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COGNITIVE NEUROSCIENCE

Area of expertise

The human fusiform gyrus is specifically activated in response to faces. This observation has led to the idea that face processing takes place separately from that of other objects in a face-specific processing module. But there is evidence that such a module might not be so specific, as the fusiform area can also show similar activations in response to birds, cars or other objects in people with expertise on these stimuli. So far, it has not been possible to determine if the activation measured in response to faces and other objects recruits the same network, or nearby networks that work in parallel. Gauthier *et al.* have now approached this problem by exploring whether processing of objects on which people are experts interferes with processing of faces.

The authors reasoned that if the same networks process faces and other objects, then processing of one stimulus should interfere with processing of the other when subjects are required to handle both categories simultaneously. They therefore devised a test in which subjects saw alternating pictures of faces and cars, and were required to say if the bottom half of an image was the same or different than the one before of the same category. As we all are experts on faces, our processing of the bottom part of a face tends to be affected by the top half; we process faces as a whole. Gauthier *et al.* took advantage of this 'holistic processing' to explore whether car experts also processed cars in a holistic manner, and whether

processing pictures of cars interfered with their judgement of faces. They found that car processing was indeed holistic and interfered with face processing. In addition, the level of interference correlated with the degree of expertise. The authors also measured an event-related potential (the N170), which tends to be larger in response to faces than to other objects, and observed that this potential was larger in car experts than in novices when seeing cars. More importantly, they found that an index of interference in terms of the N170 amplitude also correlated with the degree of expertise.

These results provide behavioural and electrophysiological evidence against the idea that there is a face-specific processing module. Moreover, as the N170 occurs quite early during visual processing, the data indicate that the lack of functional independence between the processing of faces and other objects becomes manifest during the initial, perceptual stages of visual processing.

Juan Carlos López

References and links
ORIGINAL RESEARCH PAPER Gauthier, I. *et al.*
Perceptual interference supports a non-modular
account of face processing. *Nature Neurosci.*
10 March 2003 (doi:10.1038/nn1029)

