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What is Selective Attention?

The ability to concentrate on a particular stimulus, event, or thought while excluding competing stimuli.



The Cocktail party..

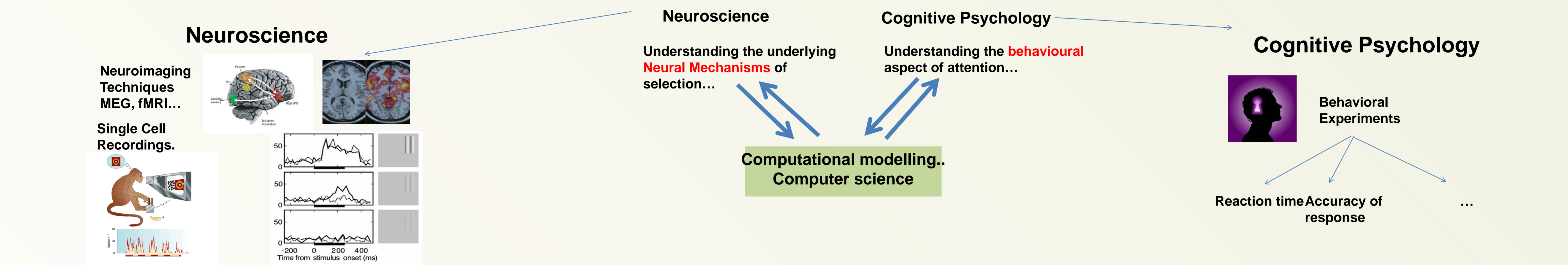
Visual Selective Attention

Bottom-Up (exogenous) attention

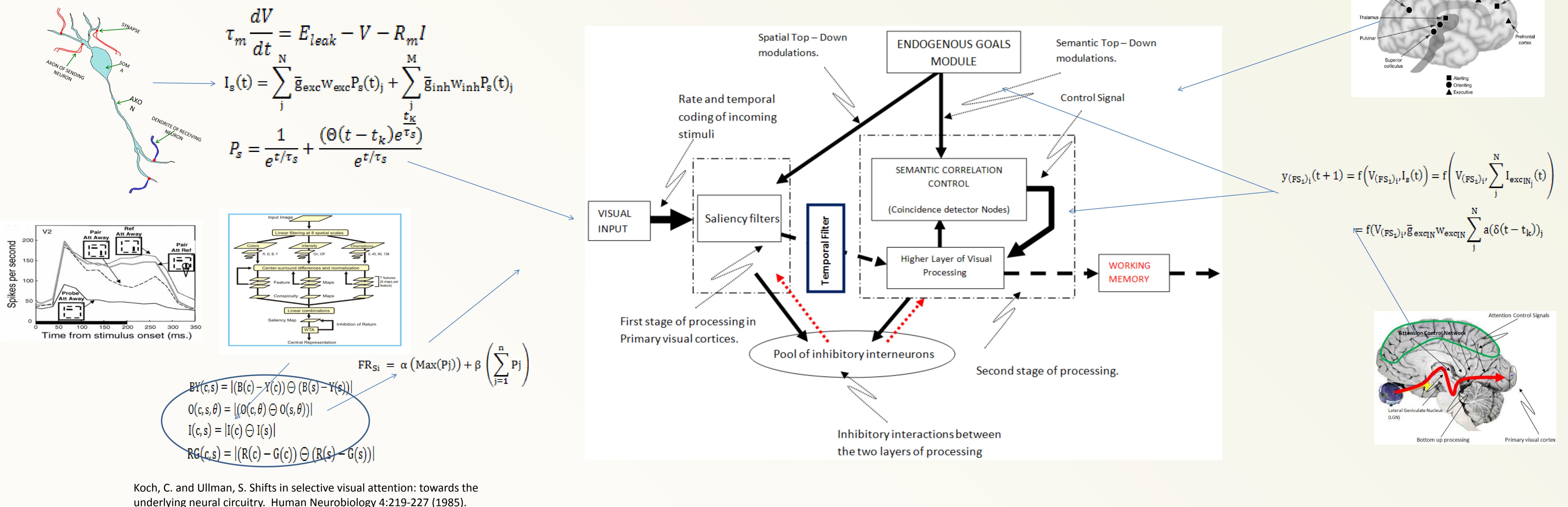
