MUSICAL EXPRESSION OF EMOTIONS: MODELING COMPOSED AND PERFORMED FEATURES

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Background

Research into musical expression of emotions has increased steadily in the last decade. This line of research has revealed a large number of acoustic features that may be used to achieve a particular expression. However, this research has suffered from certain shortcomings. Firstly, only a few emotions have been studied. Secondly, the relationships among different emotional expressions are poorly understood. Thirdly, no study has attempted to model the way in which a music composition and its performance, respectively, contribute differentially to the expression.

Aims

The aims of this research were to (a) expand the number of emotions investigated, (b) analyze the ways in which different emotions cluster together in listeners' emotion judgments, and (c) model how composed and performed features contribute to the expression of a piece of music.

Method

This study consists of two parts. In the first part, professional performers of different instruments (piano, guitar, saxophone) were required to play pieces of classical music in such ways that they would express 12 different emotions. The performances were recorded, analyzed, and judged by 60 musically trained listeners. Cluster analysis was used to capture the inter-relationships among expressed emotions. In the second part of the study, a large set of musical parameters (e.g., mode, pitch, tonality, articulation, loudness) were systematically manipulated in a factorial design using synthesis. Musically trained listeners rated the resulting pieces of music on adjective scales. The relationships between musical parameters and listeners' judgments were modeled using Multiple Regression Analysis.

Results

The analysis is still in progress. Preliminary findings highlight the complex nature of expression in music, reveal systematic relationships between acoustic features and emotions, and show that there are definitive limitations with regard to what musicians can convey to listeners.

Conclusions

The results show that quantitative modeling of various features of emotional expression in music is feasible. The study of several emotions and their inter-relationships is rendered more cohesive by taking both composition and performance into consideration.

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