Seeing Double: Brain Blends Faces to Reduce Visual Chaos

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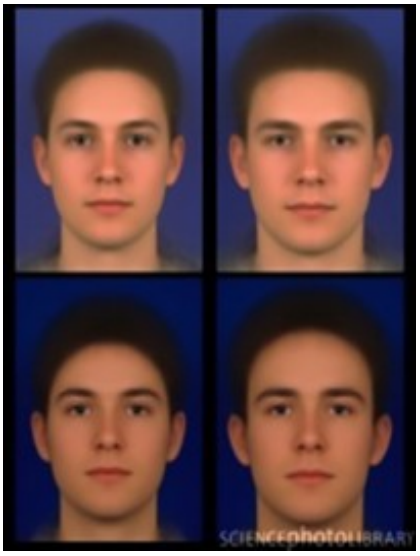
New research helps explain why we accept Hollywood stunt doubles as the identified actor, even when they do not look alike.



University of California, Berkeley researchers have identified a unique brain mechanism by which we latch on to a particular face even when it changes.

Investigators say that the brain action is a survival trait used to anchor a sense of awareness, stability, and permanence in what would otherwise be a visually disordered world.

“If we didn’t have this bias of seeing a face as the same from one moment to the next, our perception of people would be very confusing. For example, a friend or relative would look like a completely different person with each turn of the head or change in light and shade,” said Alina Liberman, neuroscience graduate student and lead author of the study.

The study has been published in the online edition of the journal *Current Biology*.

In the study, participants were asked to search for an exact match to a “target” face on a computer screen.

Investigators discovered the study participants consistently identified a face that was not the target face, but a composite of the faces they had seen over the past few seconds.

Researches also discovered participants judged the match to be more similar to the target face than it really was.

This observation helps to explain how humans process visual information from moment to moment to stabilize their environment.

“Our visual system loses sensitivity to stunt doubles in movies, but that’s a small price to pay for perceiving our spouse’s identity as stable,” said Dr. David Whitney, a professor of psychology at University of California, Berkeley and senior author of the study.

In previous studies, Whitney has established the existence of a “continuity field” in which we visually meld similar objects seen within a 15-second time frame.

For example, that study helped explain why we miss movie-mistake jump cuts, such as Harry Potter’s T-shirt abruptly changing from a crewneck into a henley shirt in the movie “Harry Potter: Order of the Phoenix.”

The current study builds on the continuity field concept by expanding the theory to include observation and recognition of faces — arguably one of the most important human social and perceptual functions.

“Without the extraordinary ability to recognize faces, many social functions would be lost. Imagine picking up your child at school and not being able to recognize which kid is yours,” Whitney said.

“Fortunately, this type of face blindness is rare. What is common, however, are changes in viewpoint, noise, blur, and lighting changes that could cause faces to appear very different from moment to moment. Our results suggest that the visual system is biased against such wavering perception in favor of continuity.”

Researchers tested this phenomenon by having study participants view dozens of faces that varied in similarity.

Each six seconds, a “target face” flashed on the computer screen for less than a second, followed by a series of faces that morphed with each click of an arrow key from one to the next.

Participants clicked through the faces until they found the one that most closely matched the “target face.”

Time and again, the face they picked was a combination of the two most recently seen target faces.

“Regardless of whether study participants cycled through many faces until they found a match or quickly named which face they saw, perception of a face was always pulled towards face identities they saw within the last 10 seconds,” Liberman said.

“Importantly, if the faces that participants recently saw all looked very distinct, the visual system did not merge these identities together, indicating that this perceptual pull does depend on the similarity of recently seen faces.”

Researchers then performed a follow-up experiment in which the faces were viewed from different angles instead of frontal views.

This was done to ensure that study participants were not latching on to a particular feature, say, bushy eyebrows or a distinct shadow across a cheekbone, but actually recognizing the entire visage.

“Sequential faces that are somewhat similar will display a much more striking family resemblance than is actually present, simply because of this continuity field for faces,” Liberman said.

Source: University of California, Berkeley

APA Reference
Nauert, R. (2014). Seeing Double: Brain Blends Faces to Reduce Visual Chaos. *Psych Central*. Retrieved on January 12, 2015, from http://psychcentral.com/news/2014/10/06/seeing-double-brain-blends-faces-to-reduce-visual-chaos/75828.html

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