

# *Using fMRI to detect conscious awareness*

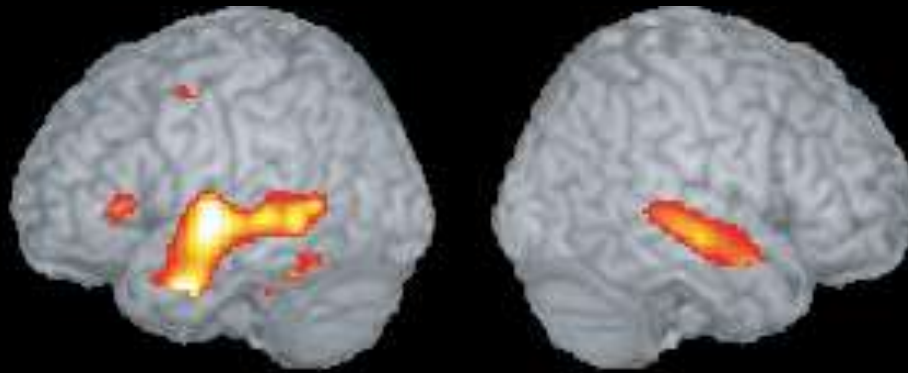
Adrian M. Owen

MRC Cognition and Brain Sciences Unit, Cambridge, UK

<http://web.me.com/adrian.owen>

“The limits of consciousness are hard to define satisfactorily and we can only infer the self-awareness of others by their appearance *and their acts*”

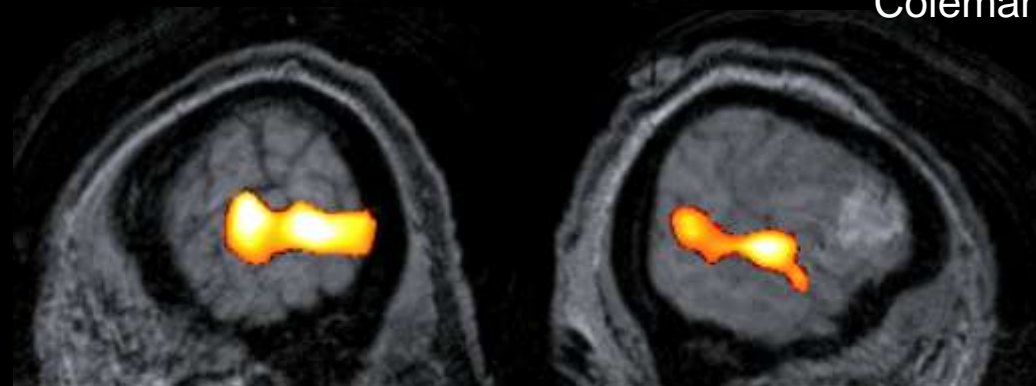
Plum and Posner, *The Diagnosis of Stupor and Coma*, 1966



