

Plasticità cerebrale nella visione

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Light on Optics and Optometry

Series of scientific, technological and tutorial webinars

In streaming on Youtube

Directed by
Giovanna Pacini

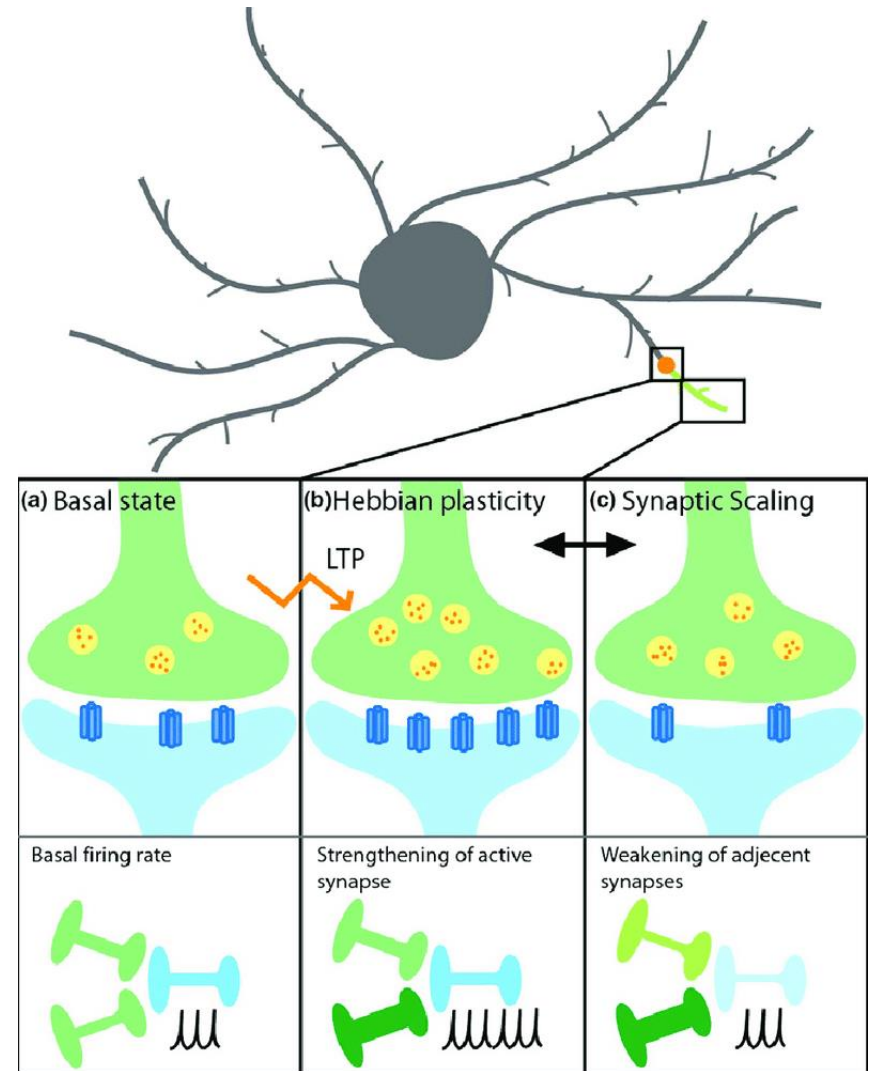


<https://www.youtube.com/user/caffescienza>

Neuroplasticità

La neuroplasticità consiste nella possibilità del cervello di riorganizzare **funzionalmente** e/o **strutturalmente** le sue connessioni in risposta a cambiamenti ambientali

“Use it or lose it”

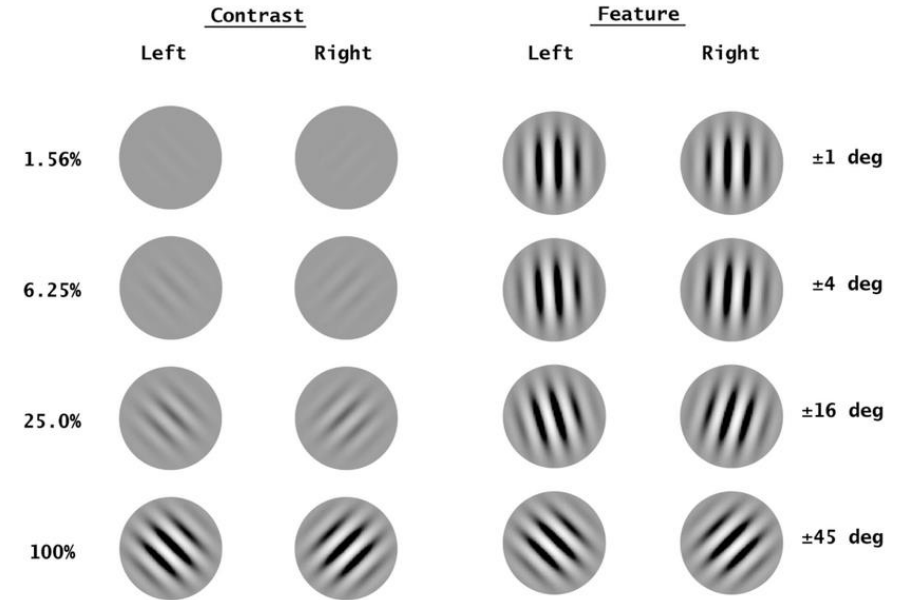


Esempi di plasticità visiva «quotidiana»:

Visual Perceptual Learning (VPL):

