



ARE YOU TOO ANXIOUS?

Everybody feels a bit of anxiety from time to time, but a clinical anxiety disorder is a different matter. If you suspect you may be suffering from one, you should consult a professional for a diagnosis. The psychological diagnostic manual lists 12 anxiety conditions. Here are the signs of five of the most common ones:

PANIC DISORDER

WHAT IT IS: Recurrent, unexpected attacks of acute anxiety, peaking within 10 minutes. Such panic may occur in a familiar situation, such as a crowded elevator

WHAT IT ISN'T: Occasional episodes of extreme anxiety in response to a real threat

WHAT TO LOOK FOR: Palpitations; chest pains; sweating, chills or hot flushes; trembling; shortness of breath or choking; nausea; light-headedness or feeling of unreality; fear of losing control or dying

BOTTOM LINE: Four or more of these symptoms in at least two discrete episodes could spell trouble

SPECIFIC PHOBIA

WHAT IT IS: Consuming fear of a specific object or situation, often accompanied by extreme anxiety symptoms

WHAT IT ISN'T: Powerful aversion to certain places or things

WHAT TO LOOK FOR:

- Do you come up with elaborate ways to avoid the object or situation?
- Do you dread the next possible encounter?
- Are you aware that the fear is excessive but you are unable to control it?
- Does merely thinking about the thing you fear make you anxious?

BOTTOM LINE: Don't worry if you just plain hate, say, snakes or crowds or heights. The key is how powerful your feelings are—and how you handle them

OBSESSIVE-COMPULSIVE DISORDER

WHAT IT IS: A preoccupation with specific thoughts, images or impulses, accompanied by elaborate and sometimes bizarre rituals

WHAT IT ISN'T: Fastidious—even idiosyncratic—behavior that does not significantly interfere with your quality of life

WHAT TO LOOK FOR: Are the obsessive thoughts persistent and intrusive?

- Do you expend a lot of energy suppressing the thoughts, usually unsuccessfully?
- Are you generally aware that the thoughts are irrational?

- Is the anxiety temporarily eased by a repetitive ritual such as hand washing or a thought ritual such as praying?
- Are the rituals time consuming?

BOTTOM LINE: Some researchers question whether OCD is a genuine anxiety disorder. Whatever it is, it does respond to treatment—provided you seek help

POST-TRAUMATIC STRESS DISORDER

WHAT IT IS: Repeated, anxious reliving of a horrifying event over an extended period of time

WHAT IT ISN'T: Anxiety following a trauma that fades steadily over the course of a month or so

WHAT TO LOOK FOR: After witnessing, experiencing or hearing about an event that caused or threatened to cause serious injury, do you:

- Have recurrent recollections or dreams about the experience?
- Feel emotionally or physically as if the event were still occurring?
- Experience intense anxiety when something reminds you of the event?
- Try to avoid thoughts, feelings, activities or places associated with the event?
- Have difficulty recalling details of the event?
- Experience anxiety symptoms such as irritability, jumpiness, difficulty sleeping, feelings of detachment from others, diminished interest in things, feelings that your future is in some way limited?

BOTTOM LINE: Sometimes, PTSD will not appear until six months after the event. Seek help whenever symptoms occur

GENERALIZED ANXIETY DISORDER

WHAT IT IS: Excessive anxiety or worry, occurring more days than not for six months

WHAT IT ISN'T: Occasional serious worry that doesn't markedly diminish quality of life

WHAT TO LOOK FOR: Restlessness; difficulty concentrating or sleeping; irritability; fatigue; muscle tension

BOTTOM LINE: If you have three or more symptoms for the required six months, the diagnosis may fit —By Jeffrey Kluger

WHAT YOU CAN DO

There are as many ways to relieve anxiety as there are things that make us anxious. The key is to find the way that works for you—and use it



