Music influences people narrative predictions

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***Abstract*— Music provokes emotions suggestively. Also, feelings can be transmitted by a visual scene. Both situations can be related in the way visual aspects are somehow subordinated to music features. This research examines the extent that music influences the communicated feelings from a neutral visual scene and the intuitions and future predictions based on what has been perceived.**

***Index Terms*—Music influence, emotion evocation, neutral movie scene.**

1. Introduction to the scope of the project

Humans, as empathic animals, can experience emotions based on a visual experience with emotive content as well as from music. Both excitement sources (images and sound) play a role in emotion suggestion with music aiding to interpret the scene [1]. This music suggestion can evoke different feelings depending on its emotional content. Distinct emotional music will be at some point played on a neutral film scene to examine how it biases participants thoughts related to the clip emotional content, their predictions or guesses about it, and how the story will develop itself [2].

2. Background and literature review

a. Selection of the movie clip

The sought film scene has to be neutral in its content to the greatest extent possible. For expressing neutrality, some movie clip examples have already been proposed [3].
The neutral propositions of the aforementioned article still have partiality in the way that they contain some speeches (mostly unavoidable) from films like "*The last emperor", "Crimes"* or *"Hannah and her sisters"*. With the aim of bypassing this possible motif of slant, the "*Jonathan's Obituary*" clip from "*Serendipity*" movie has been the one selected for this experiment. This scene has a brief starting conversation, yet suddenly turns into a scene where the protagonist is reading a letter during most of the whole clip (see Figure 1). He murmurs the content of it, yet it will not be possible to grab more than incomprehensible muttering as music will be introduced at a sufficient level not to unveil what is written on it.

Figure 1. Sketch of the scene "Jonathan's Obituary" from "Serendipity", by the author of this article.

b. Selection of music

Some studies related to this hypothesis have used its own music played by piano [4] or used old classical pieces [2]. Various types of music are selected based on the emotion they express; sadness, happiness and fear. Not to incur on the so-used classical old music for experiments, 2 more recent modern songs are chosen. Depending on the portrayed emotion, the selected songs own characteristic musical features referring to timbre, intensity, pitch and rhythm:

- Sadness: with a very low timbre and pitch, low rhythm and a medium intensity.
- Fear: with low rhythm, high timbre, medium pitch and a medium intensity.
- Happiness: with very high rhythm and pitch (*Allegro*), medium timbre and intensity.

These specific audio features are in accordance with mood classification specified in [5] and Thayer's model for emotion representation [6].

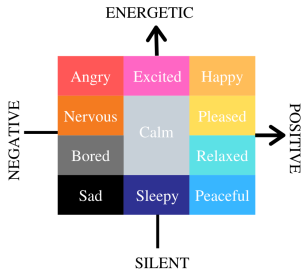


Figure 2. Emotion representation in Thayer's model

Based on these audio features, the following songs are selected for the movie clip:

Emotion	Name	Year
Sadness	Disturbed - The Sound of Silence	2015
Happiness	Mozart K.136 Divertimento in D 1st mov. Allegro	1772
Fear	Dark piano - fear – Lucas piano King	2018

Table 1. Used songs, the emotions they express and published year

c. Collection of experiences

A Google® form has been used in order to collect participants experiences in digital form. This method for information collection was preferred rather than paper, as participants find it easier and quicker to write on, and therefore, more data will be possibly submitted. Freedom on the chosen device to fill out the form is given to participants.

d. Selection of the experiment

environment

As participants are to watch a video, it is attempted that the environment they are in resembles a space where they are actually likely to watch a video so it could be a normal action in this situation. Therefore, this experiment is not though to be on a "clean" unbiased room on which variables are under total control but rather create the atmosphere that participants actually do not feel as if they are in an absolutely unknown room doing an experiment and can feel confident, cozy and not out of place.

3. DESIGN AND IMPLEMENTATION

Different background songs are added to the movie clip using iMovie software, supervising that the muttering of the main character is virtually unrecognizable. Afterwards, it is uploaded in YouTube® so everyone online can access to the resource through the questionnaire.

The form is sent individually to each participant who will use headphones compulsorily to hear the clip. All are contacted in person with the possibility of filling the form whenever they feel like, so they are not supervised during the experiment.

The questionnaire is divided in 3 sections:

- Privacy consent, at the very beginning, informing about the usage of the experiment data.
- Personal data asking basic such as age and gender in addition of brief music questions taken from [7], some emotional states picked from [8] and the environment participants are in related to noise conditions. Afterwards, the movie film is watched.
- Questions about the thoughts the movie clip has caused and predictions or guesses of the participants. As an appreciation of their time, an optional possibility of receiving this finished article is offered to the participant.

4. RESULTS

12 participants for each type of music have participated in this experiment. Note that results will be expressed in percentage.

Referring to musical background, when it comes to rate the mood of the scene (from 0-10), only a 55% of people with no musical background select ratings >5 in contrast with an 86% of people with experience in music.
When taking into account the time participants listen to music on a daily basis compared to the greatest the ratings are, there is not a clear correlation.
The gender of the participants seems to not influence the results, nor the length of the answers. However, other genres different from males represent only a 30%, which is not a sufficient percentage to conclude any statement.
Based on the movie clip, a 60% of participants have found the film clip (before music) to be of a neutral/normal/trivial/chill/unknown while a 30% rate it as a happy scene.

