



Psychological & Behavioural Sciences

Topic

Inverted faces and inverted words

Task

A region of the fusiform gyrus of the right hemisphere of the brain – the ‘Fusiform Face Area’ – appears to be specialised for the processing of faces, and this specialisation is thought to be innate. However, in literate adults, the corresponding region of the left hemisphere – the ‘Visual Word Form Area’ – shows specialisation for the processing of text. Since literacy has been widespread in mankind for only a few centuries, the latter area is unlikely to have evolved for the purpose of processing text. Stanislas Dehaene has advanced the ‘neuronal recycling hypothesis’, suggesting that the Word Form Area in the left hemisphere, originally devoted to the recognition of faces and objects, is re-purposed when we learn to read.

Both the reading of text and the recognition of faces show inversion effects: most people find text much more difficult to read when it is upside down and similarly find faces more difficult to recognise when they are inverted. However, this is not true of everyone: some people can readily read inverted text, and there are also individual differences in the size of this ‘face inversion effect’. The neuronal recycling hypothesis might suggest that individual differences in processing inverted material of different types would co-vary, i.e. someone who was good at reading text upside down would be good at recognising faces upside down.



So the task is to design a study to find whether the sizes of the inversion effects for faces and words are correlated. How would you prepare suitable test materials – i.e. how will you select suitable sets of words and faces? How would you present them to participants under controlled conditions? How would you express the size of the inversion effect, given that there will be variations in the ability to process upright materials? What statistical test might you use to analyse your results?

Resources

Here are some relevant references to get you into the existing literature:

Wyer, N. A. (2012) Individual differences in (non-visual) processing style predict the Face Inversion effect. *Cognitive Science*, **36**, 373

Dehaene, S. (2015) Illiterate to literate: behavioural and cerebral changes induced by reading acquisition. *Nature Reviews Neuroscience*, **16**, 235

If you cannot access the reading above through your school or library, please request a copy using [this link](#).