Power law of practice

Newell, Allen, and Paul S. Rosenbloom. "Mechanisms of skill acquisition and the law of practice." *Cognitive skills and their acquisition* 1 (1981).

Power law

$$f(x) = a.x^k$$

Invariante de escala:

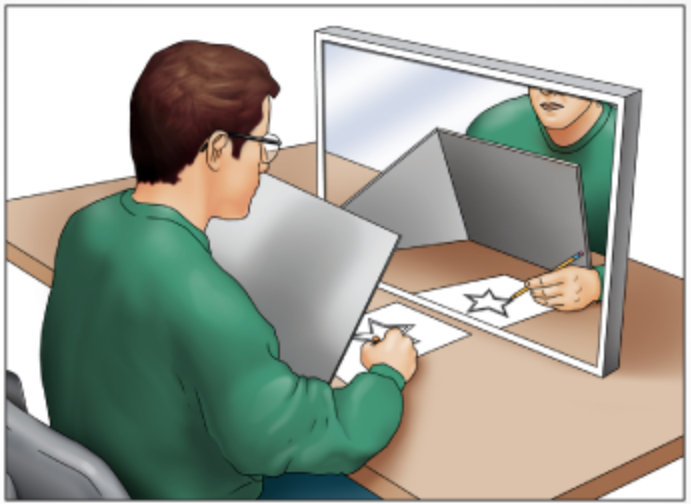
$$f(cx) = a.(cx)^k = c^k\, f(x)$$

Plot Log-log lineal

$$log(f(x)) = log(a.x^k) = log(a) + k.\ log(x)$$

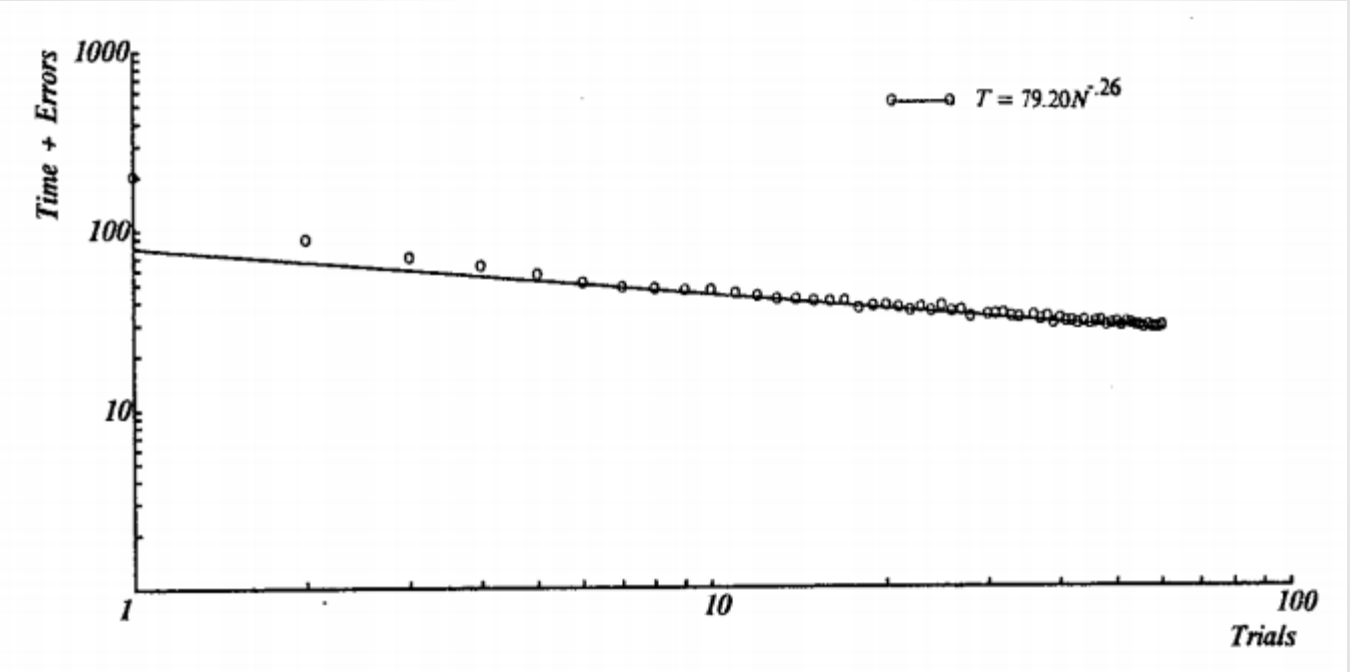
Muchos ejemplos en: http://arxiv.org/pdf/0706.1062.pdf

Mirror-tracing task



Snoddy, George S. "Learning and stability: a psychophysiological analysis of a case of motor learning with clinical applications." *Journal of Applied Psychology* 10.1 (1926): 1.

Mirror-tracing task



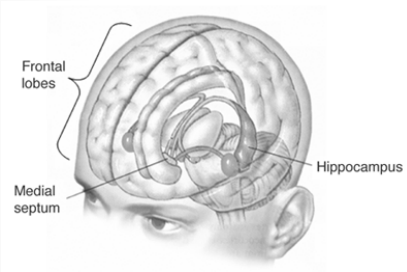
Mirror-tracing task

H.M.: **Henry Gustav Molaison**

(February 26, 1926 – December 2, 2008)

Operación por epilepsia

- August 25, 1953
- Both Hippocampus removed



Se curó de la epilepsia

Conservó memoria de trabajo y memoria de procedimiento

Perdió la capacidad de memoria de largo plazo

Mirror-tracing task

H.M.: **Henry Gustav Molaison**

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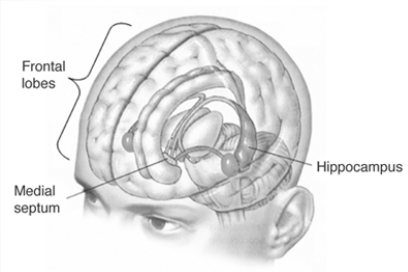
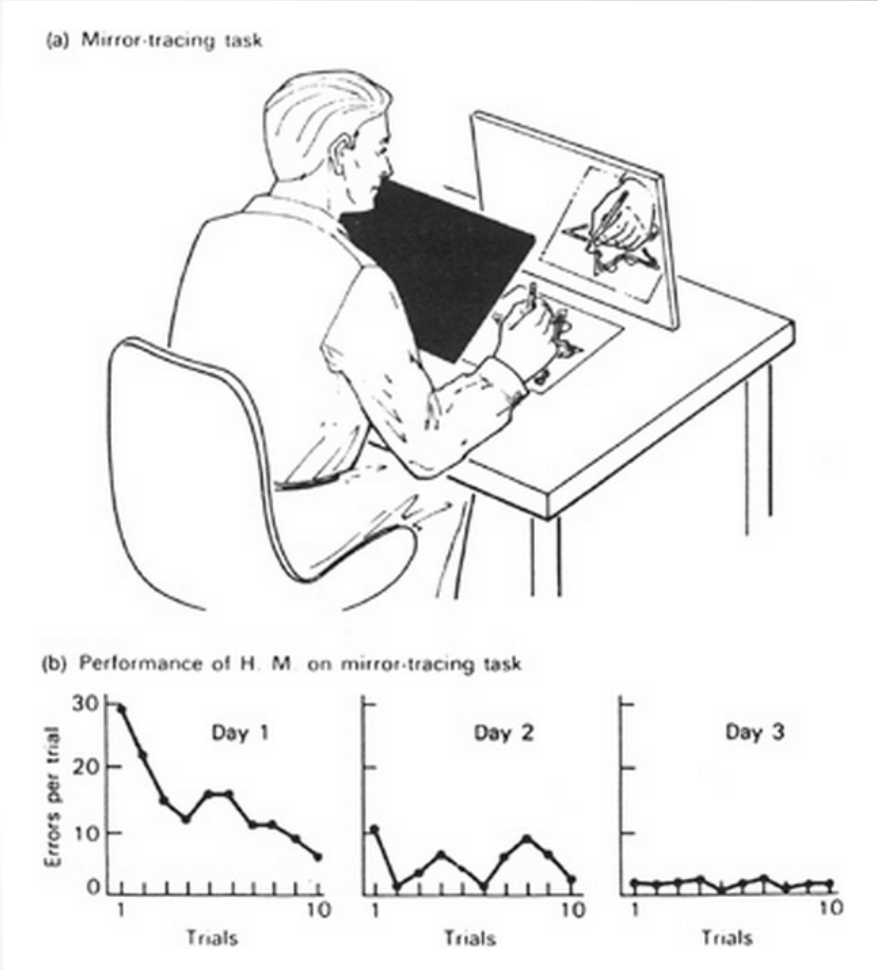