IMAGE BANK

BEHAVIORAL THERAPY

When the brain sets anxiety alarms ringing, our first inclination is to find the off switch. Behavioral scientists take the opposite approach. They want you to get so accustomed to the noise that you don't hear it anymore. The standard behavioral treatment for such anxiety conditions as phobias, obsessive-compulsive disorder (OCD) and panic disorder is to expose patients to a tiny bit of the very thing that causes them anxiety, ratcheting up the exposure over a number of sessions until the brain habituates to the fear. A patient suffering from a blood phobia, for example, might first be shown a picture of a scalpel or syringe, then a real syringe, then a vial of blood and so on up the anxiety ladder until there are no more rungs to climb. There is a risk that if treatment is cut short (before the patient has become inured to the anxiety triggers), the anxious feelings could be exacerbated. But done right, behavioral therapy can bring relief from specific phobias in as little as two or three sessions. Social anxiety takes somewhat longer, and OCD may take a good deal longer still.

COGNITIVE THERAPY

Rather than expect patients to embrace anxiety, cognitive therapists encourage them to use the power of the mind to reason through it. First popularized in the 1980s, cognitive therapy teaches people who are anxious or depressed to reconfigure their view of the world and develop a more realistic perspective on the risks or obstacles they face. Patients suffering from social-anxiety disorder, for example, might see a group of people whispering at a party and assume the gossip is about them. A cognitive therapist would teach them to rethink that assumption. Some behavioral therapists question cognitive techniques, arguing—not without some justification—that a brain that was so receptive to reason wouldn't be all that anxious in the first place. Cognitive therapists dispute that idea, though some have begun incorporating behavior-modification techniques into their treatment.

ANTIDEPRESSANTS

When talk therapy doesn't work—or needs a boost—drugs can help, especially the class of antidepressants called selective serotonin reuptake inhibitors. Prozac is the best known of these drugs, which work by preventing the brain from reabsorbing too much of the neurotransmitter serotonin, leaving more in nerve synapses and thus helping to improve mood. Another SSRI, Paxil, was recently approved by the Food and Drug Administration specifically for the treatment of social-anxiety disorder, though the others seem to work as well. A third, Zoloft, has been approved for OCD and panic disorder. Each formulation of SSRI is subtly different—targeting specific subclasses of serotonin. And side effects—which can include dry mouth, fatigue and sexual dysfunction—will vary from person to person. A new group of antidepressants, known as serotonin-norepinephrine reuptake inhibitors, may be even more effective in treating anxiety disorders than the SSRIs are. As the name implies, the SNRIs target a second neurotransmitter called norepinephrine, which is secreted by the adrenal gland and plays a role in triggering the fight-or-flight response—thus actually increasing anxiety symptoms in many situations.



However, norepinephrine also helps control emotion and stabilize mood, and, properly manipulated along with serotonin, may be able to do just that for the anxious person.

MINOR TRANQUILIZERS

If the antidepressants have a flaw, it's that they sometimes don't start working for weeks—a lifetime for the acutely anxious. For this reason, many doctors recommend judicious doses of fast-acting relaxants such as the benzodiazepines Xanax, Valium or Klonopin to serve as a temporary bridge until the SSRIs have a chance to kick in. The downside of such drugs is that they can be highly addictive and may merely mask symptoms. For this reason, doctors will prescribe them very carefully and strictly limit refills.

EXERCISE

Before turning to drugs or talk therapy, many people prefer to try to bring their anxiety under control on their own. Unlike

most emotional or physical conditions, anxiety disorders respond well to such self-medication—provided you know how to administer the treatment. One of the most effective techniques is simple exercise. It's no secret that a good workout or a brisk walk can take the edge off even the most acute anxiety. Scientists once believed the effect to be due to the release of natural opiates known as endorphins, but new research has called this into question. Regardless, working out regularly—most days of the week, if possible for at least 30 minutes or so—may well help recalibrate the anxious brain.

ALTERNATIVE TREATMENTS

One of the most popular self-treatments is yoga, which is both a form of exercise and a way to quiet the mind by focusing attention on breathing. Indeed, even without yoga, breathing exercises can help quell an anxiety episode, if only by slowing a racing heart and lengthening the short, shallow breaths of a panic attack.



conflicts that studies of the physical basis of anxiety languished.