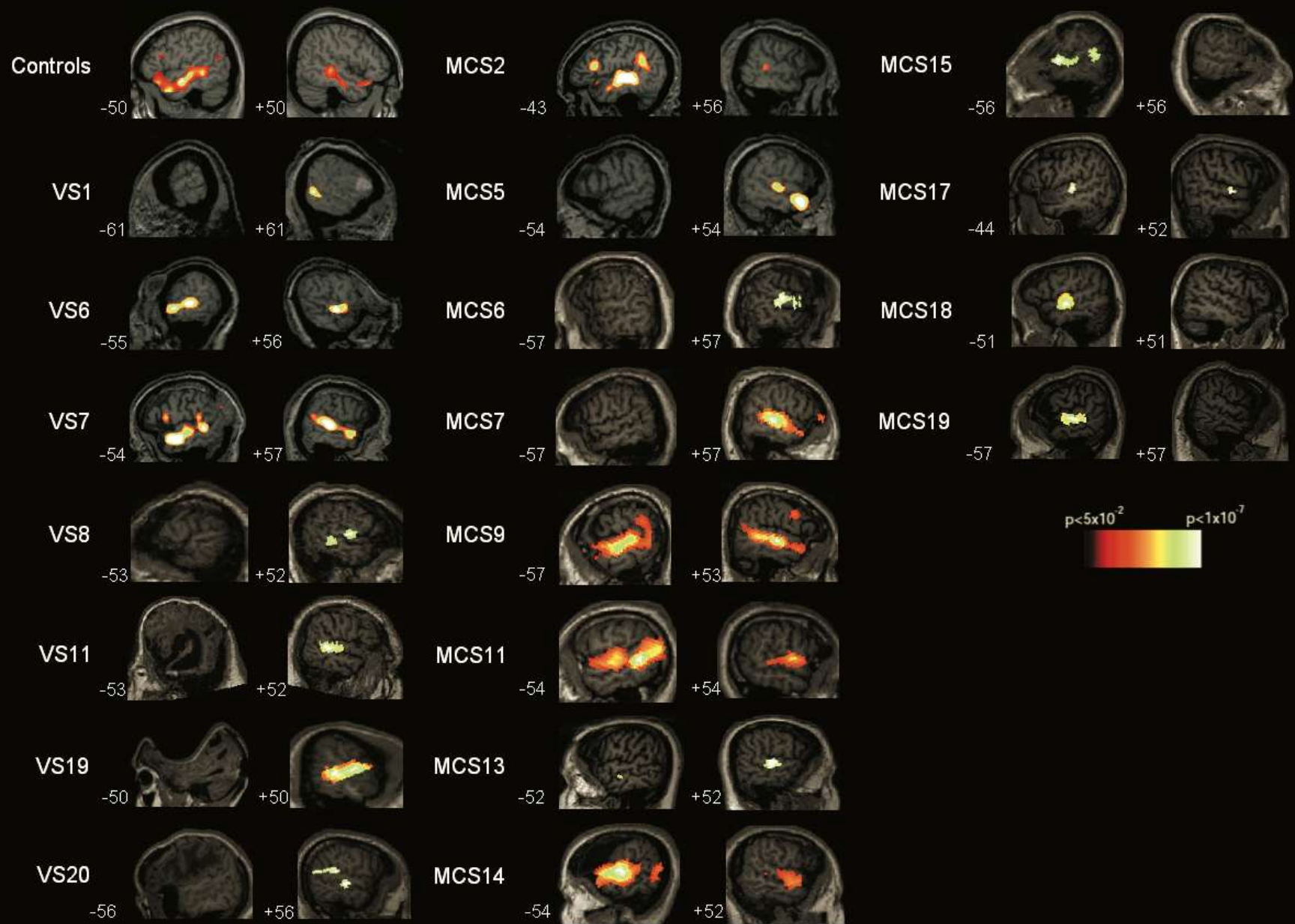
Davis *et al.*, *PNAS*, 2007

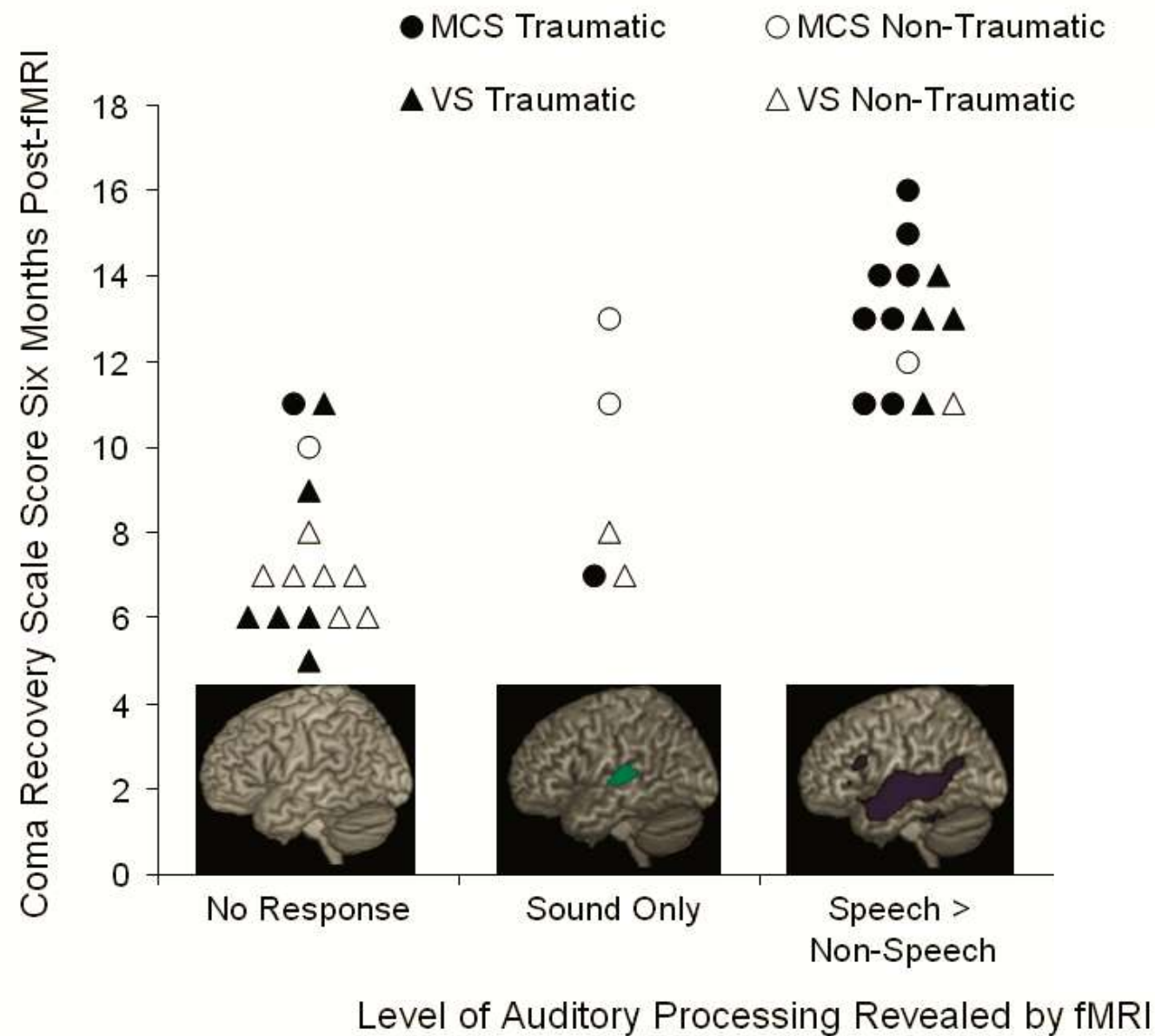