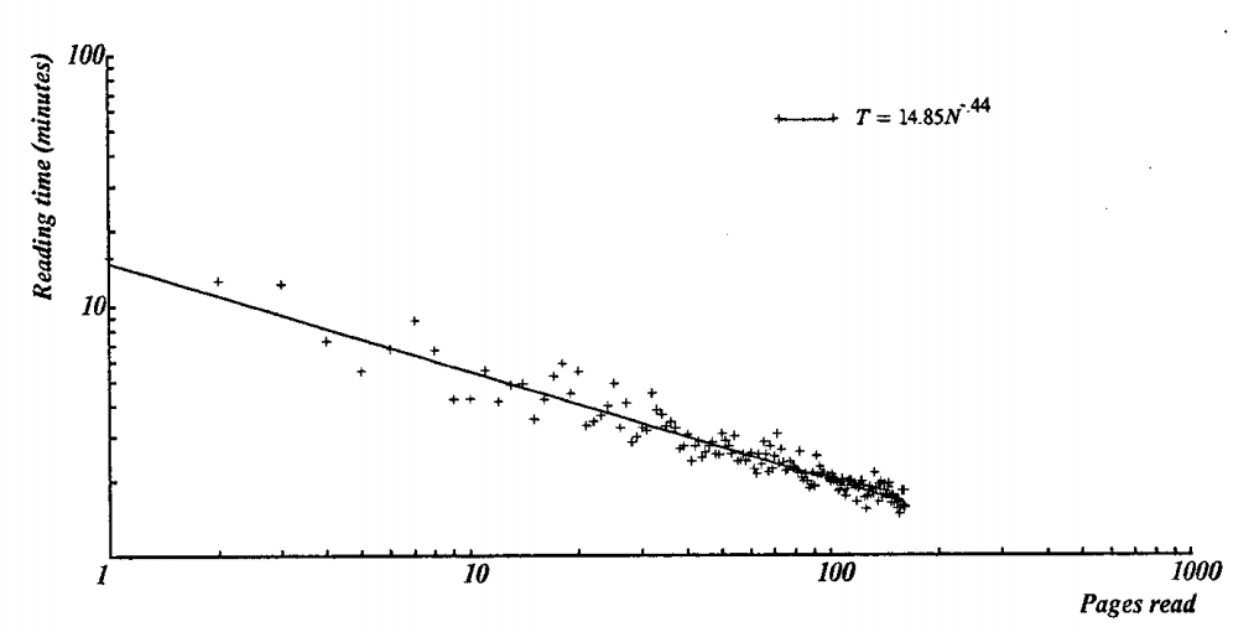
Se curó de la epilepsia

Conservó memoria de trabajo y memoria de procedimiento

Perdió la capacidad de memoria de largo plazo

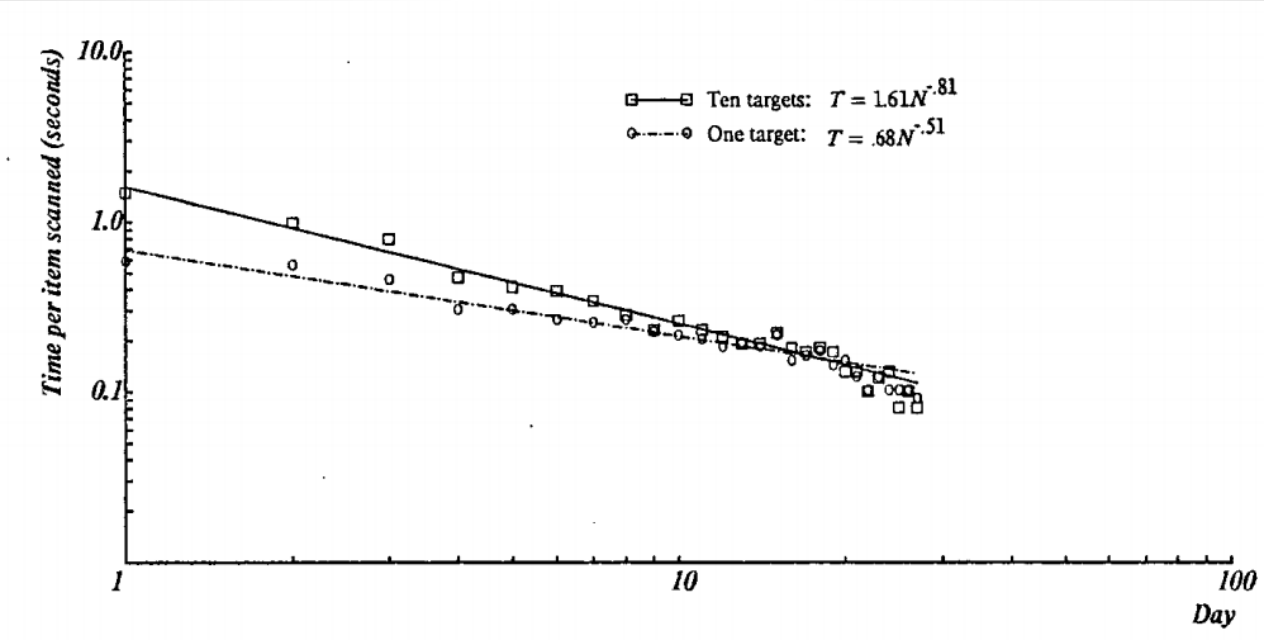


Inverted text reading

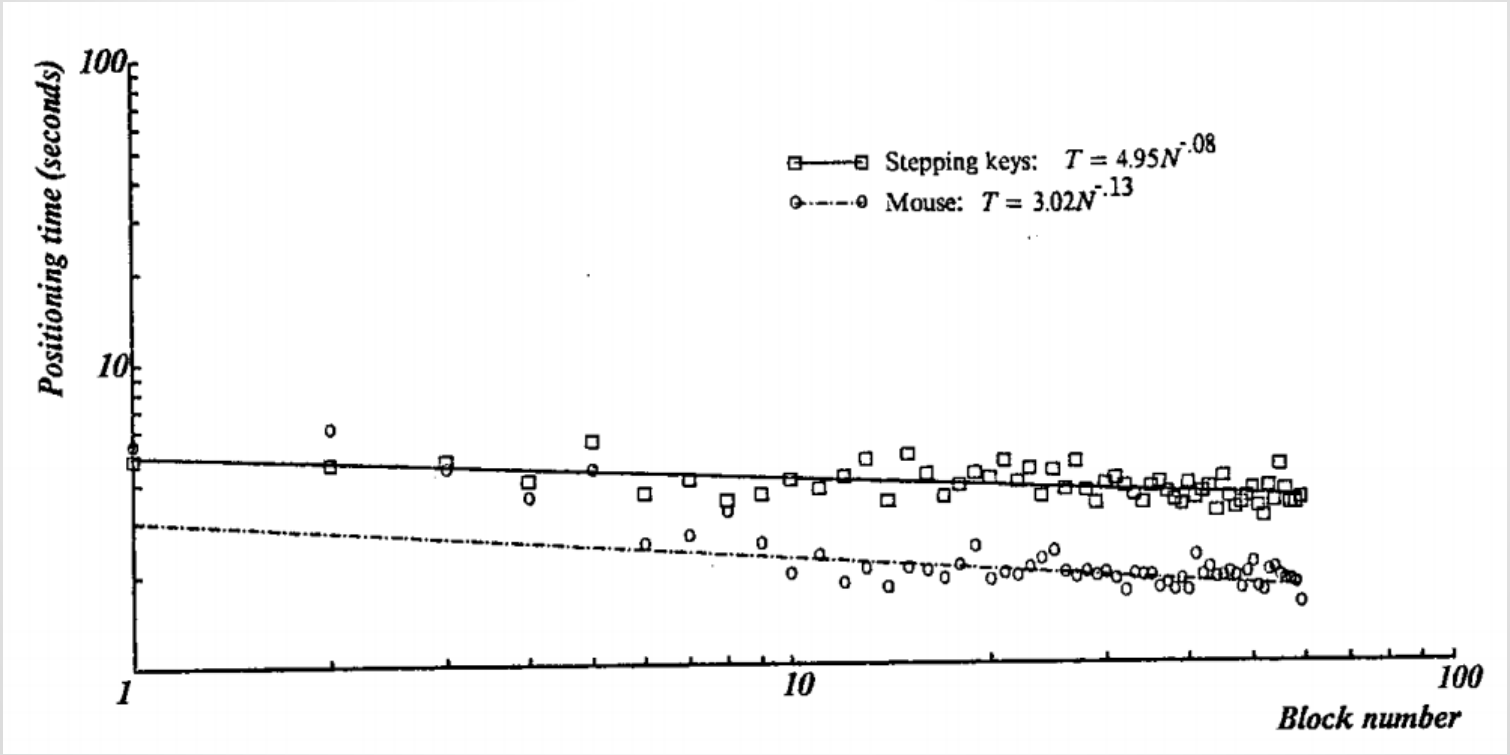


Kolers, Paul A. "Memorial consequences of automatized encoding." *Journal of Experimental Psychology: Human Learning and Memory* 1.6 (1975): 689.

