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Unusual medical case shows looking at eyes key to reading fear

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CBC News

LONDON - A woman who is unable to recognize fear from facial expressions is helping scientists to understand how our brains perceive emotions.

The 38-year-old known as SM has a rare disease that damaged both sides of her amygdala, the almond-shaped part of the brain that processes emotion.

In an experiment, researchers at the California Institute of Technology showed SM photographs of various facial expressions while covering part of the face.

Psychology Prof. Ralph Adolphs and his team found she completely avoided looking at people's eyes, but discerned emotions solely from watching the nose and mouth.

SM was unable to tell if someone was afraid based on facial expressions, although she had no problem recognizing other emotions, such as happiness or anger that are expressed in a smile or scowl.

Previous studies showed the amygdala of normal people responds to the wide-eyed expressions of terror.



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Charles Darwin proposed that humans evolved the ability to display and perceive emotion to rapidly convey danger non-verbally. The ability could help us to find the location of a threat by noting what direction the fearful eyes are gazing at.

"SM's recognition of fearful faces became entirely normal when she was instructed explicitly to look at the eyes," Adolph's team said in Thursday's issue of the journal *Nature*.

The effect was short-lived and she had to be constantly reminded to look at eyes.

Since patients with brain damage are rarely able to regain lost function simply by receiving instructions, the results suggest SM doesn't have a problem processing the visual cues.

Instead, it seems like the damage is an area that tells us where and how to look.

"These new results unexpectedly reveal that the damage to the amygdala might impair attention and exploration strategies, rather than causing a perceptual deficit," said Patrik Vuilleumier, a neuroscientist at the University Medical Center of Geneva, Switzerland, who wrote a commentary that accompanies the study.

Adolph noted explicit reminders to look at eyes may also help people with autism, who tend to abnormally focus on certain facial features.

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