Coleman *et al.*, *BRAIN*, 2007



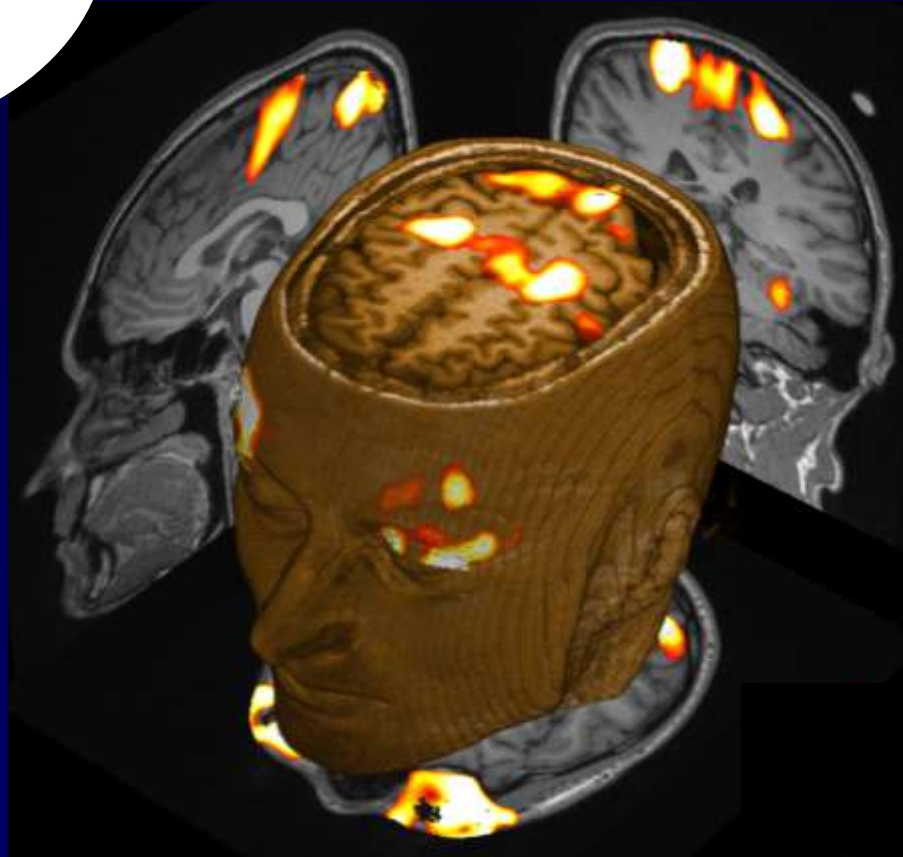
# Speech-specific responses are common in disorders of consciousness



