

# HIGHLIGHTS

## ATTENTION

### Faster than the eye can see

Visual attention is a demanding task for the brain, owing to the many factors that can affect our attentional capability. A recent paper reports that it is possible to dissociate two aspects of attention — its top-down control and the so-called ‘attentional blink’ — in people with mild cognitive impairment (MCI). This dissociation indicates that different neural substrates subserve these two processes.

Many studies have established that, when presented with complex visual stimuli, our attention to specific elements of the scene is influenced by ‘automatic’, stimulus-driven processes (termed bottom-up) and by task-dependent, goal-directed

mechanisms (termed top-down). At the same time, much effort has gone into finding out how quickly attention can be directed at a stimulus, and how long it takes to disengage from it to attend to a different one. This effort has disclosed a phenomenon known as attentional blink; when we’re required to identify two stimuli that are briefly presented in close succession, the first stimulus interferes with our ability to identify the second for a period of up to 500 milliseconds.

In the new paper, Perry and Hodges explored how top-down mechanisms interacted with the attentional blink by sequentially pre-

senting two brief stimuli, and asking subjects to identify both of them, or to ignore one of them and identify the other. In the first case, the interference of the first stimulus with the identification of the second one constituted a measure of the attentional blink; in the second case, the ability to ignore the first stimulus provided a measure of top-down processing. They tested two groups of people — healthy subjects and people with MCI (the pre-clinical stage of Alzheimer’s disease) — and found that, whereas the attentional blink was similar between the groups, top-down processing was impaired in people with MCI.

What are the neural systems that subserve these attentional processes? The prefrontal cortex has been implicated in top-down processing, and the authors propose that the attentional blink might depend on perceptual processes early in the visual pathway, although more experiments will be needed to support this idea. More importantly, the data indicate that mnemonic problems are not the only feature of the preclinical stage of Alzheimer’s disease, but that attentional deficits, which might have diagnostic implications, are also present.

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#### References and links

**ORIGINAL RESEARCH PAPER** Perry, R. J. & Hodges, J. R. Dissociation between top-down attentional control and the time course of visual attention as measured by attentional dwell time in patients with mild cognitive impairment. *Eur. J. Neurosci.* **18**, 221–226 (2003)

**FURTHER READING** Corbetta, M. & Shulman, G. L. Control of goal-directed and stimulus-driven attention in the brain. *Nature Rev. Neurosci.* **3**, 201–215 (2002)

