

Neurociencia cognitiva

2do cuatrimestre 2024

Clase 6: Percepción y reconocimiento

<http://materias.df.uba.ar/nca2024c2/>

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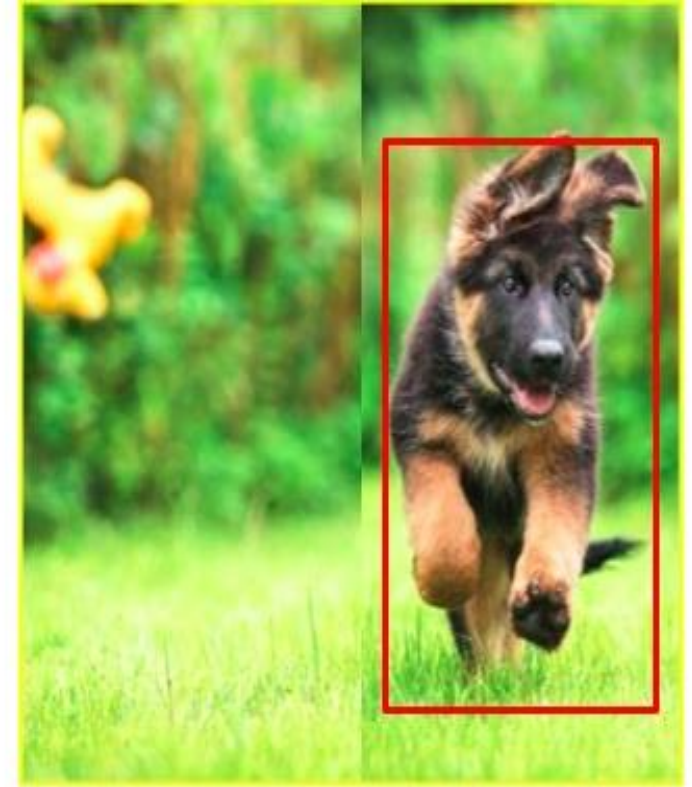


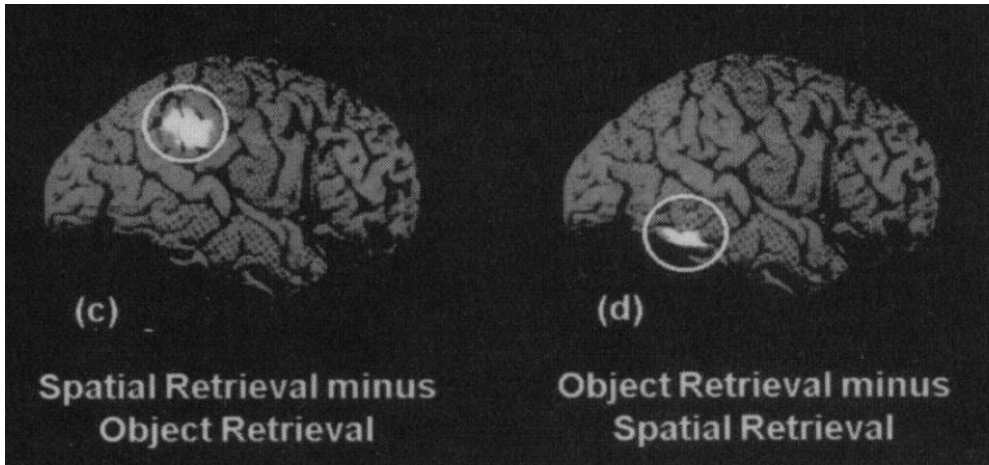
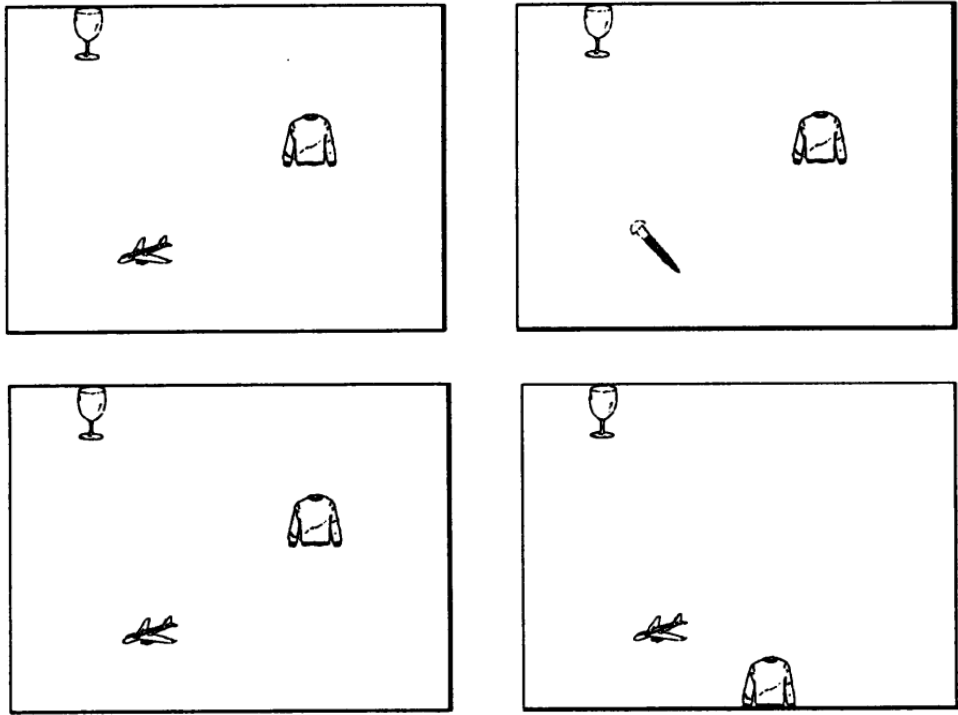
¿Qué propiedades tiene la percepción visual?

Alta capacidad de discriminación

Robusta ante transformaciones

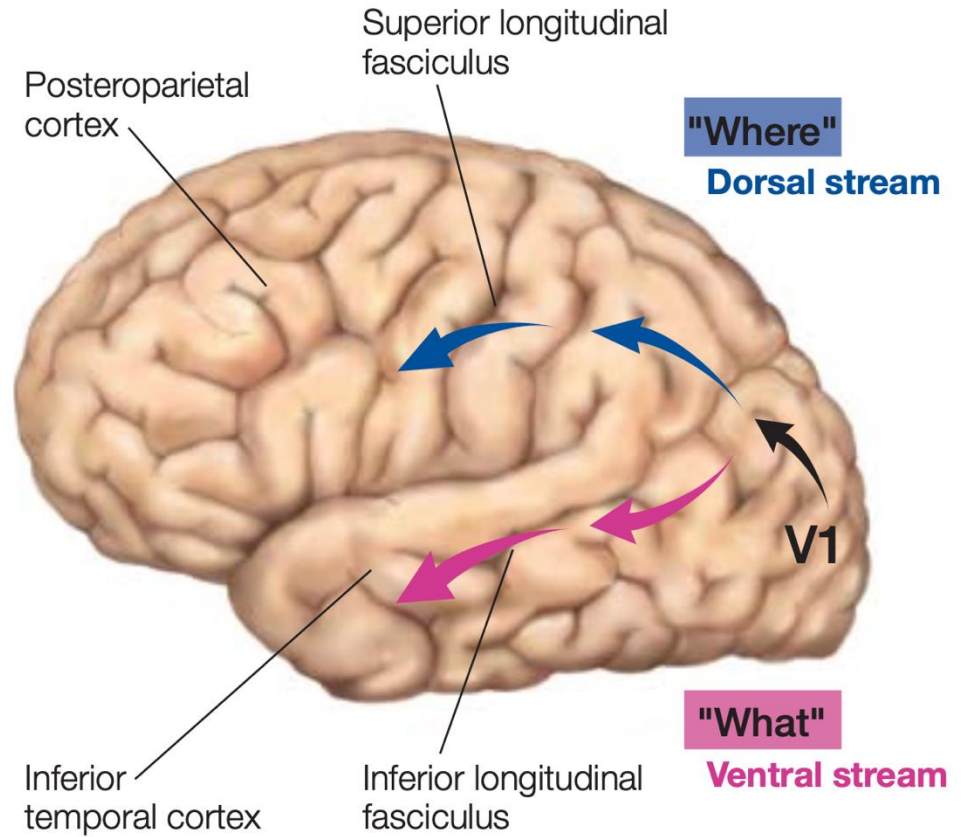
E.g. invarianza de traslación





Kohler et al., 1995

Percepción para acción



Percepción para reconocimiento

Left hand/Right object
"How many fingers?"



Right hand/Left object
"How many fingers?"



