

**Implicit distinction of the race underlying the perception of faces
by Event-Related fMRI**

김정석¹, 최보영¹, 김범수², 전신수³, 이강희⁴

¹가톨릭의대 의공학교실, ²진단 방사선교실, ³신경외과학교실, ⁴고려대 심리학교실

목적 : To investigate the neural substrates of the face-selective region called fusiform face area in the ventral occipital-temporal cortex and same-race memory superiority in the fusiform face area. Authors performed the event-related fMRI experiments that subjects (Oriental-Korean) carried out the implicit distinction of the race while they consciously made familiar-judgments, regardless of whether they considered a face as Oriental-Korean or European-American.

대상 및 방법 : Twelve right-handed normal, healthy volunteer adults participated in the experiment. The stimuli consisted of gray photographs of 100 Oriental-Korean and 100 European-American and each 100 were split into 50 familiar and 50 unfamiliar groups. The faces were presented for 1000 ms, replacing a baseline of an oval checkerboard present throughout the interstimulus interval, with minimal SOA of 4.5 s and 100 randomly intermixed null events. The subjects were instructed to press one of two possible buttons with either the index or middle finger of their right hand to indicate whether a face was familiar or not. Incorrect answers were ignored. A 1.5T VISION system (Siemens Corp., Iselin, NJ) was used to acquire T2* weighted transverse EPI images (TR/TE/FA = 3000ms/60ms/90°, FOV=240 x 240mm², 24 axial slices, 5mm slice thickness with no gap). The acquired data were applied to SPM99 for the pre-processing such as realignment, normalization, spatial smoothing, and then the individual contrast images for the effect of interest (the implicit distinction of the race through familiar-judgment) were entered into one-sample *t*-tests to determine the group-level activation, treating subjects as a random variable. The resulting statistical parametric maps of *t*-statistics at the each voxel were transformed to *Z* values and thresholded at *P* < 0.001 uncorrected for multiple comparisons.

결과 : The areas of significant activation during the overall familiar-judgment task were the bilateral supplementary motor areas [Brodmann areas (BA) 6], bilateral fusiform gyri (BA 37), left inferior temporal gyrus (BA 39), cerebellum, right middle frontal gyrus (BA 8), inferior parietal lobule (BA 40), precentral (BA 4), pallidum, putamen, middle occipital gyrus (BA 18). The bilateral fusiform region of interests that play a role in the retrieval of faces from long-term memory showed a greater response to the presentation of Oriental-Korean than European-American faces.

결론 : The bilaterality of fusiform gyrus in our experiment is consistent with other studies and is involved, not only in face perception, but in a certain aspect of face recognition memory. For consciously recognizing familiar faces among unfamiliar faces, no difference in FFA

was observed, But the unconscious face processing as the distinction of race was differentiated in FFA and middle frontallobe and seems to be caused any physiological processes of face recognition.

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