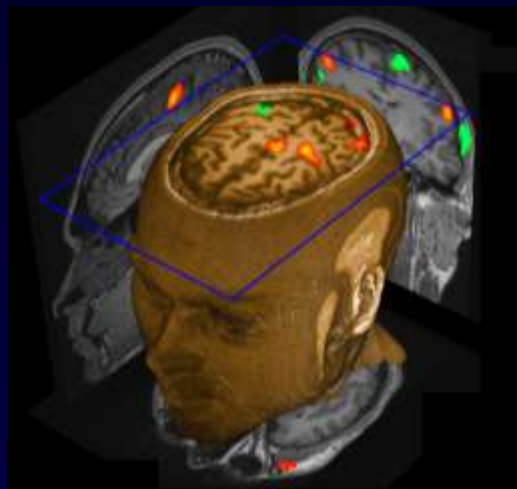




“....Imagine playing tennis”







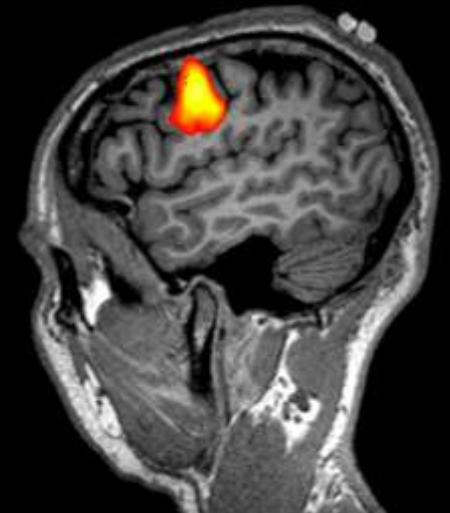
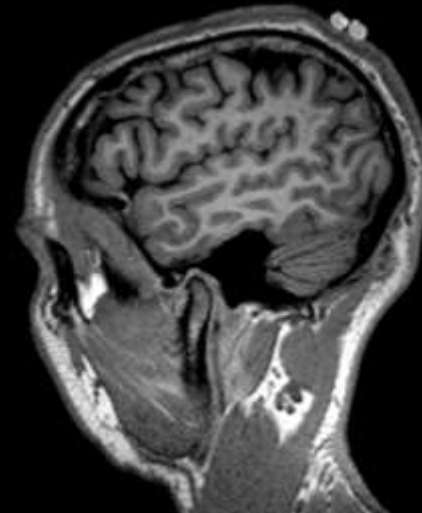
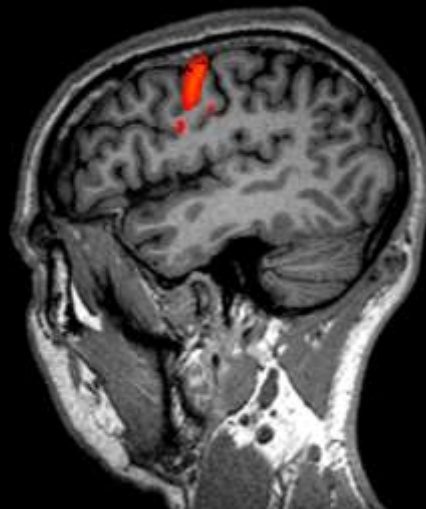
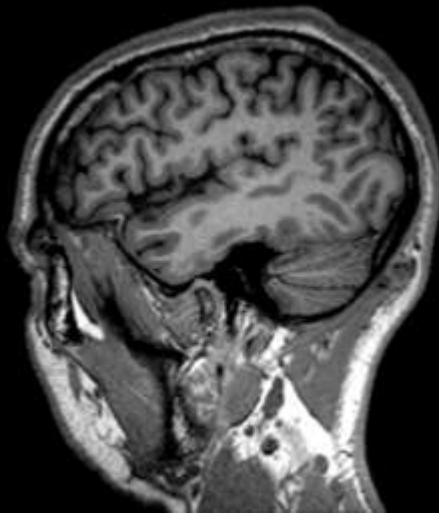
Instructions:  
“If you want to say ‘yes’, imagine playing tennis”

