Does that “Ring a Bell?”

The Effects of Music-Induced Emotions on Recall of a Story

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Background

- Music is an extremely powerful stimulus for evoking emotion, in both the realm of research and daily use (Puigscip & Bernatzky, 2002).
- Previous research has shown that music is a reliable tool for mood manipulation (Vuoskoski & Ercola, 2012), and emotion has also been shown to be a memory enhancer (Jänke, 2008).
- There are two major theories on how emotion effects memory: Emotional Arousal Theory (Cahill & McGaugh, 1998) and the Mood Congruence theory (Bower & Forgas, 2000).
  - Emotional Arousal Theory: Predicts enhanced recall of information when participant is emotionally aroused
  - Mood Congruence Theory: Predicts enhanced recall of information that is congruent with the emotional valence of the participant
- Music activates the entire limbic system, which is involved with emotion processing and memory (Jänke), and has an intrinsic capacity to modulate memory consolidation (Judd & Rickard, 2010).
- This research study addressed the effect of music and emotion on memory. Specifically, if participants read a fearful story, will their memory for information about the story be enhanced if paired with fearful music?
- The fearful story was created by the researcher to be used as the fear inducing stimulus. The fearful music used was a compilation of three different musical numbers seamlessly fused together. The titles included were Mussorgsky’s A Night on Bald Mountain, Respighi’s Michael the Archangel, and Shostakovich’s Symphony no. 8, 3rd mvt.

Hypotheses

Music on Emotion

- Fearful music paired with a fearful story will enhance the self reported levels of fear in the participants

Music on Memory

- Fearful music paired with a fearful story will enhance performance on a test of memory for information of the fearful story

Movement on Memory

- Movement of the text will effect the performance on a test of memory for information of the fearful story

Participants: A total of 62 participants took part in this study. Thirty-five of the participants were female and 27 were male. The average age of the participants was 18.78 years with a standard deviation of .728 years and an age range from 18-21 years. All participants were Introductory Psychology students at the University of Dayton. A heart rate monitor was used to record heart rate throughout the experiment for all participants.

Tasks:
- PANAS-X: “assesses the specific, distinguishable affective and emotional states that emerge from within the broader general dimensions of positive and negative emotional experience” (Watson & Clark, 1994).
- SAM: “non-verbal pictorial assessment technique that directly measures the pleasure, arousal, and dominance associated with a person’s affective reaction to a wide variety of stimuli” (Bradley & Lang, 1994).

Fear Story - Displayed as a lyric video, the story was created to induce a fear response in the participant. Depending on the condition, fearful music and or movement of the text would be present during the trial.

Method

Recall Test - 23 question test, developed by the researcher, was used to evaluate memory of information of the fear story.

Questioning
- an evaluation of basic non-categorized participant information (age, gender, musical training), participant free response description of expectations regarding the recall test, music training experience, familiarity of the music played, and music listening habits.

Results

- Performance criteria eliminated 11 participants and 4 recall questions. All data analyses conducted with 51 participants and all participants’ recall test scores were calculated out of 19 possible points
- The story did elicit a fear response. Fear, measured by the PANAS-X, was elicited in both the dynamic and static conditions, F(2,98) = 21.642, p < .0005, η² = .306, and in both the music and no music conditions, F(2,98) = 22.001, p < .0005, η² = .310
- Music, surprisingly, had no significant effect on fear as measured by the PANAS-X, F(1,49) = 3.184, p = .081, η² = .063. Movement was determined to be a distractor as participants performed significantly worse in the dynamic condition, F(1,47) = 5.242, p < .05, η² = .100

Discussion

- There was no significant change in heart rate throughout the experiment. In addition, there was no significant change in heart rate throughout the story in all four conditions
- The memory test was deemed reliable based on the Cronbach’s alpha yielding r=.720 across the original 62 participant pool and the selected 19 question recall test
- There was a significant effect of both music and movement on memory. There was a statistically significant effect of music on memory, specifically at the .10 level, F(1,47) = 3.184, p = .08, η² = .063. Movement was determined to be a distractor as participants performed significantly worse in the dynamic condition, F(1,47) = 5.242, p < .05, η² = .100

References