Right hand/Left object
"Name the object"



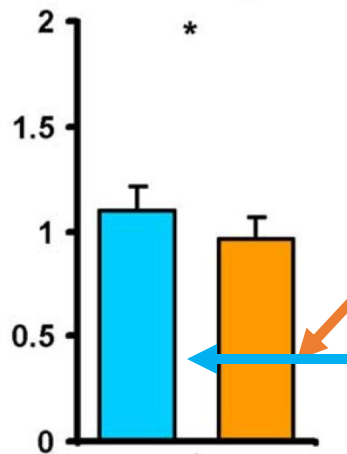
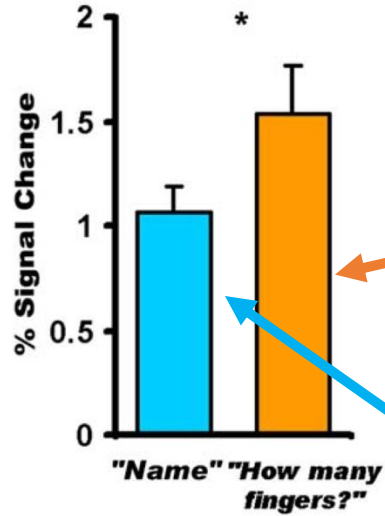
Left hand/Right object
"Name the object"



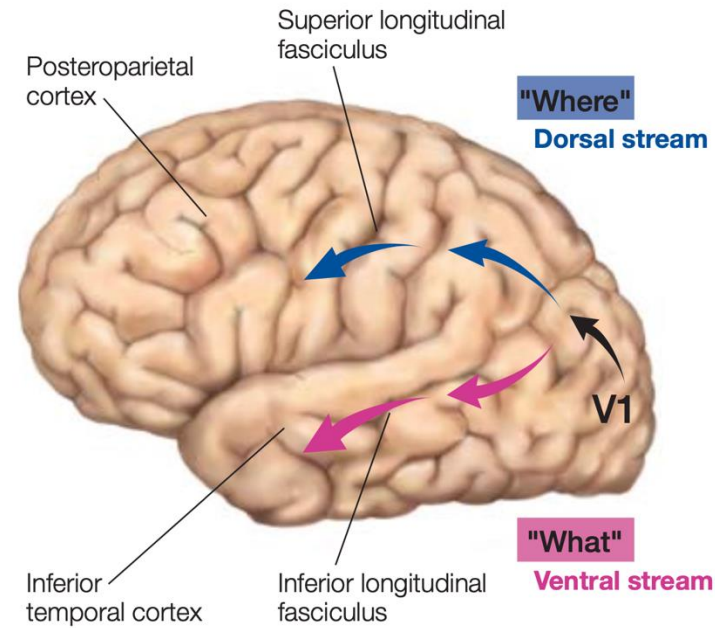
Scramble
"watch"



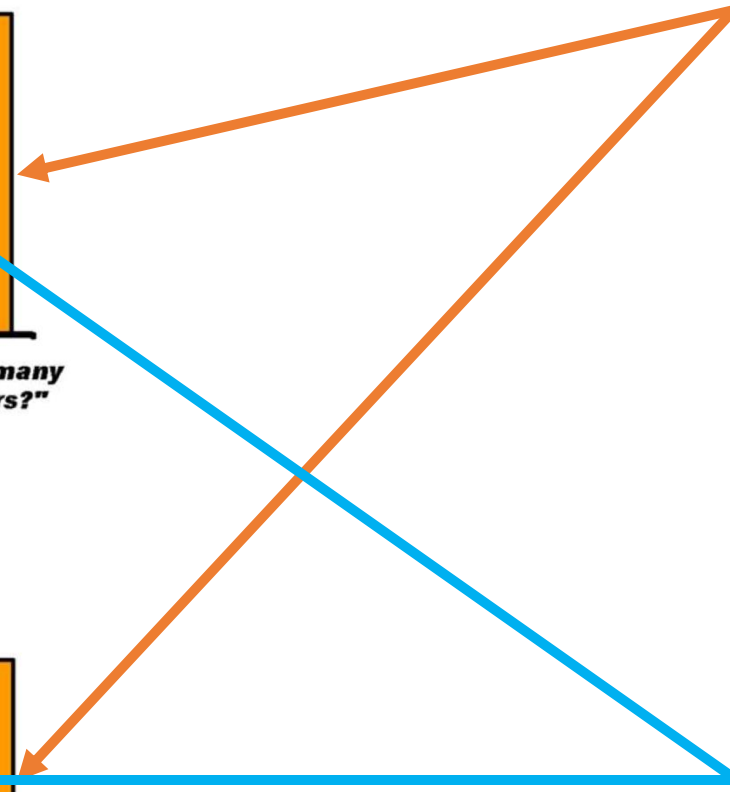
Shmuelof & Zohary, 2005



Percepción para acción



Percepción para reconocimiento

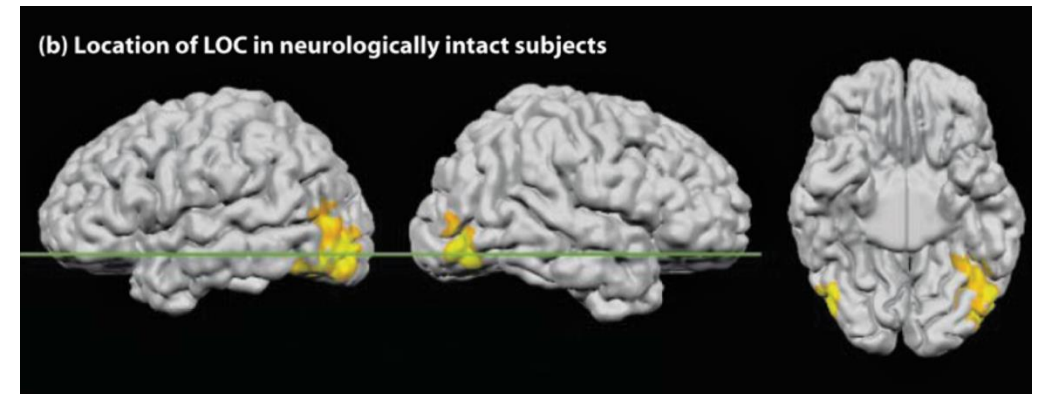
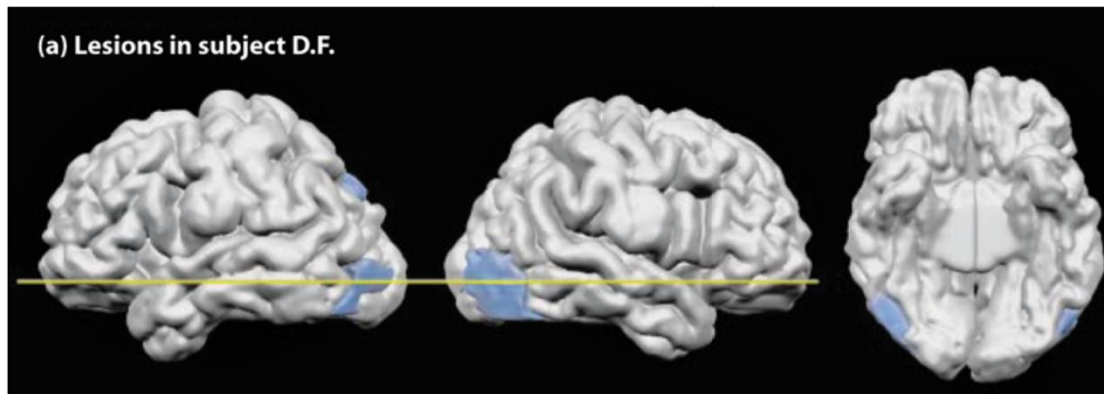




