

Brain-Friendly “Circuit Breakers” for Fear, Stress, and Anxiety



“**Fear.**” If I were perfectly concise and accurate, that would be the sum total of my response to the question, “What do you specialize in as a psychotherapist?”

Because, when you get right down to it, that’s what we’re all dealing with, in one way or another. Fear, fear of fear, fear of conflict, fear of being alone, fear of getting too close, fear of failure, fear of success, fear of dying, fear of really living...

It’s our most fundamental (and arguably most powerful) emotion, so it’s the first one to keep an eye on and learn to modulate.

Part I: Everything You Never Wanted To Know About Fear, Because You Were Afraid To Ask

Important Thing Number One: Fear isn't about “now.”

Fear isn't about what's happening now — it's *always* about anticipating the *future* pain/hurt you might experience, or even that you are definitely going to experience—but you're not experiencing it right now. In this moment, you're okay.

Take a moment to imagine you're a zebra on the African plains. Suddenly, you see a lion running across the veld toward you. Fear! But—in that moment: Are you okay? Actually, you are.

You're not hurt, you're not dead in that moment. You're anticipating what might happen, but in that moment, you're actually fine.

How about now that you're running, and the lion is catching up? Fear, definitely: What if (future) he catches you? Maybe you will be (future) maimed, or worse, but—in this moment, while you're running—you're okay.

Until that angry lion actually catches you, until the thing that you're worried about actually happens, you're okay.

Checking in like that, moment to moment, when you're anxious or afraid, can be very helpful. It's a bit like those advertisements for the mobile phone service that continually asked, “Can you hear me now? Good.” Am I okay now? Good.

Important Thing Number Two: Fear and anger are intimately related.

A few thoughts about anger: At its core, anger is about unmet needs. (Minor example: If I get angry at the person who cut me off in traffic this morning, the unmet need was to be able to trust that I'm not going to get my car totaled on the way to work.)

What we're really mad about is based in our fear that our needs aren't going to be met—that we're going to experience pain or hurt or violation, be it of our trust or our safety. So, modulating fear gets you benefits in dealing with anger as well. Good stuff.

Important Thing Number Three: Hiding from our fear gets in the way.

We often distract ourselves from fear by busying or girding ourselves with anger, numbness, busy-ness, or detachment. Those are defensive (or sometimes offensive) maneuvers. As you're able to develop increased mindfulness, and tune in to the fear underneath, you're more likely to discover the key to the lock: being compassionately curious about what the fear is, underneath those defenses, often reveals the genuine treasure hidden beneath.

If you acknowledge your fear, you can learn how to deal with it (and others around you) in a much more effective, healthy way.

It's like being able to understand why a baby is crying—if you can calm yourself down long enough to tune in, you'll be able to know that the baby is hungry or overtired, and from there, you can be a more effective caregiver.

Important Thing Number Four: Fear stresses the body—including your brain.

We do need some fear to boost our chances of survival. Too much, though, shuts down the higher centers of your brain—the ones you need for learning and thinking clearly and problem solving. Not a good place to hang out for very long. Having some fear is necessary—it's what makes you look both ways before crossing the street—but too much and you end up “dead” in another way.

Your amygdala—and the fear response it generates—is helpful to your survival in large part because it never forgets potential dangers. But your amygdala tells your brain to store “fear” memories without any reference to when the fearful event occurred—so when it's called up from storage, you experience the fear as “here and now,” whether that's true or not. It's an unconscious, non-dated, never-expiring memory, whose job it is to generalize those fearful memories as broadly and as frequently as possible, to keep you as “safe” as possible.

That means any fearful or painful or otherwise potentially unsafe memories of long-ago experiences are at-the-ready to try to “help” you avoid being hurt today. Those memories are in there, waiting for anything even remotely similar to trigger them, below your awareness.

Wouldn't it be awesome to have ways to *modulate* that fear, so you wouldn't be ruled by it?