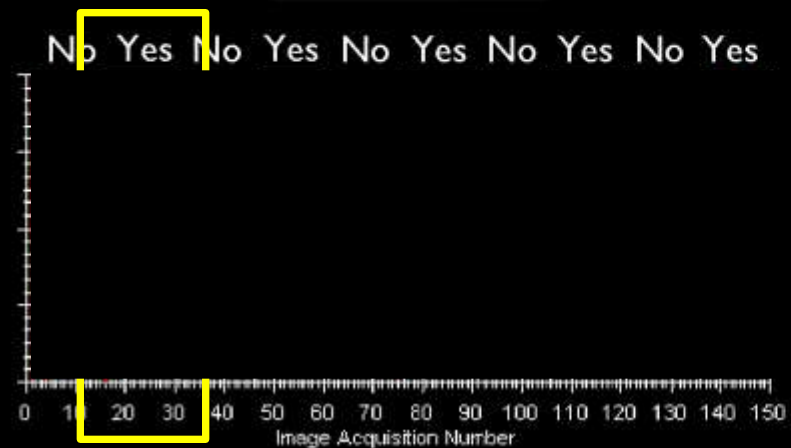
“Is your husband  
called Charlie?” ☐

“Is your husband  
called Terry?” ☐

“Is your dog  
called Terry?” ☐

“Is your dog  
called Charlie?” ☐



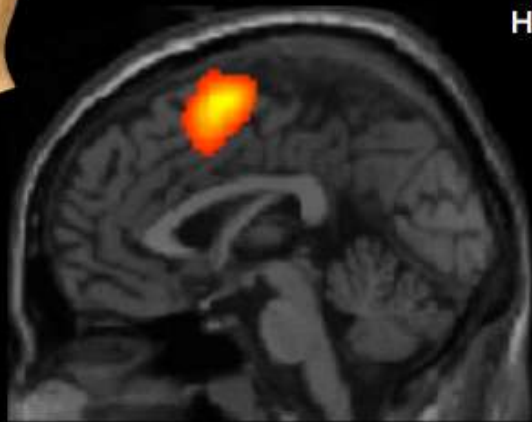


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TENNIS IMAGERY

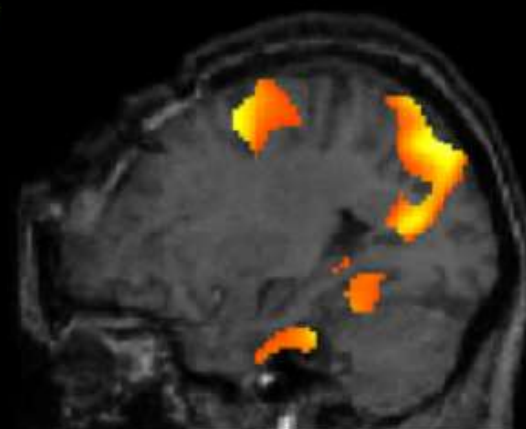
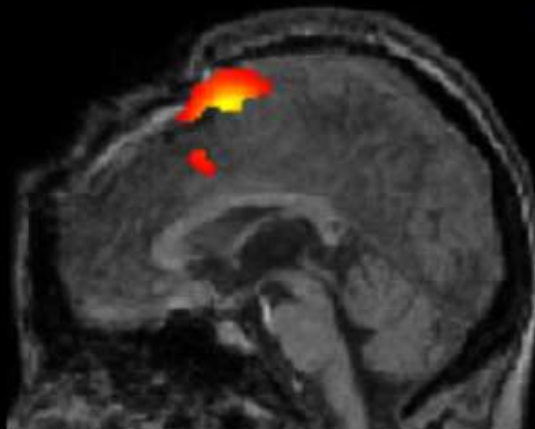


