

THE SCIENCE OF making emotions

When you feel emotional — the heat of anger, a surge of joy, a wave of nostalgia — what's actually happening in your body and brain? And what can you do to control it? Research in neuroscience has produced some intriguing new answers.



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Three main ingredients contribute to how and why the brain creates feelings

Lisa Feldman Barrett, Ph.D.

What is an emotion, scientifically speaking? Many scientists used to think (and some still do) that emotions are automatic reactions. For example, if you learn that you just won the lottery, this event is said to trigger a happiness circuit in your brain, which then triggers your body to react in certain ways, like speeding up your heart rate and moving your face into a smile. Or if you're faced with bad news, like being told a beloved pet just passed away, a different brain circuit for sadness would leap into action and cause you to droop and sob. This reactive view of emotion dates back thousands of years.

Recent neuroscience, however, suggests that emotions aren't uncontrollable chain reactions, even if they feel that way. Something entirely different is going on inside you, completely outside of your awareness.

Here's how it works. Your brain's most important job is to keep you alive and healthy. To accomplish this task, your brain constantly guesses about what's best for your body. Do you need more water? How about sleep,

or a surge of adrenaline? This ongoing stream of guesses (known as “intrinsic brain activity”) ultimately helps to drive everything you do, think and feel.

In other words, emotions are your brain’s best guess of how you should feel in the moment. Emotions aren’t wired into your brain like little circuits; they’re made on demand. As a result, you have more control over your emotions than you might think. That’s because your brain’s guesses are forged from three “ingredients” that are with you all the time: your body, your surroundings and your past experience. The good news is that you can exert some control over these three ingredients and, to a certain extent, change your emotions. Getting a handle on your emotions can be tough at first, but like any skill, it becomes easier with practice.

The first ingredient, your body, means the physical sensations from inside you. Your heartbeat, your temperature, any aching or gurgling in your stomach, and so on, influence your brain’s guesses because they hint at what your body needs.

To change the signals coming from your body, try to get more sleep, eat healthfully and exercise. A stronger, healthier body promotes a healthier emotional life. On the other hand, some people take a riskier approach to regulating their body by using drugs, like opiates, cigarettes and alcohol, or eating foods high in fat and sugar. These may make your body feel better for a short time, but they have serious, long-term consequences.

The second ingredient, your surroundings, means sensations from the outside world. Whatever you’re seeing, hearing, smelling, tasting and touching in the moment influences your brain’s guesses for the next moment, which in turn influences your emotion.

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So, the next time you’re feeling overwhelmed, try changing your current situation. Leave the room. Take a walk. Shut off your phone. If you don’t have the flexibility to move around at that time, try paying attention to a different part of your surroundings. Pay mindful attention to some small detail. Each of these changes has the potential to influence your brain’s unconscious guesses and change your emotion.

The third ingredient, your past experience, is a key factor in your brain’s guesses. If your pet has died, and your brain must create an appropriate emotion, then it makes sense to construct the same emotion as the last time you were in a similar situation. Maybe last time, you weren’t mourning a pet but a friend, or you watched a movie in which someone had died.

Your brain could judge that past experience to be “close enough” and make a new experience of sadness.

Your past experience is the toughest ingredient to change, because obviously you can’t modify your past! However, you can change your present, and this seeds your brain to guess differently in the future. A quick way to change your present is to cultivate new experiences. For example, some people keep a written journal of things they’re grateful for every day. Other people meditate, which teaches them to be compassionate. Personally, I like to weed my garden and marvel at the power of nature to overwhelm my vegetables in a matter of days. The more often you cultivate new experiences, the more you build up your brain’s toolbox for making emotions in the future.

In every waking moment of your life, your brain combines all three ingredients to make the best guesses possible for your body, and in the process, it constructs emotions when you need them. So, emotions that seem to happen to you are actually made by you. Admittedly, sometimes your brain chooses badly for the situation. (Have you ever laughed during an argument, making the other person even angrier at you?) But if you know the ingredients, you can learn to change the recipes.



Lisa Feldman Barrett, Ph.D. (@LFeldmanBarrett) is a psychologist and neuroscientist and the author of *How Emotions are Made: The Secret Life of the Brain*. View her TED Talk at go.ted.com/lisafeldmanbarrett.