Hey—whaddaya know? *There are healthy circuit breakers for fear.*

Part II: Do-It-Yourself Healthy Circuit Breakers for Fear

As you're certainly aware by now, fear is a many splendored thing. It keeps you vigilant for potential danger, keeps you running in the face of present danger—good things for survival—but if it doesn't dissipate, it contributes to inflammation, heart disease, lousy immunity, ulcers, you name it.

Fear can be acute, or it can be chronic; it can protect you, and it can wreck you. So maybe it'll come as no surprise that the fear circuit breakers listed below come in different varieties as well—some are quick and in-the-moment, and others involve creating longer-term habits through mindfulness meditation that rewire your response and recovery over time. Having an array of circuit breakers integrated into your daily life will serve you well.

First, here are six circuit breakers you can hack, and some science to help you understand why they're so helpful:

Circuit Breaker #1: Delivering GABA to the Amygdala

You know those old cowboy movies where someone's been bitten by a rattlesnake, and there's a race against time to find some anti-venom—another substance that counter-acts the venom's deadly effect on the body?

In the case of the over-reactive amygdala, the anti-venom is GABA (gamma aminobutyric acid). In the adult human brain, GABA acts as an *inhibitory neurotransmitter*—you can think of it as a chemical override switch, which if you hit it, turns the alarm button off.

An area of your brain called the *orbitomedial prefrontal cortex* (OMPFC) has a GABA delivery system at the ready, with especially strong projections (think of them as delivering arms) going to the amygdala. Building more of those projections from the OMPFC to the amygdala, and delivering more soothing, inhibitory GABA, means you're building in a circuit breaker. One of the most accessible ways to do that? *Practicing mindfulness meditation.*

Circuit Breaker #2: Upping Your Oxytocin

Oxytocin is the neurotransmitter often referred to as the “cuddle hormone” because of its role in social bonding and attachment.

Oxytocin serves as an excellent circuit breaker for two reasons: First, like GABA, it seems to have an inhibitory (“off-switch”) effect on your amygdala’s response to fear.

Second, it seems to encourage the growth of those projections from the middle prefrontal cortex to the amygdala that deliver GABA.

When and where does your brain produce oxytocin? In a small part of your limbic system called (buckle up) the *paraventricular nucleus of the hypothalamus* (sometimes called the PVN or PVH).

It’s a small cluster within your hypothalamus—one of many. And it’s basically *the* source of oxytocin in your brain. That’s the “where.”

The “when” about oxytocin production provides an important clue as to how you can increase your oxytocin action: The hypothalamus sends out more oxytocin when you feel calm and safe in the presence of another—or even, it seems, if you simply think of someone with whom you feel safe.

It also sends out more when you’re hugging (especially, according to some, when that hug presses snugly and safely against your chest and belly).

So you have the potential to increase your own oxytocin output by simply ***thinking of someone with whom you feel safe and loved, by being safely hugged with pressure on your chest and belly, or even pressing your chest and belly with your own hands, or hugging a pillow.***

Circuit Breaker #3: Activating the Parasympathetic Branch of Your Autonomic Nervous System

Think of the *sympathetic branch* of your nervous system as the gas pedal—the thing that makes you zoom into fight or flight.

The *parasympathetic branch*, in contrast, can be thought of as the brake pedal—its activation brings about a state of about relaxing, restoring, repairing, which is the opposite of the fear response.

The parasympathetic branch is really much more than a “stop” mechanism, though—when you’re in a state that’s shifted toward the parasympathetic branch, not only does your body have the opportunity to recover, but it also affords you the state of mind needed for playing, creating, and daydreaming. It’s often when thoughts and ideas and feelings that were previously not “connected” come together and make sense, giving you clearer insight.

The simple things on the list below will help your autonomic nervous system switch from the accelerator to the brakes. You can do any or all of the things on this list any time you notice your body is in need of some regulation, or your fear is in need of some modulation. You’ll also be practicing them in the mindfulness exercise at the end of this post.

