (Haake, 2011). Another explanation for the lack of statistical significance was the disturbance variable of talking. Regardless of the work shift, music condition or no-music condition, talking could not be controlled. The moods elicited from a conversation about anything exciting would likely override any mood change based on the music being played. The amount of talking as well as the type of talking that was

happening between workers could not be controlled in this study. The busyness of the particular workday could not be controlled either. The moods brought about by a hectic work shift could have over-ridden the effect of music on mood of an employee. A workday experience questionnaire was distributed to every worker at the end of his or her shift to distinguish how busy that particular work shift was. Even with that information, it is hard to tell what a particular level of busyness does for a person's mood without an appropriate questionnaire. Does an extremely busy work shift make a particular worker anxious, jittery, sad, or elated? Other environmental factors could have contributed to the lack of statistical significance found in the results. The weather was not taken into account, as bad weather may influence someone's mood. Academic and personal woes may also creep in during an employee's work shift, which may influence mood. In the future, these should also be taken into consideration.

This study is a stepping-stone for future research and investigation in the realm of applied organizational psychology. The study could be repeated through a systematic replication. As previous research has shown, there are more compelling changes in mood when participants are able to choose music based on their personal preferences. With all things systematically analogous, allowing the music to be congruent with individual employee's preference could account for the lack of significance found in the results of the present study. The present study brought about music as background music from a stereo system, future research might aim to see if there is a great effect of mood when participants are exposed to background music verses music administered via headphones. The research at hand aims to find out ways to alter mood, which has the potential to bring about a change in employee satisfaction as well as increased productivity and efficiency.

Using the same method and controlling for the amount of customers to be served, it would be interesting to see how music effects quantitative data. That is, for example, does music effect how many sandwiches someone can make in a work shift? This research has the ability to indirectly effect company's bottom line. The implications of this research can help drive an improvement in business culture. This research can help drive employee's mood which can lead to a more positive workforce, and ultimately find a greater climate for individuals while they work.

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Appendix A

PANAS-X

This scale consists of a number of words and phrases that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way during the past few weeks. Use the following scale to record your answers:

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely
<input type="checkbox"/> cheerful	<input type="checkbox"/> sad	<input type="checkbox"/> active	<input type="checkbox"/> angry at self	
<input type="checkbox"/> disgusted	<input type="checkbox"/> calm	<input type="checkbox"/> guilty	<input type="checkbox"/> enthusiastic	
<input type="checkbox"/> attentive	<input type="checkbox"/> afraid	<input type="checkbox"/> joyful	<input type="checkbox"/> downhearted	
<input type="checkbox"/> bashful	<input type="checkbox"/> tired	<input type="checkbox"/> nervous	<input type="checkbox"/> sheepish	
<input type="checkbox"/> sluggish	<input type="checkbox"/> amazed	<input type="checkbox"/> lonely	<input type="checkbox"/> distressed	
<input type="checkbox"/> daring	<input type="checkbox"/> shaky	<input type="checkbox"/> sleepy	<input type="checkbox"/> blameworthy	
<input type="checkbox"/> surprised	<input type="checkbox"/> happy	<input type="checkbox"/> excited	<input type="checkbox"/> determined	
<input type="checkbox"/> strong	<input type="checkbox"/> timid	<input type="checkbox"/> hostile	<input type="checkbox"/> frightened	
<input type="checkbox"/> scornful	<input type="checkbox"/> alone	<input type="checkbox"/> proud	<input type="checkbox"/> astonished	
<input type="checkbox"/> relaxed	<input type="checkbox"/> alert	<input type="checkbox"/> jittery	<input type="checkbox"/> interested	
<input type="checkbox"/> irritable	<input type="checkbox"/> upset	<input type="checkbox"/> lively	<input type="checkbox"/> loathing	
<input type="checkbox"/> delighted	<input type="checkbox"/> angry	<input type="checkbox"/> ashamed	<input type="checkbox"/> confident	
<input type="checkbox"/> inspired	<input type="checkbox"/> bold	<input type="checkbox"/> at ease	<input type="checkbox"/> energetic	
<input type="checkbox"/> fearless	<input type="checkbox"/> blue	<input type="checkbox"/> scared	<input type="checkbox"/> concentrating	
<input type="checkbox"/> disgusted with self	<input type="checkbox"/> shy	<input type="checkbox"/> drowsy	<input type="checkbox"/> dissatisfied with self	