Percepción para reconocimiento



Percepción para acción



Percepción para reconocimiento: formas

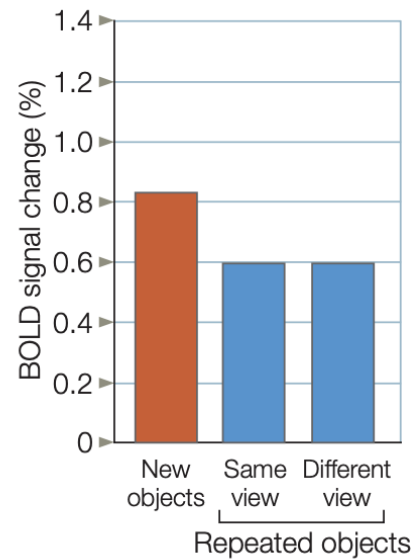


Dependiente de perspectiva



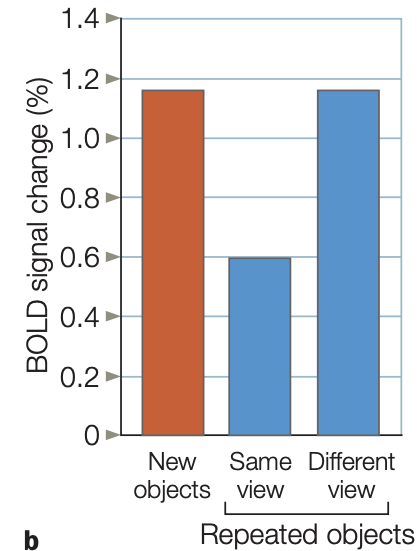
Independiente de perspectiva

Left fusiform area



a

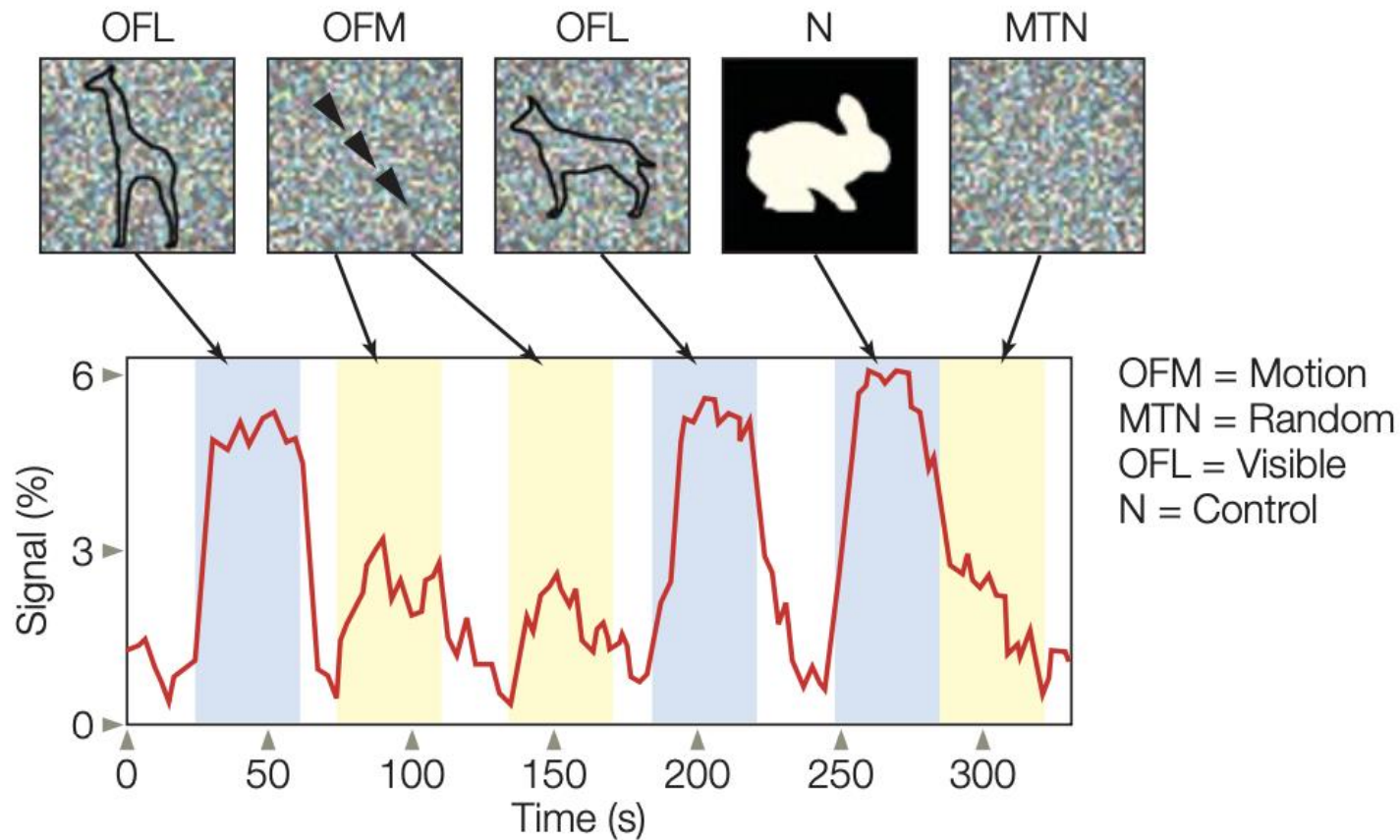
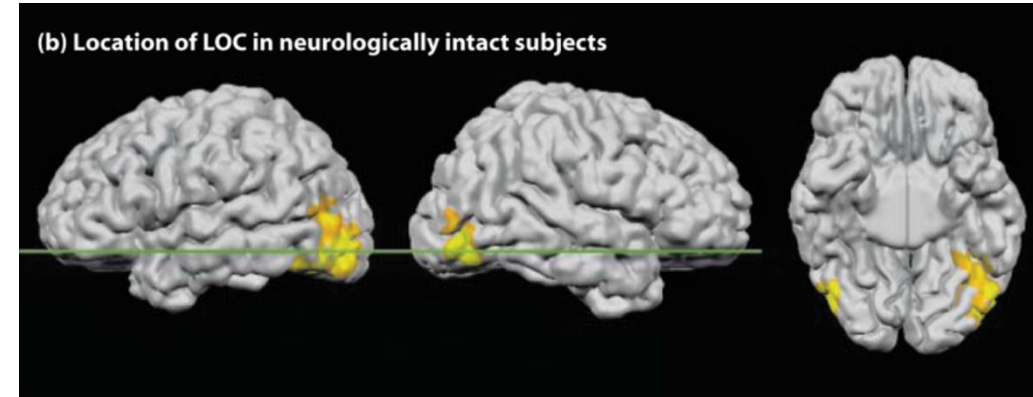
Right fusiform area



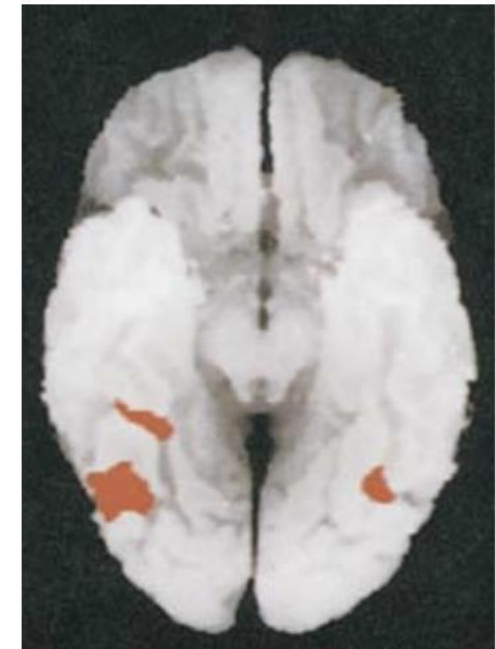
b

Percepción para reconocimiento de formas:

Corteza occipital lateral (LOC)



