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Chills and intensive feelings Structural and physical aspects of affective responses to music

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ABSTRACT

Music is an optimal stimulus for observing the dynamics of affective responses in the course of time. This study presents evidence that psychological and physiological reactions to music can be differentiated according to physical features and expressive quality of music.

Keywords

Emotion, Music, Chill, Physiology

INTRODUCTION

Music can arouse extraordinarily strong affective responses up to ecstatic “chill” experiences defined as “goose bumps” and as “shivers down the spine” (Panksepp, 1998; Sloboda, 1991). Since emotional states may change in the course of every piece of music, it is necessary to measure psychological and

bodily reactions continuously. In order to investigate distinct musical events related to chill reactions, we combined psychological and physiological methods in one experiment.

The aim of this study was to study the effects of identification with and of the musical quality of a musical interpretation on affective reactions. Additionally distinct musical structures were compared regarding the affective responses they elicited.

METHODS

Two versions of the “Confutatis”, “Lacrimosa” and “Rex tremendae” from Mozarts Requiem (KV 626) sung by two different choirs of musical layman were used as stimuli. Additionally we used the “Tuba mirum” and “Dies irae” as professional versions conducted by Karajan, which were played twice in each experimental session.

We asked 52 participants (32 from the two choirs who performed the two versions of the Requiem, 20 from two control choirs) to give continuous self-reports of the intensity of their perceived emotional reactions.

Physiological measurements (skin conductance response [SCR], heart rate [HR], breathing rate [BR]) were recorded and synchronized with the other data.

After each piece participants filled in questionnaires regarding their liking of the interpretation, their perceived feelings (on the dimensions valence and arousal and by choosing adjectives from a list) and bodily reactions.

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RESULTS

We hypnotized that participants would show the strongest emotional reactions in response to their “own” version and interpretation of the Requiem. Preliminary results give evidence that the musical quality of performances (as rated by the participants) show a stronger effect on emotional intensity and chill reactions, though. Several structural elements, such as changes in volume, the entry of a lead voice and contrast of register were found to be affectively influential. The time series analysis of the pieces demonstrated that chill reactions to music show a strong relation to highly expressive sections of the musical piece and seem to depend on cognitive evaluation of the stimulus. Physiological reactions in contrast seem to be influenced by both loud sections, i.e. physically intense, and expressive sections, i.e. musical aesthetic effects. The entry of a lead voice or melody results in both psychological and physiological stimulation, but reactions are quite weak and can be interpreted as orienting responses. The specific register of voices does not seem to be influential.

CONCLUSION

Musical quality seems to have a stronger influence on emotional reactions compared to identification or empathy with a “personal musical interpretation”. Distinct structural elements such as “entry of a lead voice”, “contrast of register” or “volume” show a relation to affective reactions. The effect of music as a mere physical stimulation and as an aesthetic expression can be differentiated. Chills seem to be an effect of conscious and attentive music listening, whereas effects in physiological parameters like Skin conductance can be elicited also by a mere physical stimulation, i.e. section of higher volume. The effect of breathing rate needs to be discussed when using physiological measurements as an indicator of emotional reactions.

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