Top-Down (endogenous) attention



Approach for cognitive modeling of visual selective attention



Computational modeling guided by Neuroscience

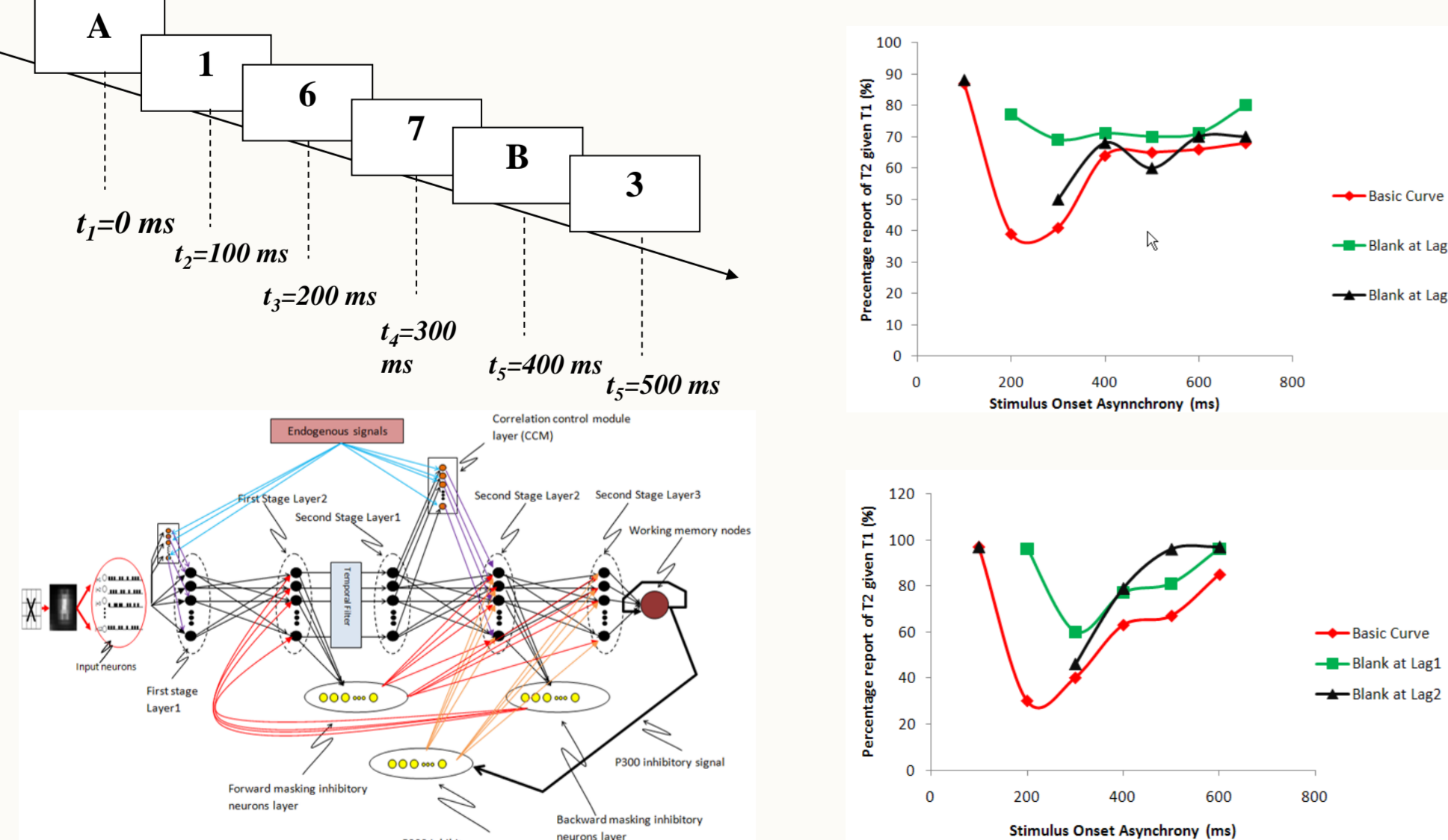


Koch, C. and Ullman, S. Shifts in selective visual attention: towards the underlying neural circuitry. Human Neurobiology 4:219-227 (1985).