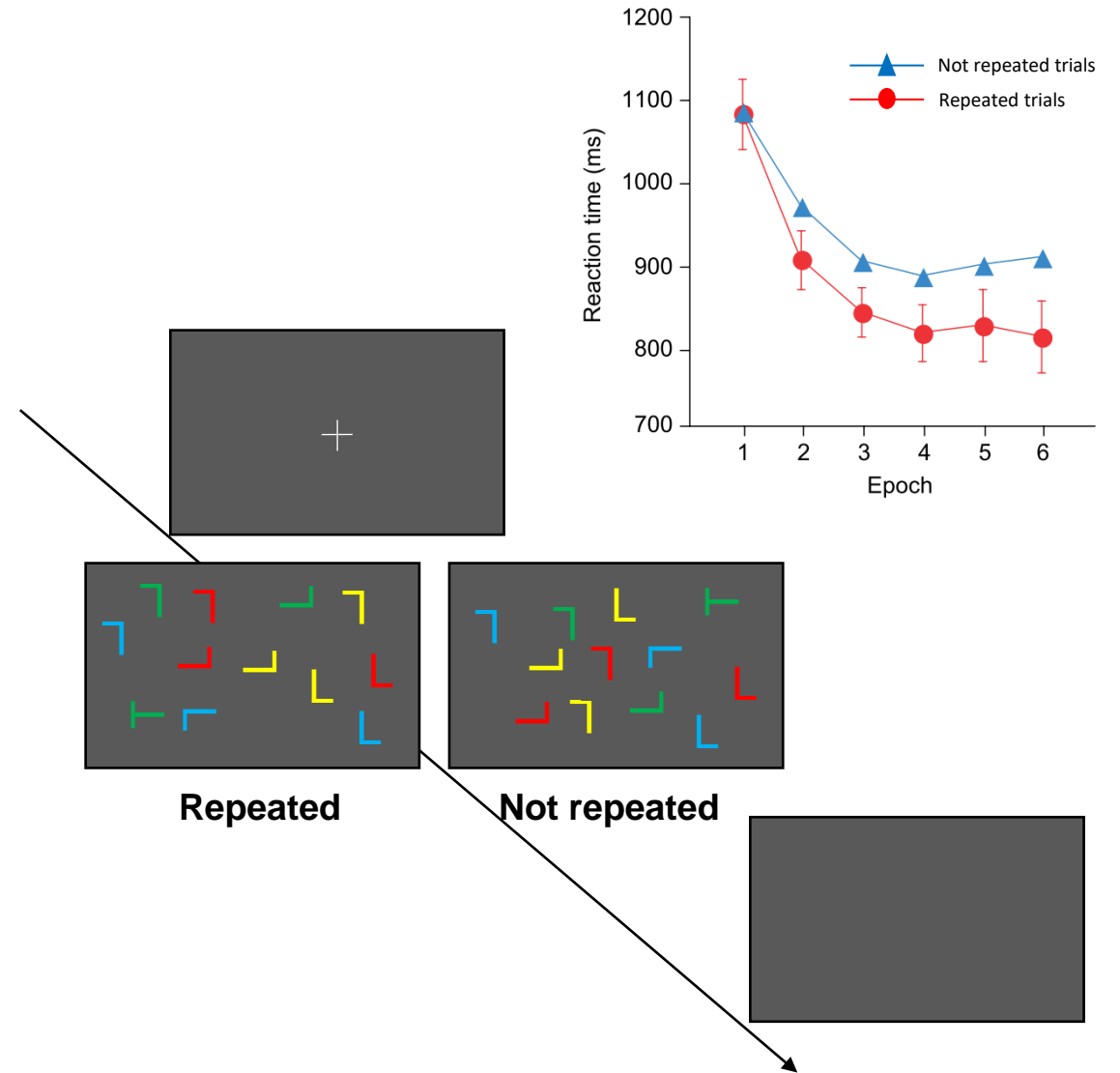
Praticare ripetutamente un compito complesso porta a miglioramenti significativi e persistenti nella performance

- **Contrast sensitivity**
- **Orientation discrimination**
- **Verier acuity**
- **Motion discrimination**



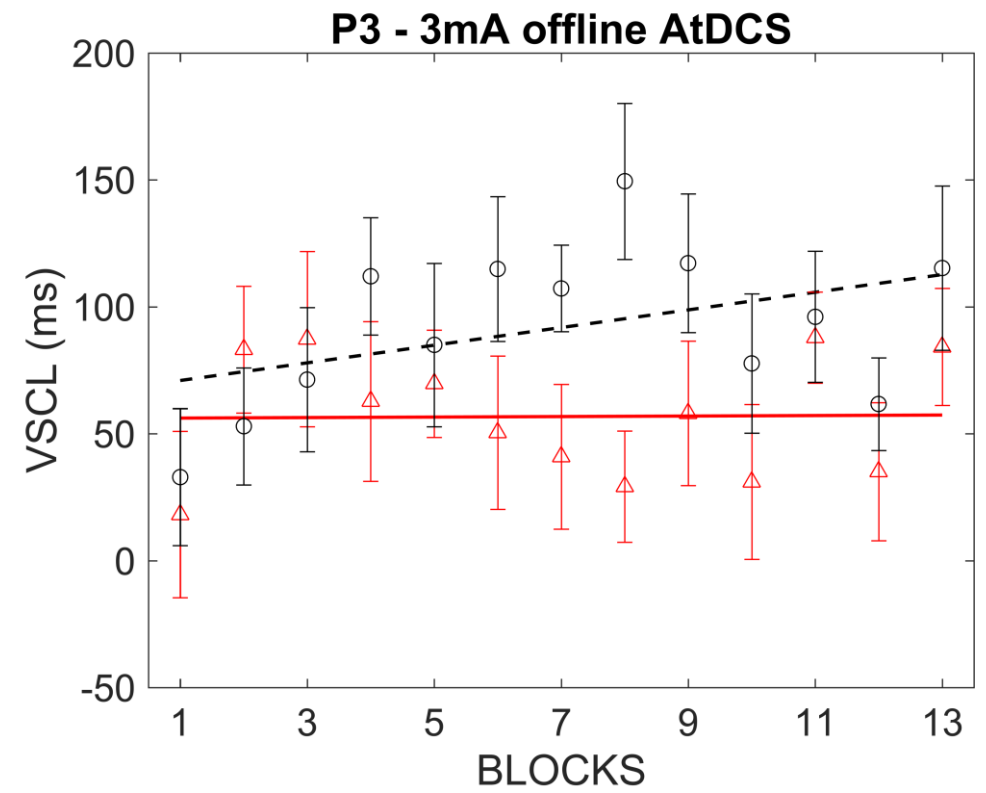
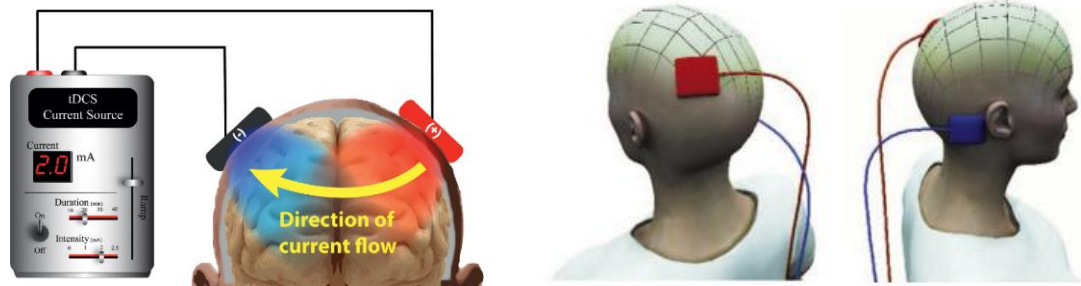
Esempi di plasticità visiva «quotidiana»:

Visuo-spatial contextual learning:
Apprendimento implicito di relazioni
visuospatiali tra oggetti





