

Emotional processing from language and music: Comparative neurocognitive and functional neuroimaging studies

ABSTRACT:

Background

Humans perceive emotions in spoken language and music but despite recent progress in the cognitive neuroscience of emotion, language and music, it remains to be uncovered how far the mechanisms involved are shared or specific.

Aim

To investigate the neurocognitive mechanisms through which emotions such as happiness or fear are recognized in speech prosody and in music, with an emphasis on disentangling what is common and what differs across domains by assessing the impact of age and neurocognitive dysfunction on emotion recognition.

Method

Five interrelated studies were conducted.

Results

A validated database of sentences spoken in European Portuguese expressing by prosody alone anger, disgust, fear, happiness, sadness, surprise and neutrality was developed [Study 1]. [Study 2] Accuracy in the recognition of happiness and peacefulness in music remained stable with increasing age, but decreased for fear and sadness from middle-age onwards; a serendipitous finding was that music training modulated recognition accuracy. [Study 3] We compared Parkinson's disease patients with matched controls in the recognition of emotions in speech prosody and music, and found a dissociation: patients were impaired for positive emotions in music but not in speech, where they had a small global impairment. The impairment in music was not associated with perceptual or cognitive dysfunctions, but the impairment in speech correlated with executive dysfunction. [Studies 4 and 5] The role of musical training on emotion recognition was followed up in two further studies where musicians were compared with musically naive listeners. Musicians recognized emotions in speech more accurately than musically naive listeners [Study 4], and musical training correlated with recognition accuracy of emotions in music [Study 5].

Conclusion

How we perceive emotions in speech and music is modulated by ageing, Parkinson's disease and musical training. The neurocognitive mechanisms involved are in all likelihood partly shared, and partly segregated, across domains.

Keywords

Ageing, Emotion recognition, Music emotions, Speech prosody, Transfer effects

Published Work:

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