

Brain science: How to manage fear and anxiety

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Everyone knows what it's like to be afraid. A snake slithers unexpectedly across the path ahead, and your body automatically responds. You spring backward should it strike. Your heart pounds, muscles tense, breath quickens. You begin to perspire. All attention is on the snake.

This is the <u>fear response</u>, says Dr. Christa McIntyre-Rodriguez, head of the undergraduate neuroscience program at the University of Texas at Dallas.

It's a primitive, physiological and emotional response to something perceived as immediately dangerous, she says. Fear focuses our attention and prepares us to act, making it essential to protecting us from threats to our survival - threats like a <u>poisonous snake</u> or an out-of-control car speeding toward us.

But sometimes, <u>fear</u> is unwarranted - say, when you peer closer at the snake and realize it's just a rubber hose. Other times, fear remains longer than it should, as in the case of <u>post-traumatic stress disorder</u>.

How exactly do our brains process fear? What's the difference between fear and <u>anxiety</u>? And how can we prevent either from unnecessarily overwhelming us?

We talked with three experts to find out.

When something frightens us, the part of the brain called the amygdala



triggers the physiological response we know as fear, explains McIntyre-Rodriguez. After the initial fear response, the neocortex, a more recently evolved part of the brain that's larger in humans than in other vertebrates, then evaluates the situation, drawing on the wisdom of the individual to determine whether there's really a danger, she says.

That's when you ask yourself: Do I need to be fearful of this? If yes, how can I protect myself? If no, OK, I can calm down.

Say somebody jumps out at you in a haunted house. At first you scream in shock, she says, but it's mere seconds before you realize there's no immediate threat. The next thing you know, you're laughing at yourself. That's the neocortex doing its job.

"Kids really ruminate over these scary things because their neocortex isn't as developed as an adult's," she says. "They rely on their parents. They don't have the wisdom of a fully developed brain."

While fear is an immediate response, anxiety is the anticipation of danger, she says.

"Most of anxiety comes from some root fear," explains Dr. Alan Podawiltz, chairman of psychiatry and behavioral health at the University of North Texas Health Science Center and John Peter Smith Health Network.

That could be a fear of financial problems, fear of someone hurting you, fear of flying, fear of snakes, fear of scary stories, etc., he says.

With prolonged anxiety, the cellular structures of the body struggle under the constant cascade of hormones. That can lead to physical problems, such as <u>high blood pressure</u>, lack of appetite and loss of the desire to exercise, he says.



Nevertheless, experts say, anxiety is a part of normal human emotional experience, which means it's important to have ways to cope with it.

Preparing before facing something fearful helps ease anxiety, Podawiltz says.

For example, say you're anxious before a job interview.

Podawiltz suggests first asking, "Are they going to kill me?"

"No. So there's no reason for me to have a fight-or-flight response. Now, are they going to ask me about my work experiences? Yes. So, I need to think about what experiences are most appropriate for that setting."

Imagining what you're going to be up against and how you will respond helps your body counteract the fear response by slowing the heart rate and relaxing the muscles.

"It's preparing myself before I go into that arena," Podawiltz says. "It's like what teachers do before teaching a class and what the military does before an operation ... it doesn't take away anxiety, but it provides better coping mechanisms when the anxiety does occur."

Exercises like yoga and meditation help in the same way, he says.

"Don't attempt to not think about it!" adds Dr. Alicia Meuret, associate professor of psychology and director of the Anxiety and Depression Research Center at Southern Methodist University.

In an email, she explains the tangled logic behind this: "By trying not to think about it, you will need to think about whether you are thinking about it - which will massively increase the amount of thinking about it."



Instead, Meuret suggests calming irrational fears by considering the likelihood of the worst-case outcome, which might be rather small.

But, she adds, for some people, anxiety can become more frequent, occur at unreasonable times or have an intensity out of proportion relative to the actual danger. In these cases, she says, treatments, such as psychosocial interventions and medication, can help.

"Even though it often seems that what patients with an anxiety disorder are fearful about is trivial, the disorder itself is not," Meuret says. "It can be extremely disabling and is associated with immense social and economic costs."

When asked what he fears, Podawiltz says he's afraid of speaking in front of crowds.

Besides mentally preparing himself before a speech, he also calms himself during the talk by giving himself a physical cue to relax.

With his right hand, he touches his finger to his thumb. To the audience, it looks like he's merely pointing, but really, he's pausing, taking a breath and giving himself a mental message to relax.

"Guess what?" asks Podawiltz. "My anxiety lowers."

Since the Ebola scare in Dallas, McIntyre-Rodriguez says she's felt fearful of germs. To cope, she reminds herself that it's helpful to fear germs because that fear reminds her to wash her hands and not touch dirty things.

She also evaluates the risk of encountering the virus with the rewards of experiencing life.



After all, she says, "We have to accept risk in everything."

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