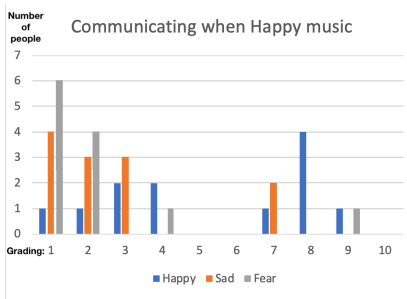
After music was introduced and having watched the film clip, participants have described the movie clip mood depending on the music emotion as:

- Sad music: in its totality (92%), with negative feelings like dramatical, dark, sad, bitter amongst others.
- Fearful music: almost in its majority again (92%), adjectives related to fear have been used; worry, fear, mysterious detective, disturbing, suspenseful, uneasy, high. tension, intriguing….

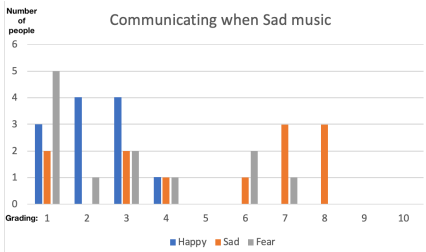
- Happy music: participants rate it as a tranquil/calm scene (16%), neutral (25%) and happy (33%).

It is also interesting to highlight that one participant did not feel the movie clip mood did no change after music was introduced.

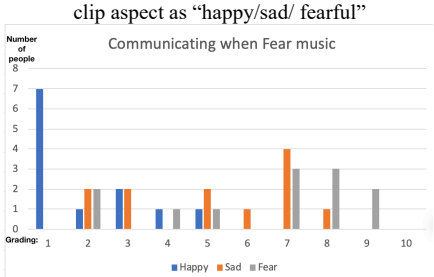
When rating the film in the aspect to communicate emotions (from 0-10), participants reckon the following.



Bar graphic 1. Having heard "happy" music, number of people rating the film clip aspect as "happy/sad/fearful"



Bar graphic 2. Having heard "sad" music, number of people rating the film clip aspect as "happy/sad/ fearful"



Bar graphic 3. Having heard "fearful" music, number of people rating the film clip aspect as "happy/sad/ fearful"

Participants depending on music emotion have answered that the letter content is:

- Sad music: in its majority (58%), related to sad events; saying goodbye, something serious, bad news, confession, negative incident inter alia. Some other more neutral answers (42%) were given such as a letter expressing feelings, information about a

member of a family, a relationship…but all agreeing that it is about something important.

- Fearful music: adjectives used to relate to fear are; surprising, shocking, disturbing, persecution, mysterious… in a 50%. Negative events like something bad or a suicide letter represent a 42% and the rest neutral.
- Happy music: guesses are a little more distinct; love letter, uplifting, luck, farewell, bad news (this participant rated him/herself as extremely tired), a lost relative. It can be said that a 67% are related to positive situations, 17% negative and a 16% neutral.

Participants predictions after what is next to happen after the scene were:

- Sad music: 50% answers were related to negative events: redemption, face something bad, drama, lover death, meeting a lost family member. The other half of the answer were related to neutral situations like; the man changes his life, the protagonist goes home and thinks, he will meet the letter's author…etc.
- Fearful music: they are partly related to investigating, (learning, figuring out, finding, searching) in a 42%. Related to bad events, a 33% and the rest neutral.
- Happy music: related to happy events; (surprised by love, meeting a loved person) a 25%. Neutral actions like seeing the person who wrote the letter, fixing a problem, meeting up and talk with the author, are the most given answers in this case (75%).

5. Discussion

Past musical experience is a quality that makes participants more likely to rate the expressiveness of the mood of the film clip a higher level (>5) rather than the ones who do not.

The choice of the movie clip has been suitably selected to express neutrality as a consistent part of participants has rated it as neutral or with other approximated synonyms.

It can be said that perceived moods of the movie film clip by participants accords well with the emotion of the background played music. It can be highlighted that happy music is the least clear to bias participant so their predictions within the "happy" direction, finding sad or neutral emotions too.

When guessing the content of the letter, intuitions were biased by the music mood, been mostly negative when sad music was played, shocking or intriguing when listening to fearful/scary music. When happy music was played, guesses where more distinct, including neutral and negative although happy was the most written guess.

For predictions for what happens in the future after watching the movie clip, they were also biased by the emotional music. Negative and neutral predictions were the most made for sad music. Investigation actions and negative events were predicted when hearing fearful music during the clip. For happy music, predictions were mixed between neutral and happy, been neutral the mayor opinion.

Having said this, it can be clearly seen that music biases partly intuitions, moods and predictions and what is perceived or communicated from a movie clip depending on the emotional content of the music.

It is also remarkable out that some outliers have been found in this experiment, having found during investigation that:

- 1 participant possess anhedonia (not been appealed by music at all). Possibly the one that feels the perception of the scene did not change after music was introduced.
- Possibly, from few participants, miss-selection of options was introduced due to the use of mobile phone for filling out the form (it is easier to fail selecting with the finger the desired option compared to PC).
- Extreme fatigue on participants causing wrong selection of some answers.

6. Conclusion

Narrative predictions, guesses and perceived moods from a movie scene are biased depending on the music emotional content, which are enhanced by having a musical background rather than how many hours a person listen to music on a daily basis.

Musical past experience clearly makes a difference for feeling more appealed emotionally, perceiving emotions in a higher rate when listening to music while watching a piece of a video. Possibly, the musical mind, musical remembrances or unconscious musical analysis can facilitate an empathetic quality towards music other non-musical people do not have.

In the future, to avoid the found outliers, participants should be accompanied at the beginning by the carriers of the experiment (so the vitality or other states of participants can be checked) and the only possibly filling of the form should be made on a PC. Also, questions about emotional state [8] should be asked at the end of the experiment to corroborate participant coherence.

References

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