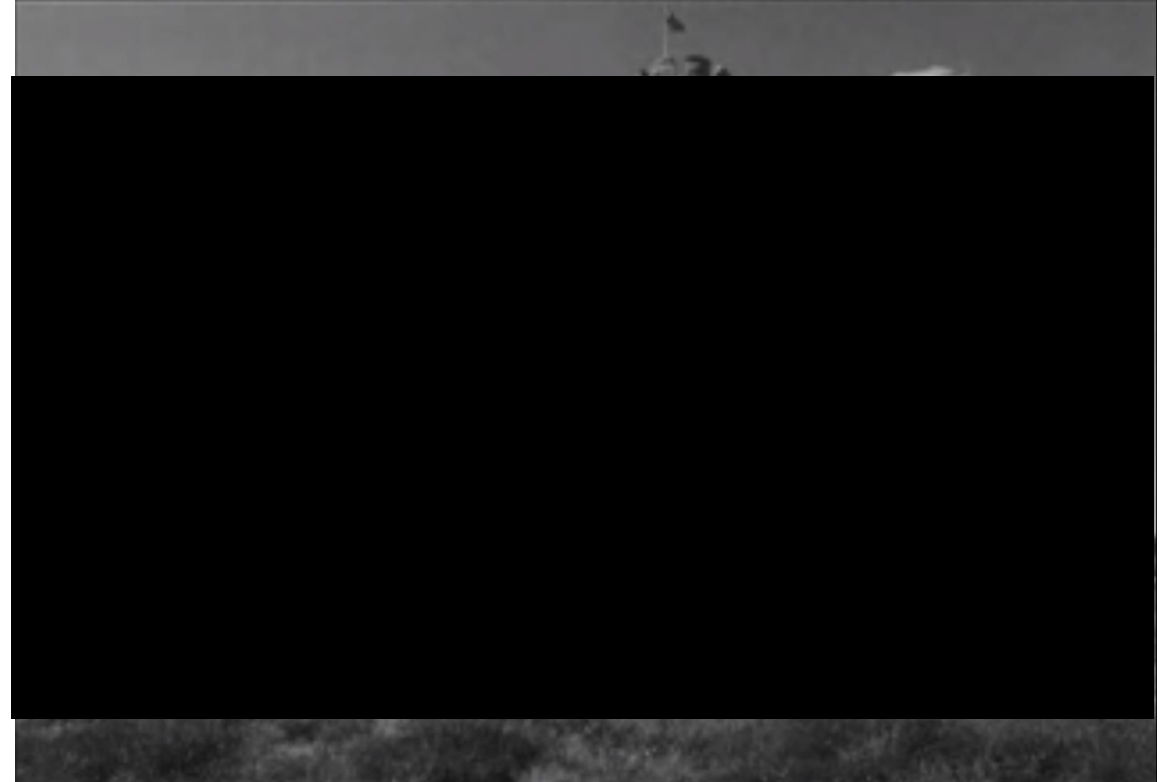
Transcranial Direct Current Stimulation (tDCS)

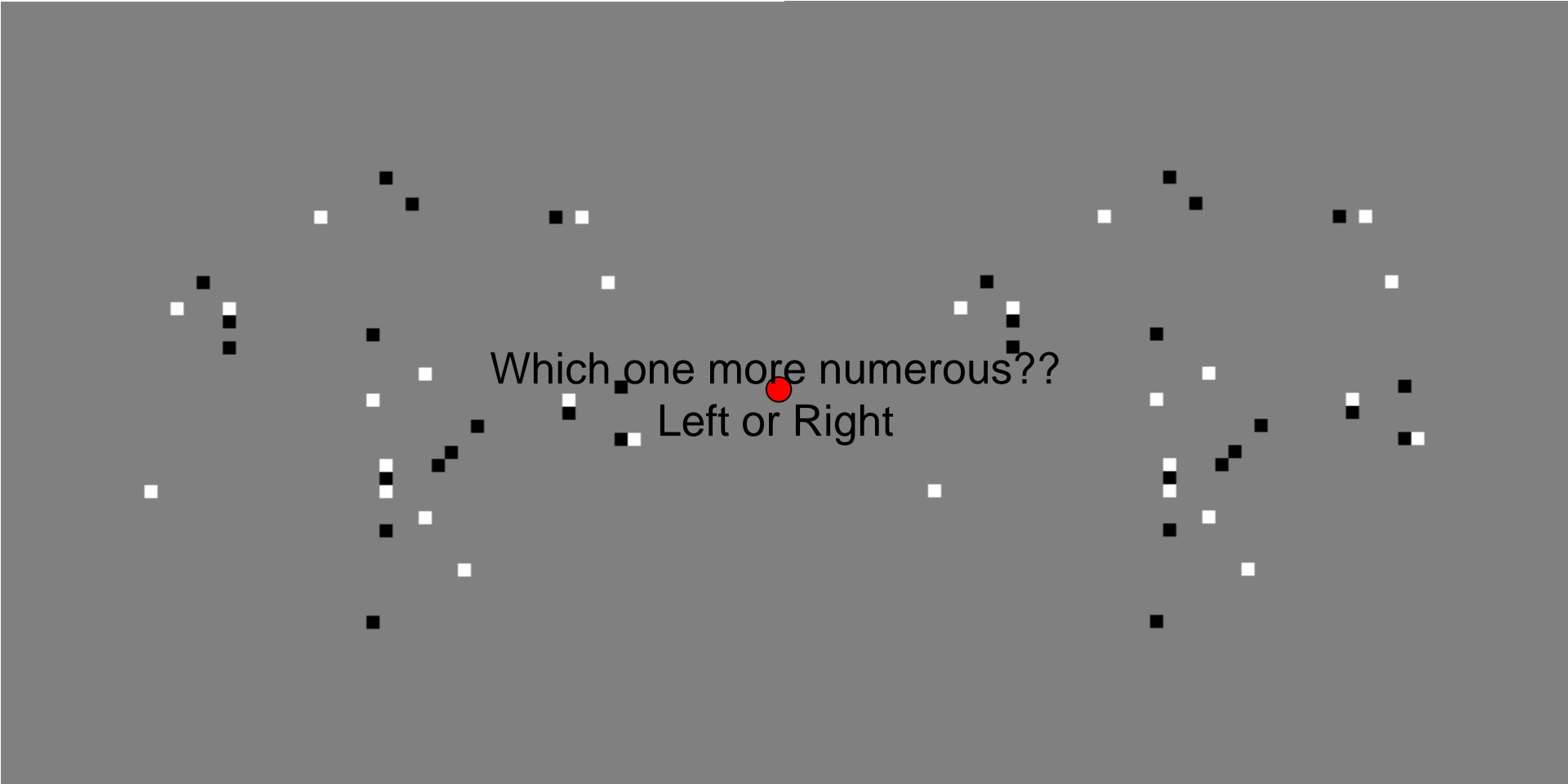


Esempi di plasticità visiva «quotidiana»:

Perceptual Adaptation: osservare un pattern visivo per un periodo prolungato produce una riduzione della sensibilità visiva a quel pattern producendo un bias percettivo nei pattern successivi.

