

IMPACT OF THE MOTHER'S ODOUR ON ILLUSORY FACE PERCEPTION IN INFANTS

At 4 months of age, brain activity reveals that infants perceive faces in everyday objects if they are exposed to their mother's smell.

Human infants need to rapidly develop their ability to perceive faces. For this purpose, their visual system, which is still immature, can rely on a more developed sense such as olfaction. Indeed, from the very first months of life, infants react to human odours – including their mother's odour, which orient their social behaviour. Can these odours influence the way young infants perceive faces?

In previous works^{1,2,3}, we showed that the 4-month-old infant brain responds more to faces than to other objects in the presence of the mother's body odour. The aim of this novel study was to examine whether the maternal body odour influences the perception of "illusory" faces, namely pictures of face-like objects (the so-called "face pareidolia"; e.g., when we see a face in coffee foam). To do so, we recorded the brain activity of 4-month-old infants using scalp electroencephalography (EEG) while they were looking at various images. Some images depicted face-like objects while others did not. During testing, infants were exposed to a T-shirt which had either been worn by their mother or not.

Our results reveal that the brain response selective to illusory faces is enhanced in the presence of the mother's odour. This distinct response between "face-like" and "non-face" objects even emerges only in presence of the maternal body odour for a majority of infants. This indicates that the odour can directly initiate the illusion of a face in objects that infants initially do not perceive as faces.

This study demonstrates that the infant visual system is fed by other sensory information like odours for the early tuning of face perception. It illustrates the key role of multisensory experiences for interpreting social stimuli in infancy.

Contact

Arnaud Leleu (arnaud.leleu@u-bourgogne.fr)

Diane Rekow (diane.rekow@u-bourgogne.fr)

To know more

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Keywords

Face pareidolia; vision; olfaction ; perception; body odour; maternal odour; EEG

¹ Durand et al. (2013). *PLoS One* ; ² Leleu et al. (2020). *Dev. Sci.* ; ³ Rekow et al. (2021). *Cog. Dev.*