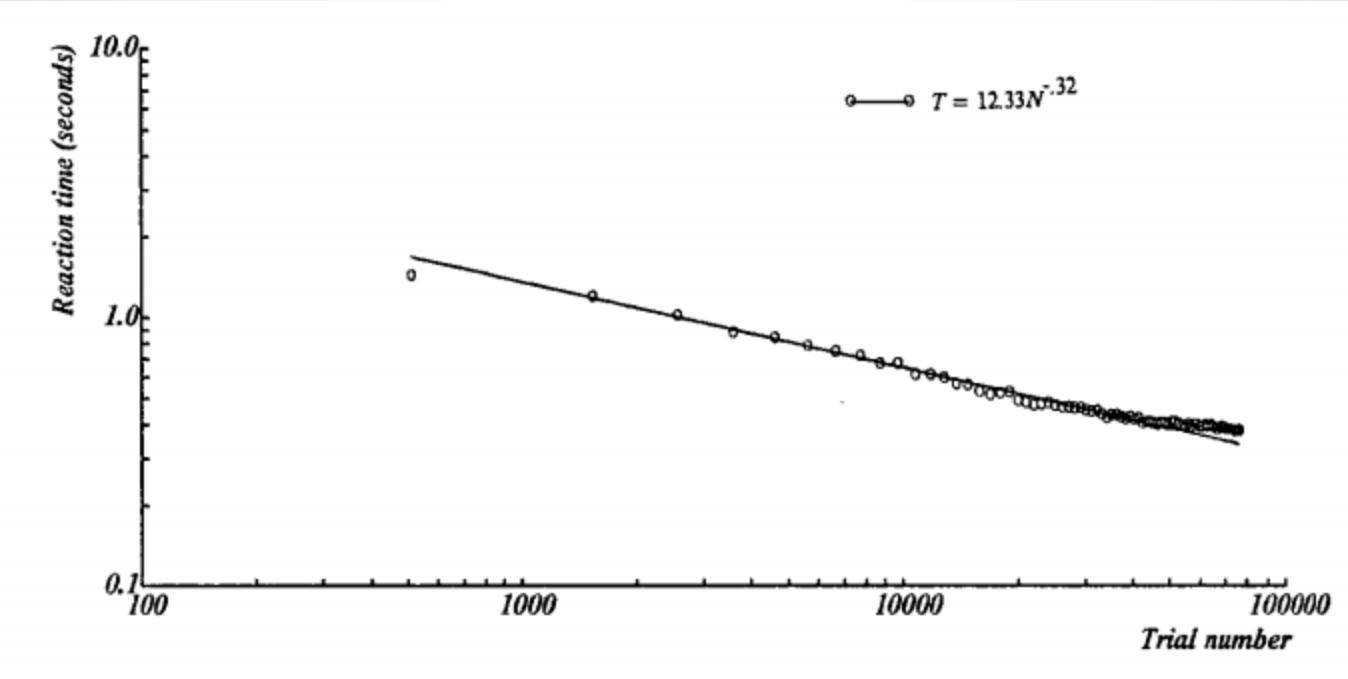
Buscando a Wally



Apuntando con el mouse

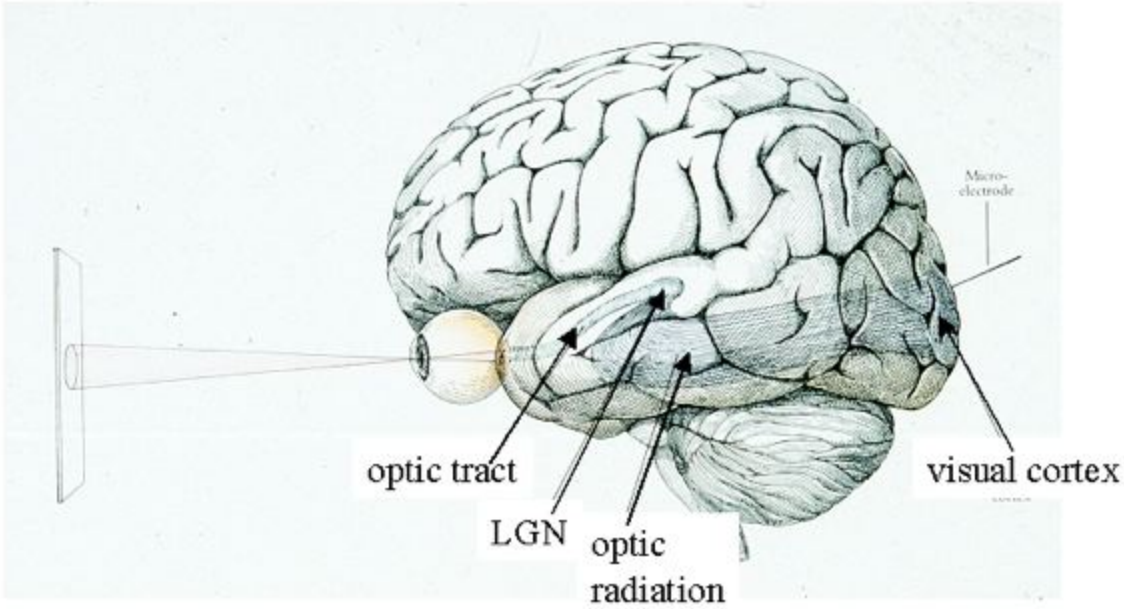


10 lámparas


Reaction time (seconds)
10.0
1.0
0.1
100
1000
10000
100000
Trial number
$T = 12.33N^{-.32}$

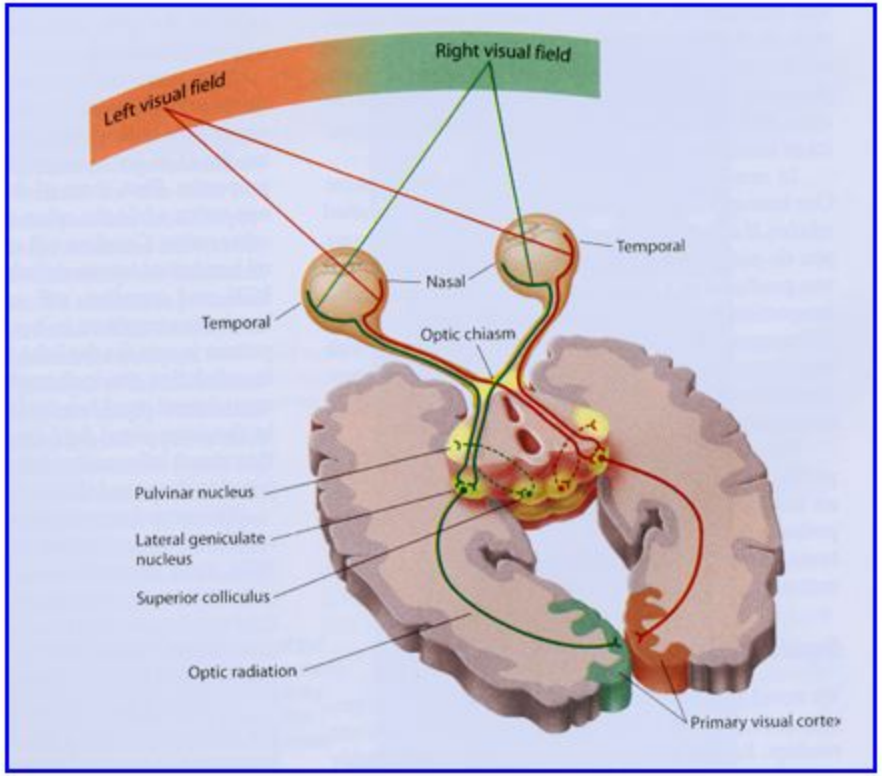
Adaptación

Retinogeniculate visual pathway

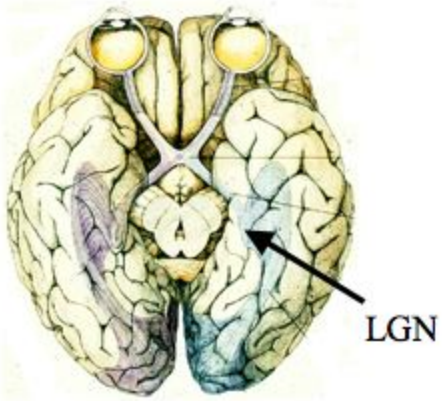


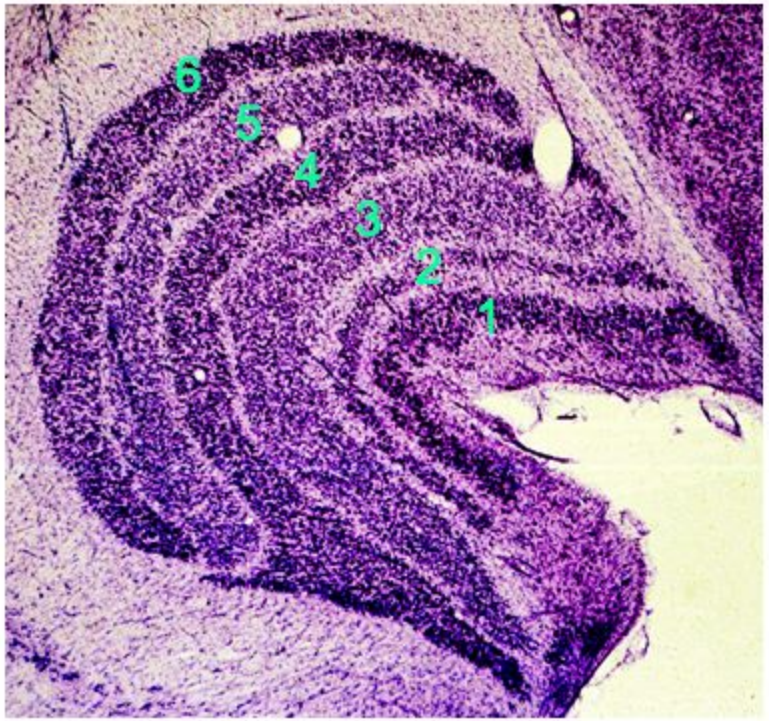
Lateral view

Lateralization

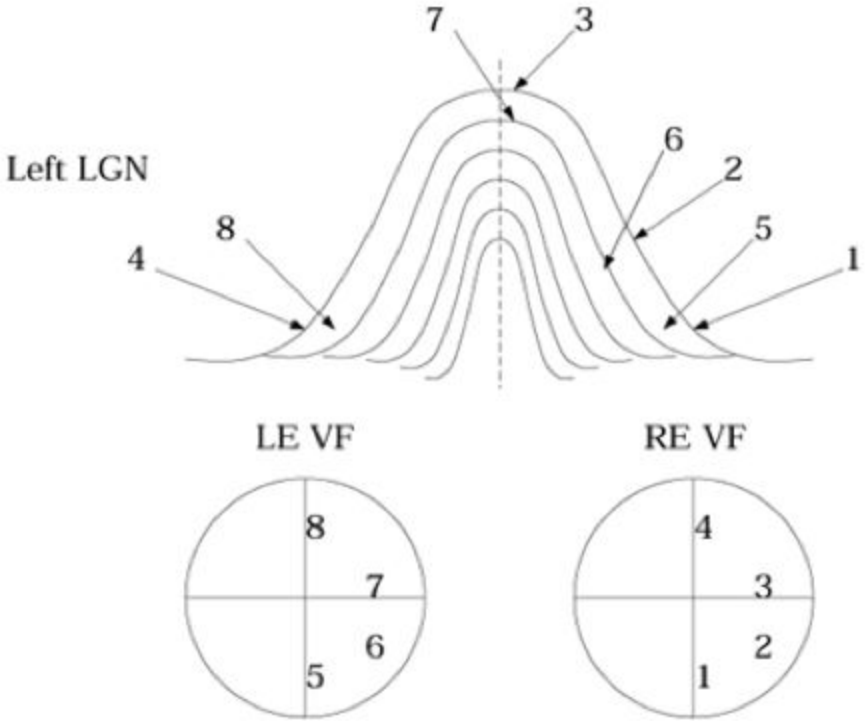


Lateral Geniculate Nucleus (LGN)

