THE DIFFERENT FACES OF ONE’S SELF: NEURAL CORRELATES OF
CHANGES IN SELF-IDENTITY

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Objectives: Mirror self-recognition is considered as an index of self-awareness. Neuroimaging studies have identified a neural circuit specialized for the recognition of one’s own current facial appearance. However, faces change considerably over a lifespan, highlighting the necessity for representations of one’s face to continually be updated. This research project aimed at understanding the neural processes that underpin the cognitive capacity for self-face recognition by investigating two important dimensions: aging-related changes and sensory-driven changes in self-face identification.

Methods: Two experiments were designed to address separately these two questions using functional magnetic resonance imaging (fMRI). In Experiment 1 participants viewed images of either their own face as it currently looks morphed with the face of a familiar other or their childhood face morphed with the childhood face of the familiar other. In Experiment 2 participants experienced tactile stimulation delivered to their face, whilst observing either temporally synchronous or asynchronous tactile stimulation delivered to another person’s face on either a congruent or incongruent location.

Results: Experiment 1 showed that activity in areas that have a generalised selectivity for faces, including the inferior occipital gyrus, the superior parietal lobule and the inferior temporal gyrus, varied with the amount of current self in an image. Importantly, activity in areas involved in memory encoding and retrieval, including the hippocampus and the posterior cingulate gyrus, and areas involved in creating a sense of body ownership, including the temporo-parietal junction and the inferior parietal lobule, varied with the amount of childhood self in an image.

Experiment 2 showed an effect of synchronous, congruent stimulation in the activity in a network of multisensory areas, including the right temporo-parietal Junction (rTPJ) and middle frontal gyrus, the bilateral anterior insula and intraparietal sulcus. Activity in the rTPJ was scaled with the extent to which the participants’ felt identification with the observed face during stimulation.

Conclusions: These results suggest that distinct neural structures encode changes in self-identity across time, and provide a functional basis for the neural plasticity of the self-recognition network.

Publications:
1) Published peer-reviewed papers:
Apps, M.A.J., Tajadura-Jiménez, A., Turley, G., & Tsakiris, M. The different faces of


2) Abstracts (proceedings and meetings):


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