Familiar & Novel > Scrambled

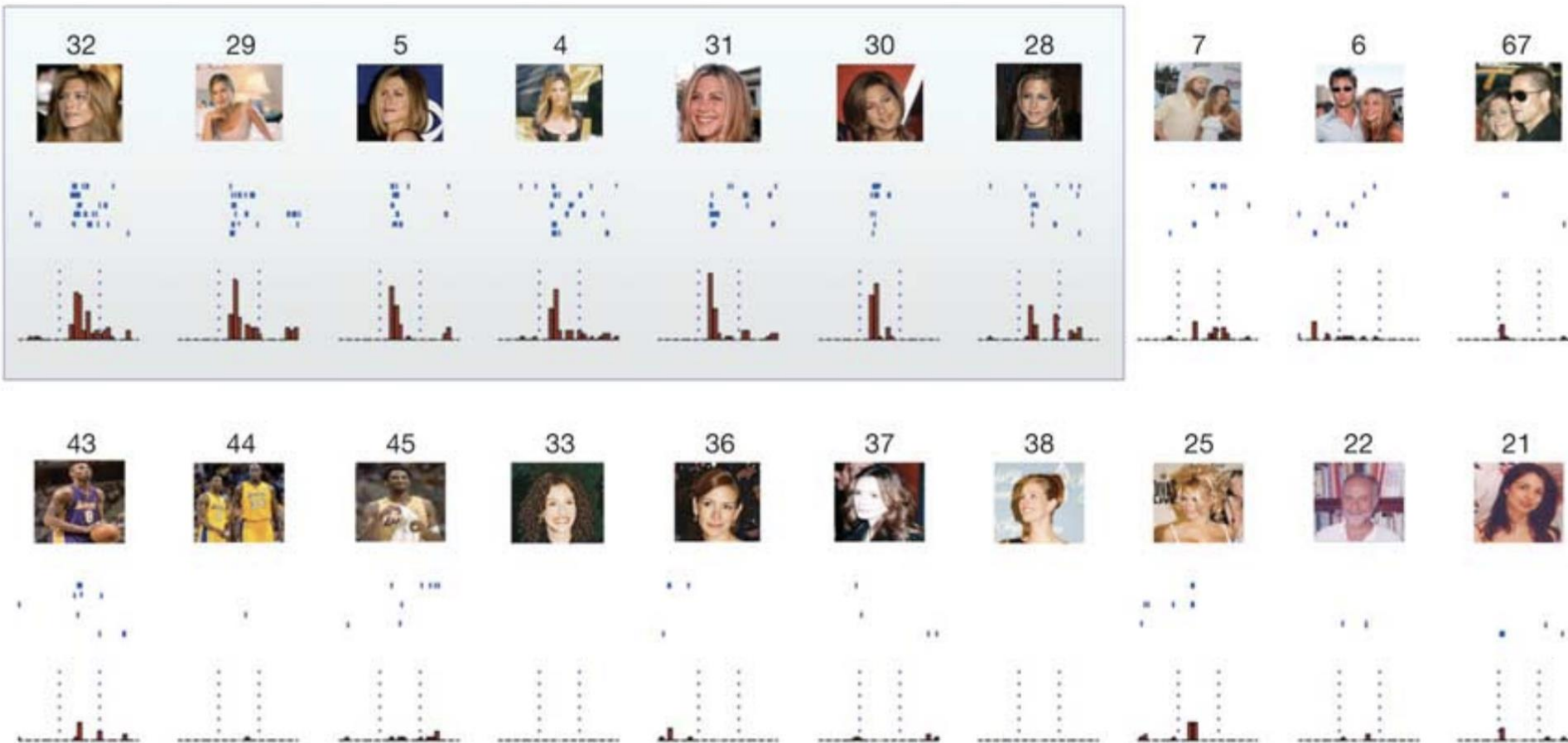


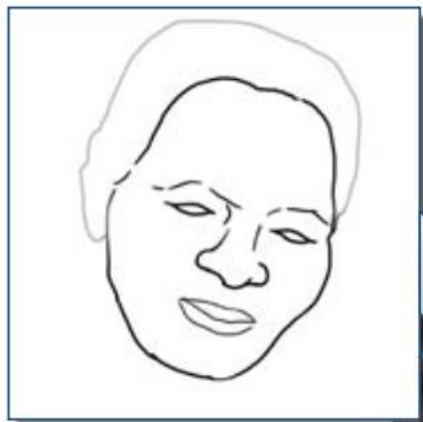
Kanwisher et al., 1997a

Invariant visual representation by single neurons in the human brain

R. Quian Quiroga^{1,2,†}, L. Reddy¹, G. Kreiman³, C. Koch¹ & I. Fried^{2,4}

a





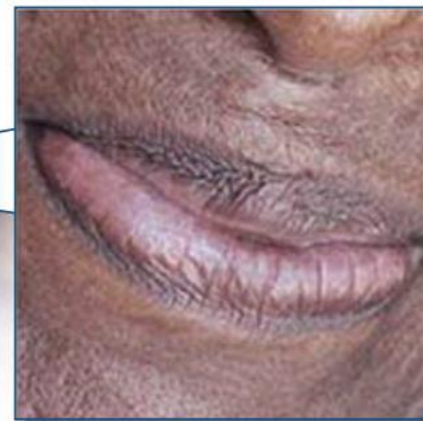
Face shape



Hair



Wrinkles

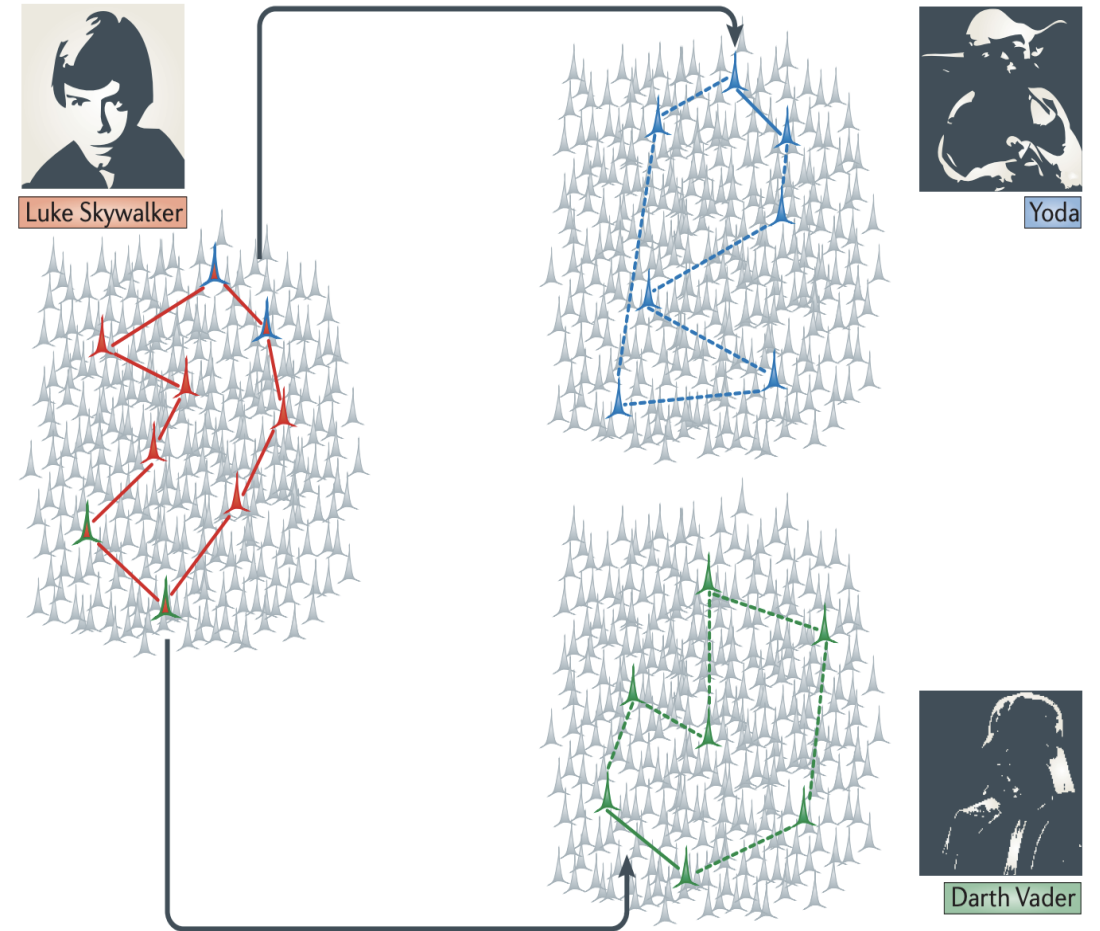
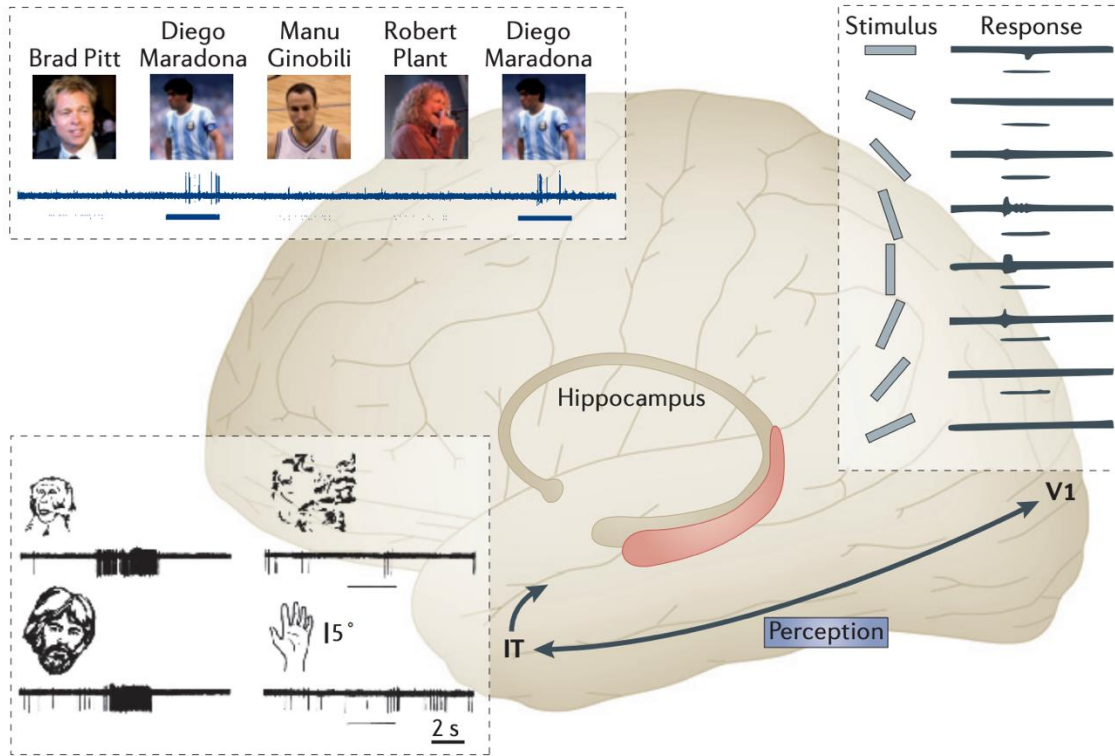


Mouth

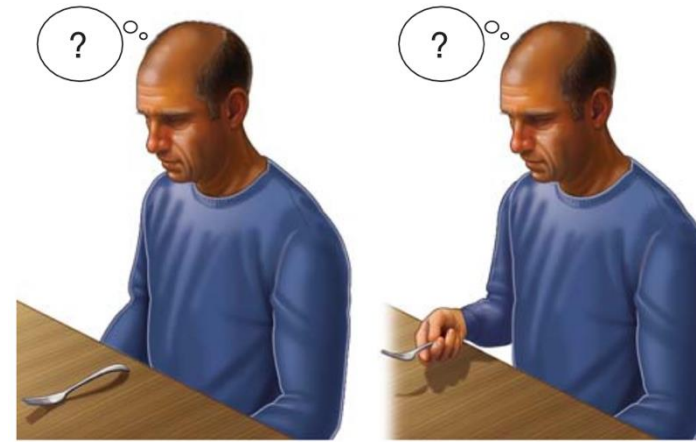
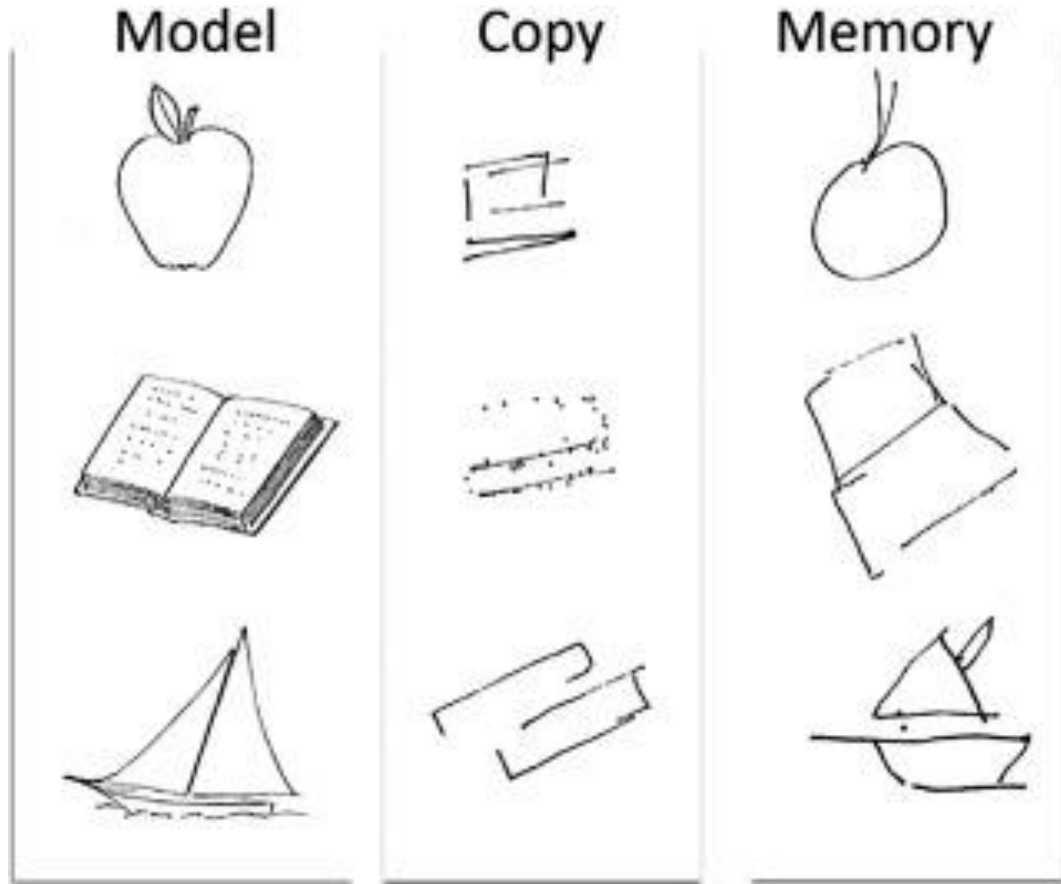