In recent years, however, researchers have made significant progress in nailing down the underlying science of anxiety. In just the past decade, they have come to appreciate that whatever the factors that trigger anxiety, it grows out of a response that is hardwired in our brains. They have learned, among other things:

- There is a genetic component to anxiety; some people seem to be born worriers.
- Brain scans can reveal differences in the way patients who suffer from anxiety disorders respond to danger signals.
- Due to a shortcut in our brain's information-processing system, we can respond to threats before we become aware of them.
- The root of an anxiety disorder may not be the threat that triggers it but a breakdown in the mechanism that keeps the anxiety response from careering out of control.

Before we delve into the latest research, let's define a few terms. Though we all have our own intuitive sense of what the words stress and fear mean, scientists use these words in very specific ways. For them, stress is an external stimulus that signals danger, often by causing pain. Fear is the short-term response such stresses produce in men, women or lab rats. Anxiety has a lot of the same symptoms as fear, but it's a feeling that lingers long after the stress has lifted and the threat has passed.

In general, science has a hard time pinning down emotions because they are by nature so slippery and subjective. You can't ask a rat if it's anxious or depressed. Even most people are as clueless about why they have certain feelings as they are about how their lungs work. But fear is the one aspect of anxiety that's easy to recognize. Rats freeze in place. Humans break out in a cold sweat. Heartbeats race, and blood pressure rises. That gives scientists something they can control and measure. "You can bring on a sensory stimulus that makes an animal—or human—fearful and study its effects," says Dr. Wayne Drevets of the National Institute of Mental Health (NIMH). "Then you can take the stimulus away and see how the animal calms down."

Indeed, a lot of what researchers have learned about the biology of anxiety comes from scaring rats and then cutting them open. Just as the Russian physiologist Ivan Pavlov showed 100 years ago that you could condition a dog to salivate at the sound of a bell, scientists today have taught rats to fear all kinds of things—from buzzers to lights—

THE ANATOMY OF WHAT TRIGGERS IT ...

When the senses pick up a threat—a loud noise, a scary sight, a creepy feeling—the information takes two different routes through the brain

A THE SHORTCUT When startled, the brain automatically engages an emergency hot line to its fear center, the amygdala. Once activated, the amygdala sends the equivalent of an all-points bulletin that alerts other brain structures. The result is the classic fear response: sweaty palms, rapid heartbeat, increased blood pressure and a burst of adrenaline. All this happens before the mind is conscious of having smelled or touched anything. Before you know why you're afraid, you are



B THE HIGH ROAD

Only after the fear response is activated does the conscious mind kick into gear. Some sensory information, rather than traveling directly to the amygdala, takes a more circuitous route, stopping first at the thalamus—the processing hub for sensory cues—and then the cortex—the outer layer of brain cells. The cortex analyzes the raw data streaming in through the senses and decides whether they require a fear response. If they do, the cortex signals the amygdala, and the body stays on alert

1. Auditory and visual stimuli

Sights and sounds are processed first by the thalamus, which filters the incoming cues and shunts them either directly to the amygdala or to the appropriate parts of the cortex