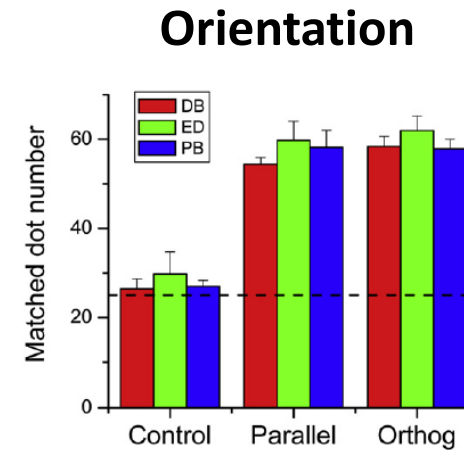
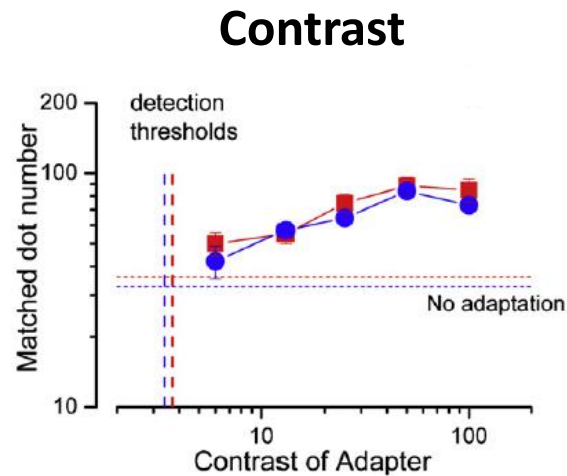
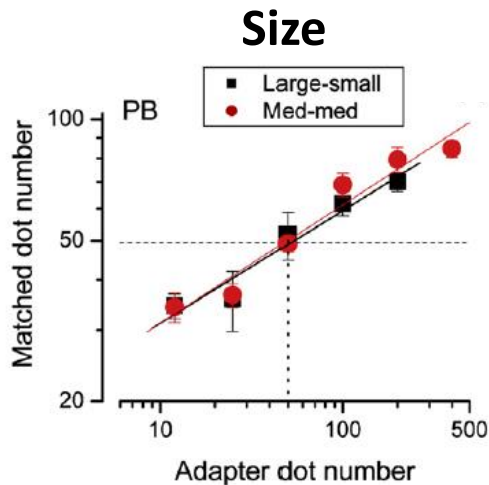
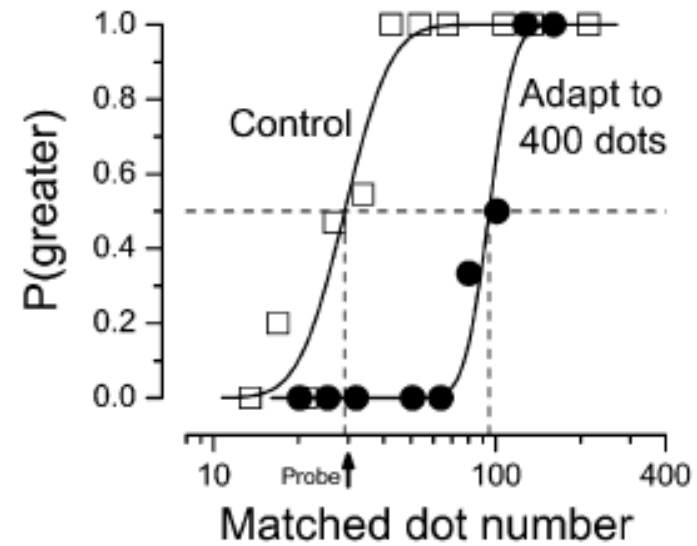
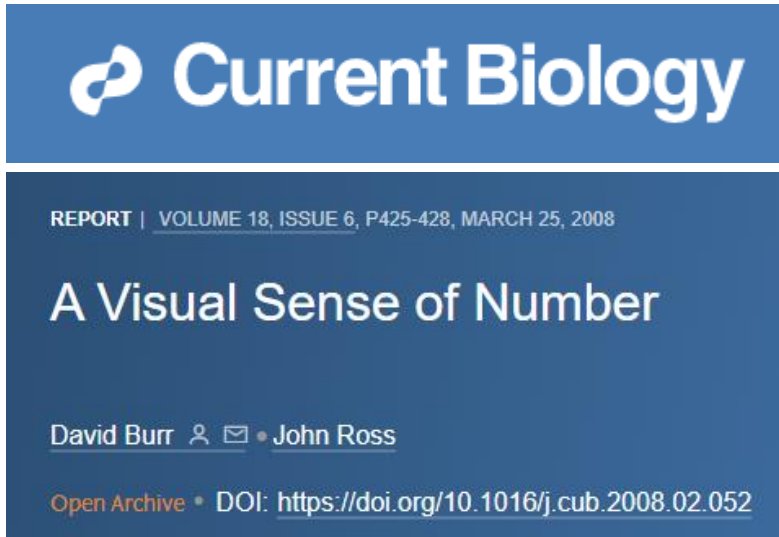
- **Light adaptation**
- **Color adaptation**
- **Motion adaptation**
- **Numerosity adaptation**



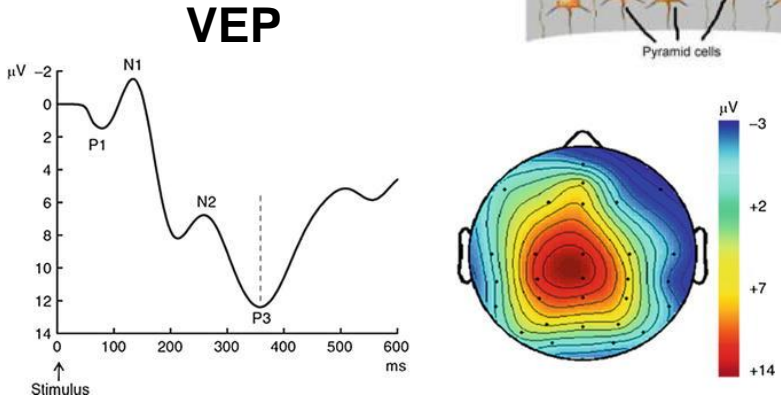
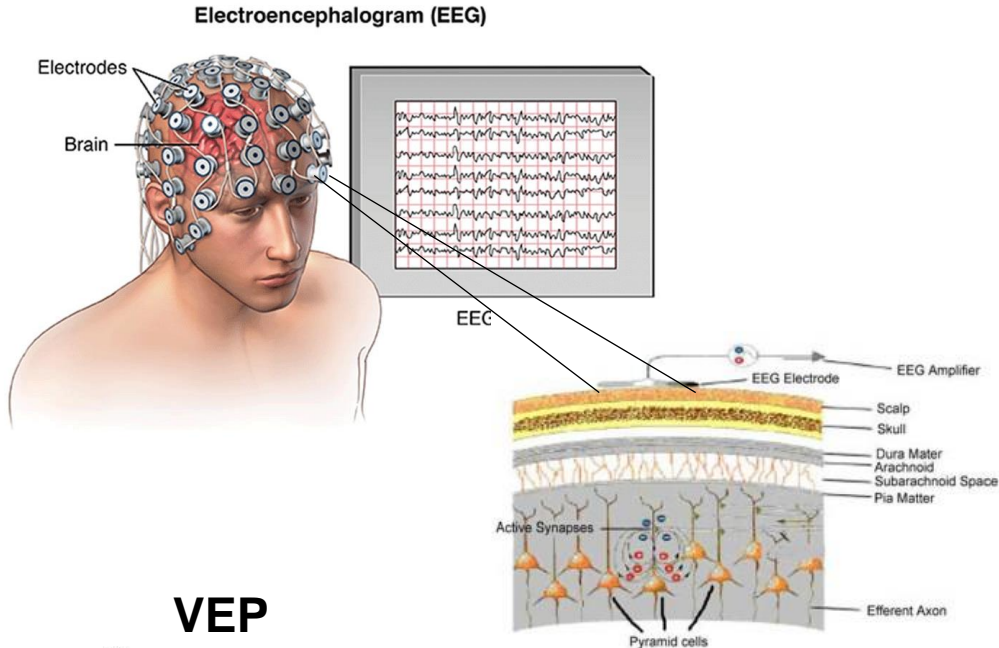
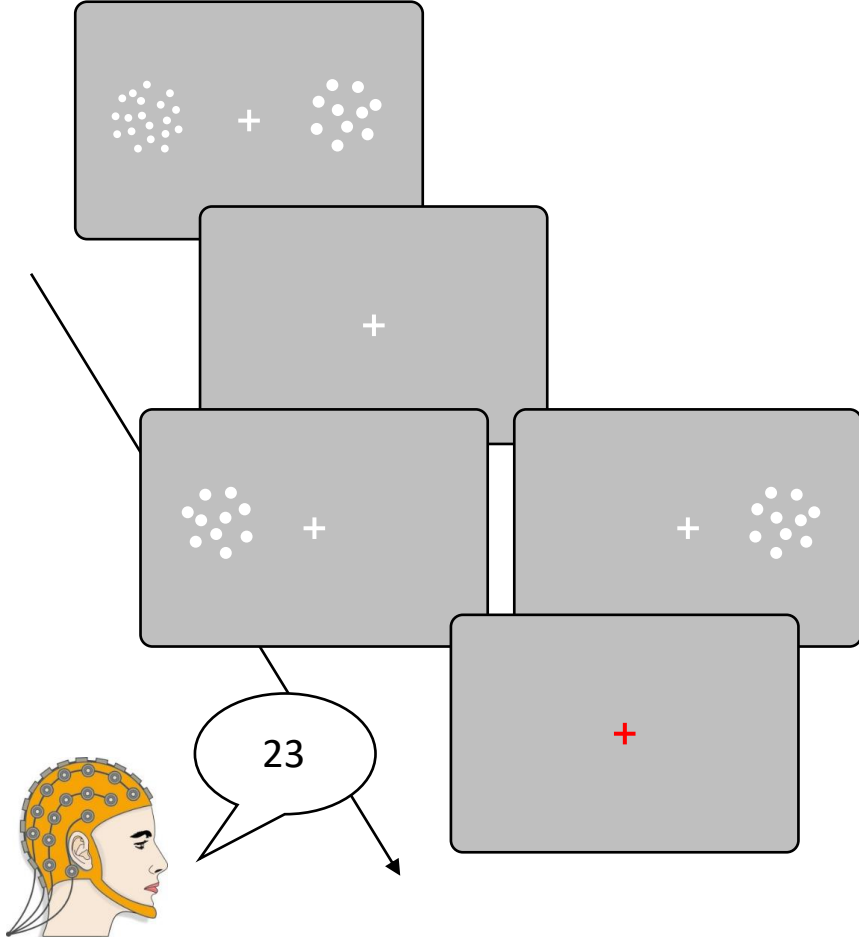


