Face Perception in Autism

How does movement affect how people with ASC understand facial expressions and identity?

Benjamin Hamblin-Pyke
Supervisors: Karen Lander & Emma Gowen

The University of Manchester

Recognising emotions from faces

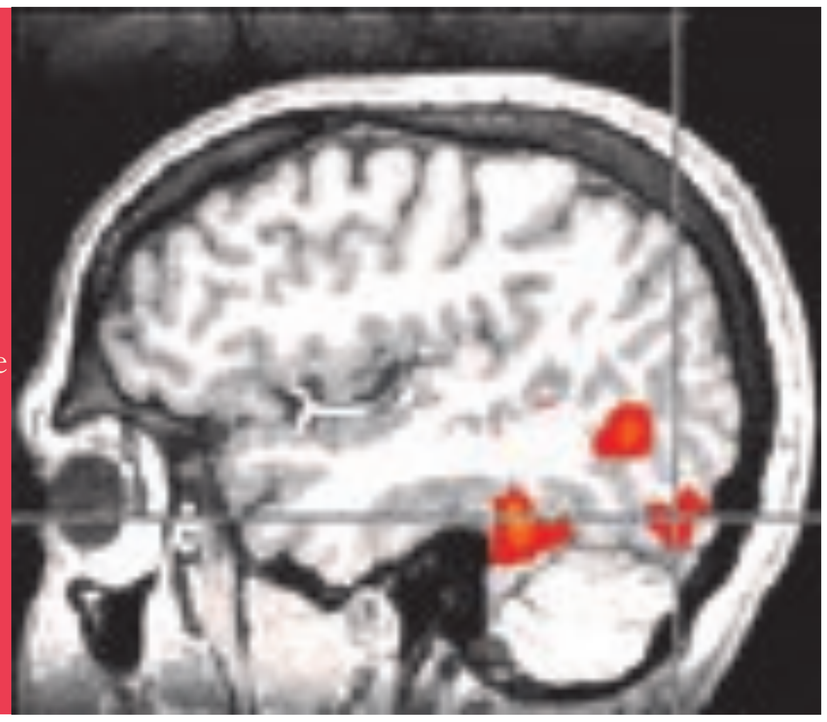
- Recognising emotion from facial expression is something people generally do well (1).
- A study found that on average people with ASC are slightly worse at recognising most expressions (2), but this varies between individuals.
- Those with ASC may also have differences in how they process motion (3). Does this impact recognising expressions in real life?

The Ekman 60 Faces Test — can you name all the different emotions are shown here? (1)

(Anger, fear, sadness, disgust, happiness, and surprise)

How do we test face recognition?

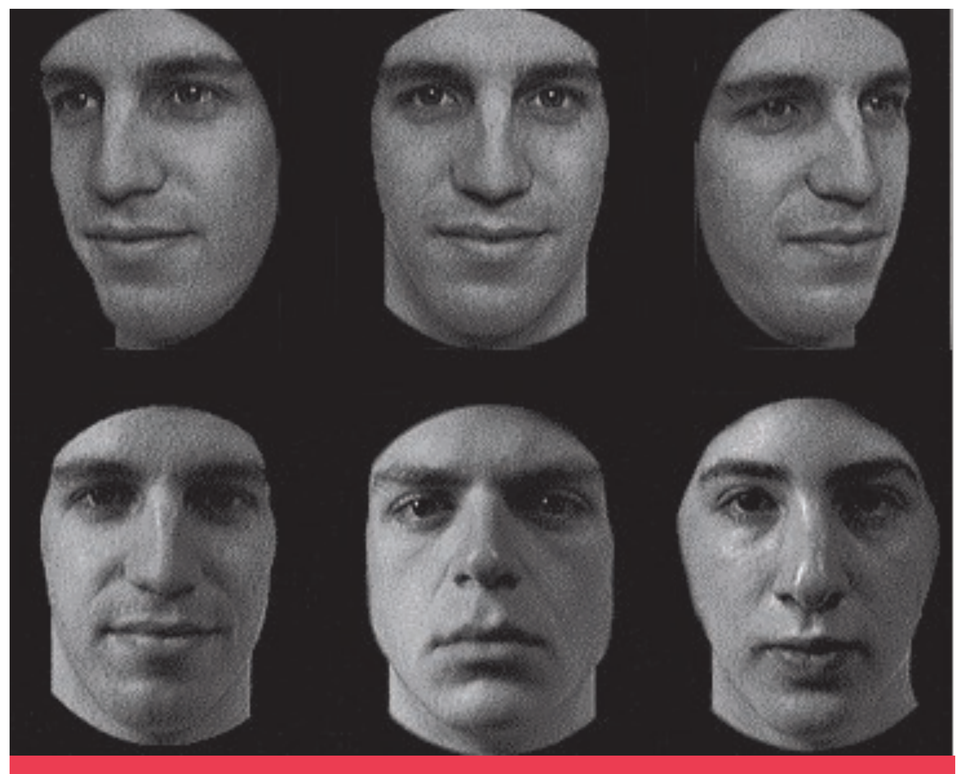
- There are a number of tests for identity and expression recognition, including the Ekman 60 Faces Test (above) and the Cambridge Face Memory Test (right).
- Most of these tests use static images of faces, but in real life faces are moving all the time.
- There are no widely-used tests with moving faces, which makes it difficult to compare studies.



The three key parts of the brain for face recognition (4).

Recognising identity from a face

- Recognising who someone is from their face is crucial for day-to-day life.
- Some studies suggest that those with ASC have a worse memory for faces than neurotypical people (5).
- While most people with ASC score similarly to NT in face recognition tests with moving faces, there is evidence different parts of the brain might be used (6).



The Cambridge Face Memory Test — can you tell which face from the bottom row matches the top? (7)

References:

(1) Young, A. W., Perrett, D. I., Calder, A. J., Sprengelmeyer, R., & Ekman, P. (2002). *Facial Expressions of emotion: Stimuli and Test (FEEST)*. Psychology (Vol. 126). Bury St Edmunds, Suffolk: Thames Valley Test Company.

(2) Uljarevic, M., & Hamilton, A. (2013). Recognition of emotions in autism: A formal meta-analysis. *Journal of Autism and Developmental Disorders*, 43(7), 1517-1526.

(3) Spencer, J., O'Brien, J., Riggs, K., Braddick, O., Atkinson, J., & Wattam-Bell, J. (2000). Motion processing in autism: Evidence for a dorsal stream deficiency. *Neuroreport*, 11(12), 2265-2767.

(4) Pitcher, D., Walsh, V., & Duchaine, B. C. (2011). The role of the occipital face area in the cortical face perception network. *Experimental Brain Research, 209(4), 481-493*.

(5) Weigelt, S., Koldewyn, K., & Kanwisher, N. (2013). Face recognition deficits in autism spectrum disorders are both domain specific and process specific. *PLoS ONE*, 8(9), e74541.

(6) Sato, W., Toichi, M., Uono, S., & Kochiyama, T. (2012). Impaired social brain network for processing dynamic facial expressions in autism spectrum disorders. *BMC Neuroscience*, 13(1), 99.

(7) Duchaine, B. C., & Nakayama, K. (2006) The Cambridge Face Memory Test: Results for neurologically intact individuals and an investigation of its validity using inverted face stimuli and prosopagnosic participants. *Neuropsychologia*, 44(4), 576-585.