

The neural correlates of the aesthetic experience of music

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We listen to music because we enjoy it. Incidental or intentional aesthetic experiences of music are highly common around the world. A central aspect of the aesthetic experience of music is its emotional outcome, such as liking, joy, relaxation and awe. Besides these aesthetic emotions associated with the overall evaluation of music, music is known to express and even induce basic emotions that are observed in everyday life, such as happiness and sadness. Basic and aesthetic emotions interact in an interesting and intricate way. For instance, music may express and induce sad emotions (e.g. Albinoni's Adagio) but still be enjoyed and generate positive aesthetic experiences. In this study, we aimed at addressing one aspect of the complex aesthetic experience of music, that is, the relation between basic emotions and aesthetic enjoyment of the same musical material. Seventeen volunteers (9 females, 10 men; age range 18-27 years) selected 4 happy and 4 sad pieces from their favourite music and 4 happy and 4 sad pieces from music they disliked. During a listening test, subjects rated on a 5-point scale the familiarity, pleasantness, emotion connotation, emotion induction, and aesthetic value of 18-sec excerpts of the self-selected pieces. A subset of 32 excerpts was used as stimulation for the subsequent fMRI experiment (3-tesla; Signa VH/I General Electrics; EPI sequence, TR = 3 sec, 33 slices). During fMRI scanning, subjects were prompted by a visual cue to rate the liking/disliking or sadness/happiness of each excerpt. Interestingly, behavioural ratings showed that sad excerpts were overall more liked than happy excerpts and that favourite music induced stronger emotions than disliked music. The fMRI results contrasting liked vs. disliked excerpts and happy vs. sad excerpts showed that only favourite music was able to activate the limbic and paralimbic neural systems, in particular, the cingulate cortex, the ventral medial prefrontal cortex and the ventral striatum. In contrast, happiness and sadness in music mainly activated temporal lobes

structures. Both behavioural and neuroimaging results point at the relevance of aesthetic enjoyment for emotion induction. Future research should more closely look at the temporal dynamics between emotion expression, emotion induction and aesthetic enjoyment of music.