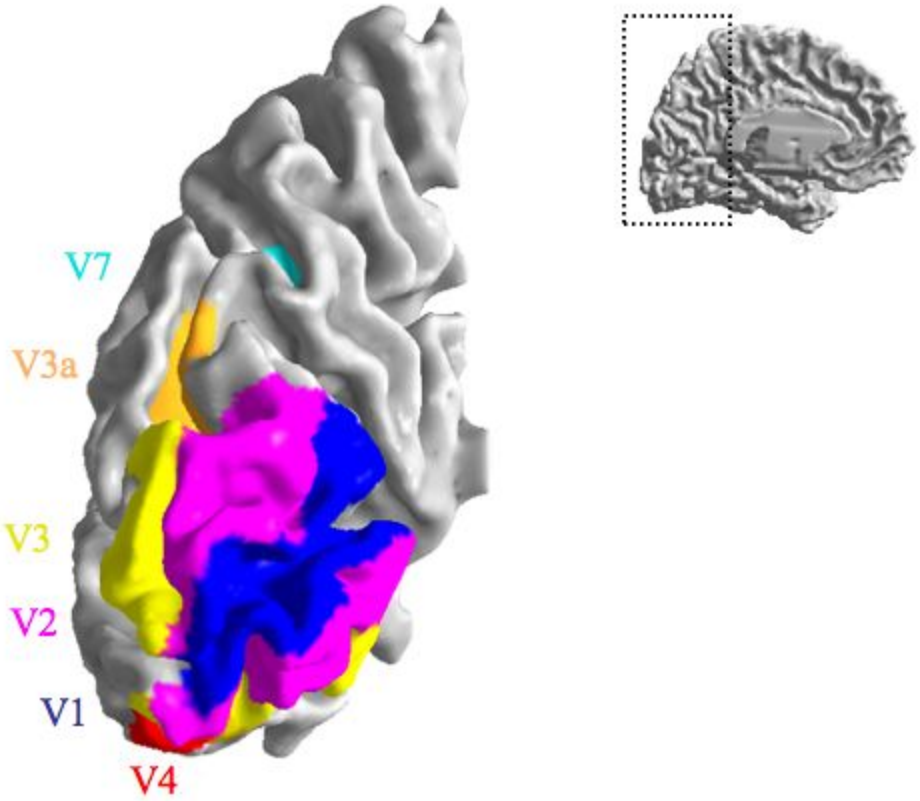




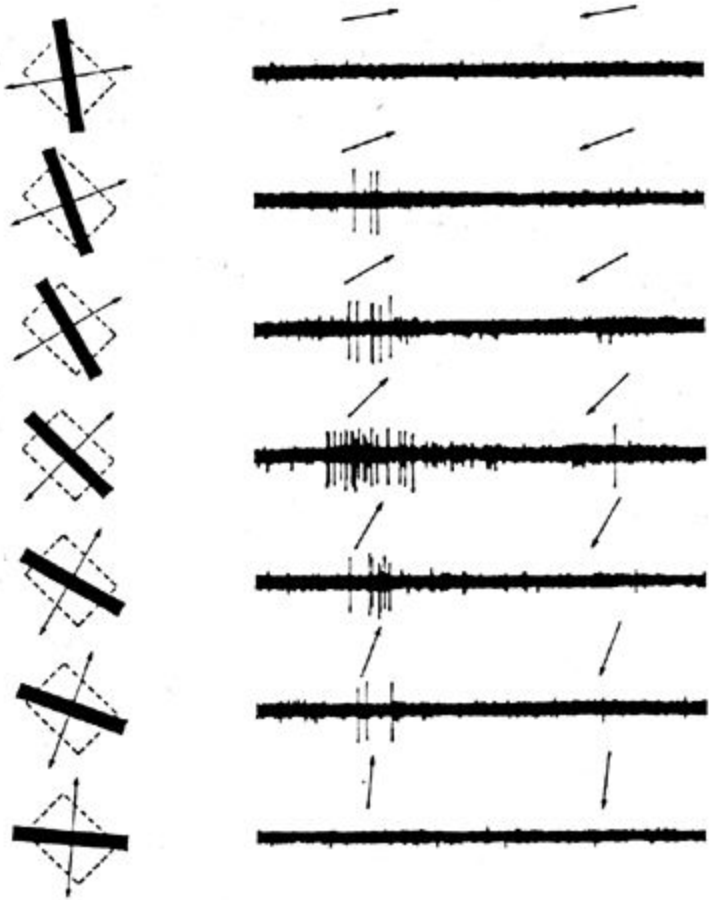
LGN retinotopic map

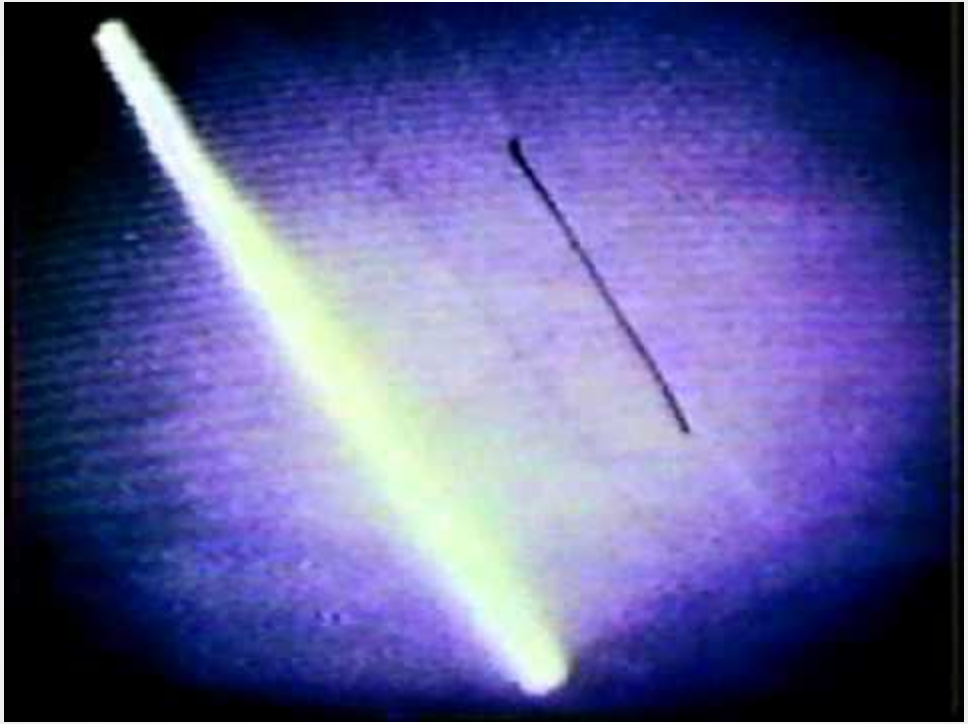


Primary visual cortex (V1)

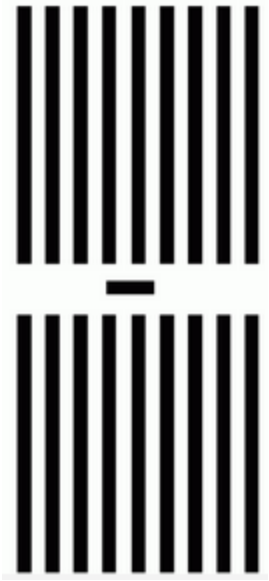


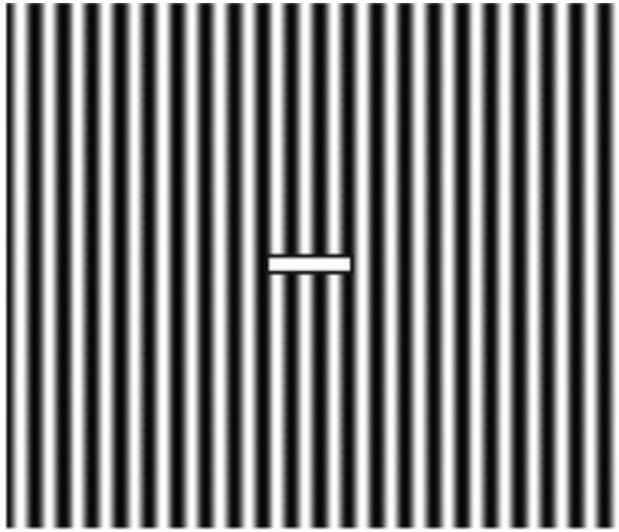
V1 physiology: direction selectivity

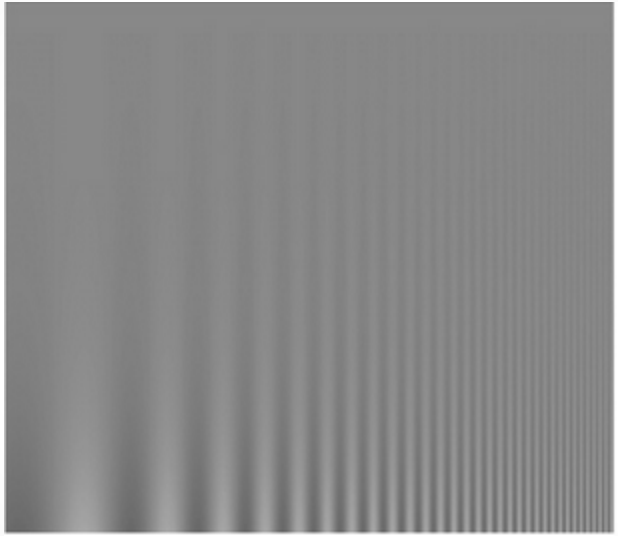


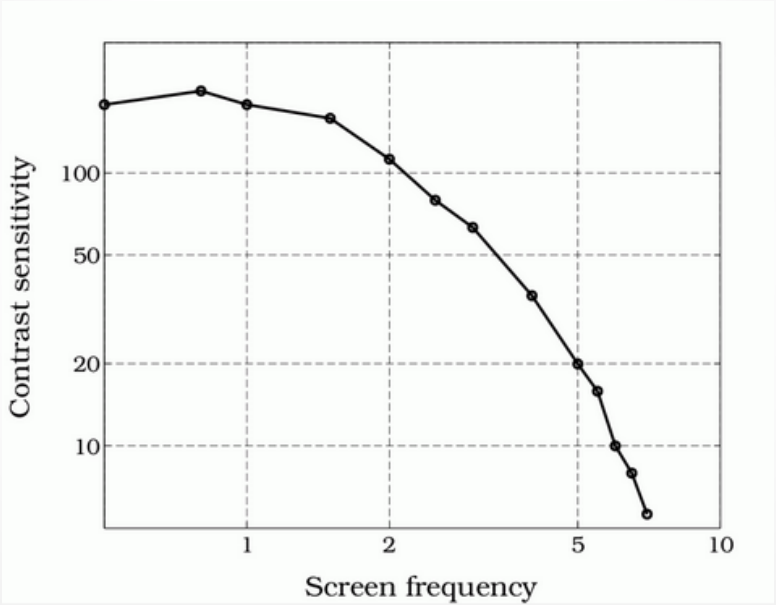


Blakemore, Colin, and Peter Sutton. "SIZE ADAPTATION: A NEW AFTEREFFECT." *Science* 166.3902 (1969): 245-247.

