Patient JJ:
Limb-dependent magnetic misreaching
An impairment in action binding

Mrs D: A previous report of Magnetic misreaching

Typical Eye and Hand Traces
Does the right hand simply follow the left?:

Contralateral unimanual reaches

Simultanagnosia?

‘Mirror placement’ task: Visual-Proprioceptive condition

Unimanual RH: Gaze left
Unimanual RH: Gaze right

Reaching hand

‘Mirror placement’ task: Visual-Proprioceptive condition

VP condition trials

Reaching hand

‘Mirror placement’ task: Proprioceptive condition

Target hand

Summary of findings

- No misreaching errors when reaching to unimanual targets which he can foveate.
- Not a basic sensory deficit - Limb-specific form of magnetic misreaching. JJ only makes large misreaching errors with his right hand when he foveates the target of his left hand and not vice versa.
- Not a consequence of visual capture of left object during movement execution – effect persists when vision is removed at movement onset.
- Not a ‘field’ effect – magnetic misreaching reverses direction when reaching with the right hand into the left field during contralateral reaching.
- Not a result of having recently made an eye movement – effect persists when gaze is fixed centrally and the objects are moved.
- Not a result of the right hand following the left hand – effect persists for unimanual reaches to extrafoveal targets.
- Not a consequence of simultanagnosia – The ‘mirror placement task’ confirms that effect persists when only one visual object is present.
- Is it a purely visuomotor effect? – Interestingly, PP condition of ‘Mirror placement task’ suggests that magnetic misreaching may occur for attended, proprioceptively-defined, target locations.
Top-down modulation

Hybrid reference frames based upon the weighted average of sensory signals
Does the right hand simply follow the left?:
Ipsilateral unimanual reaches

Simultanagnosia?
‘Mirror placement’ task: Visual-Proprioceptive condition

Simultanagnosia?
‘Mirror placement’ task: Visual-Proprioceptive condition
Limb-dependent magnetic misreaching in a patient presenting with Balint’s syndrome.

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