Which one more numerous??
Left or Right

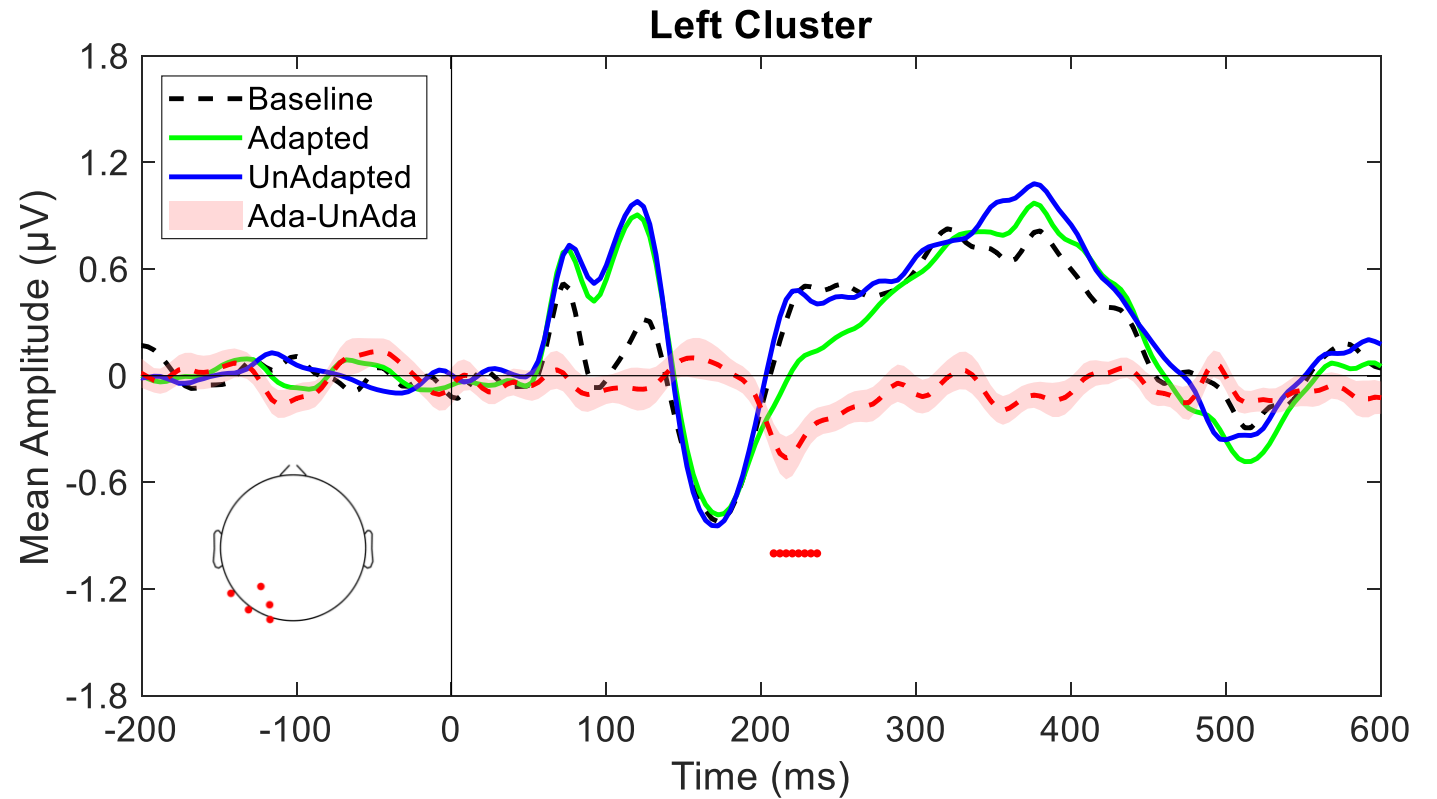
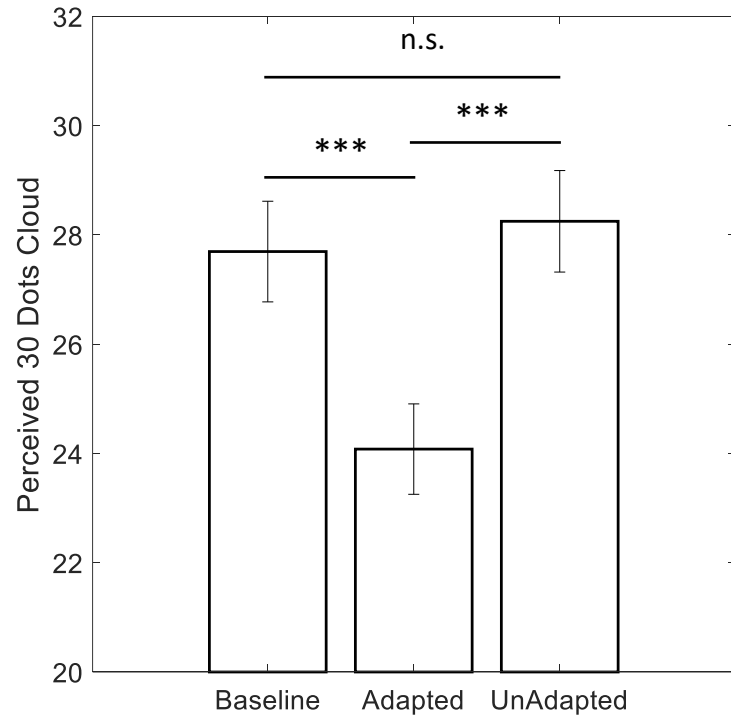
Short-term plasticity in visual numerosity perception



