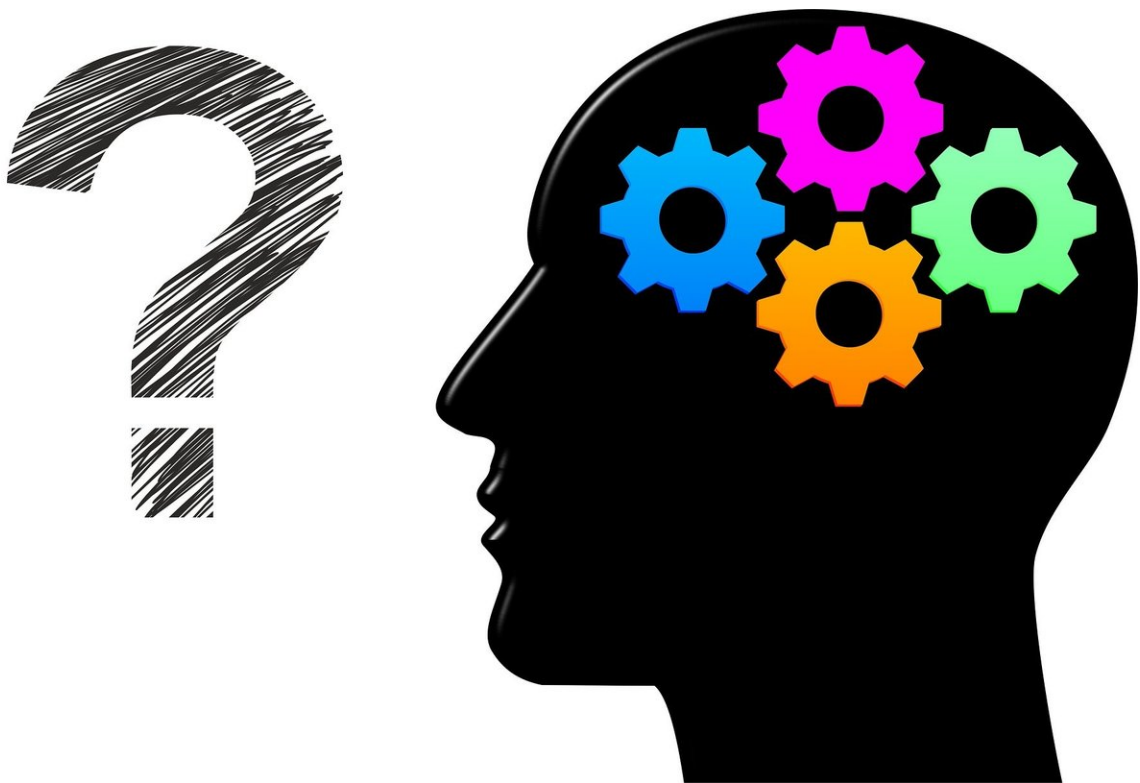


# New research suggests failure to retrieve relevant details from memory may underlie face blindness

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The ability to recognize faces is a complex neurocognitive skill with important social implications. The disorder, which, according to some estimates, affects more than 2 percent of the population, can lead to

isolation and anxiety and impair personal and work relationships.

The traditional view of face [blindness](#)—prosopagnosia in scientific parlance—has held that the disorder arises from deficits in visual perception. Under that view, individuals with face blindness are unable to visually distinguish the features of [faces](#) presented side by side and unable to determine whether the faces are the same or not.

Now a new study led by researchers at Harvard Medical School and the VA Boston Healthcare System shows that face blindness may arise from deficits beyond visual perception and appears to involve glitches in retrieving various contextual cues from memory.

The results, published July 5 ahead of print in the journal *Cortex*, suggest that the traditional view of face blindness as a purely visual perceptual disorder may be reductive, the researchers said. Further, they reveal that successful facial recognition requires recollection, or the recall of relevant contextual details about a person, such as their name or profession.

The new findings can help explain a mystifying discrepancy in face blindness research: People with the condition often fail to visually identify [familiar faces](#), but many also perform normally on visual-perception tests.

"This inconsistency has always hinted that there may be other factors at play that go beyond visual perception," said study senior author Joseph DeGutis, HMS assistant professor of psychiatry at VA Boston. "Our findings suggest that one important deficit beyond perception is face recollection."

The ability to recognize a face requires two forms of memory: Recollection and familiarity. Recollection is the retrieval of contextual

information upon seeing a face—a fellow shopper greeting you in the store and you recognizing them as the person you met through work a few weeks back. Familiarity, on the other hand, is a fuzzier "feeling of knowing" without any contextual information, the researchers explained. Think of the fellow shopper looking vaguely familiar but without any of the relevant details that tell you how you know them.

The findings can help inform the design of techniques to boost face recognition in people with developmental prosopagnosia—a form of face blindness that is not caused by [brain injury](#), poor vision or neurodevelopmental disorders like autism.

"Our results underscore that prosopagnosia is a far more complex disorder that is driven by more than deficits in [visual perception](#)," said study first author Anna Stumps, a researcher in the Boston Attention Learning Laboratory at VA Boston. "This finding can help inform the design of new training approaches for people with face blindness."

The research team is currently working to design one such experimental program in the VA Boston laboratory where the work was conducted.

The study involved 60 people, ages 18 to 65, half of whom had lifelong face blindness.

The participants were asked to perform a series of facial-recognition tasks by studying and then identifying sets of faces that the participants had not seen prior to the study.

Participants were asked to study 60 faces shown on a computer screen, one at a time. The participants were then shown a scramble of 120 faces—some of them already seen during the study session and some completely new.

To tease out the differences in recognition memory between participants with and without face blindness, DeGutis and colleagues measured their degree of confidence in classifying each face as "old" or "new" on a scale of 1 to 6. Correctly identifying a face as old with high confidence reflects the use of recollection, the researchers said, whereas correctly identifying a face as old with less confidence reflects the use of familiarity.

Compared with participants who had face blindness, people without it were significantly more confident that they had seen these faces before. However, those with face blindness were still able to correctly identify many of the faces they had seen before, although with less confidence. In other words, when trying to recognize a face, participants with face blindness relied on familiarity, the vague sense of knowing or having seen someone before without specific contextual information. In contrast, individuals without face blindness relied on recollection.

Taken together, these findings suggest that people with face blindness use different memory processes for face recognition.

The results, the researchers said, demonstrate that successful face recognition requires more than a vague familiarity with a face—a sense of having seen a face before but without recalling any other details to "place" the face. Memory researchers call this inability to identify a familiar face out of context "butcher-on-the-bus" phenomenon. Though everyone experiences this from time to time, for people with true [face blindness](#) this can happen frequently, as often as multiple times a day.

"Our findings suggest that people with developmental prosopagnosia use a different memory system when trying to learn and remember faces and that system is less optimally suited for the task of recognizing faces," DeGutis said.

**More information:** Anna Stumps et al, Characterizing developmental prosopagnosia beyond face perception: Impaired recollection but intact familiarity recognition, *Cortex* (2020). [DOI: 10.1016/j.cortex.2020.04.016](https://doi.org/10.1016/j.cortex.2020.04.016)

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