Staged decline of visual processing capacity in mild cognitive impairment and Alzheimer's disease.

Visual information intake was assessed with a whole-report task in patients with probable Alzheimer's disease (AD), mild cognitive impairment (MCI), and healthy elderly control subjects. Based on a theory of visual attention (TVA), four parameters were derived characterising different aspects of visual processing capacity: perceptual threshold, iconic memory, processing speed, and visual short-term memory (VSTM) storage capacity. Results indicated increased perceptual thresholds in MCI, and an additional decline in processing speed and VSTM storage capacity in AD. Cholinomimetic medication had beneficial effects on processing speed in AD patients. Perceptual thresholds were associated with disease duration, but not with cognitive measures, while the reverse was true for speed and VSTM measures. These results reveal a staged pattern of deficits affecting pre-attentive visual processing in MCI, and attentive processing in AD. It is compatible with the amyloid cascade hypothesis and suggests that impaired visual processing is a pathological feature present already at the MCI stage and might represent a distinct marker of upcoming AD independently from memory deficits.