Background

- ‘Reality Monitoring’: ability to distinguish veridical memories from imagined experiences (1).
- A prominent theoretical account on reality monitoring is the ‘Source Monitoring Framework’ (2).
- According to this view, reality monitoring ability might depend on qualities of remembered experiences (3).
- Precision of memory is an important mnemonic quality, which has been linked with activity in angular gyrus (4).

Research Questions:

1) Does reality monitoring ability depend on memory precision?  
2) What is the neurocognitive basis of this possible dependency?

Behavioural Tasks

Study Phase

(A) The ‘agency task’: either the participant or the experimenter moved objects.
(B) The ‘perceptual task’: participants either imagined or perceived moving objects.

Test Phase

- Participants first recreated precise location of each object
- They then indicated the condition in which each object was studied.

Brain Stimulation

(C) Control stimulation site vertex (MNI: 0, -15, 74) (4)
(D) Angular gyrus (MNI: -54, -54, 33) (5)

- Participants received stimulation to both regions on separate occasions.
- Order of stimulation site was counterbalanced.

Brain Stimulation Results

- The observed behavioural association was reduced only in the “Self” condition following angular gyrus stimulation, relative to control stimulation ($p < 0.001$).

Conclusions

- Better reality monitoring ability might indeed depend on higher memory precision.
- Angular gyrus might help to imbue memories with a sense of self.
- Personal memories might involve awareness about ourselves in remembered experiences, enabling a key aspect of episodic memory: ‘autonoetic consciousness’ (6).

References

P. Review
P. Bulletin
Trends in Cognitive Sciences
Neuroimage
Effe