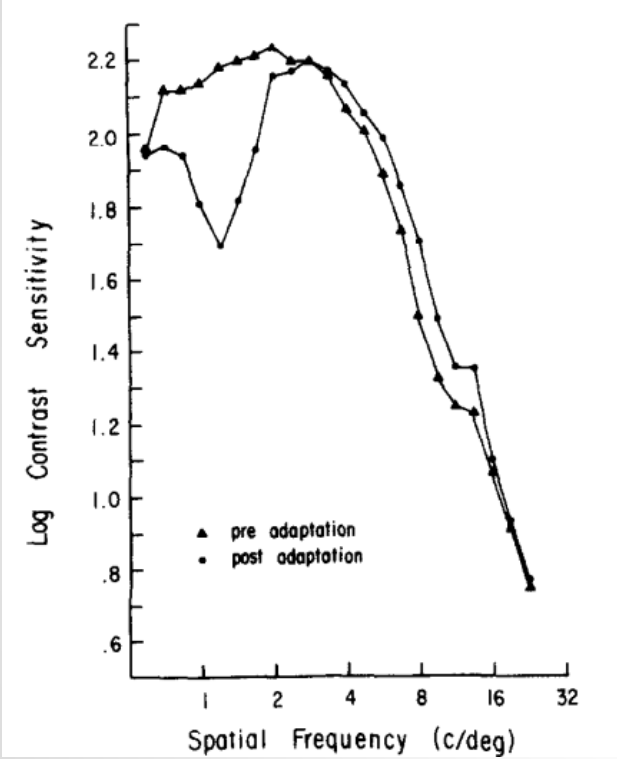


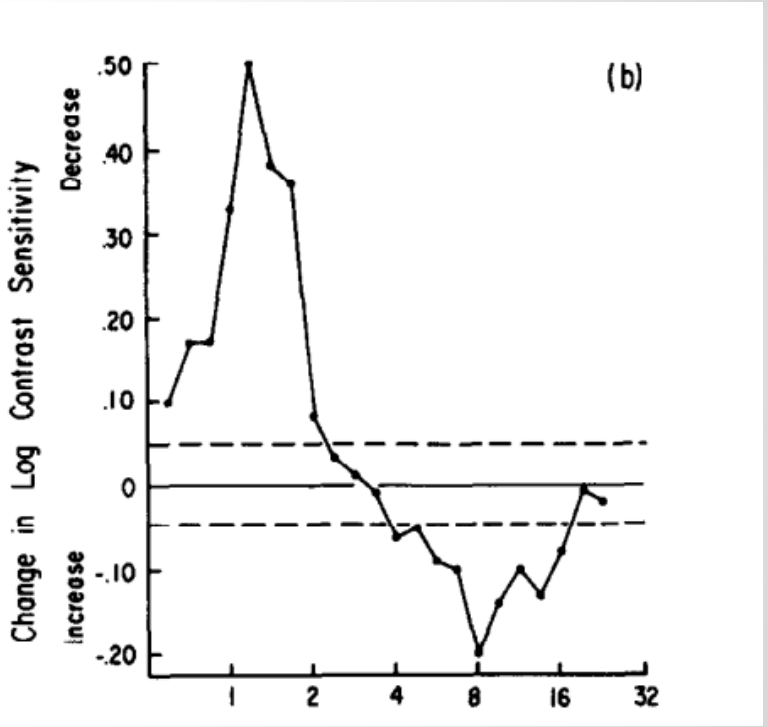






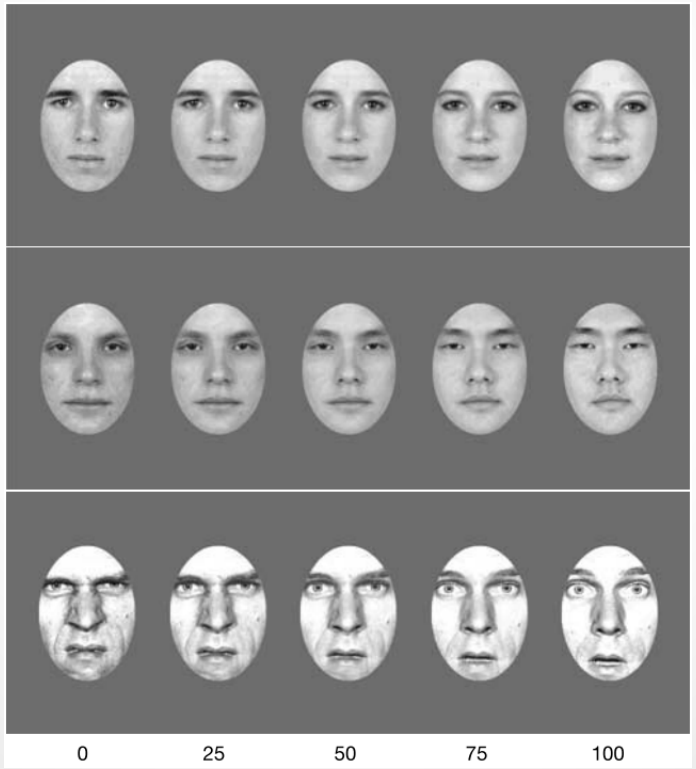
SCHADE, SR. "Optical and photoelectric analog of the eye." *JOsA* 46.9 (1956): 721-738.

