

## Neural Correlates of Face Recognition

### Background

We recognize the faces of familiar others dozens of times every day, and we do so highly efficiently and without apparent effort. This is independent of specific instances or images, as we can easily recognize highly familiar faces (such as our close friends and relatives) from pictures we have never seen before.

However, it remains largely unclear how the brain achieves this remarkable ability. Previous work in our group has established image-independent EEG/ERP markers of familiar faces recognition (Figure 1).

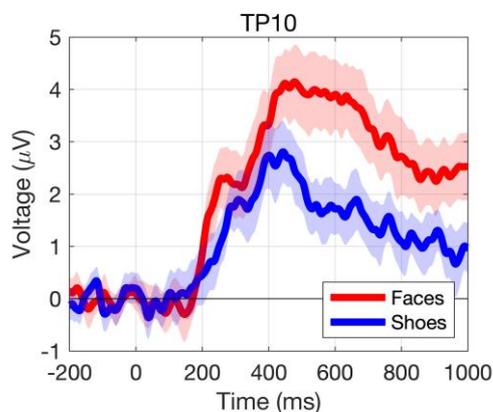
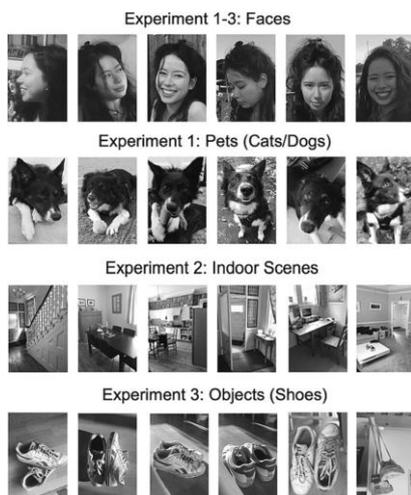


Fig. 1. Top: Example stimuli of high variability “ambient” faces and other visual

categories (animals, objects, scenes). Bottom: Difference in the brain’s ERP response to familiar and unfamiliar faces (red) and objects (blue).

Currently, we use these markers to tackle the following questions:

1. What information is stored in familiar face representations (i.e., in our image-independent long-term memories of faces)?
2. How do perceptual and (working/long-term) memory processes interact to achieve face recognition?
3. How do we learn new faces?
4. Why are some people better at recognizing faces than others?
5. To what extent is face recognition “special” and distinct from the recognition of familiar objects or scenes?

### Methods

The projects will use EEG to examine brain responses in face recognition experiments. Experimental techniques (e.g. repetition priming) and stimulus manipulations (e.g. digital image morphing) will be tailored to individual projects.

### Relevance

Face recognition is of relevance to several subdisciplines of psychology (cognitive psychology, perception, cognitive neuroscience, neuropsychology, social psychology). Face recognition is also important in applied contexts (e.g. forensic, clinical).

### Training

The candidate's research activity will be based in Durham Psychology. Besides a training in general research skills, the candidate will be trained in planning, conducting and analyzing EEG

experiments. Training in additional techniques (eye-tracking, TMS, fMRI) may be possible via collaborations.

**Suitable for**

PhD and MSc by Research students.

**Further Reading**

Wiese H, Schweinberger SR, Kovács G (2024). The neural dynamics of familiar face recognition. *Neuroscience and Biobehavioral Reviews*, 167. 105943.

Wiese H, Tüttenberg SC, Ingram BT, Chan CYX, Gurbuz Z, Burton AM, Young AW (2019). A robust neural index of high face familiarity. *Psychological Science*, 30, 261-270.

Young, A.W., Bruce, V., 2024. Face Perception (Second Edition ed.). Routledge, New York.