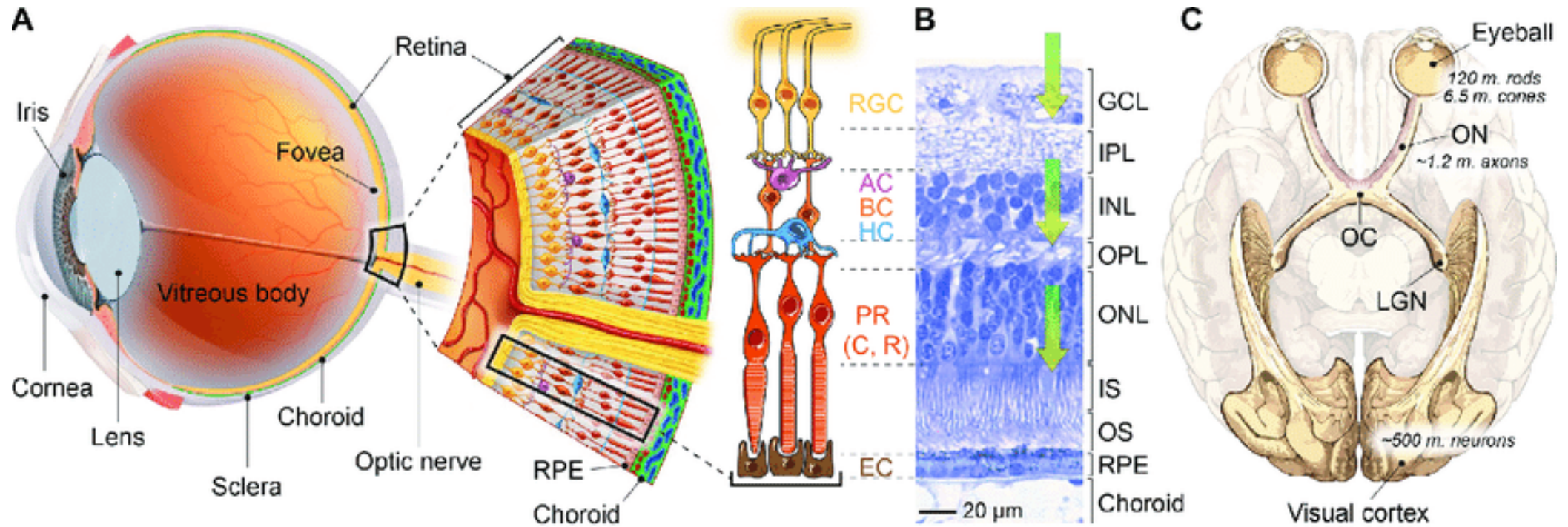
Short-term plasticity in visual numerosity perception



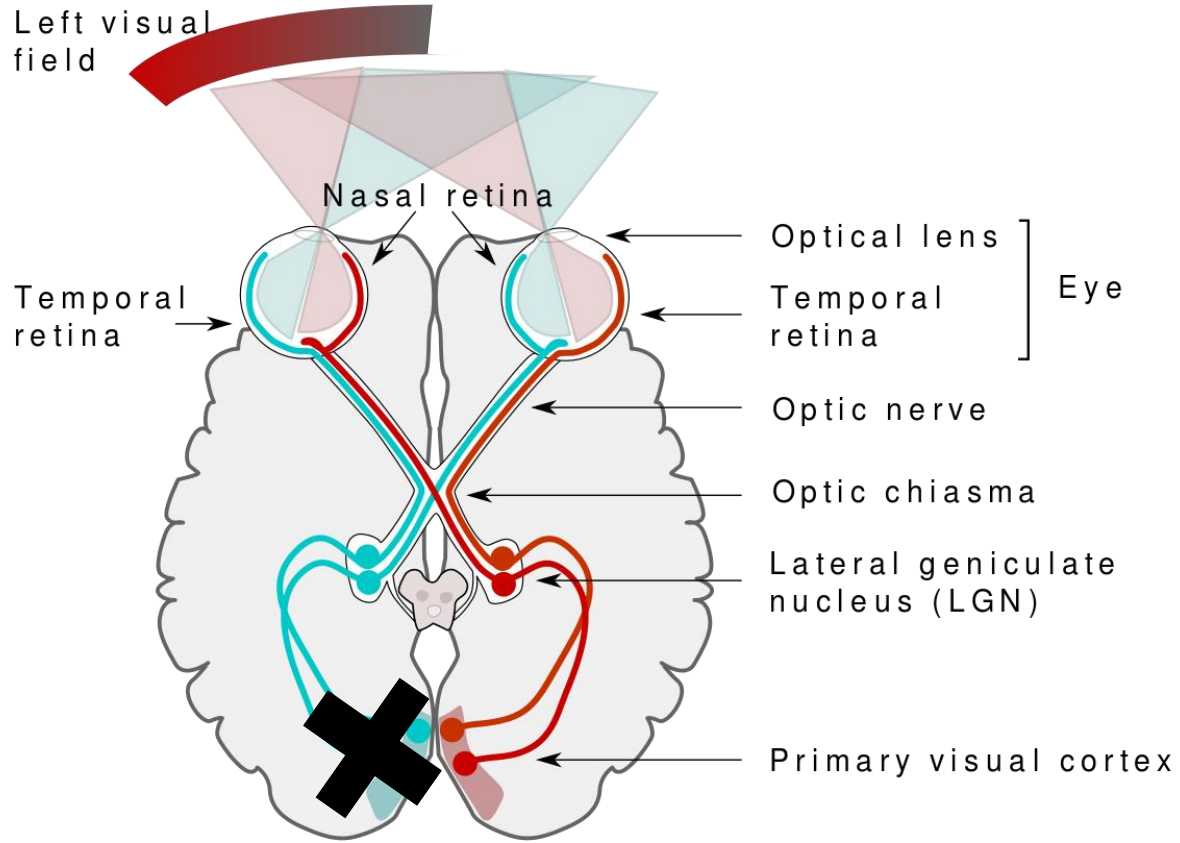
Short-term plasticity in visual numerosity perception