HEALTHY VOLUNTEERS

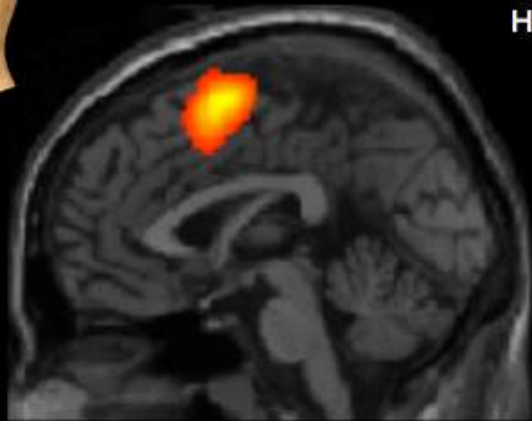
SPATIAL IMAGERY



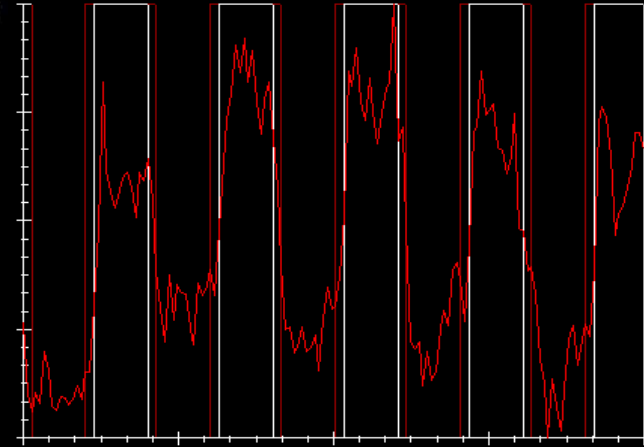
VEGETATIVE PATIENT



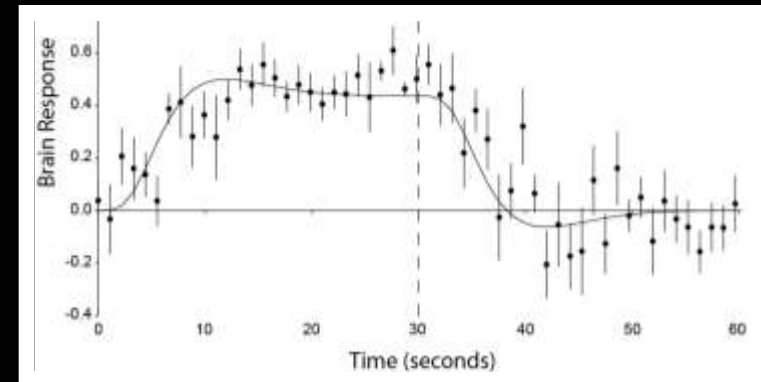
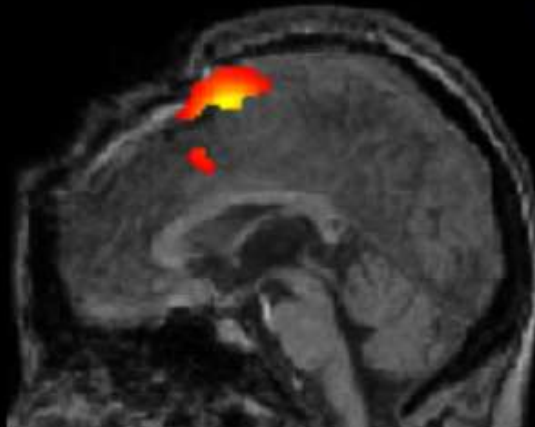
## TENNIS IMAGERY

