

## **Psycho-Physiological Patterns of Musical Emotions and Their Relation With Music Structure**

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This study investigates the dynamics of psychological and physiological reactions during music listening to determine whether differentiated psychological and physiological patterns could be related with differentiated patterns of music variables.

We asked 39 participants to give continuous self-reports of the intensity (Arousal) and hedonic value (Valence) of the emotions felt while listening to 9 pieces of western instrumental art (classical) music. Simultaneously we recorded their Heart Rate (HR) and Skin Conductance Response (SCR) for the full length of the pieces.

Arousal was found to increase for higher levels of tempo, loudness, mean pitch, sharpness and timbral width, and Valence was correlated with variations in tempo and (tonal) dissonance. Psychological and physiological reports showed that increased Arousal and Valence are related with increased SCR, while increased HR related with higher Arousal. We also found a negative relationship between Valence and Heart Rate.

Our study supports the idea that significant patterns of interactions between music structure and differentiated levels of intensity and hedonic value do exist in musical emotions. Our study also shows differentiable physiological patterns across different emotions, supporting the claim that physiological arousal is also a component of musical emotions. We are currently creating a neural network model to analyse in detail such interactions.