How to participate in my project. purpose

Art & Culture, Music

How Do Different Types of Music Affect People´s Attention Span? Social Science November 2017Experimental Research_____Signature of Sponsoring Teacher_____Signature of School Science Fair Coordinator TeacherShreyas Verma640 W. Scott St. Chicago, IL 60610Grade #7Table of ContentsAcknowledgmentsPage 3Purpose and HypothesisPage 4Review of Literature and Background ResearchPage 5ProcedurePage 7Results and Other ObservationsPage 10 Conclusion, Reflection, ApplicationPage 12Reference ListPage 14Acknowledgments: I would like to thank my Dad for teaching me how to use Google Forms as a survey tool and Microsoft Excel to track my data and create graphs from it. I would also like to thank both of my parents for helping me recruit people online by forwarding my request for test subjects to their friends and coworkers to allow me to get a sample of at least 50 respondents. A special thank you to my 17 year old cousin in California who successfully got many of her classmates to participate in my project. "Purpose and HypothesisThe purpose of this project was to see how different types of music impact people’s ability to remember. As my parents always tell me that listening to popular music while studying is distracting and lessens my ability to concentrate, I thought this would be an interesting topic to explore.

Based on a 2016 Guardian Article by Dean Burnett that indicated that music scores and video game soundtracks are designed to have you concentrate on what is on the screen, my initial hypothesis was that songs that were softer and did not have distracting lyrics or catchy beats would allow you to better focus on a memory exercise compared to catchy songs that distracted

your focus from the memory exercise. The purpose of this project was to test if this hypothesis is true."Review of Literature and Background ResearchAs mentioned before, a 2016 article by Dean Burnett discusses the idea of music and concentration by exploring the idea that some people say background music helps with focus. It suggests that music that is halfway between “ repetitive and chaotic” is what our brains prefer by providing “ non-invasive noise and pleasurable feelings, to effectively neutralise the unconscious system’s ability to distract us.” What this means is that a mellow beat that is not itself distracting or attention grabbing can actually help drown out other distractions that are around us and improve focus on something that needs concentration. Again, this is why musical scores are designed by movie and game makers to keep people’s focus on their products. Another study reported by Max Baker in the “ The Independent” in 2016 said that “ memory and concentration was better in a silent environment,” however “ studying in place often disturbed by talkers, sneezers, or traffic” made this difficult.

What this means is that in noisy and distracting environments, students that had “ background music were found to get better results than those tested against background noise.” Again, this study shows that music can do a good job to fight against noisy distractions that break concentration and memory. Other articles that were reviewed included a 2013 article from CNN Health and a paper by Sheela Doraiswamy in 2012 that both explored why songs can get “ stuck in a person’s head.” Both said that music can be designed to “ lower anxiety more than medications” or activate brain patterns and that music can “ alleviate depression and anxiety.” This can be

important knowledge when trying to put people in the right “ frame of mind” for a specific activity like studying or memorizing. A Stanford study from 2007 did confirm that “ music engages the areas of the brain involved with paying attention, making predictions, and updating the event in memory” and that “ peak brain activity occurred during a short period of silence between musical movements.

” This indicates that softer music with pauses is best for allowing memory and learning to be more effective. (Mitzi Baker, 2007)"ProcedureThis project was inspired by a study done by Steve Kelly at the University of Nebraska at Omaha whose purpose was to investigate “ the effects of popular and classical background music listening styles” on students’ test scores. Kids who were not music majors were asked to listen to different types of music while doing a math test. This study did conclude that music had no effect on performance in other areas.

However, I wanted to change the objective from “ learning” to “ memorizing” as I felt that memorizing requires concentration and the other articles I had read did indicate that different types of music can impact concentration. The procedure for my project was as follows: Chose one catchy well-known pop song with rapid lyrics and highly changing pitch and beats throughout and one soothing, calmer movie score without lyrics that was not as “ jumpy.” These two songs are the project variables. The two songs chosen for this project were: Music Clip A (Fast): “ We Didn’t Start the Fire” by Billy Joel from his 1989 Album “ Store Front.” This well-known pop song is known for its “ rapid fire” mentions of over 100 headline events after World War II. It has a

catchy beat with rock n' roll instruments including drums and guitars. Music Clip B (Slow): " With this Love" by Peter Gabriel from his 1989 soundtrack to the movie " The Last Temptation of Christ." Unlike Music Clip A, this is a mellow instrumental piece.

The songs had to be edited to make sure they were both the same length. In this case, each song was edited to 2 minutes and 30 seconds by using the software " iMovie." This was done to make sure that people's performance was not based on the time they got listening. A list of 60 random words was created for the test subjects to memorize. The words on the list were in no particular order (such as alphabetized) that could help assist in memorization. They were a mix of nouns, verbs, adjectives and adverbs.

