Musical versus Visual Cues to Emotion

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Musical versus V

There are also multiple studies that go to the core idea of using music to evoke emotion. These studies agree that music can cause an emotional reaction in a person (Baumgartner, 2005; Patrik, 2013). Baumgartner's results also supported the idea that art could induce emotion as well, but not as much as music. The findings support the idea that art and music, but particularly music, can have a strong emotional impact on a person. Results indicated that it is strong enough to reduce a person's pain or perception of pain, and increase or decrease one's anxiety, in addition to evoking a certain emotion from a person.

A different study discussed the emotional impact of music on younger people and older people (Pearce, 2015). Using the Geneva Emotional Music Scale 9, they tested participants to see how film music would affect them (Pearce, 2015). While both groups, younger and older, liked the music and reacted to it in similar ways, the younger people found sad music to be more sad happy music to be more happy as per compared to the older group (Pearce, 2015). Since my study was done with college students, this study may pertain to mine as all of my participants are young. Perhaps the results of my study would have been different with a more diverse group of participants.

There was another study that was very similar to mine that determined "the effect of auditory (happy and sad instrumental music) and visual stimuli (happy and sad faces) congruent or incongruent for emotional content on audiovisual processing using fMRI blood oxygenation level dependent (BOLD) signal contrast" (Jeong et al., 2011, "Method," para. 1). They were able to find different reactions in the brain based upon the pairing that they did, such as there was more "activation" in the "superior temporal gyrus" for happy music and happy faces over sad music and sad faces (Jeong et al.,

Furthermore, a previous study indicated that people were likely to listen more closely to music when they were engaged with art in the form of paintings than when listening to music alone (Shank, 2003). This study was done on pre-service elementary teachers from a southern university, who are likely close in age as those found within my study (Shank, 2003). The students were separated randomly into two groups: a control group and the tested group (Shank, 2003). Both groups were non-musicians who were being taught music lessons over the span of two weeks with one group being show projected paintings (Shank, 2003). They were given a test before the lessons and after to see what these non-musicians learned and retained (Shank, 2003). "Results indicate that the group receiving visual stimuli in the form of paintings scored significantly higher on listening skills ($p<.01$) than the control group which received no visual stimuli " (Shank, 2003, p.58). A

participants were not paid, but some gained credit from their teacher for a specific class, *Introduction to Psychology*. Those participants fulfilled part of their research requirement by earning .5 creditsIn addition, some professors gave extra credit for participating in studies, which is how some other students may have gained extra credit, at their professor's discretion.

Materials and Procedure

Participants were asked to come to a room equipped with a computer projection and speaker set-up on campusI presented each participant with a consent statement (please see Appendix)A When the participant signed the consent form, agreeing to be in the study, he or she was then presented with a written survey (please see Appendix), B after watching a piece of animation with music (the stimulus). The study was done with groups of participants; group size varied based on participants' availability.

There were four different possible stimuli for the participants: "happy" animation with "happy" music, "happy" animation with "sad/scary" music, "scary" animation with "happy" music or "scary" animation with "sad/scary" music. The animations did not correlate to each other in any way and all four of the soundtracks were different. All of the art and music was original work created by me. Participant groups were randomly assigned to a set of two animation/music combinations.

One of the four stimuli was presented faceetiena [(i) 3 -sd/e340 Tw 19.15 0dt4(s)-1(e)-6(10

They then saw a second animation (different from first) with different music and were asked again to pick the emotion evoked. No participant saw the “happy” animation twice or the “sad/scary” animation twice.

All participants were debriefed at the end of the study and I answered any questions that they had.

Development of Animations and Composition of Music

There were two animations that I created, one that was “happy” and one that was “scary.” One was

my friend and she would react to it in a funny way. I wanted the video to have a clear beginning and end as well, so I asked her to start by waking up and end with going through a door at the end that would remove her from the situation. While in theory, the concept sounded simple, it ended up being confusing to some, as it did not have a clear plot. My goal was for it to be "happy" but some people that were part of the study found it weird and confusing because there was no story line to follow and my friend's reactions weren't funny to everyone. This confusion may have affected the results for the trials that used the "happy" animation.

When first creating the "sad/scary" animation, I wanted it to relate to most people. Therefore, I thought that a common sadness or fear that most people face is the future. The common future that will scientifically inevitable happen is that the universe will in some way as we know it be destroyed, even if that does not happen for millions of years. I created an animation with that theme in mind. I wanted to gradually get into that idea though, so I started off simply by having the planets move around the sun in a typical orbit. About halfway through, the planets began to explode and dissolve and at the end, the sun imploded on itself. I created the planets myself by using Photoshop and they appeared somewhat realistic. I knew that with the type of video I wanted to show, it would not be taken seriously if it was too cartoonish or unrealistic. I edited all of the planets to reflect their actual size and speed of orbit and rotation. I researched how each planet moves around the sun and on its axis as well as in which direction. All of these additional details added to the realism of the piece, even if the participants didn't know the exact size of all of the planets, they likely know a few facts and I wanted to keep in line with the real science as much as I could. The sun was made in a C4D by

layering multiple lights that was also realistic enough; however, as it was not a solid

The best “sad” emotion that I thought would pair up with the “happy” video was nostalgia. Due to the playfulness and childlike reactions that my friend portrays in the video, nostalgia was the best “sad” emotion to pair up with it, as I knew adults would be watching the video. I started off with a soft piano for when my friend was waking up in the video. I slowly added in a full set of strings that slowly built up a presence within the track. I also made the song slower as slower tracks typically lend to a sadder or more serious sound. This track was also in free rhythm, but held more of a tempo than the “happy” song. The song repeats a large set of chords on the piano a few times with strings often times doubling up on a octave difference of the piano’s chords, which adds an additional tug on the heart and emphasizes those notes. Many of the chords were minor chords, which typically has a “sadder” ring to it.