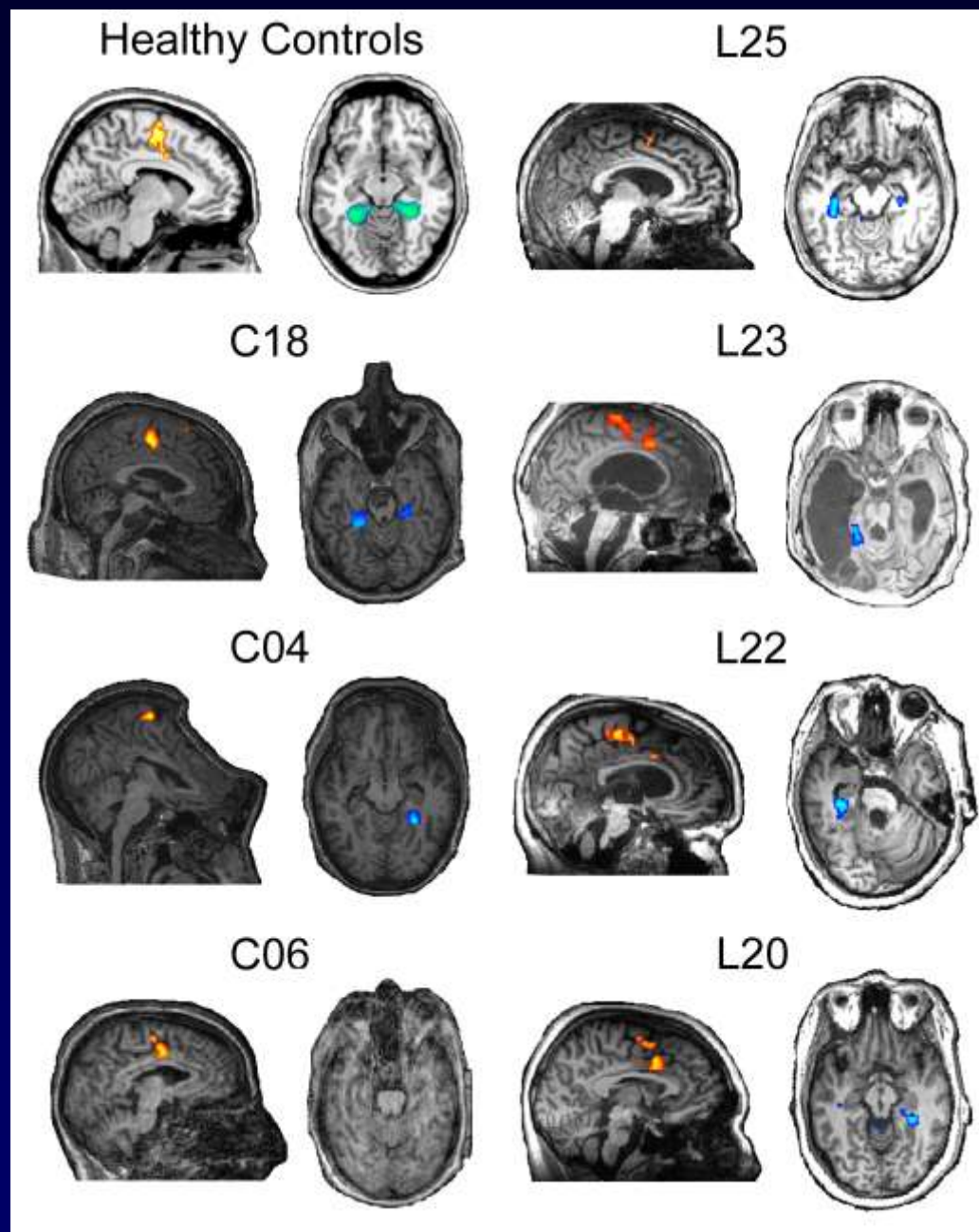


HEALTHY VOLUNTEERS



VEGETATIVE PATIENT

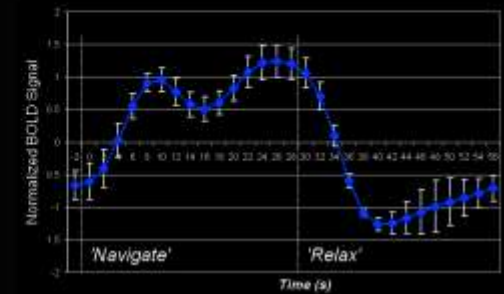
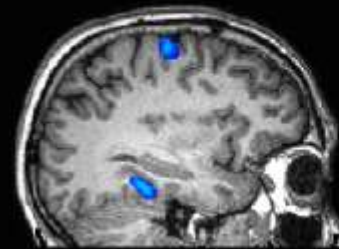
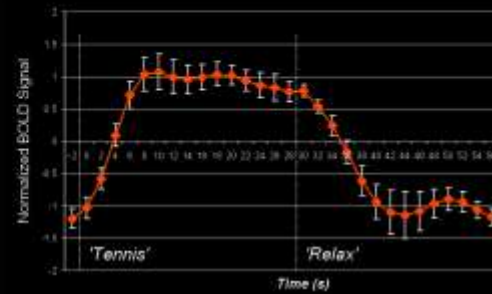