Concept cells: the building blocks of declarative memory functions

Rodrigo Quian Quiroga

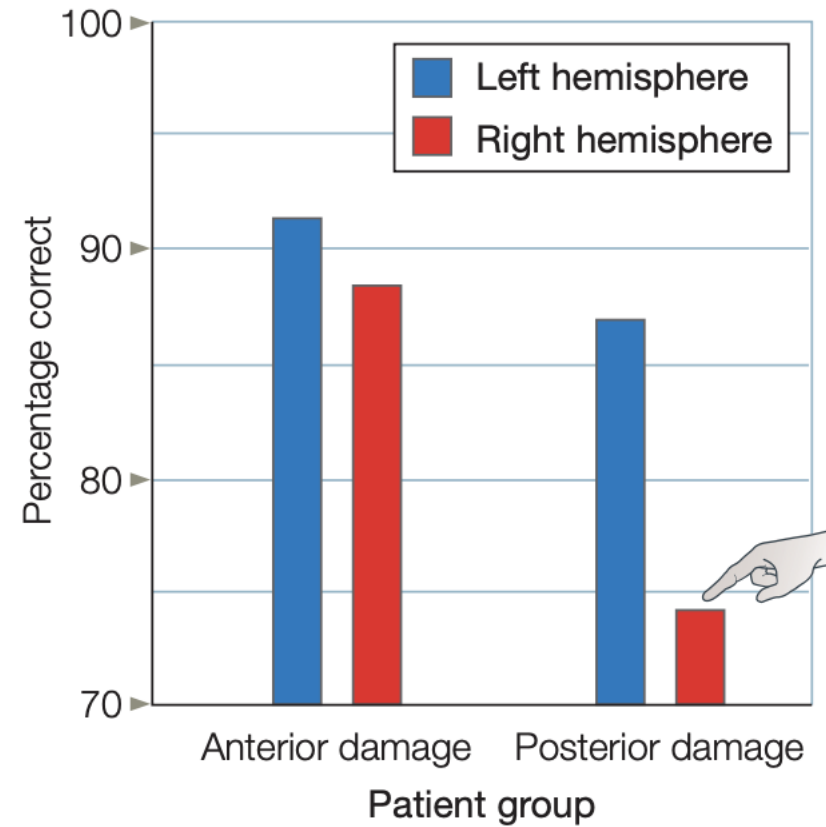
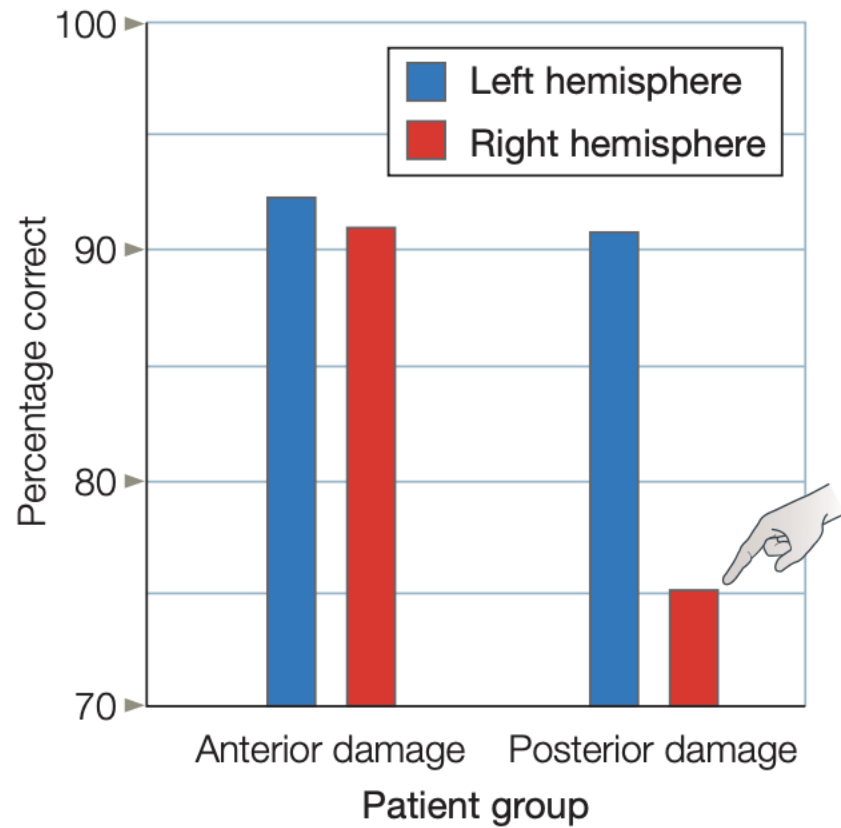
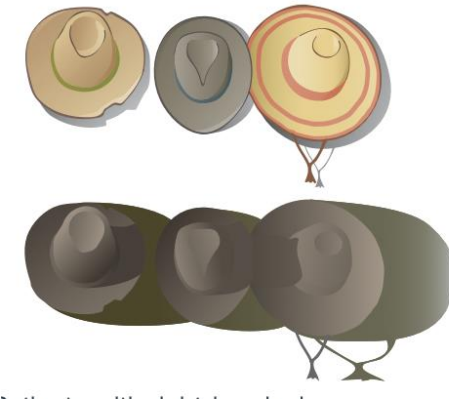


Reconocimiento vs. memoria: *agnosia aperceptiva*

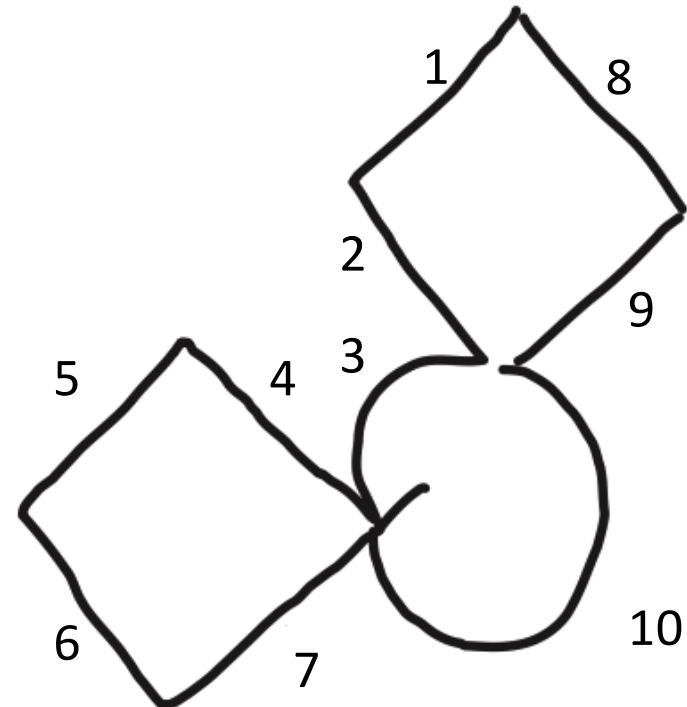
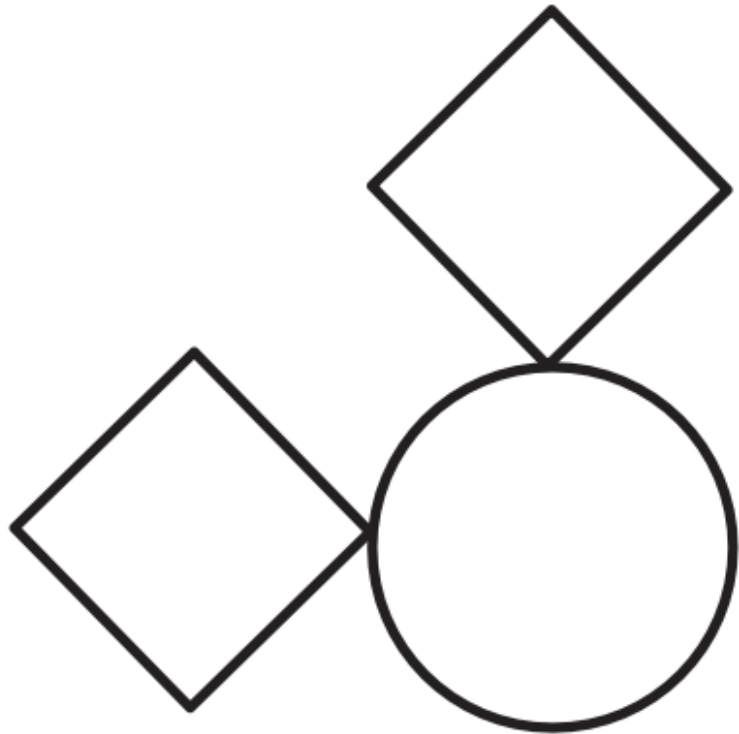


Vs.

