Are the anxious oblivious?

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Anxious people have long been classified as "hypersensitive" – they're thought to be more fearful and feel threatened more easily than their counterparts. But new research from Tel Aviv University shows that the anxious may not be hypersensitive at all – in fact, they may not be sensitive enough.

As part of a study on how the brain processes fear in anxious and non-anxious individuals, Tahl Frenkel, a Ph.D. candidate in TAU's School of Psychological Sciences and the Adler Center for Research in Child Developmental and Psychopathology, working with her supervisor Prof. Yair Bar-Haim, measured brain activity as study participants were shown images designed to induce fear and anxiety. Using an EEG to measure electrical activity caused by the neuronal activity that represents deep processing of these stimuli, the researchers discovered that the anxious group was actually less stimulated by the images than the non-anxious group.

The results of the study were recently published in *Biological Psychology*.

Measuring fear in the subconscious

Surprisingly, anxious study participants weren't shown to be as physiologically sensitive to subtle changes in their environment as less fearful individuals, Frenkel explains. She theorizes that anxious people could have a deficit in their threat evaluation capabilities — necessary for effective decision-making and fear regulation – leading to an under-reaction to subtle threatening stimuli. Non-anxious individuals seem to

have a subconscious "early warning system," allowing them to prepare for evolving threats. Essentially, anxious people are "surprised" by fearful stimuli that non-anxious individuals have already subconsciously noticed, analyzed, and evaluated.

To get a more accurate picture of both behavioral and neural reactions to fear-inducing stimuli, the researchers drew participants from a group of 240 undergraduate students at the university. Using the Speilberger's State-Trait Anxiety Inventory trait scale, they identified the 10 percent "most anxious" individuals and 10 percent "least anxious" individuals to participate in the final study.

In the first part of their study, the researchers measured behavioral responses to fear-inducing stimuli. A set of pictures, featuring a person looking progressively more fearful on a scale of 1-100, was shown to the participants. When shown the sequence of pictures, anxious people were quicker to respond to the fear in the subject's face. They identified a face as being "fearful" at a rating of only 32, while non-anxious people did not describe the same face as fearful until it reached a rating of 39.

But the EEG data tells a different story, Frenkel says. The researchers also measured the participants' brain waves by EEG while they were being shown the photographs and discovered that non-anxious individuals completed an in-depth processing of fear-inducing stimuli that informed their behavioral response, whereas anxious individuals did not.

Compensating for an "insensitive" brain

When confronted with a potential threat, Frenkel concluded, non-anxious people unconsciously notice subtle changes in the environment before they consciously recognize the threat. Lacking such preparation, anxious individuals often react more strongly, as the threat takes them

more "by surprise."

"The EEG results tell us that what looks like hypersensitivity on a behavioral level is in fact the anxious person's attempt to compensate for a deficit in the sensitivity of their perception," she explains.

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