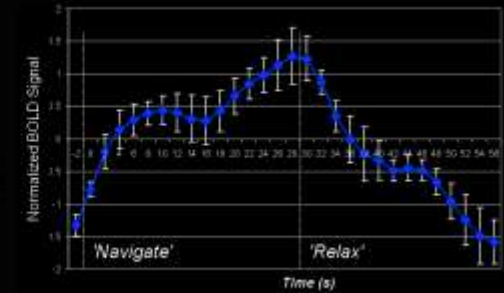
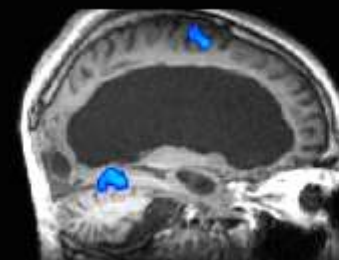
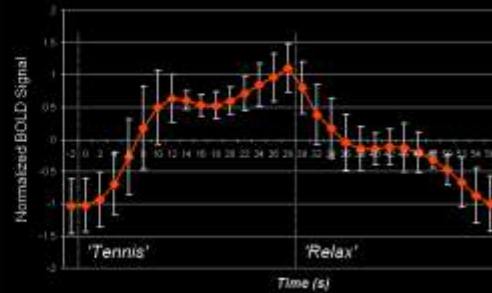
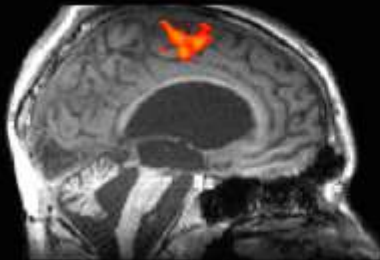
“Tennis”

“Navigation”

Control



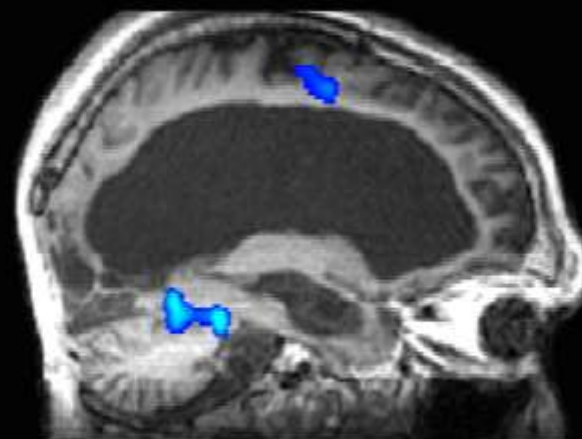
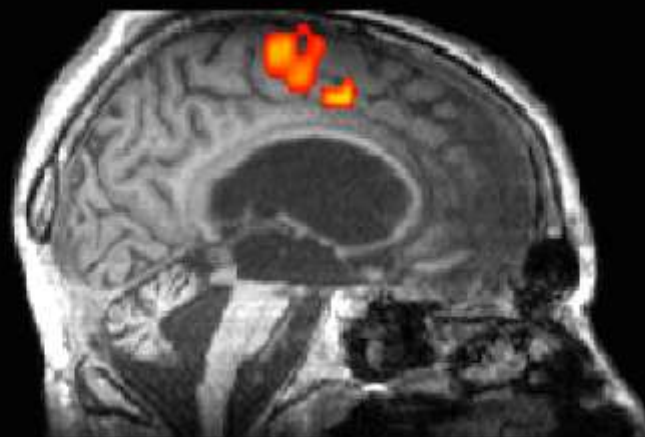
Patient



Control



Patient





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Plum and Posner, *The Diagnosis of Stupor and Coma*, 1966



Thanks...

Wolfson Brain Imaging Centre, Cambridge

Martin Coleman  
David Menon  
John Pickard  
Anthony Absalom  
Ram Adapa

University of Liege

Audrey Vanhaudenhuyse  
Melanie Boly  
Steven Laureys

MRC Cognition and Brain Sciences Unit

Tristan Bekinschtein  
Damian Cruse  
Rhodri Cusack  
Matt Davis  
Diets Jolles  
Martin Monti  
Beth Parkin