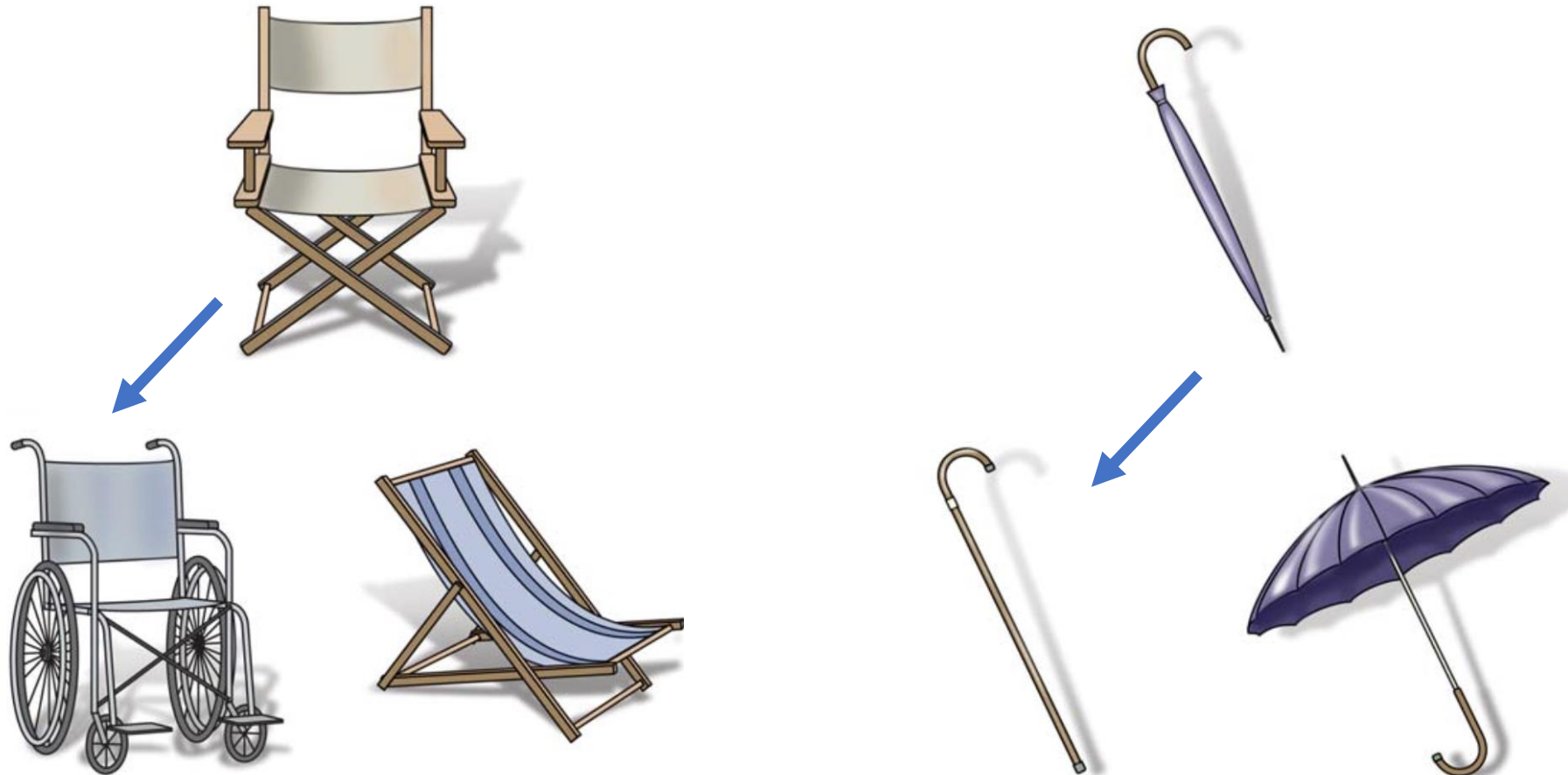




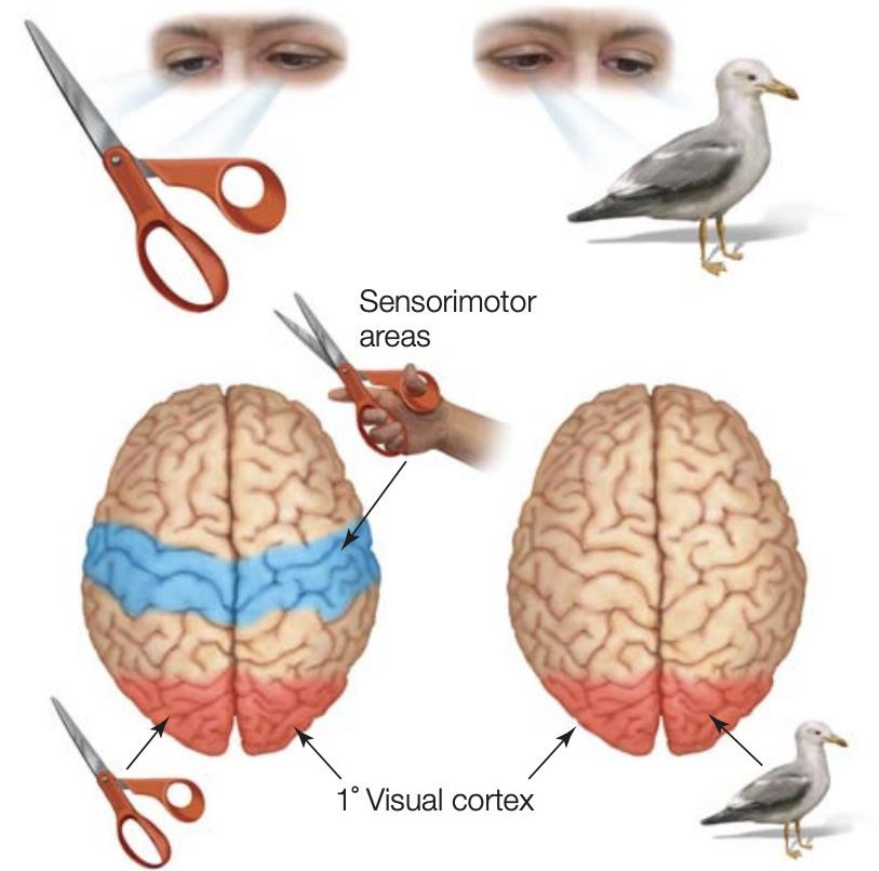
Todo vs. partes:
agnosia integrativa



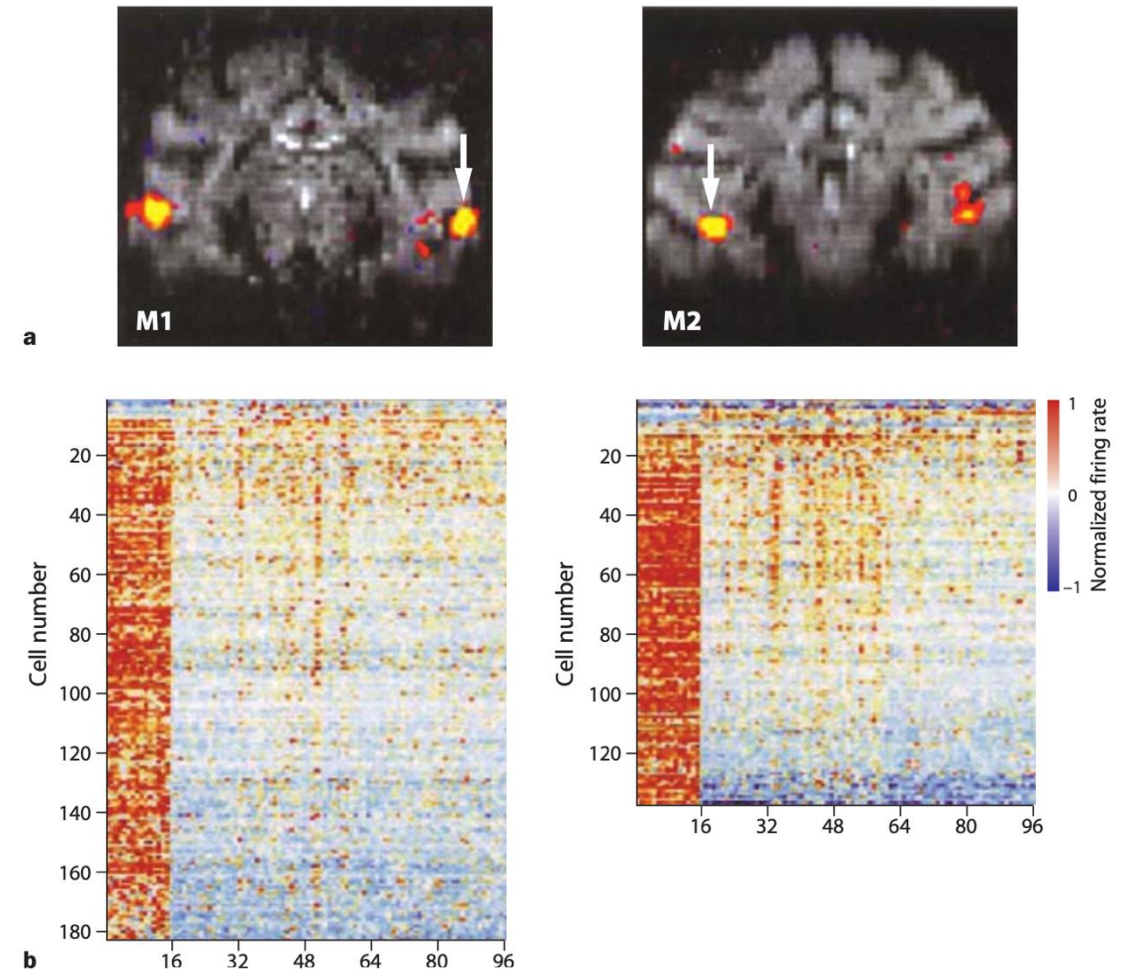
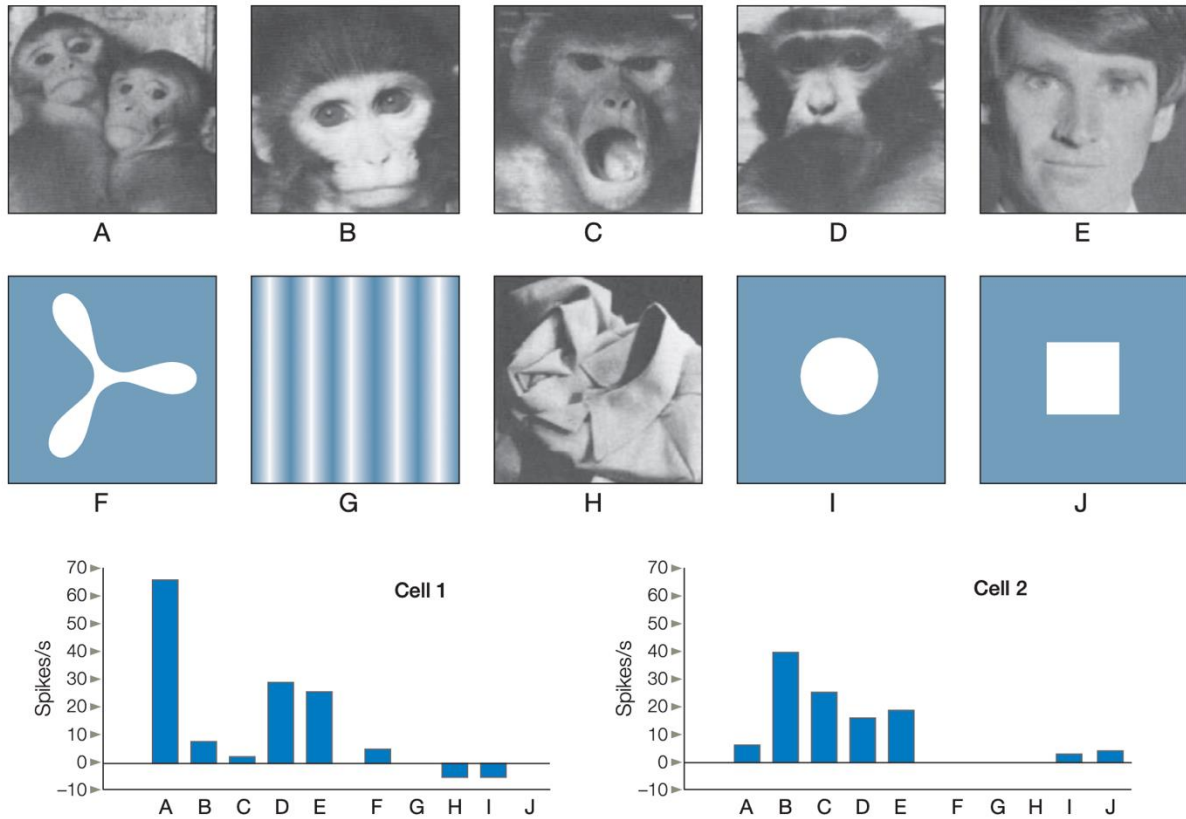
Forma vs. significado:
agnosia asociativa