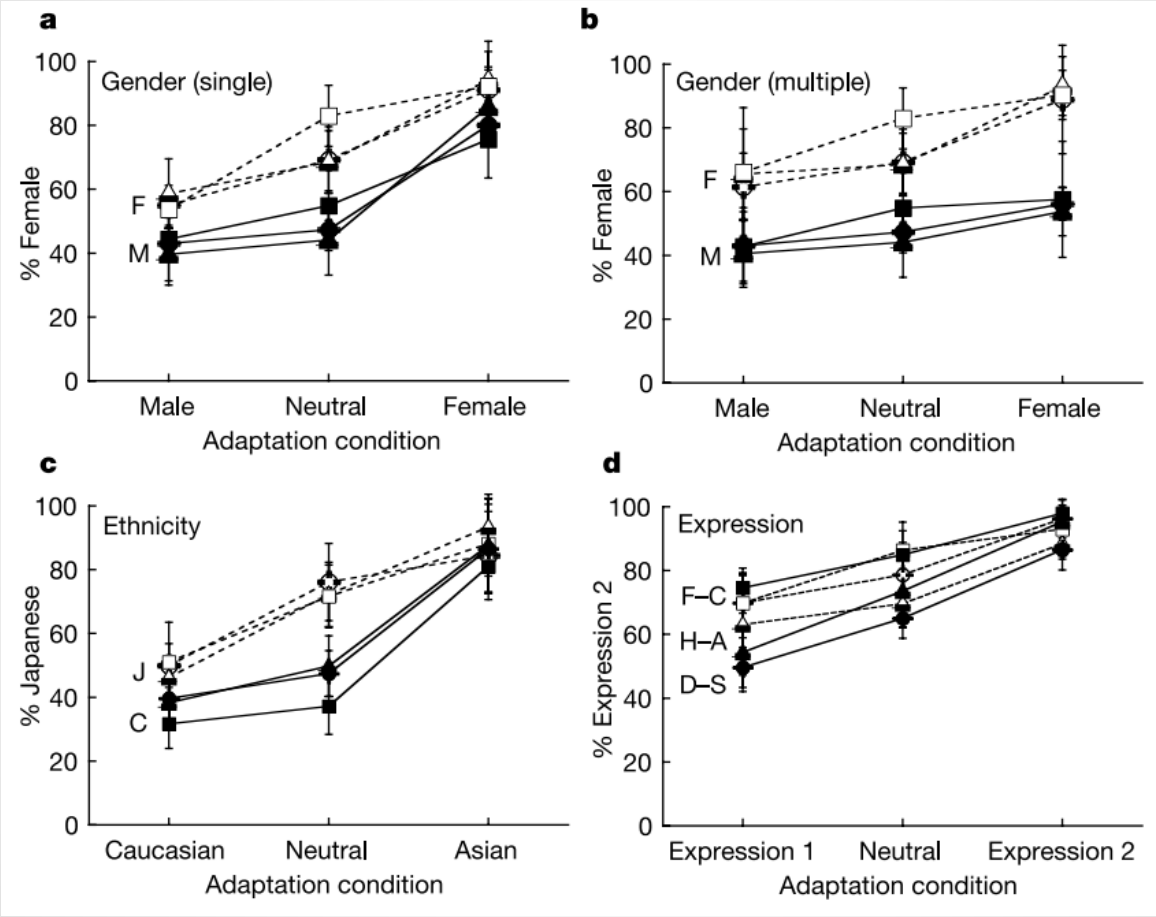


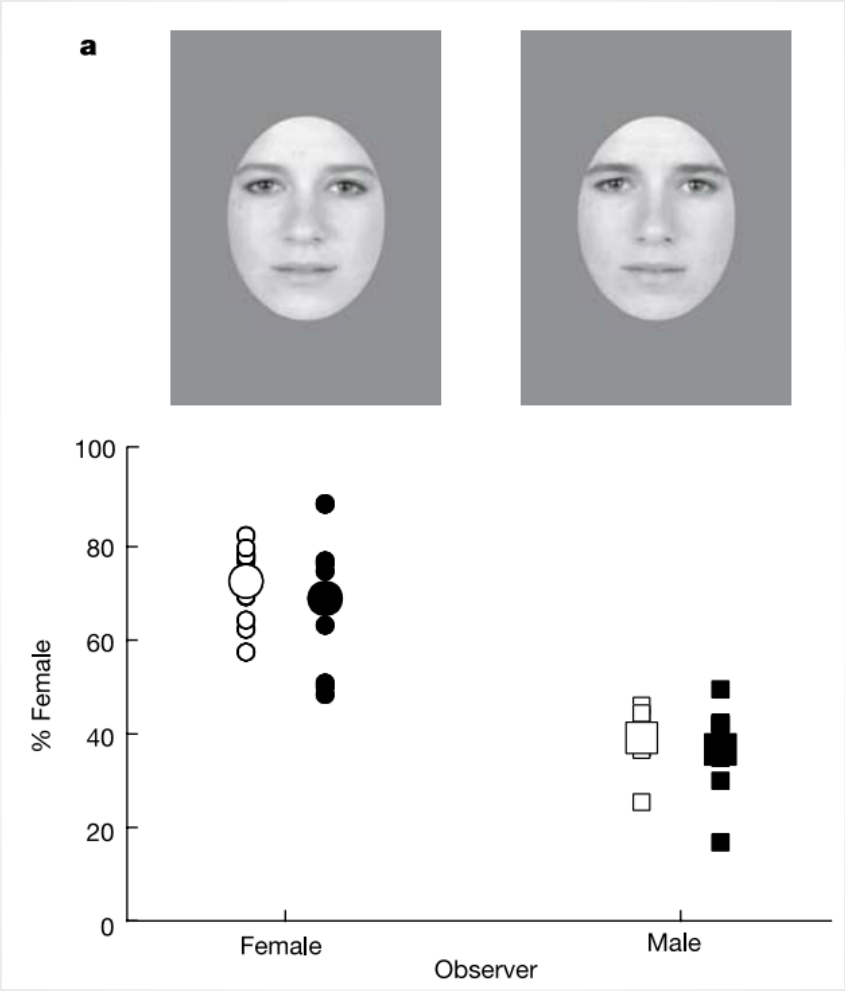


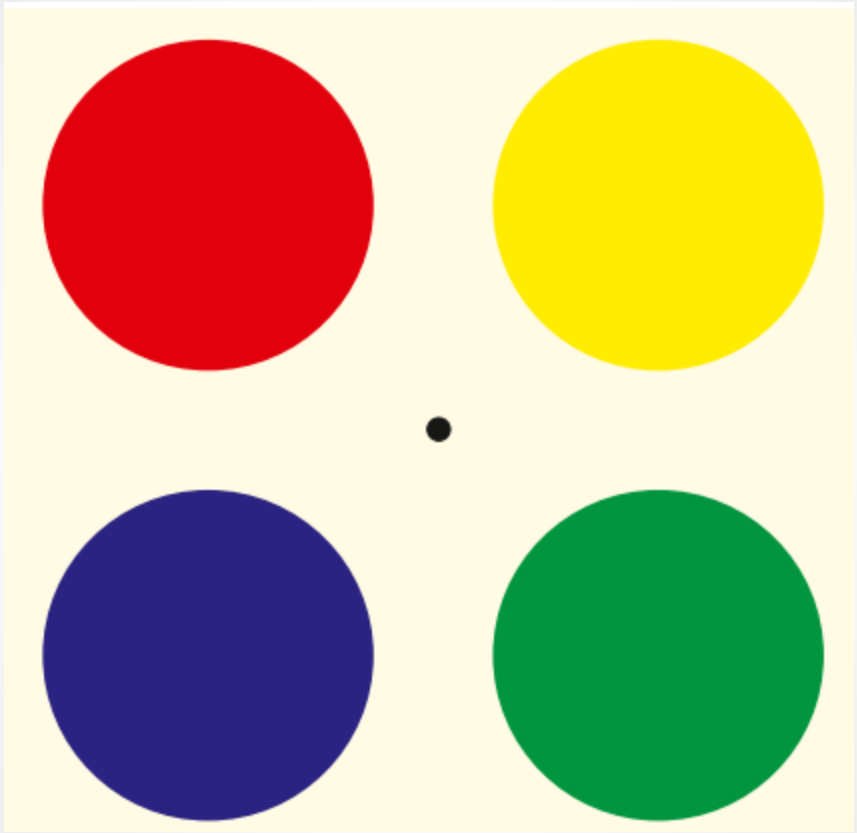
De Valois, Karen K. "Spatial frequency adaptation can enhance contrast sensitivity." *Vision research* 17.9 (1977): 1057-1065.

Adaptando a caras




a
Gender (single)
% Female
100
80
60
40
20
0
F
M
Male
Neutral
Female
Adaptation condition
b
Gender (multiple)
% Female
F
M
Male
Neutral
Female
Adaptation condition
c
Ethnicity
% Japanese
J
C
Caucasian
Neutral
Asian
Adaptation condition
d
Expression
% Expression 2
F–C
H–A
D–S
Expression 1
Neutral
Expression 2
Adaptation condition


a
100
80
60
40
20
0
% Female
Female
Male
Observer



Thompson, Peter, and David Burr. "Visual aftereffects." *Current Biology* 19.1 (2009): R11-R14.

Motion aftereffect

http://www.michaelbach.de/ot/mot-adaptSpiral/index.html

Algoritmos visuales

Capacidad en presentaciones visuales breves

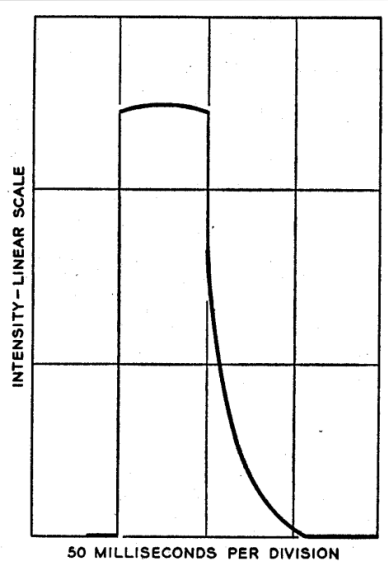
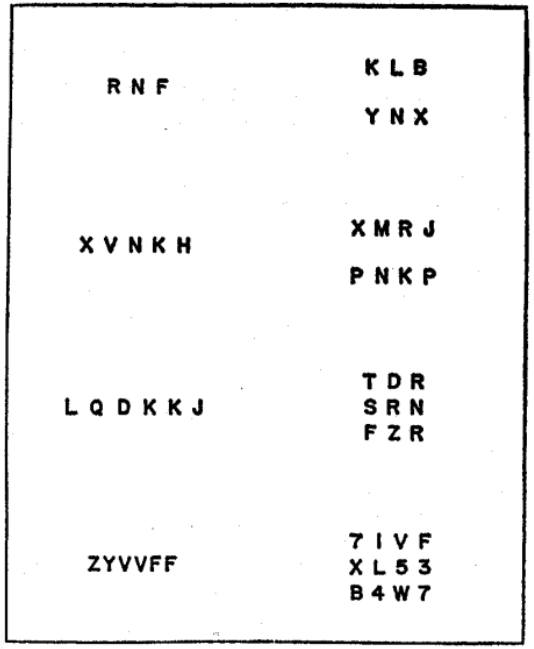
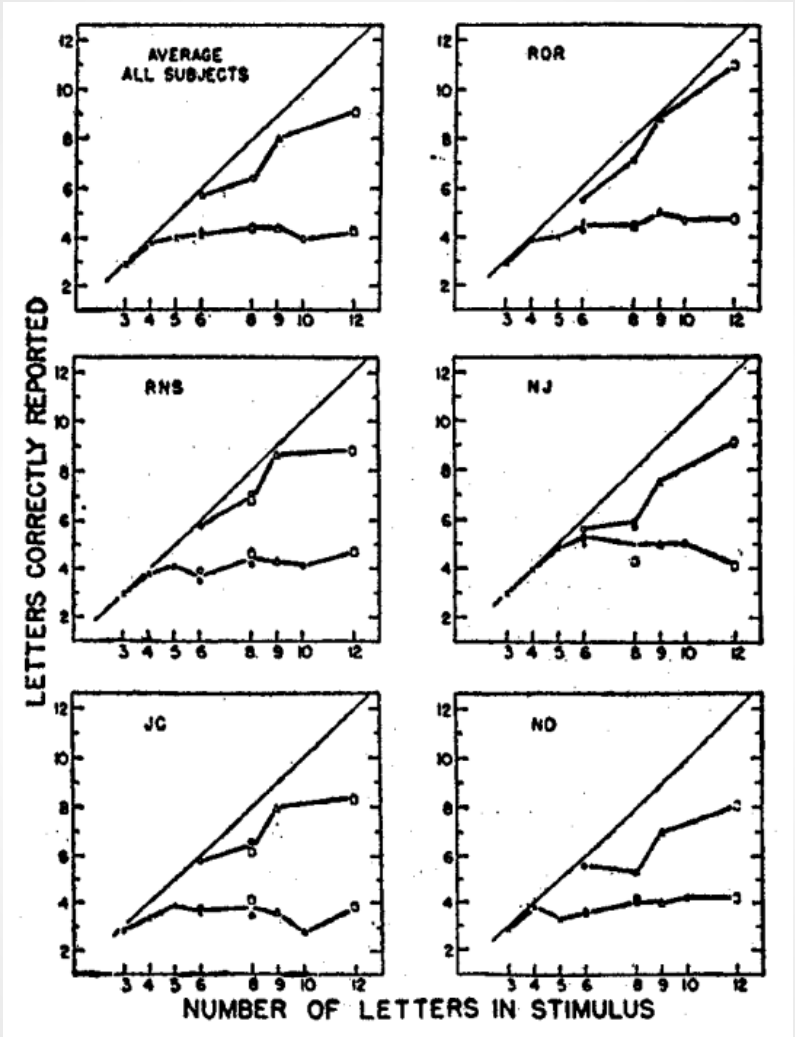


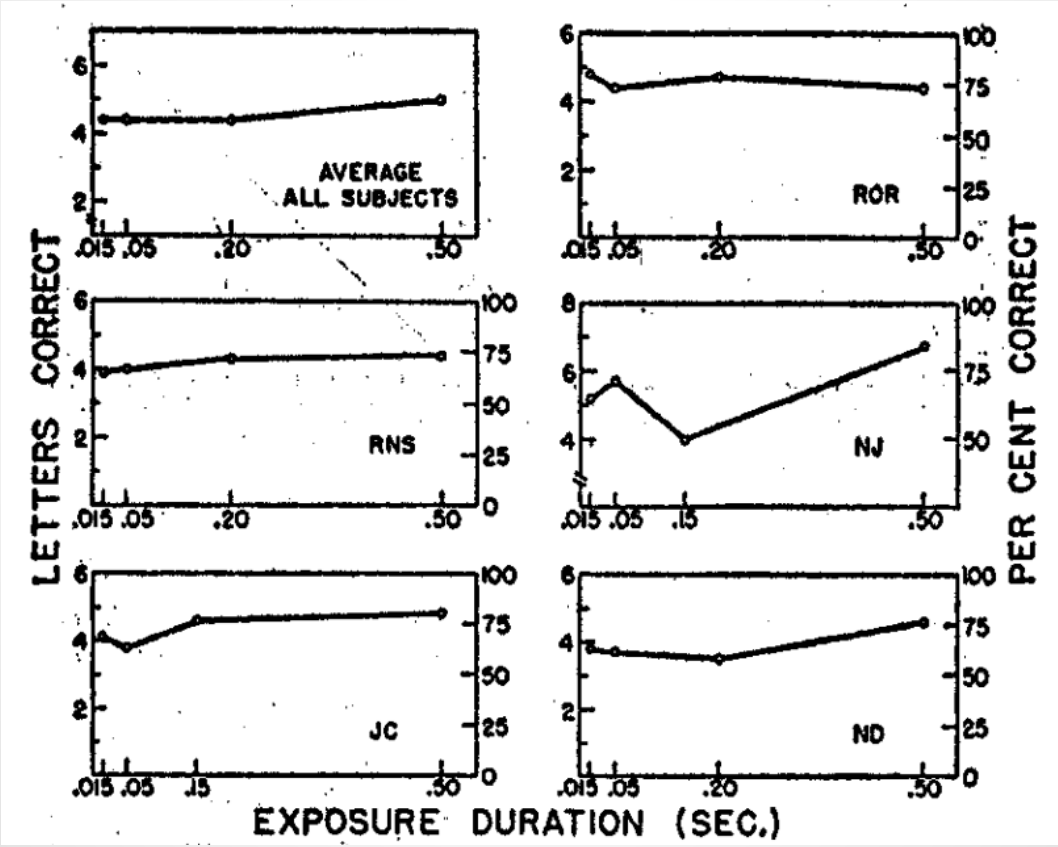
FIG. 1. A 50-millisecond light flash, such as was used in most of the experiments. (Redrawn from a photograph of an oscilloscope trace)