- **Breathe a bit more slowly, a bit more deeply.** This sends the message, from your lungs and your heart, that things aren’t dangerous “out there” in the world. Your vagus nerve carries that message up to your brainstem, and the cascade of chemicals that were stimulating your body’s fear response is turned off.
- **Relax your tongue.** Relaxing your tongue also sends feedback through the vagus nerve that everything is okay, getting the parasympathetic nervous system working to soothe you.
- **Open your mouth slightly.** Again, a relaxed jaw gets the message to your brain that it can relax, too, via the vagus nerve.
- **Imagine increased warmth in your hands.** When you’re under threat or stressed, your sympathetic nervous system acts to direct blood flow to where you’re likely to need it most if you’re going to need to run for your life, or fight—that’s into the big muscles in your body, like your legs. It directs blood flow away from less-important areas, like your hands and fingers. By imagining warmth (which accompanies increased blood flow) in your hands, you’re

sending yet another signal to your sympathetic nervous system to take it easy and let the parasympathetic branch set the more relaxed tone. Biofeedback and hypnosis techniques for relaxation, pain management, and stress reduction very often utilize hand warming for this reason.

Circuit Breaker #4: Shifting from a Right-Brain (Avoid) Mode to the Left (Approach)

We're all prone to walking around with a right-hemisphere bias—leading us to tilt towards negative moods, fear, and so on—because of our first order of business: survival. *With regular **mindfulness practice**, your brain activity is shifting toward greater left hemisphere activation. Shifting away from letting your right brain rule the roost means shifting away from letting fear run your life.*

Circuit Breaker #5: Making the Most of Your Anterior Cingulate Cortex

In what I think may be one of the top ten best uses of pop culture in the explanation of neuroscience, Steven Schlozman, of Harvard University, uses zombies to help explain the importance of the anterior cingulate cortex in modulating fear. As you've already seen, the anterior cingulate cortex, together with the insula, acts a sort of balancing middle-man between the amygdala and the frontal cortex.

Schlozman was watching the classic horror film *Night of the Living Dead*, and, being a neuroscientist, he noticed that the zombies “had a whole lot of amygdala going on.... Then there's an intermediary part of the brain, the anterior cingulate cortex, which helps to modulate communications between higher and lower brain. And I figured that probably wasn't working so good [in the zombie's brains], because you figure in normal humans, if that lower brain gets too loud, the anterior cingulate cortex [ACC] helps to modulate it so the frontal lobe can process it in time. But zombies don't process things that well.”

Yup. Zombies are driven by their amygdalas, without anything to help modulate their fear (or their anger and aggression, which as you learned earlier, are so closely related that we often can't tell them apart—if you're in

doubt, scare a crocodile sometime and see what happens). So they, um, eat people.

Makes you want to beef up your own anterior cingulate cortex (ACC), yes? Well, neuroscientists are starting to show that ***mindfulness practice—in as little as three hours total—seems to increase ACC activity in ways that improve emotional regulation.*** In as little as eleven total hours of mindfulness practice, one set of researchers showed that there were structural changes in an important neural pathway connecting the ACC to other structures—again, related to improved emotional regulation.

Circuit Breaker #6: Increasing the Integration of Your Brain

The better integrated your brain is, from top to bottom and from side to side, the better your overall well-being. Making sure that your lower right limbic system isn't driving the bus out there all on its own—without higher brain areas or the left side to help—is key.

Bringing more of your brain into the picture means that the communications pathway is a little bit longer. This is a good thing, because it gives the rest of your brain a little more time to process what's going on, and come up with a broader range of possible ways to respond.

That way, you don't just make a mad dash from your limbic brain's alarmist judgment straight to having a reaction. Your whole brain has a bit of time to get a tad more grounded, and to riffle through the card-deck of options. In particular, you have the time for your prefrontal cortex (PFC) to get on board and act as a more reasonable (literally, as in *reasoning*) guide.