The list of words as presented to the test volunteers looked like this: A video clip was created using " iMovie" that flashed up the word list on the screen for the time the song played. The word list appeared when the song started and faded away to black as soon as music ended after 2 minutes and 30 seconds. Participants were recruited to take a test using email, social media (my parents) and phone calls. The only criteria was that participants had to be over 9 years old and were fluent in English. This was done to make sure that certain respondents did not have an unfair disadvantage just because they did not know a word. Each respondent was allowed to randomly pick one of the two clips. There was a fear that way more than half would choose the first clip. However, as seen in the results, less than 55% of respondents chose the first clip.

Each respondent was asked to watch the video clip with the song and word list and immediately close out the clip when it was done. Although there was no way to be sure about this, the instructions to the respondent asked that they take the test on a computer with no other surrounding distractions, with headphones (to block out other noises) at an “ average listening volume.” These instructions were included to best “ control” for those possible variables which could impact someone’s results. Respondents were asked not to cheat and not spend more time looking at the list after the 2. 5 musical part was done. Each respondent was then asked to start a 2-minute timer and write down as many words from the word list that they could remember. Respondents were asked not to cheat and not spend more than 2-minutes on this part of the test. Once the 2-minutes was complete, the respondents were asked to stop and submit their list along with which song clip they had listened to.

Results were summarized to look for differences in words remembered by group. Volunteers were given one full point for each word they remembered (spelling was not accounted for). Words that were duplicated on someone’s list were only given credit once. Words that were listed by someone but were not on the original list of words given were not given any credit, though words that were variants of words that were on the list were given half credit (e.

g. – “ simulation” instead of “ simulate.”) The data was also reviewed for other patterns and observations as well. "Results and Other Observations65 people between the ages of 9 and 61 participated in the study with 35

people choosing Clip A (54%) and 30 people choosing Clip B (46%). The average age of Clip A respondents (who heard the fast song w/ catchy lyrics) was 31. 4 while the average age of Clip B respondents (who heard the slower film score without lyrics) 32. 5.

The following graphs summarize the results of this project that for testing the main hypothesis. As can be seen, the hypothesis was proven right. The average number of words remembered by those who chose Clip A was 8. 2 while the average number of words remembered by those who chose Clip B was 11. 7. This is an average difference of about 3. 5 words.

Even with slight differences in each of the two groups (slight average age difference), there were enough people in both groups to likely account for most other differences that might have not been " controlled for" very well. As mentioned before, it can be said that each individual took this test on the " honor system" and there is no way to be sure that each person did not look at the list for more than 2. 5 minutes, that they did not spend more than 2 minutes writing down the words that they remembered, or that they all took the test under similar conditions (on a computer, with headphones on and no other distractions).

Another observation that was made was the number of times each of the 60 words on the original list was remembered and listed by each of the volunteers and where each of those words were placed on what they were memorizing. Below is a " heat map" that shows how many times each word was on the list of the 65 test subjects and where they were placed on what they saw. As can be seen, there is a big difference in how many times some

words were remembered compared to other words. In fact, only “ neglect” which was in the first row and first column was on the list of more than 24 people (it was mentioned 33 times).

At the same time, the word “ testament,” which was fifth row, third column (close to the middle) was not mentioned even once by anybody. This might provide some clues into “ where people look” or “ focus.” "Conclusion, Reflection, and ApplicationAs discussed in the previous section, the project confirms the hypothesis that different types of music can affect people’s attention span and memory differently. While this project did not prove that all kinds of music are better for memory nd learning than no music at all, the literature did indicate that some kinds of music do put people in a better frame of mind and can block out distractions in the environment to allow for better learning and memory. This project proves if you do listen to music while studying, it is better to listen to calmer, more steady music that is similar to musical scores. Classic music, light jazz or background music might be better than hard rock or hip-hop. This is good to know when thinking about what playlists to load when you a studying for a test.

Also, there are opportunities for people who design web pages and place ads to look deeper into the results of my data to find out about where best to place things on a page. My mother who works for the Chicago Board of Elections said this data proves the argument some candidates make that not being placed “ first” on the ballot puts them at a disadvantage. My Dad, who is in marketing, says there is a whole field of study in Marketing called “

Search Engine Marketing” that focuses on “ optimizing” where to place “ web content” on a page or in search results to ensure more people see it.

If I had a product that I wanted to show up in web searches, I’d want it to show up in the top left like the word “ neglect” was on my word list. I would not want my content to be stuck in the middle of the page like the word “ testament” on my word list where it gets lost and unnoticed. Overall, this was a fun project.

By making it an online survey, it made it easier to get participation and a lot of data. However, it also resulted in “ not being able to control” for certain variables like the setting the people took the survey in, the type of device they used (would be much harder to participate on a phone compared to a computer), confirm that each person only looked at the words for exactly 2 minutes and 30 seconds, etc. I think I could have improved on in this project by giving the tests in person where everyone took the test on the same laptop, with the same headphones set to the same volume, in a similar setting and with me confirming that there was not any cheating by spending too much time studying the words or writing down what they remembered. I also think that my project benefited the people who actually did my experiment as it was able to show them how easy or hard it was to remember content with music playing.

This will be helpful to them when they study or are trying to concentrate in a busy place like a coffee shop where there might be a lot going on around them."Reference ListClassical v. s. Pop Music: Their Effects on Concentration.

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