Bias towards negativity predicts vulnerability to stress

February 2 2010

A man with a stress-related headache massaging his head to relieve the pain. Credit: Wellcome Library, London

(PhysOrg.com) -- People who naturally notice negative information over positive information are more susceptible to stress, research has revealed. The findings increase our understanding of what makes people vulnerable to stress and could lead to new forms of therapy.

Researchers from the University of Essex found that they could predict the body's reaction to stress up to eight months after they measured a person's bias towards positive or negative images.

The results suggest that biases towards noticing negative things - especially when they operate subconsciously - might predispose people to anxiety disorders.

In the study, around 100 students were tested three times over an eight-month period. Subjects were first asked to fill in a questionnaire to

assess their levels of anxiety and depression. The researchers also measured the level of cortisol - a known physiological marker of stress - in their saliva.

To measure the participants' reactions to positive and negative images the researchers flashed a variety of pictures very rapidly on a computer screen and asked particpants to detect small probes that appeared near the pictures.

Some people could detect the probes more quickly when they appeared near positive images such as smiling babies and playing puppies. Others were quicker to notice the probes near negative images such as a snarling dog or pointed gun. These biases were particularly strong when the images were presented so quickly that people could not consciously see them.

Four months later, the participants reactions to stress were tested following a lab-based stress test: each was asked to prepare and perform a five-minute speech presented to two of the researchers and a video camera. At the eight-month mark, they were tested again, this time at a point with a real-life stressor - the students' end of year exams. Each participant was asked to give a short talk to one of the researchers and a camera on 'Have I prepared well enough for my exams?'

The researchers found that those who had a strong subliminal bias towards negative, rather than positive, material showed a stronger physiological (cortisol) reaction to both laboratory-based and real-life stresses. Furthermore, these bias measurements were much better for predicting subsequent stress than questionnaire measures of anxiety, depression and neuroticism.

"These biases are likely to be reliable early warning signs for vulnerability to anxiety, and open up possibilities for therapy," said

Professor Elaine Fox, who led the study.

The team's previous research had identified a gene linked to a tendency to selectively avoid negative images and to pay attention to positive information.

They are now continuing their research to see whether using computer-based training could actively modify these biases in people's attention and make them more resilient to traumatic life events.

  More information: Fox E et al. Preconscious processing biases predict emotional reactivity to stress. Biol Psychiatry 2010 [Epub ahead of print].

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