Photo: Brian Summers

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Reducing visual clutter may help Alzheimer's patients recognize familiar objects

People diagnosed with early-stage Alzheimer's disease are often unable to recognize once-familiar faces and objects. New research suggests that this is not simply a memory problem but an issue of perception. "Alzheimer's patients have trouble recognizing a loved one's face not just because they can't remember it but also because they aren't able to correctly perceive its distinct combination of features to begin with," said Morgan Barense of the Department of Psychology.

In a series of trials, Barense, her students and colleagues at the Georgia Institute of Technology tested patients with mild cognitive impairment (MCI) — a disorder commonly thought to be a precursor to Alzheimer's — on their ability to determine whether objects were different or identical.

In one set of trials, patients were shown many pairs of photos of very similar blob-like objects. As expected, MCI patients struggled greatly to identify identical pairings. In trials where the blob-like objects were interspersed with photos in which non-matches were more extreme and varied — for example, a picture of a butterfly shown next to a photo of a microwave — patients performed much better.

The research contributes to growing evidence that a part of the brain once believed to support memory exclusively — the medial temporal lobe — also plays a role in object perception. The findings have practical implications for helping patients adapt and perform everyday tasks. For example, the buttons on a telephone tend to be the same size and colour. Only the numbers are different — a very slight visual difference for someone who struggles with object perception. One solution could be a telephone with varying sized buttons and different colours.

Human ancestors hunted with stone-tipped spears a half-million years ago

Stone spear tips are a common feature at Stone Age archeological sites, leading to the widely held view that our ancestors were using them to hunt 300,000 years ago. But a recent analysis of stone spear points recovered from Kathu Pan 1 in South Africa has pushed the timeline back even further to about 500,000 years ago. Anthropologist Jayne Wilkins, who was a PhD candidate at the time, led the team of researchers from U of T, Arizona State University and the University of Cape Town. Their analysis placed the spear tips in the early Middle Pleistocene, a period associated with *Homo heidelbergensis*, the last common ancestor of Neanderthals and modern humans.

"This is the first evidence that the technology originated prior to or near the divergence of these two species," said Wilkins. "It now looks like some of the traits that we associate with modern humans and our nearest relatives can be traced further back in our lineage."

Photo: Erich C. Fisher

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