

# Where is the accurate memory? The eyes have it

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(Medical Xpress) -- The witness points out the criminal in a police lineup. She swears she'd remember that face forever. Then DNA evidence shows she's got the wrong guy. It happens so frequently that many courts are looking with extreme skepticism at eyewitness testimony.

Is there a way to get a more accurate reading of [memory](#)? A new study says yes. "[Eye movements](#) are drawn quickly to remembered objects," says Deborah Hannula, assistant professor at the University of Wisconsin Milwaukee, who conducted the study with Carol L. Baym and Neal J. Cohen of the University of Illinois, Urbana-Champaign and David E. Warren of the University of Iowa College of Medicine. Tracking where and for how long a person focuses his or her eyes "can distinguish previously seen from novel materials even when behavioral reports fail to do so." The findings will appear in an upcoming issue of [Psychological Science](#), a journal published by the Association for Psychological Science.

The researchers gave university students 36 faces to study. These target faces were also morphed to produce images closely resembling them; the morphed phases were not seen during the study phase. The students were then shown 36 three-face displays, one at a time. Told that the studied faces wouldn't always be there, the participants had to press a button indicating which face was the studied one, or simply choose a face if they felt none had been studied. They then reported verbally whether the studied target face was present or not. While they looked at the 3-face

display, their eye movements were recorded, tracking where the eyes focused first and what proportion of time was spent looking there. For the analysis, the psychologists divided the faces into three groups: studied targets; morphs mistaken for the “target” face; and morphs chosen and known to be incorrect.

Participants easily identified the target faces most of the time. They also spent more time looking at these faces, and did so soon after the 3-face display had been presented. “The really interesting finding is that before they chose a face and pressed a button, there was disproportionate viewing of the target [faces](#) as compared to either type of selected face,” said Hannula. However, “after the response was made, viewing tended to mimic the behavioral endorsement of a face as studied or not, whether that endorsement was correct or incorrect.” In other words, “pre-response viewing seems to reflect actual experience, and post-response viewing seems to reflect the decision making process and whether or not the face will be endorsed as studied.”

Hannula theorizes as to what is happening: “Early disproportionate viewing of the target face may precede and help give rise to awareness that a particular face has been studied. Subsequently, we begin to think about the choice that we’re making”—we look closely, compare and weigh the options—“these cognitive processes permit us to make a decision, but may also lead us down the wrong path. In this case, leading us to endorse a face as studied despite having never seen it before.”

Aside from the potential for practical application, says Hannula, eye movement methods could be used to examine memory in individuals—like some psychiatric patients and children – who may have trouble communicating what it is that they remember. “Eye movements might provide us with more information about what exactly these individuals remember than behavioral reports alone.”

**More information:** [www.psychologicalscience.org/i...](http://www.psychologicalscience.org/i...)  
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Provided by Association for Psychological Science

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