The sad soundtrack for the sad animation had a similar instrumentation to the sad soundtrack for the happy animation, because I felt that it had worked well with the previous video. However, the soundself is very different. The soundtrack starts off with singular notes and barely plays any chords. The strings often play a different note than

delay may have irritated some of them or made th

played the other video for her. She was the only one to have the videos played in that order and while I do not believe it would have any affect on her emotions, I thought that the discrepancy should be noted. Another girl that participated that day knew the friend that I had used as my model for the happy stop motion animation. No one else mentioned knowing her, but that may have also had an affect on the one girl's emotions depending on how she feels about my friend.

The study ended up having 37 participants with 4 males and 33 females. Participants were mainly students who needed to get credit for participating in studies, which is a requirement for students in the *Introduction to Psychology* class. All participants were over the age of 18, were students at Ramapo College of New Jersey and were young adults. The four stimuli that were available were randomly assigned to one of the four groups that were doing the study for the two available dates. Each stimulus was done once on each date.

Results

When the song and animation were both created to be "happy" stimuli, participants were equally likely to experience anger, happiness, and disgust, $\chi^2(2, N = 24) = .88$, $p = .64$. It appears that there were individual differences in how this animation and music combination impacted people.

When the song was "happy" but the animation was more solemn, participants were equally likely to experience sadness, happiness, and fear, $\chi^2(2, N = 22) = 2.58$, $p = .28$. Once again, the animation and music combination struck people differently; even though the modal response (N = 11) was to say "happiness," consistent with the music, there were 11 other participants experienced a negative emotion.

animation, happy music to happy animation, sad music. They do not have the same reactions, so the music did make a difference. The same is true for the sad animation; the music made a difference here as well, although not statistically strong.

Given these results, it is possible that the animations simply did not appear happy or sad to all the participants as they were meant to be, regardless of the music. This can especially be seen with the happy animation, as even with the happy music, there was not a majority of participants that found it to be happy. In fact, one person went into a bit of detail when explaining his decision to mark "disgust" and he referenced certain actions that the girl did in the happy animation, such as pour water on the floor, touch it and inspect it. Others simply said that they felt confused by the mismatched combinations.

When considering the sad animation, more people checked off that they were happy with the happy soundtrack than those with the sad soundtrack. Even though happiness was not the majority for the sad animation, happy soundtrack, a larger number of participants circled happy. This supports the idea that music can affect a visual stimulus, even if it did not pertain to everyone. Everyone is different and likely not to react to the same stimuli in the same way.

Significance

This study tested to see if people would be affected by a musical element with a visual stimulus. Specifically, I wanted to test which form of art is stronger. While it likely depends on the individual, some people seemed to be subtly impacted by the music. The study supported the idea that the soundtrack can impact what the person feels, which can and is likely used for real world applications. For example, all movies have soundtracks that are likely trying to get their audience to feel a certain way. If the main character in a

movie is feeling anxious, the soundtrack might reflect that and attempt for the audience to feel the same way. They may add a gradually rising heartbeat, or some dissonant tones. It also demonstrates how much the arts can impact our emotions. People can binge watch television shows, because the story might be relatable or interesting or dramatic; they want to see it. People have favorite songs, artists, and actors because we are likely all

was evoked from a list. The entire study will be completed in approximately 10 minutes. There are no risks in participating, but you can stop at any time if desired, without any penalty. All responses will be kept confidential. Some students (including Introduction to Psychology students) may get class research credit for participating. If not, the only benefit will be an interesting experience.

Ariana Rivera is doing the research for an honors project and you may contact her via email at arivera7@ramapo.edu with any questions. You may also contact the faculty advisor, Donna Crawley, at dcrawley@ramapo.edu. This research has been approved by the Ramapo College IRB (approval # ____), Dr. Jacqueline Braun, chair (jbraun@ramapo.edu). You must be at least 18 years of age to participate.

Please sign below giving your consent to participate in this study. Thank you for your time.

Signature: _____ Date: _____

Print your name: _____

Appendix B

Survey

Video 1

Please indicate the emotion that you experienced the most as you watched the first video sequence.

Please circle the word below that best describes your emotional reaction to this video**.**

Anger **Sadness** **Happiness** **Fear** **Disgust**

Video 2

Please indicate the emotion that you experienced the most as you watched the first video sequence.

Please circle the word below that best describes your emotional reaction to this video**.**

Anger **Sadness** **Happiness** **Fear** **Disgust**

References

Baumgartner, T., Esslen, M., & Jäncke, L. (2005). From emotion perception to

information. *Cognitive Science*, *2*, 676685.