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# Causal evidence of the involvement of the right occipital face area in face-identity acquisition

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## Abstract

There is growing evidence that the occipital face area (OFA), originally thought to be involved in the construction of a low-level representation of the physical features of a face, is also taking part in higher-level face processing. To test whether the OFA is causally involved in the learning of novel face identities, we have used transcranial magnetic stimulation (TMS) together with a sequential sorting – face matching paradigm (Andrews et al. 2015). First, participants sorted images of two unknown persons during the initial learning phase while either their right OFA or the Vertex was stimulated using TMS. In the subsequent test phase, we measured the participants' face matching performance for novel images of the previously trained identities and for two novel identities. We found that face-matching performance accuracy was higher for the trained as compared to the novel identities in the vertex control group, suggesting that the sorting task led to incidental learning of the identities involved. However, no such difference was observed between trained and novel identities in the rOFA stimulation group. Our results support the hypothesis that the role of the rOFA is not limited to the processing of low-level physical features, but it has a significant causal role in face identity encoding and in the formation of identity-specific memory-traces.

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