Evaluation of the model based on relevant behavioral experiments

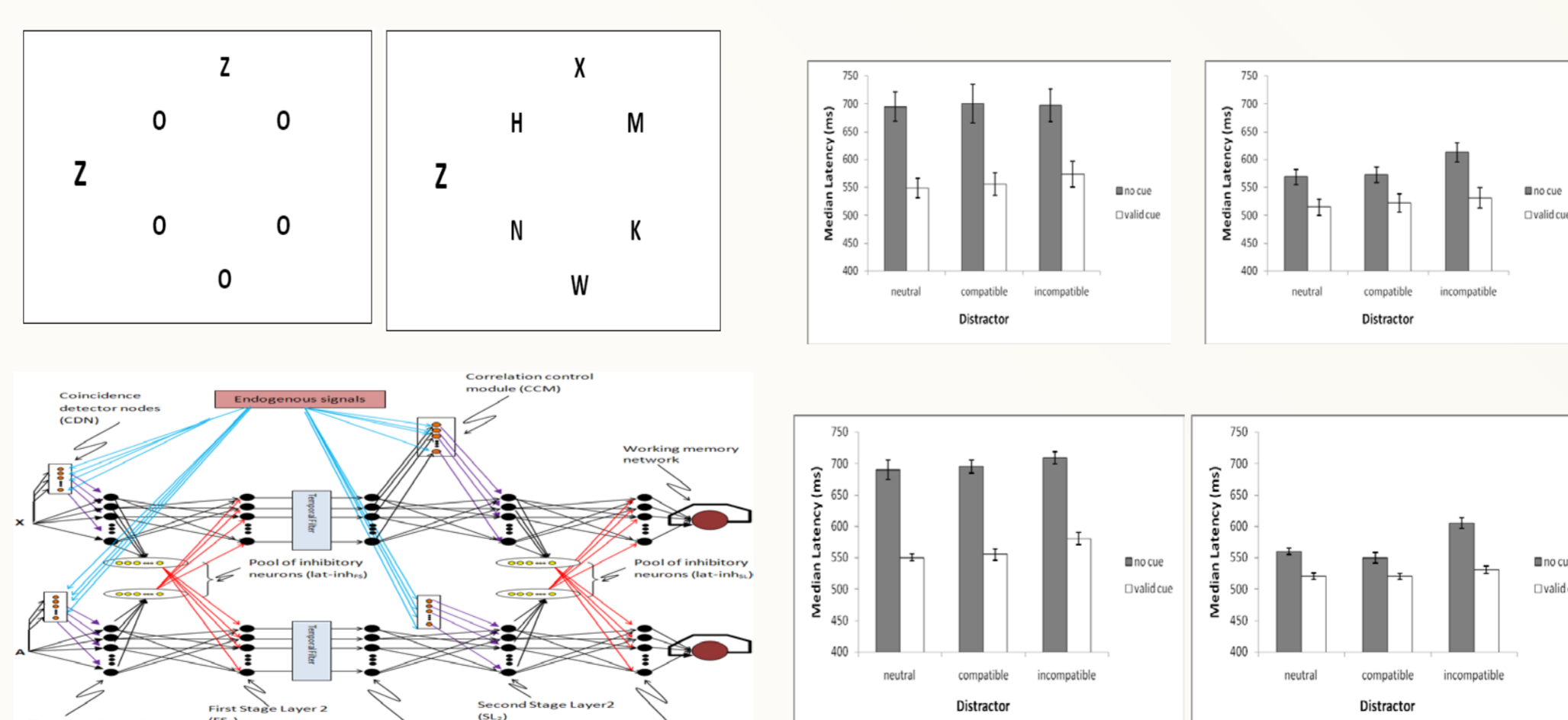
The Attentional Blink

Raymond JE, Shapiro KL, Arnell KM (1992). "Temporary suppression of visual processing in an RSVP task: an attentional blink?". J. of exp. psych. Human perc, and performance 18 (3): 849-60