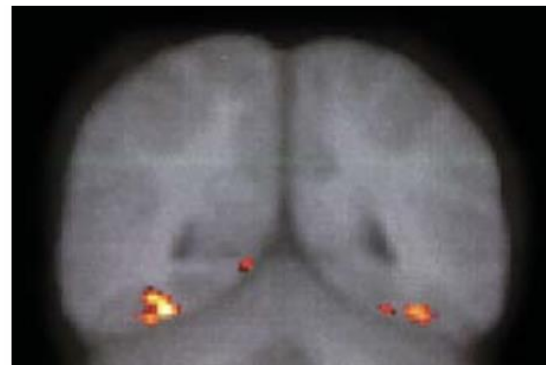
Agnosias de categoría



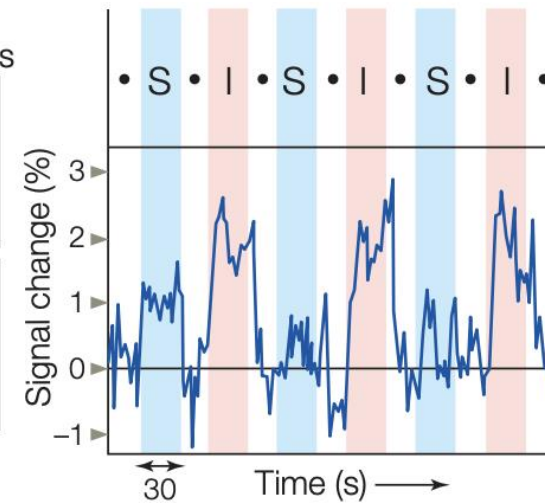
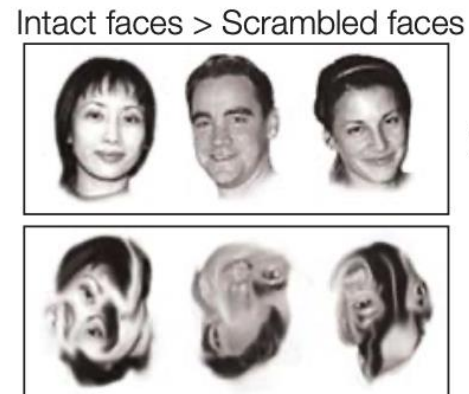
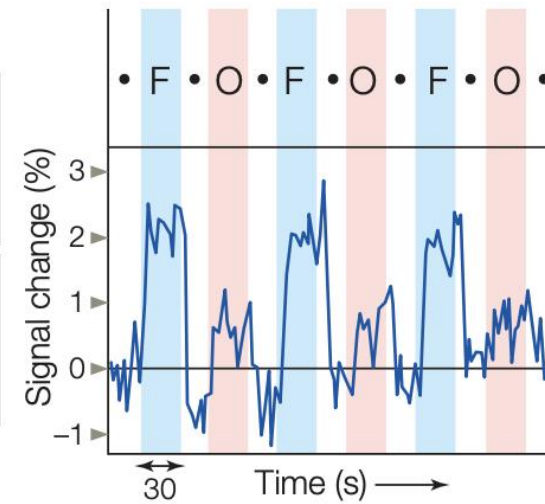
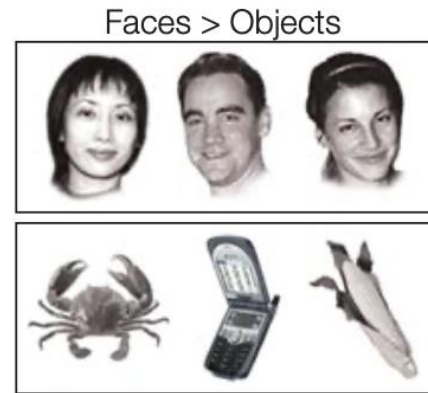
Reconocimiento de caras