2. Olfactory and tactile stimuli

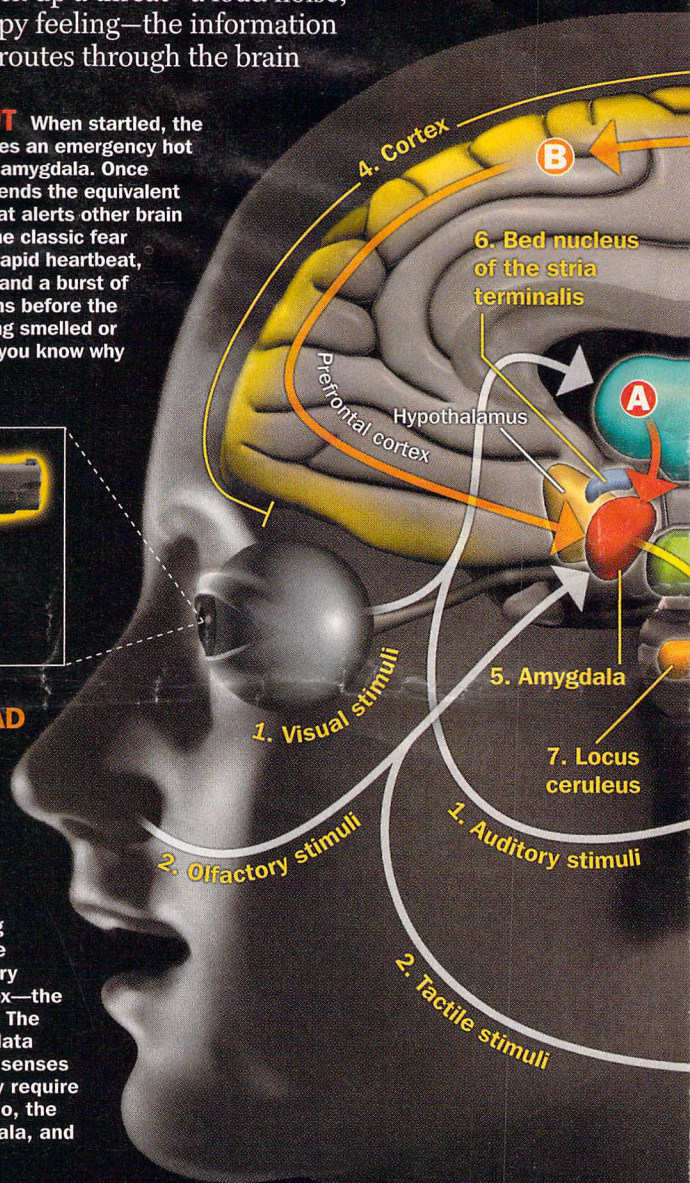
Smells and touch sensations bypass the thalamus altogether, taking a shortcut directly to the amygdala. Smells, therefore, often evoke stronger memories or feelings than do sights or sounds

3. Thalamus

The hub for sights and sounds, the thalamus breaks down incoming visual cues by size, shape and color, and auditory cues by volume and dissonance, and then signals the appropriate parts of the cortex

4. Cortex

It gives raw sights and sounds meaning, enabling the brain to become conscious of what it is seeing or hearing. One region, the prefrontal cortex, may be vital to turning off the anxiety response once a threat has passed

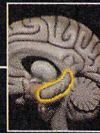
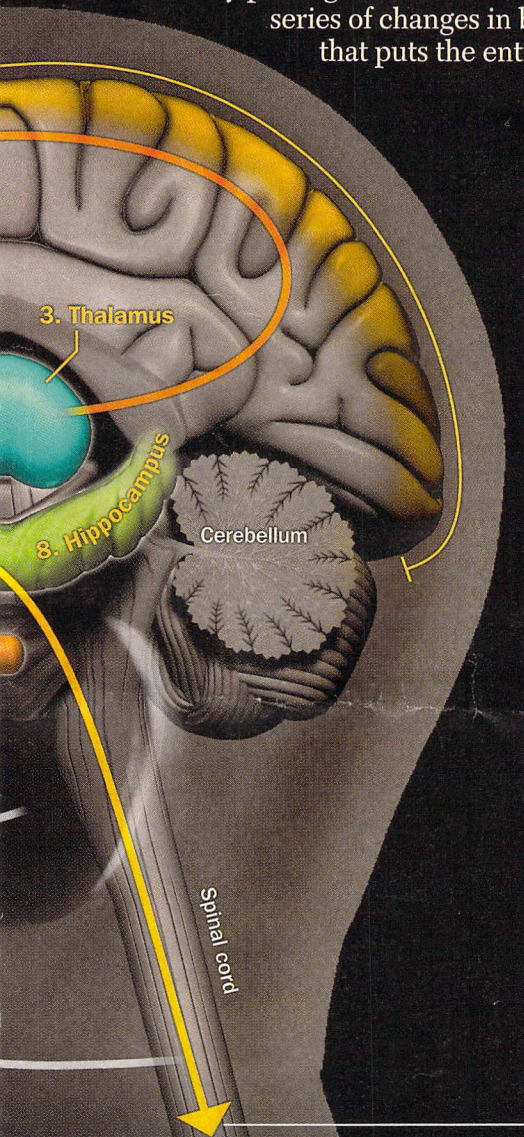