Appendix B

Music Selections

Emotion	Composer	Composition
Happy	Beethoven	<i>Piano Concerto no. 4, 3rd mvt</i>
Happy	Ravel	<i>Tombeau de Couperin, Rigaudon</i>
Happy	Dvorak	<i>Symphony no. 6 in D major, 4th mvt</i>
Happy	Vivaldi	<i>La Primavera (Spring) from The Four Seasons</i>
Happy	Alfven	<i>Midsommarvaka, Swedish Radio Symphony Orchestra</i>

Note: The first three selections were used in Barnas, A. (2014). EMOTIONAL RESPONSES EVOKED BY PAINTINGS AND CLASSICAL MUSIC IN ARTISTS, MUSICIANS, AND NON-EXPERTS. Master Thesis, University of Dayton.

The last two selections were used in Krumhansl, C. L. (1997). *An Exploratory Study of Musical Emotions and*

Psychophysiology. Canadian Journal of Experimental Psychology, 51,336-352

Appendix C

Background Questionnaire

Work experience

1. Name: _____
2. UD Email: _____
3. Weekly work schedule: Please put a check mark the days you work at Arstreet during the week, and write in the hours you work during those days.

Monday	<input type="checkbox"/>
Tuesday	<input type="checkbox"/>
Wednesday	<input type="checkbox"/>
Thursday	<input type="checkbox"/>
Friday	<input type="checkbox"/>
Saturday	<input type="checkbox"/>
Sunday	<input type="checkbox"/>

4. What is your job role on Artstreet?

- a. Associate
- b. Manager
- c. Other

5. How long have you worked at Artstreet?

- a. Less than one semester
- b. 1-4 semesters
- c. 4-6 semesters
- d. 6+ semesters

6. Do you hold any other jobs on campus?

- a. Yes
- b. No

If yes, please list

7. Do you find your work enjoyable?

- a. Yes
- b. No

If no, please explain

8. Do you find your work to be engaging?

Music Experience

9. Do you play a musical instrument?

- a. Yes
- b. No

If yes, what instrument?

10. How many years of formal music education experience have you had?

- a. None
- b. less than 1 year
- c. 1-4 years
- d. 5-10 years
- e. More than 10 years

11. In a given day, how many hours do you spend listening to music?

- a. Less than 1 hour
- b. 1-2 hours
- c. 3-6 hours
- d. More than 6 hours

12. Do you listen to music while doing other activities? (ex: running, studying, working, surfing the web, writing, reading, driving, etc.)

- a. Yes
- b. No

If yes, please list

13. What type of music do you enjoy? (circle all that apply)

- a. Rock
- b. Rap
- c. Classical
- d. Jazz
- e. Pop
- f. Alternative
- g. Folk
- h. Other _____

14. Is there any particular music that you find irritating/distracting

15. Are you familiar with music in a working environment? Explain

16. Do you prefer peace and quiet when doing a task? (ex: writing, reading, doing hw, driving, etc)

- a. Yes
- b. No

Appendix D

Workday Experience Questionnaire

This is given to every participant (both music and no- music condition) at the end of his or her shift.