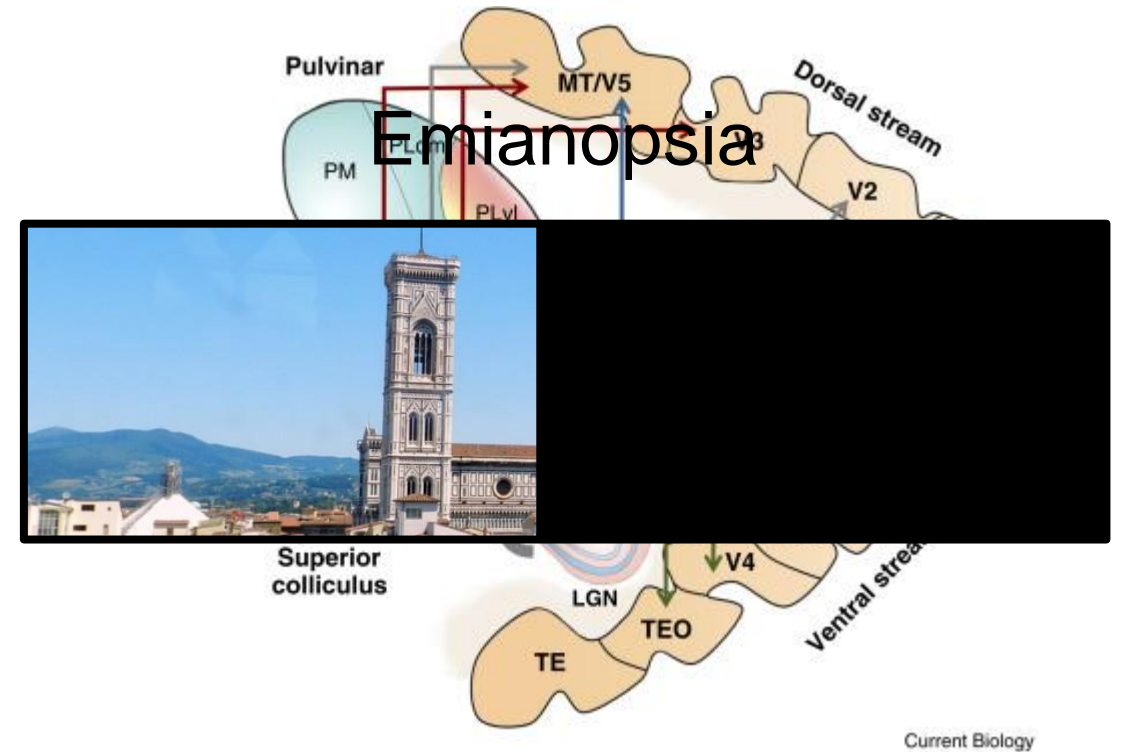
Visual system architecture



Visual system architecture

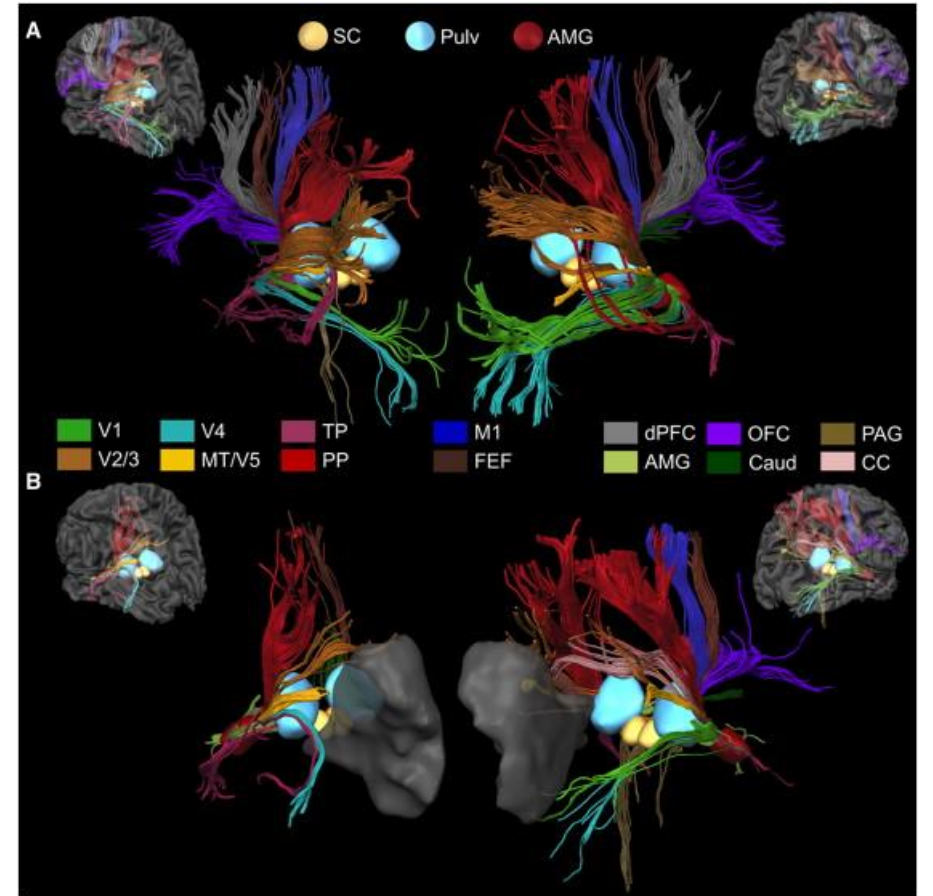


Primary visual route



Primary and secondary visual routes

Blindsight

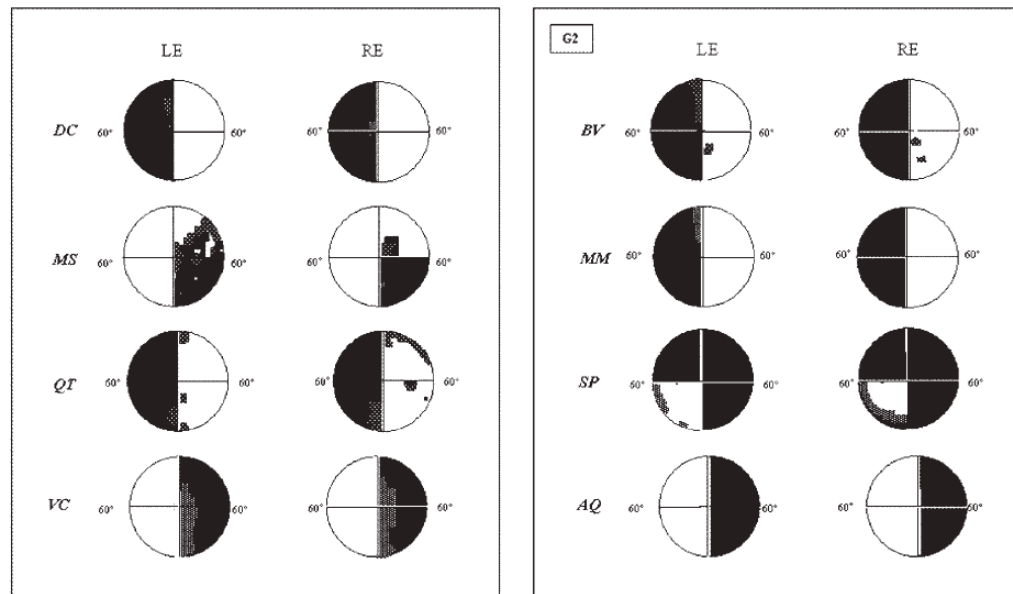
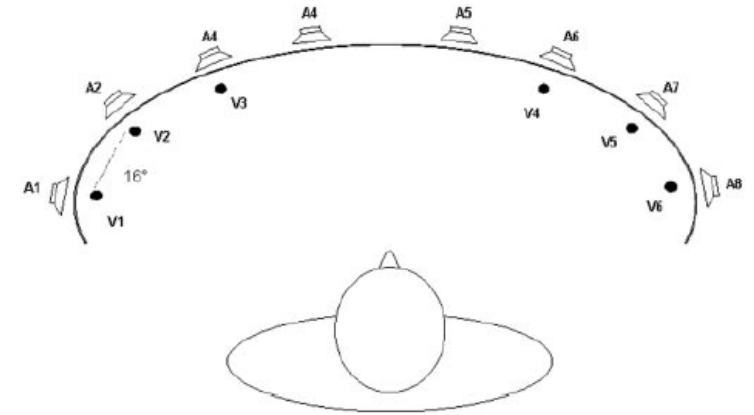