ANXIETY

TIME Diagram by Joe Lertola.
Text by Alice Park

... AND HOW THE BODY RESPONDS

By putting the brain on alert, the amygdala triggers a series of changes in brain chemicals and hormones that puts the entire body in anxiety mode



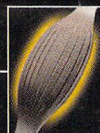
STRESS-HORMONE BOOST

Responding to signals from the hypothalamus and pituitary gland, the adrenal glands pump out high levels of the stress hormone cortisol. Too much cortisol short-circuits the cells in the hippocampus, making it difficult to organize the memory of a trauma or stressful experience. Memories lose their context and become fragmented



RACING HEARTBEAT

The body's sympathetic nervous system, responsible for heart rate and breathing, shifts into overdrive. The heart beats faster, blood pressure rises and the lungs hyperventilate. Sweat increases, and even the nerve endings on the skin tingle into action, creating goose bumps



FIGHT, FLIGHT OR FRIGHT

The senses become hyperalert, drinking in every detail of the surroundings and looking for potential new threats. Adrenaline shoots to the muscles, preparing the body to fight or flee



DIGESTION SHUTDOWN

The brain stops thinking about things that bring pleasure, shifting its focus instead to identifying potential dangers. To ensure that no energy is wasted on digestion, the body will sometimes respond by emptying the digestive tract through involuntary vomiting, urination or defecation

5. Amygdala

The emotional core of the brain, the amygdala has the primary role of triggering the fear response. Information that passes through the amygdala is tagged with emotional significance

6. Bed nucleus of the stria terminalis

Unlike the amygdala, which sets off an immediate burst of fear, the BNST perpetuates the fear response, causing the longer-term unease typical of anxiety

7. Locus ceruleus

It receives signals from the amygdala and is responsible for initiating many of the classic anxiety responses: rapid heartbeat, increased blood pressure, sweating and pupil dilation

8. Hippocampus

This is the memory center, vital to storing the raw information coming in from the senses, along with the emotional baggage attached to the data during their trip through the amygdala

by giving them electrical shocks when they hear the buzzer or see the light. The animals quickly learn to fear the stimulus even in the absence of a shock. Then researchers destroy small portions of the rats' brains to see what effect that has on their reactions (an experiment that would be impossible to conduct in humans). By painstakingly matching the damaged areas with changes in behavior, scientists have, bit by bit, created a road map of fear as it travels through the rat's brain.

The journey begins when a rat (we'll get to humans later) feels the stress, in this case an electric shock. The rat's senses immediately send a message to the central portion of its brain, where the stimulus activates two neural pathways. One of these pathways is a relatively long, circuitous route through the cortex, where the brain does its most elaborate and accurate processing of information. The other route is a kind of emergency shortcut that quickly reaches an almond-shaped cluster of cells called the amygdala.

What's special about the amygdala is that it can quickly activate just about every system in the body to fight like the devil or run like crazy. It's not designed to be accurate, just fast. If you have ever gone hiking and been startled by a snake that turned out to be a stick, you can thank your amygdala. Joseph LeDoux, a neuroscientist at New York University, calls it "the hub in a wheel of fear."

But while the amygdala is busy telling the body what to do, it also fires up a nearby curved cluster of neurons called the hippocampus. (A 16th century anatomist named it after the Greek word for sea-horse.) The job of the hippocampus is to help the brain learn and form new memories. And not just any memories. The hippocampus allows a rat to remember where it was when it got shocked and what was going on around it at the time. Such contextual learning helps the poor rodent avoid dangerous places in the future. It probably also helps it recognize what situations are likely to be relatively safe.

By this point, the other half of the stress signal has reached the cortex, which confirms that there's a danger present and figures out that it's causing pain. Once the shock has worn off, a part of the brain called the prefrontal cortex sends out an all-clear message and lets the amygdala know that it's O.K. to stand down. At least it's supposed to. It seems that it's harder to turn off a stress response than to turn it on. This makes sense, in terms of survival. After all, it's better to panic unnecessarily than to be too relaxed in the face of life-threatening danger.