

# Measuring listeners' emotionally expressive responses to music

Finn Upham  
New York University, USA  
finn@nyu.edu

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Surface Electromyographic recordings (sEMG) of facial muscles such as the zygomaticus and the corrugator supercilii have been used in several studies on emotional response to music. Though recorded continuously as music is presented to a listener, the relationship between felt emotions and contractions of these facial muscles have principally been considered in aggregate, over minutes of music and across participants, but results have been hard to interpret as these signals of affective response appear to be less consistent than subjective reports of felt emotion. Rather than treat facial sEMG measurements as directly reporting the feelings of subjects (as often promised by the idea of tracking microexpressions), I propose interpreting smiles and frowns as expressive behaviours, thus inviting factors such as social context of listening, social associations with the genre of stimulus, individual differences in emotional expressiveness and listener mood to modulate the relationship between facial muscle contraction and emotional response to the music. Examples demonstrating different conditions for expressive behaviour are taken from a case study of emotional responses collected during repeated presentations of wide variety of musical stimuli from one subject (the solo response project), and responses collected from groups of subjects presented with live and recorded concert music. Interpreting facial sEMG as a measure of expressed emotion has implications for interpreting published studies on physiological responses to music and future work exploring the listening experience. Traditional experimental paradigms may have limited the expressivity of participants by presenting music they are unfamiliar with, implicitly encouraging some acceptable range of expressive response, or presenting music to which people rarely practice expressive behaviour. By making explicit factors effecting expressive behaviour, we can make better use of these tools to investigate the experience of listening to music.

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