

## **Functional Organisation of Familiar Melody Recognition as Revealed Using Octave-Generalisation of Melodic Structure**

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This fMRI study investigates the brain structures that underlie the process of music recognition with familiar melodies. This experiment was based on the ‘mysterious melody’ illusion, which was developed in earlier research (Deutsch, 1972). In our experiment, we tested how the brain recognises well-known melodies. We also identified the different places of activation in the brain when listening to identical tunes which were the same but had been distorted. Seventeen (n=17) subjects were initially screened for normal music ability and normal hearing. First, in a scrambled version they listened to a popular melody without lyrics. However, this melody was not presented rather in a conventional way that they would be able to recognize. The melodies were presented in a cross three different octaves in this phase. Subsequently, in the second phase, we asked them to listen to the same melody again but this time we used the original melody or another very similar melody. Finally, we presented them with the scrambled melody again and asked the participants after each presentation to rate the extent to which they recognised it for the final time, using a four-point scale. Consequently, we were able to compare how the brain responds in each of the phases. In doing so, we compared brain activation after each presentation of stimuli. Overall, this study identified activation in the bilateral auditory cortices, bilateral superior temporal lobes, bilateral frontal orbital cortices, in the right precentral gyrus and left inferior frontal gyrus, all of which have been implicated in the neural pathways of melody recognition.

Deutsch, D. (1972). Octave generalization and tune recognition. *Perception & Psychophysics*, 11(6): 411-412. doi:10.3758/BF03206280