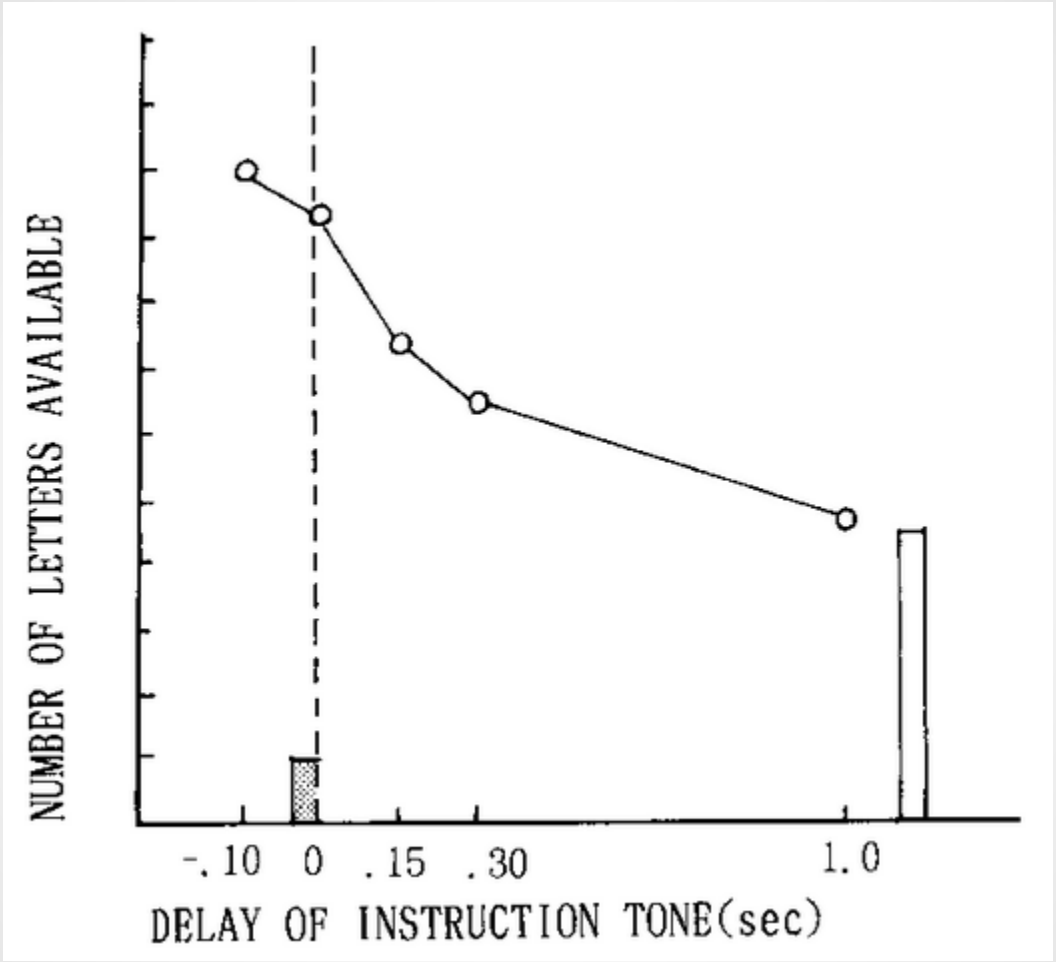
Sperling, George. "The information available in brief visual presentations."*Psychological monographs: General and applied* 74.11 (1960): 1.


AVERAGE
ALL SUBJECTS
ROR
RNS
NJ
JC
NO
LETTERS CORRECTLY REPORTED
NUMBER OF LETTERS IN STIMULUS

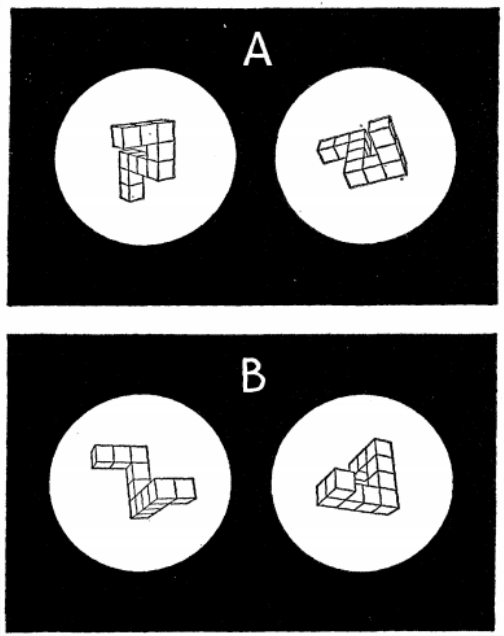
No depende del tiempo de exposición



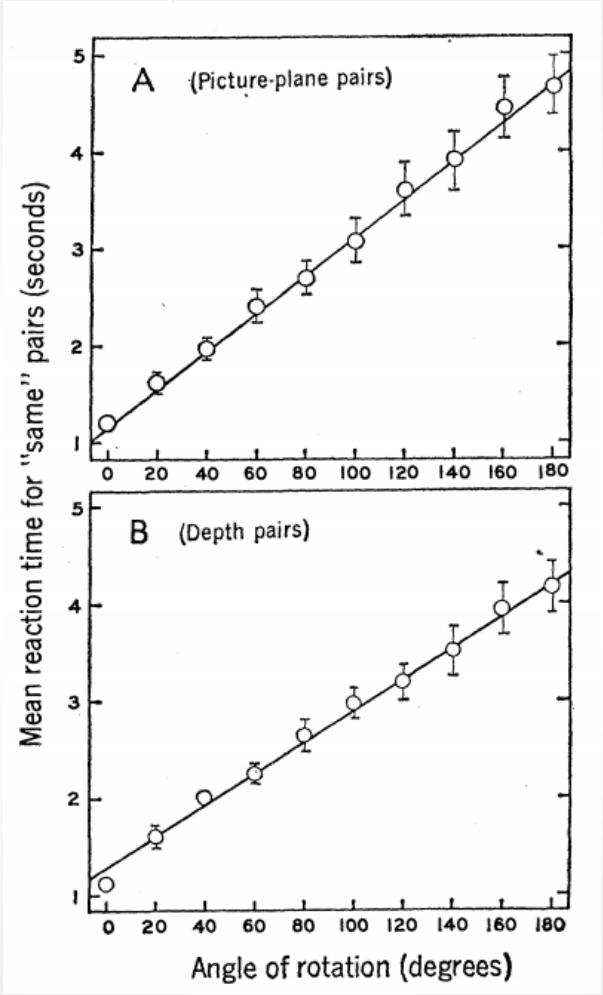
¿Y cuánto dura el recuerdo?


NUMBER OF LETTERS AVAILABLE
-.10
0
.15
.30
1.0
DELAY OF INSTRUCTION TONE(sec)

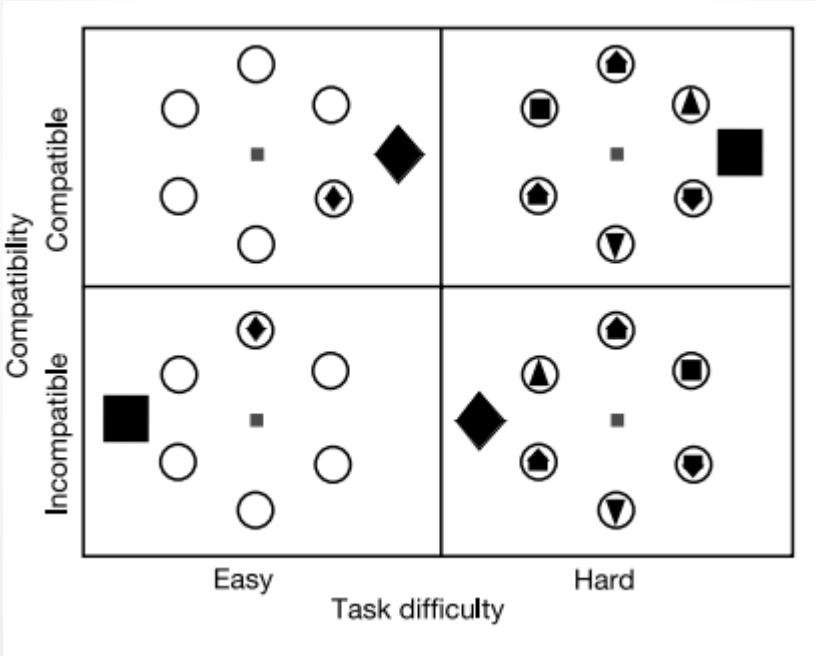
Rotación mental



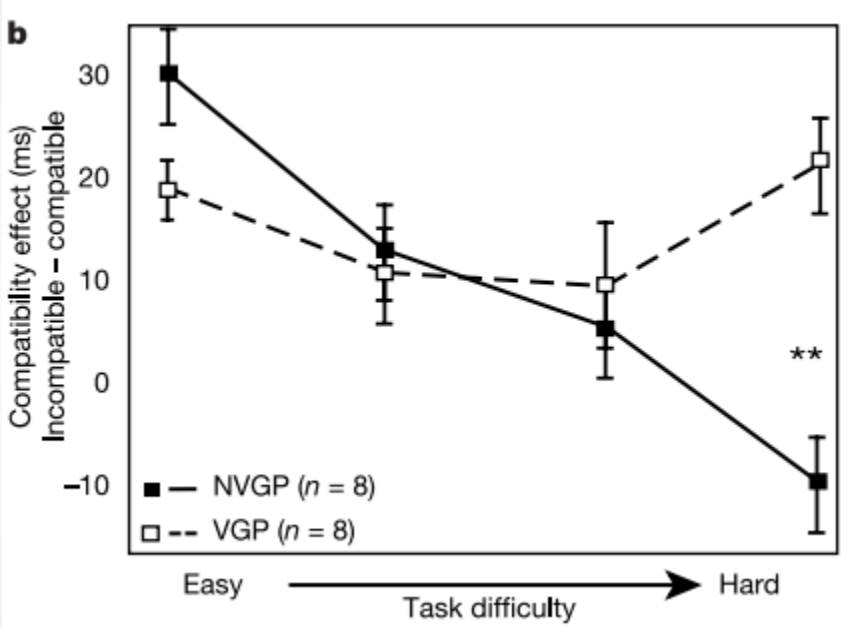
SHEPARD, RN. "Mental rotation of three-dimensional objects." *Science* 171 (1971): 701-703.


