

# Neural correlations of familiar and Unfamiliar face recognition by using Event Related fMRI

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**Purpose:** This event related fMRI study was to further our understanding about how different brain regions could contribute to effective access of specific information stored in long term memory. This experiment has allowed us to determine the brain regions involved in recognition of familiar faces among non familiar faces.

**Materials and Methods:** Twelve right handed normal, healthy volunteer adults participated in face recognition experiment. The paradigm consists of two 40 familiar faces, 40 unfamiliar faces and control base with scrambled faces in a randomized order, with null events. Volunteers were instructed to press on one of two possible buttons of a response box to indicate whether a face was familiar or not. Incorrect answers were ignored. A 1.5T MRI system(GMENS) was employed to evaluate brain activity by using blood oxygen level dependent (BOLD) contrast. Gradient Echo EPI sequence with TR/TE= 2250/40 msec was used for 17 contiguous axial slices of 7mm thickness, covering the whole brain volume (240mm Field of view, 64 x 64 in plane resolution). The acquired data were applied to SPM99 for the processing such as realignment, normalization, smoothing, statistical ANOVA and statistical preference.

**Results/Disscusion:** The comparison of familiar faces vs unfamiliar faces yielded significant activations in the medial temporal regions, the occipito temporal regions and in frontal regions. These results suggest that when volunteers are asked to recognize familiar faces among unfamiliar faces they tend to activate several regions frequently involved in face perception. The medial temporal regions are also activated for familiar and unfamiliar faces. This interesting result suggests a contribution of this structure in the attempt to match perceived faces with pre existing semantic representations stored in long term memory.