

Effects of attractiveness and priming on face processing

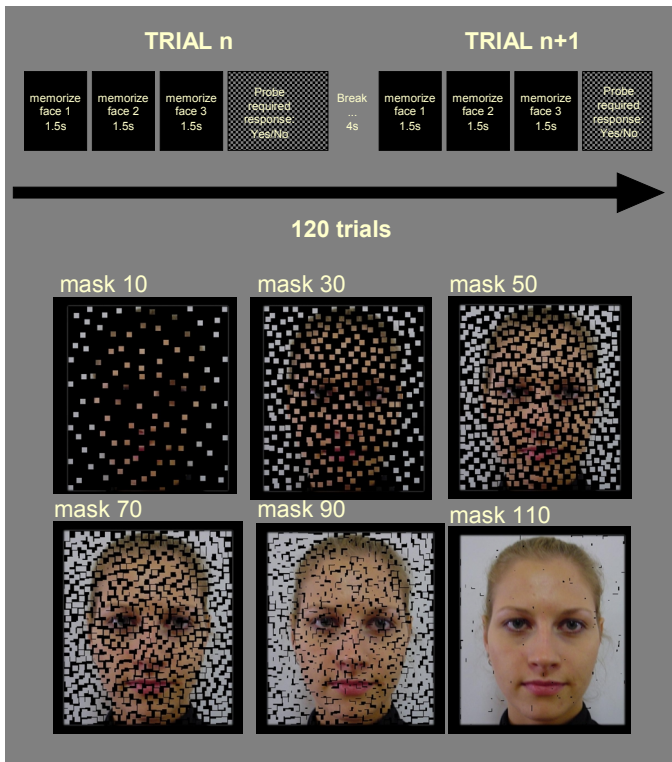
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INTRODUCTION

Little is known about how the brain represents facial attractiveness. Gaze direction and reward value of faces modulate brain activation patterns. Particularly the dopaminergic reward system is supposed to be involved in the facilitation of face recognition by attractiveness. However, this system does not play a major role in priming, which also facilitates face processing. The aim of the present study was to investigate, if there is an interaction between perceived face attractiveness and repetition priming.

METHOD

After memorising three sequentially presented faces, a single probe-face was displayed, which was or was not one of the faces shown before. Each probe was slowly unmasked. BOLD-recording benefits from prolonged stimulus processing. Subjects indicated by a button press if the face belonged to the to-be-memorized set or not. Totally, 120 trials were performed by each subject. Reaction times indicated the expected recognition facilitation.



Details

Subjects: 26 male volunteers (range 21-34, M=25.6). Four subjects were excluded from analyses for different reasons.

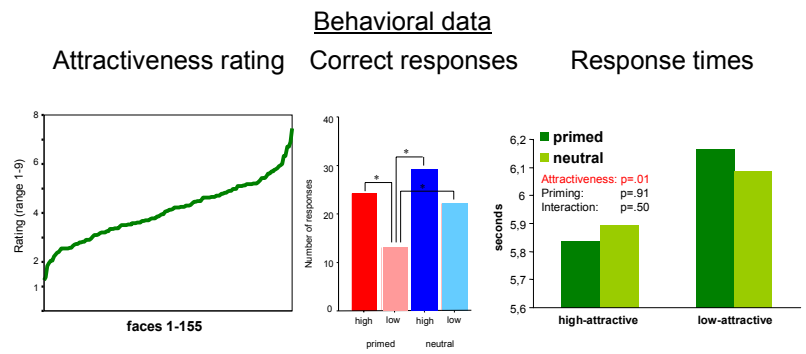
Data Recording: 1.5T Siemens Symphony; 25 slices x 850 (max.; depended on the subject's speed) volumes T2*-weighted EPI, slice thickness=5 mm, in-plane resolution=3x3mm, TR=2.5s., TA=100ms, TE=60ms, flip angle=30°, FOV=192 x 192mm, acquisition matrix 64x64pxl.

Preprocessing (SPM99): Slice-time correction, movement correction; spatial and temporal Gaussian filtering (FWHM = 8/4s); normalization into Talairach-space.

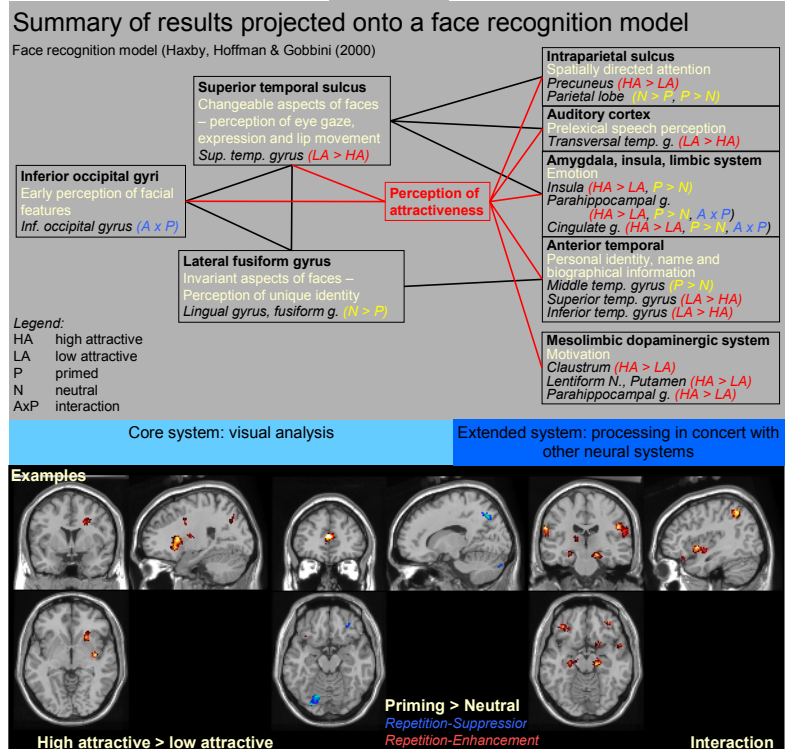
Statistical Analysis (SPM99): (1) Individual GLM-fit: 2x2 factorial design; factors attractiveness and priming; 6 movements parameters; (2) Group-SPMs: 2nd level random effects analysis. Intensity-threshold, $p < 0.001$ uncorrected.

References: Haxby, J.V., Hoffman, E.A., Gobbini, M.I. (2000). The distributed human neural system for face perception. *Trends in Cognitive Sciences*. Vol.4, No.6, 223- 233.

RESULTS



fMRI data



CONCLUSION

Primed faces showed a decreased activation in the fusiform gyrus. High-attractiveness of the individually rated faces activated structures in the mesolimbic dopaminergic system, and the limbic system including insula, parahippocampal area and the cingulate gyrus. Interactions of the factors attractiveness and priming were found in the limbic structures. Summarizing, based on Haxby's (2000) model of a neural system for face perception, priming takes place at the visual analysis modules, and attractiveness activates the extended modules of the model. However, priming modulates the attractiveness effects in the limbic system, which belongs to the extended modules too.

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