A (Picture-plane pairs)
B (Depth pairs)
Mean reaction time for "same" pairs (seconds)
Angle of rotation (degrees)
1
2
3
4
5
0 20 40 60 80 100 120 140 160 180

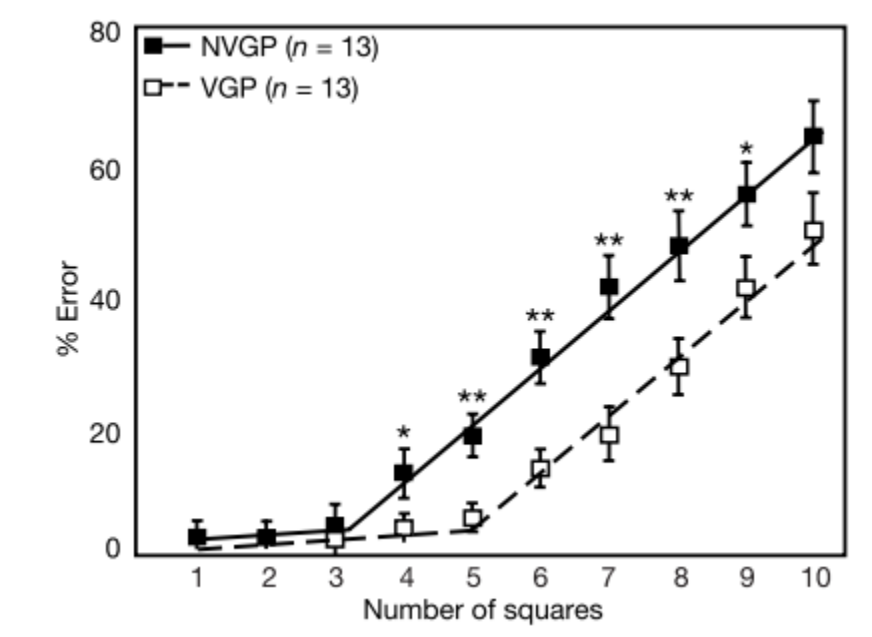
Juguemos al counter...



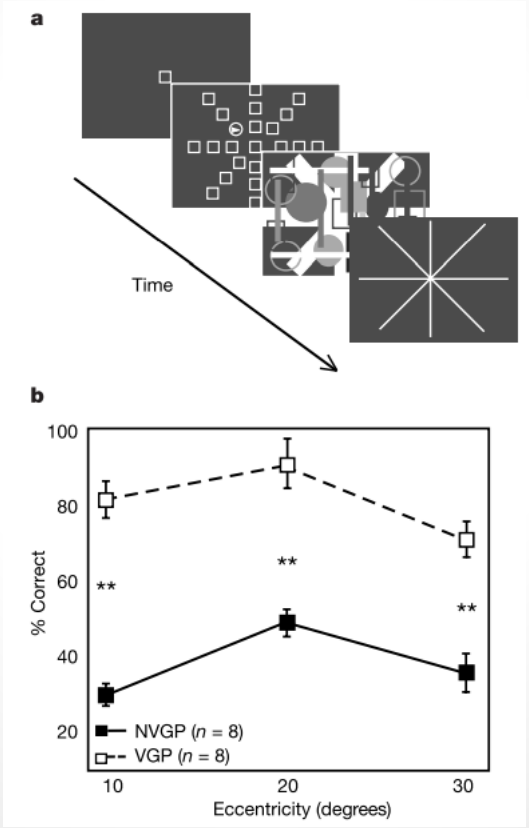
Green, C. Shawn, and Daphne Bavelier. "Action video game modifies visual selective attention." *Nature* 423.6939 (2003): 534-537.


b
30
20
10
0
−10
Compatibility effect (ms)
Incompatible − compatible
**
NVGP (n = 8)
VGP (n = 8)
Easy
Hard
Task difficulty

Contando rápido...



Precisión espacial...



Interferencia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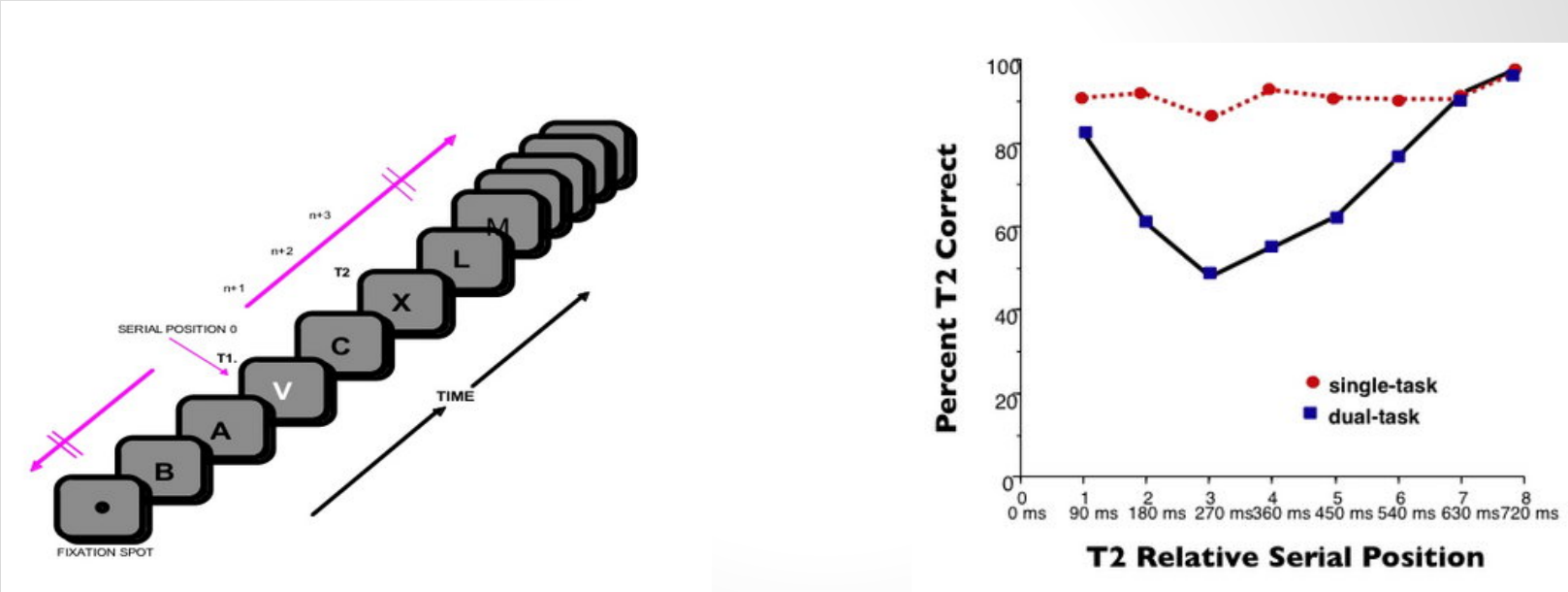
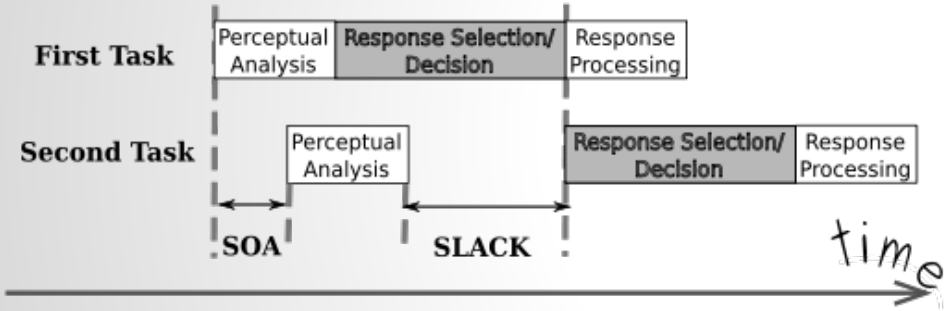
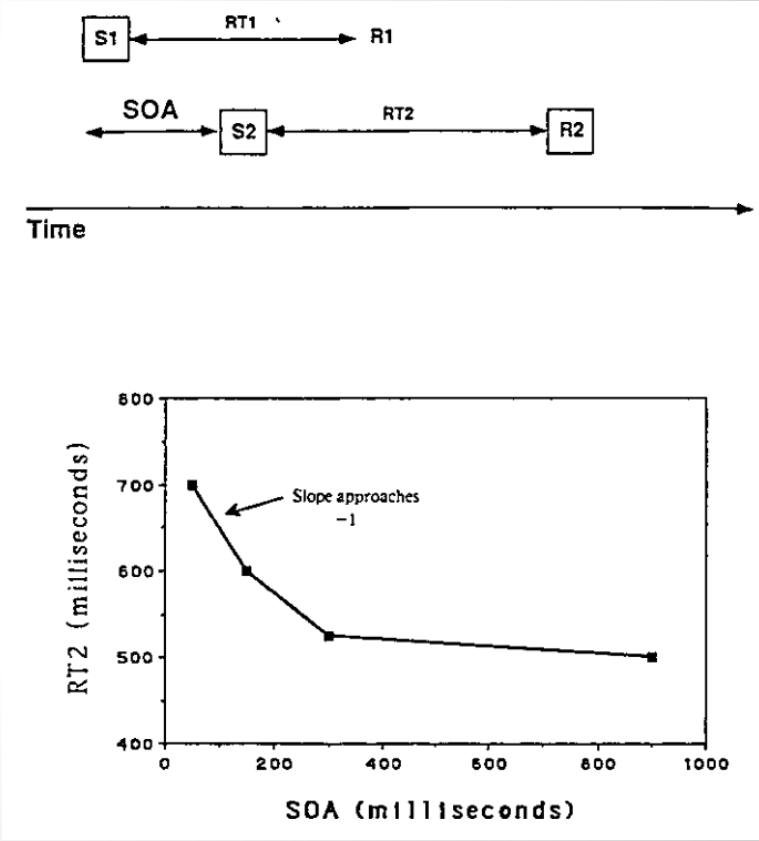
Ceguera atencional



Raymond, Jane E., Kimron L. Shapiro, and Karen M. Arnell. "Temporary suppression of visual processing in an RSVP task: An attentional blink?."*Journal of Experimental Psychology: Human perception and performance* 18.3 (1992): 849.

Psychological refractory period





Pashler, Harold. "Dual-task interference in simple tasks: data and theory." *Psychological bulletin* 116.2 (1994): 220.