It's like taking the longer, more scenic route home to give yourself time and space to sort out the stress of your day, get more balanced, gain some perspective, relax your shoulders, and remember that you love your family and your family loves you, before walking in the door. (Which, by the way, is something I *highly* recommend.)

Part III: A Circuit-Breaker Mindfulness Meditation

Here's an adaptation of an excellent meditation by Linda Graham, a psychotherapist and trainer/consultant who is a long-time student of mindfulness.

The meditation is built around several ideas—many of which can be traced to the healthy circuit breakers described above:

Delivering GABA to the amygdala. This exercise, as a mindfulness meditation, can stimulate the growth of neuronal fibers from the prefrontal cortex down toward the amygdala—and remember that these fibers carry GABA, the neuropeptide that counteracts the amygdala’s fear signals.

Upping your oxytocin. Being touched by someone with whom you feel safe can stimulate the hypothalamus to release oxytocin—and, how convenient: that could include your own touch. In this exercise you’ll be placing one hand on your heart and one on your belly.

Upping your oxytocin in another way. Evoking mental imagery of a loved one, or of feeling safe and loved, is also an effective way to calm the body and release oxytocin.

Activating the parasympathetic branch of your autonomic nervous system. Your heart and your gut are two areas rich in neural circuitry that tells your brain how you’re doing—are you safe? Having a supportive, gentle hand on each of those areas helps soothe them, leading to feedback to the brain (via the vagus nerve—as we talked about before, in the chapters on body regulation) that you’re okay. You’ll also be shifting toward the parasympathetic branch of your autonomic nervous system, through relaxed, natural, slightly deeper breathing, relaxing your tongue, opening your jaw, and imagining warmth flowing into your hands.

Shifting from a right-brain (avoid) mode to the left (approach). By practicing this exercise, you’ll be “priming” yourself to feel safe, connected, or loved—lowering your right brain’s usual flurry of activity and cultivating more action on the left—which you now understand as a buffer for your body and brain’s fear-based response to subsequent stressors.

Making the most of your anterior cingulate cortex. Increasing the pathways connecting your ACC to other structures, and other ways of integrating of your middle prefrontal cortex—increased mindfulness wires it up.

Ready?

Circuit Breaker Meditation

First, settle into your body and your breath, as described in the [Basic Mindfulness Meditation](#).

Invite yourself to move slowly through the meditation exercise, taking your time with each step.

Bring your awareness to your jaw and your mouth. Allow your tongue to relax inside your mouth, and let your jaw open slightly. Feel your breath passing easily through your relaxed throat.

When you feel ready, gently place your hand on your heart, in the center of your chest. Place your other hand on your lower belly, below your navel.

Imagine your hands getting warmer, the tiny capillaries and arteries relaxing just a bit to allow warmth to flow into them.

Breathe gently and deeply, imagining the breath going into your heart and your belly.

With each breath, invite yourself to also breathe into your heart and your belly any sense of goodness, safety, trust, acceptance, or ease that you're able to bring to mind.

Once that's steady, call to mind a moment of being with someone who loves you unconditionally, someone you feel completely safe with. This may not always be a partner or a parent or a child. Those relationships can be so complex and the feelings can be mixed. It may be, for example, a good friend or a trusted teacher. It may be your therapist, your grandmother, a third grade teacher, or a beloved pet. (Pets are great!)

As you remember feeling safe and loved with this person or pet, see if you can feel the feelings and sensations that come up with that memory in your body. Allow yourself to really savor these feelings of warmth, safety, trust, and love in your body.

When that feeling is steady, gently release the image for now, and simply bathe in the feeling for 30 seconds or so.

As always, when you're done with your formal practice, gently and gradually bring yourself back into the room, and into the stream of daily life.

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