1. How would you describe today's work shift
 - a. very unpleasant
 - b. moderately unpleasant
 - c. neutral
 - d. moderately pleasant
 - e. very pleasant

2. How would you describe today's busyness
 - a. Very slow (Little to no customers)
 - b. Slow (A few customers here and there)
 - c. Moderate (steady flow of customers)
 - d. Busy (Constant flow of customers)
 - e. Very busy (overwhelming flow of customers)

3. Describe (if applicable) anything out of the ordinary that happened at work today?

Appendix E

Follow-up Questionnaire

Given to every participant after the entire experiment is over

1. Music makes the time pass faster?
 - a. Yes
 - b. No
 - c. Can't tell

2. Music gives you a lift when you're feeling tired?
 - a. Yes
 - b. No
 - c. Can't tell

3. You get more work done with music
 - a. Yes
 - b. No
 - c. Can't tell

4. Music makes you nervous
 - a. Yes
 - b. No
 - c. Can't tell

5. Music makes your job more pleasant
 - a. Yes
 - b. No
 - c. Can't tell

Appendix F

Informed Consent to Participate in a Research Project

Project Title:	<i>Listening to music</i>
Investigator(s) :	Nolan McNulty, Susan Davis, PhD (faculty sponsor)
Description of Study:	The study will involve a series of questionnaires before, during, and after work shifts at Art Street Café. The questionnaires will ask about age, grade, life experiences, musical preferences, movie preferences, feelings about music, feelings about films and sports, descriptions of mood, hobbies, activities, preferences, and perceptions of work environment. Music listening will also take place.
Adverse Effects and Risks:	<i>This study may cause some slight emotional discomfort in responding to questions about mood.</i>
Duration of Study:	The study will take approximately 2 hours each shift for a total of 4 weeks to complete.
Confidentiality of Data:	Your name will be kept separate from the data. Both your name and the data will be kept in a locked filing cabinet. Only myself (Nolan McNulty) and Dr. Davis will have access to the locked filing cabinet. Your name will not be revealed in any document resulting from this study. You will be observed directly by the experimenter, Nolan McNulty.
Contact Person:	Participants may contact Nolan McNulty, 810-836-2934 and mcnultyn1@udayton.edu or Dr. Susan Davis, SJ327, (937) 229-1345, sdavis1@udayton.edu. If you have questions about your rights as a

Appendix G

Debriefing Form

Information about Listening to Music

Objective:

The current study is concerned with the effect of music on mood in the workplace. My goal is to see if music has an effect on the affect, or mood, of employees at Artstreet Café. Using both classical music and no music as conditions, and an evaluation of participants mood by asking them to complete an affect questionnaire, I attempted to determine if there was any significant change in affect for Artstreet Café employees. The results of this study can be used to gauge employee mood, which can, in turn, be a determining factor in worker productivity and efficiency.

Hypothesis:

My expectation is that when in the music condition participants would show a positive change in affect during their shift as compared to when they are in the no-music condition which would not produce a change in affect.

Your Contribution:

Your participation in this study will provide me with valuable data for interpreting the role that music can play in affecting the atmosphere of a work environment. This may lead to places of work adopting music in their work environment.

Benefits:

The study will help to determine the effectiveness of music in a work setting. If music is a direct correlation to positive mood, that can establish a more engaging and positive work environment.

Assurance of Privacy:

We are studying the effects of music on employee affect and are not evaluating you personally in any way. Your responses will be kept completely confidential and

your responses will only be identified by a participant number in the data set with other participant numbers. Your name will not be revealed in any document resulting from this study.

Please note:

- We ask you to kindly refrain from discussing this study with others in order to help us avoid biasing future participants.
- If you have any questions please do not hesitate to contact any of the individuals listed on this page.
- For further information about this area of research, you may consult the references cited on this page.

Contact Information:

Students may contact Nolan McNulty, 810-836-2934, mcnultyn1@udayton.edu or Dr. Susan Davis, SJ327, (937) 229-1345, sdavis1@udayton.edu if you have questions or problems after the study. If you have questions about your rights as a research participant, you may also contact the chair of the Research Review and Ethics Committee, Lee Dixon, PhD in SJ 310, (937) 229-2160, lee.dixon@udayton.edu.

Thank you for your participation.

Disclaimer:

The University of Dayton supports researchers' academic freedom to study topics of their choice. The topic and/or content of each study are those of the principal investigator(s) and do not necessarily represent the mission or positions of the University of Dayton.