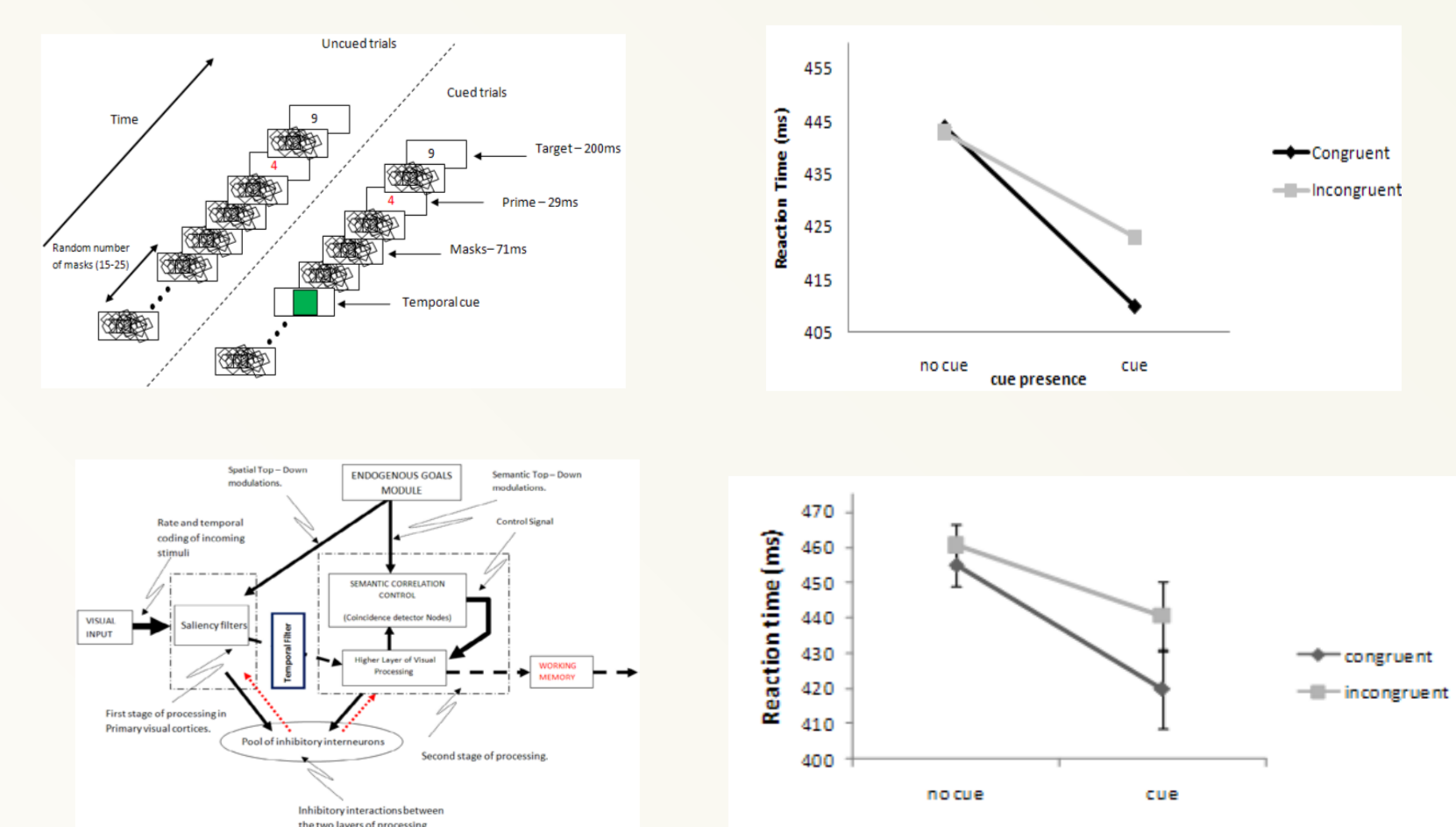
Perceptual Load theory

Lavie, N. (1995). Perceptual load as a necessary condition for selective attention. Journal of Experimental Psychology: Human Perception and Performance, 21(3), 451-468.



Attention & consciousness

Naccache L., Blandin E., Dehaene S. (2002). Unconscious masked priming depends on temporal attention. Psychol Sci 2002; 13: 416-424.



Potential applications

Medical applications

- ADHD
- Schizophrenia
- ...

Social applications

- Working safety..
- Car accidents avoidance

Human computer interactions applications

- Operating systems
- Computer networks

Computational intelligence

- Robotics
- Intelligent algorithms...