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- claim
- reasons
- data items

The Effects of Music on the Induction of Emotional States Over Time

Abstract

Music has been a subject explored rigorously throughout the sciences because of its apparent influences on the human mind and body. By taking an embodied perspective towards cognition, and more specifically towards an agent's interaction with music, great progress can be made in understanding the interaction in depth. This paper is concerned with capturing both the intrinsic and extrinsic affects of music on *sad* and *happy* emotional states, the various ways scientists have gone about recording these states, and the implications that come from these studies.

Introduction

While there are several theories of mind that hold positions on music and the expression of human emotion, the embodied cognitive perspective offers one of the most promising frameworks for understanding how music effects emotional states. Embodied cognition is not constrained by behavior being mediated by internal processes, but rather allows for our perceptual access to the world and the environment as central resources alongside internal representations (Wilson & Golonka, 2013). By embracing this perspective, much work has been done to better understand the interaction between music and one's emotional states. Many of the great accomplishments within the field of Music Embodied

Cognition can be found in work by pioneers in the field such as Arnie Cox, Lawrence Shapiro, and many others. In Arnie Cox's book, *Music, and Embodied Cognition: Listening, Moving, Feeling, and Thinking*, he lists the eight avenues of musical affect, which are not meant to be a full explanation of how music affects emotions, moods, desires, and other extrasensory experiences, but are meant to show that these eight avenues are always relevant and integral to one's emotional experience with music. Many modern-day scientific studies attempt to account for many of these avenues and have been able to accurately measure the induction of several emotional states.

While there are many emotional states that have been recorded, *happy* and *sad* states are the most commonly verifiable. These states can be verified through a combination of measurement tactics such as skin conductance levels, heartrate levels, and valence/arousal self-report. These methods have been used in many recent studies including *Emotional induction through music: Measuring cardiac and electrodermal responses of emotional states and their persistence* (Ribeiro, et al. , 2019), *Role of tempo entrainment in psychophysiological differentiation of happy and sad music?*(Khalfa, et al., 2008), and many others. While there are great insights made from these studies, there are many critiques and limitations as well. These insights, critiques, and limitations will all be addressed later on within this paper, and it will be argued that the Embodied Cognitive Perspective can help make better sense of these critiques and limitations.

In this paper, I will make the claim that carefully selected positive and negative excerpts can be effective in inducing *happy* and *sad* states, and that these states are heavily dependent on the Eight Avenues of Musical Affect in Arnie Cox's book, *Music Embodied Cognition: Listening, Moving, Feeling, & Thinking.* I will then discuss why I make this specific claim, then discuss any limitations or possible critiques of the claim.

Overview of Cognitivism and Embodied Cognition

¶ Describe the standard cognitive explanations for behavior under the cognitivist perspective.

¶ Introduce perception-action research and lead into the *replacement hypothesis* and describe other important aspects of the embodied cognition movement.

¶ Introduce prominent examples of embodiment in action

¶ List and describe the four key questions any embodied cognition research program must address according to Wilson and Golonka's *Embodied cognition is not what you think it is*.

Overview of Music Embodied Cognition

¶ Discuss research on music perception, and how it has been guided by the paradigm of focusing on anticipation of structural components of music.

¶ Discuss evidence for music perception as embodied cognition

¶ Give and discuss a model of music perception from an embodied standpoint, and suggest some important points made in *Chapter 8 – Music Perception and Embodied Music Cognition,* and make sure to mention that this empirical research within embodied music cognition is very *recent*.

¶ Lay the groundwork for describing the intrinsic and extrinsic properties of music, and briefly mention Arnie Cox's 8 avenues of musical affect.

The Intrinsic Properties of Music

¶ Introduce the 4th avenue of musical affect – *Acoustic Impact*, which describes the intrinsic properties of music, and the 5 components that shape this impact.

¶ Briefly describe the first 3 of 5 components that shape acoustic impact, *Pitch Height*, *Duration*, and *Timbre*

¶ Briefly describe the last 2 of 5 components that shape acoustic impact, *strength* and *location*.

The Extrinsic Properties of Music

¶ Introduce and discuss *Memetic Participation* and *Anticipation*, the 1st and 2nd avenues of musical affect.

¶ Talk about *Expression* and *Implicit/Explicit Analysis*, the 3rd and 5th avenues of musical affect.

¶ Finally, talk about *Associations* (both cultural and not), *Exploring Taboos*, and the *Invisibility of Musical Sounds*

Recording Emotional States within a Study

¶ Discuss the self-report method, skin conductance level, heartrate, when pertaining to methods of capturing the induction of emotional states.

¶ Give examples of how these methods of recording emotional states work together within multiple studies. (Riberto et al., 2019), (Etzel et al., 2006), (Khalfa et al., 2008) (Dibben, 2004), etc.

How Does Music Effect the Induction of Happy and Sad Emotional States?

¶ Discuss the importance in pitch variations and tempo on happy/sad distinction, and how higher rates of electrodermal activity (EDA) and heartrate correlate with 'pleasant' or happy music but not for neutral or sad music.

¶ Discuss SCL's, mention their sensitivity to arousal over valence, and how sad songs can induce chills that increase EDA and subjective arousal.

¶ Discuss the effect of valence/arousal self-report over time, and how EDA is affected over time.

¶ Restate portions of my claim from the intro and use evidence from this section to support it

Differences in Emotional States

¶ Explain the difference between the emotional states that are recorded, and why my claim only includes happy/sad.

¶ Explain some possible reasons as to why sadness has an increased affect on EDA and why there are increased mixed responses in “sad” music.

Criticisms

¶ List criticisms and limitations of the studies introduced in this paper

¶ Describe how these studies/future studies could have better implementation of an embodied perspective, and where they could improve

¶ List limitations of this paper, criticisms to my claim, and any possible rebuttals to those criticisms

Conclusion

The conclusion of the paper will be done in this section.

References

Wilson, A. D., & Golonka, S. (2013). Embodied Cognition is not what you think it is. *Frontiers in Psychology*, *4*. https://doi.org/10.3389/fpsyg.2013.00058

Ribeiro, F. S., Santos, F. H., Albuquerque, P. B., & Oliveira-Silva, P. (2019). Emotional induction through music: Measuring cardiac and electrodermal responses of emotional states and their persistence. Frontiers in Psychology, 10. https://doi.org/10.3389/fpsyg.2019.00451

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