Tamietto et al. **Current Biology** (2012)

Visual search improvement in hemianopic patients after audio-visual stimulation

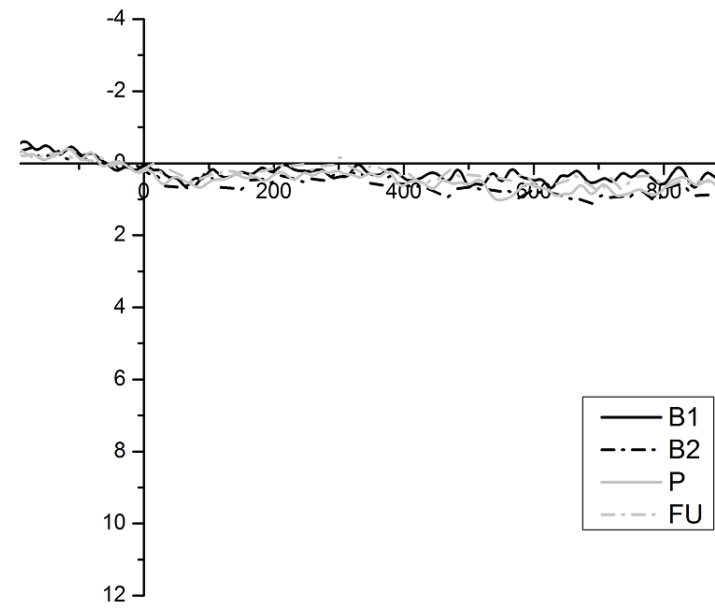
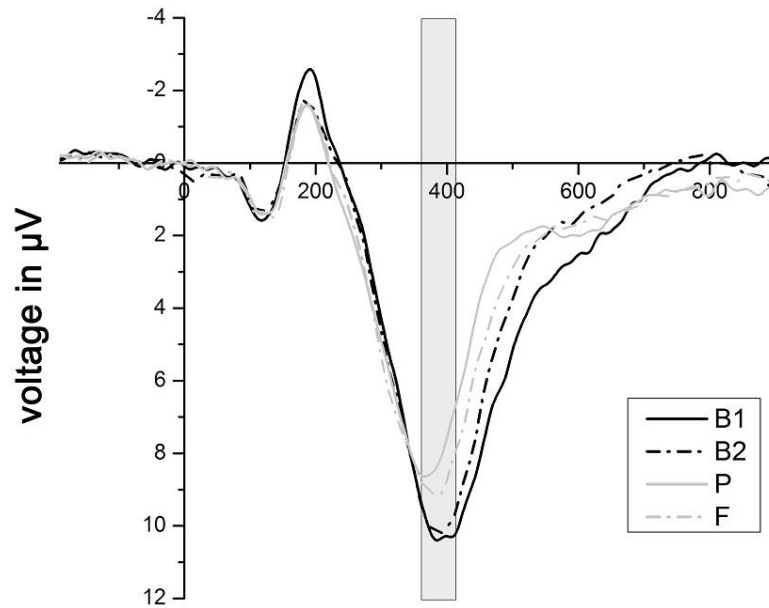
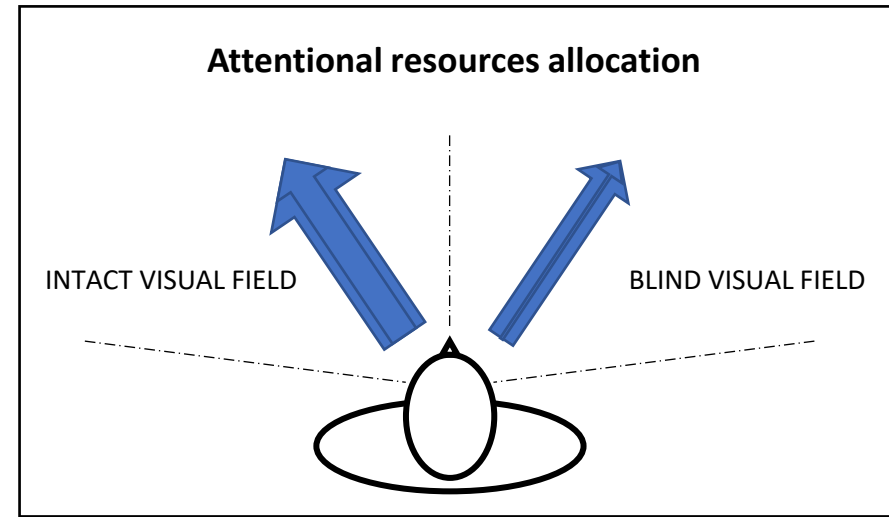
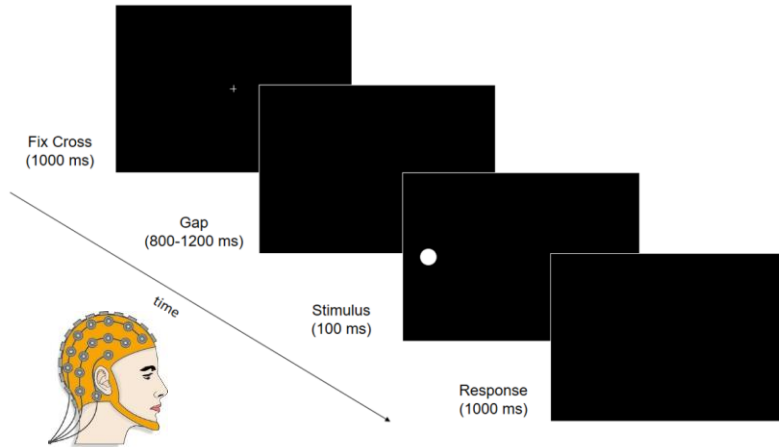
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CLINICAL IMPROVEMENTS AFTER THE AUDIO-VISUAL TRAINING

- Improved performances on visual search and visual detection tasks
- Improved oculomotor scanning behaviors
- Improvements in self-report measures



THANKS FOR YOUR ATTENTION

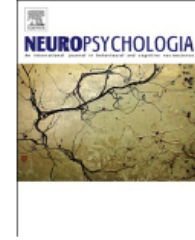




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Shaping the visual system: cortical and subcortical plasticity in the intact and the lesioned brain

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