Reconocimiento de caras

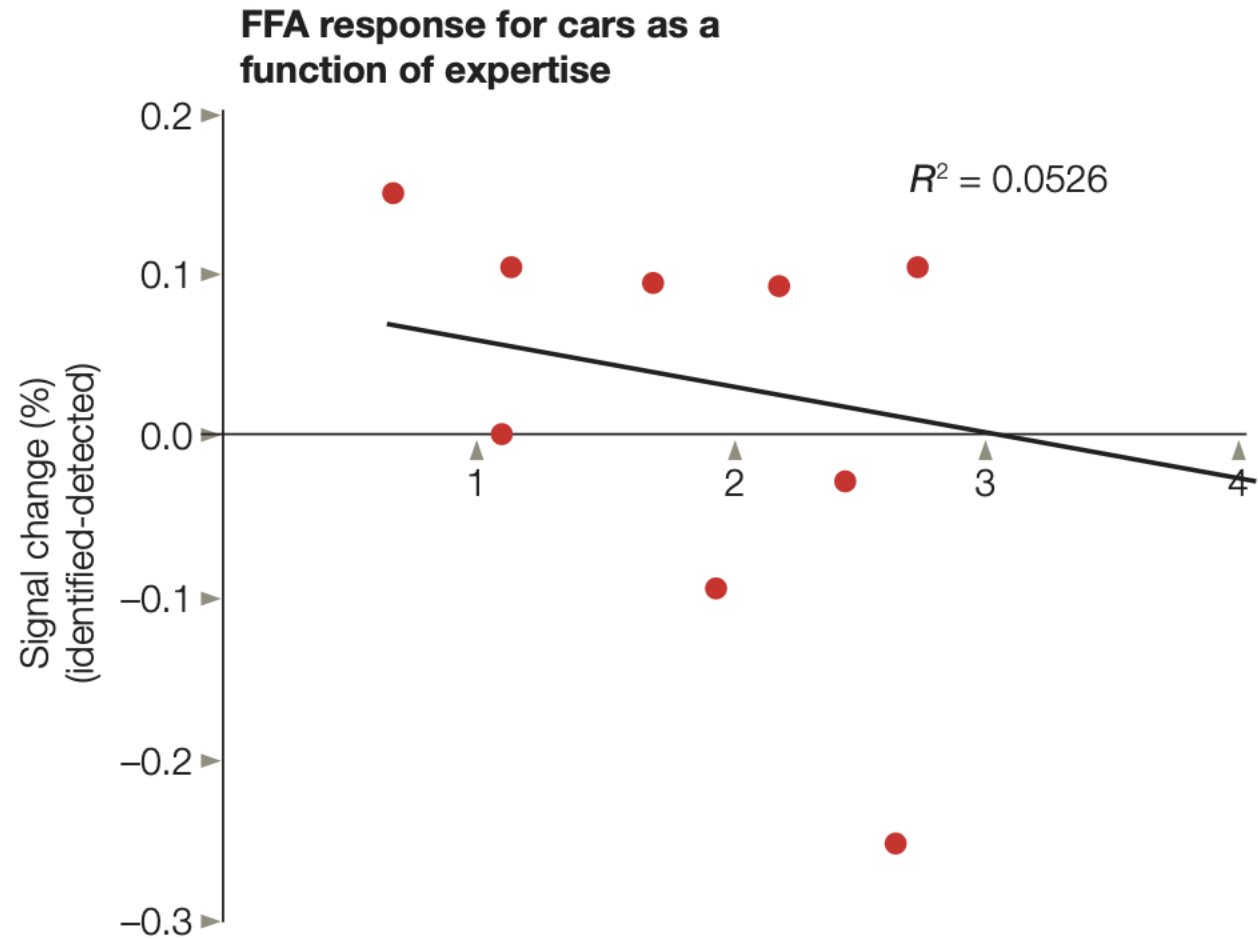
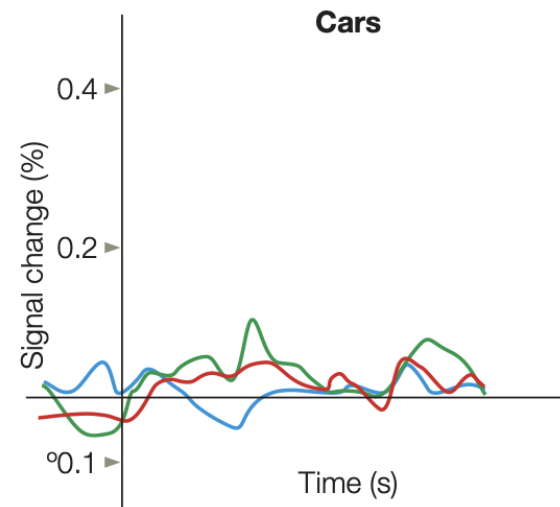
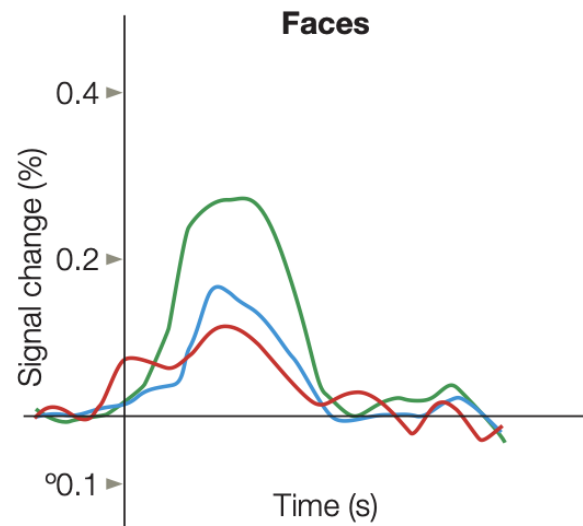


a



b

Reconocimiento de caras



Reconocimiento de caras vs. reconocimiento de palabras

Table 6.2 Patterns of Co-occurrence of Prosopagnosia, Object Agnosia, and Alexia

Pattern	Number of Patients
Deficits in all three	21
Selective deficits	
Face and objects	14
Words and objects	15
Faces and words	1 (possibly)
Faces alone	35
Words alone	Many described in literature
Objects only	1 (possibly)

Farah, 1990

Study phase

This is Larry.



This is Larry's house.



Test phase

Is this Larry's nose?



Part condition



Whole condition

Is this Larry's door?

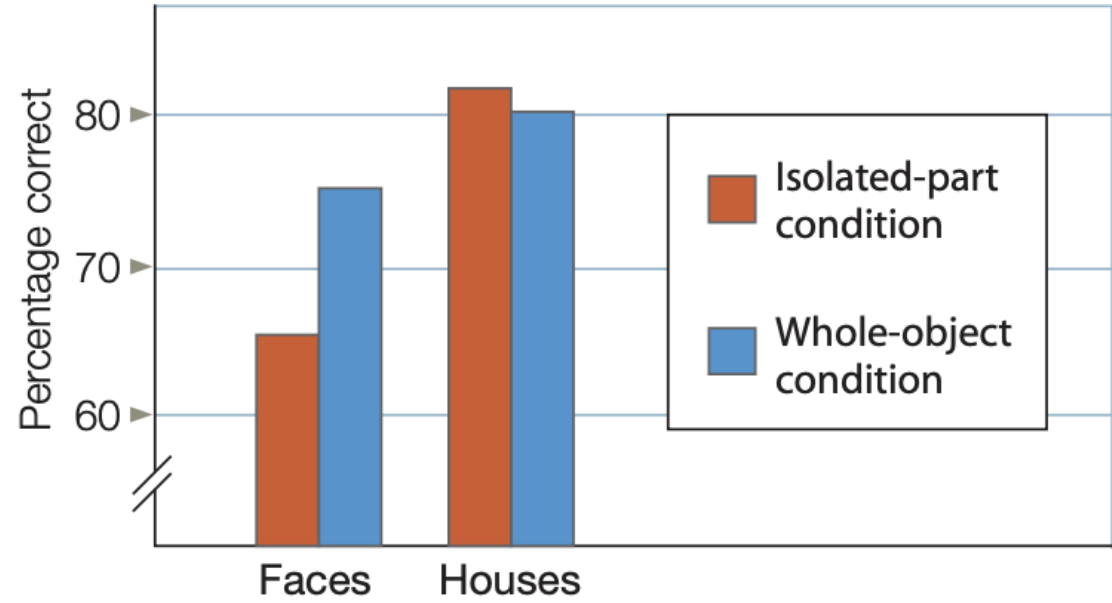


Part condition



Whole condition

Tanaka & Farah, 1993

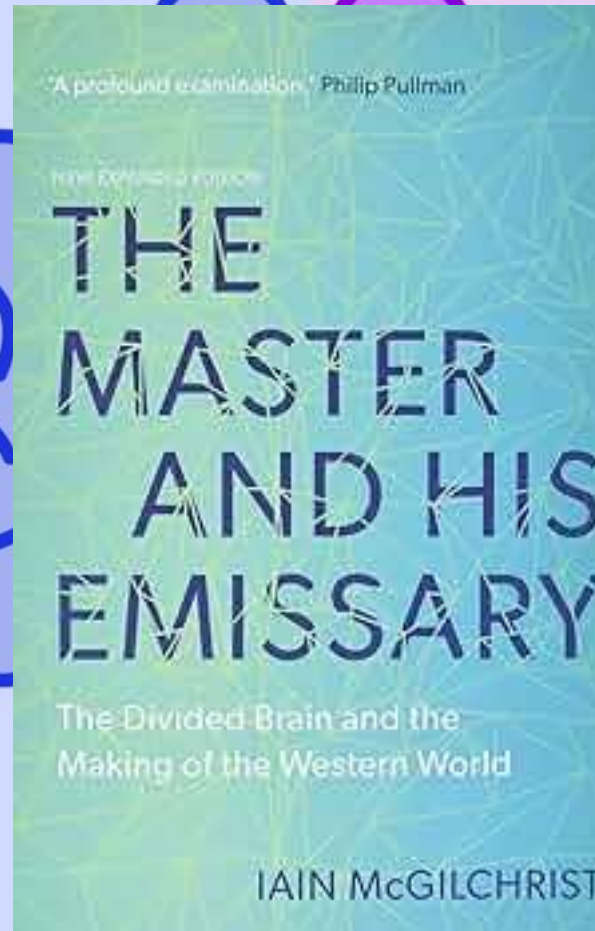


LEFT BRAIN vs RIGHT BRAIN

CHARACTERISTICS OF LEFT BRAIN:

Procesamiento analítico:
reconocimiento por partes (e.g. palabras)

“the emissary”



CHARACTERISTICS OF RIGHT BRAIN:

Procesamiento holístico:
reconocimiento por el todo (e.g. caras)

“the master”