

Neural representations of naturalistic person identities while watching a feature film

Clare Lally¹, Nadine Lavan², Carolyn McGettigan¹

¹University College London ²Queen Mary University of London

c.lally@ucl.ac.uk

Abstract (max 300 words)

Recognising others is fundamental for many social interactions. Past research has mapped out brain regions implicated during face and voice identification, although this has often been based on tightly controlled experiments that reduce authentic aspects of person identification. We used representational similarity analysis to uncover neural representations of identity during task-free, naturalistic stimulation. We conducted our analyses on an open-access MRI dataset, in which participants watched feature length movies (Aliko et al., 2020). We hypothesised that regions representing person identity should produce similar patterns of activity in response to multiple instances of the same person, and dissimilar patterns based on instances of different people. This was observed in right hemisphere regions associated with face, voice and person perception. This was replicated across two independent groups of participants in response to different sets of identities. The final analysis dissociated contributions of face vs voice information to neural representations of identity, revealing areas of preferential sensitivity for each modality, with more extensive evidence of regions preferring face information. By simultaneously modelling sensitivity to between-person differences as well as within-person generalisation, we were able to take recent theoretical developments in person perception and apply these to cognitive neuroscience. Further, this work is one of the first to investigate the neural representations that underpin identity perception in the absence of an experimental task, enabling us to characterise how the brain represents information about other people in the real world.

[Abstract Word count: 235]

References

Aliko, S., Huang, J., Gheorghiu, F., Meliss, S., & Skipper, J. I. (2020). A naturalistic neuroimaging database for understanding the brain using ecological stimuli. *Scientific Data*, 7(1), 1-21. <https://doi.org/10.1038/s41597-020-00680-2>