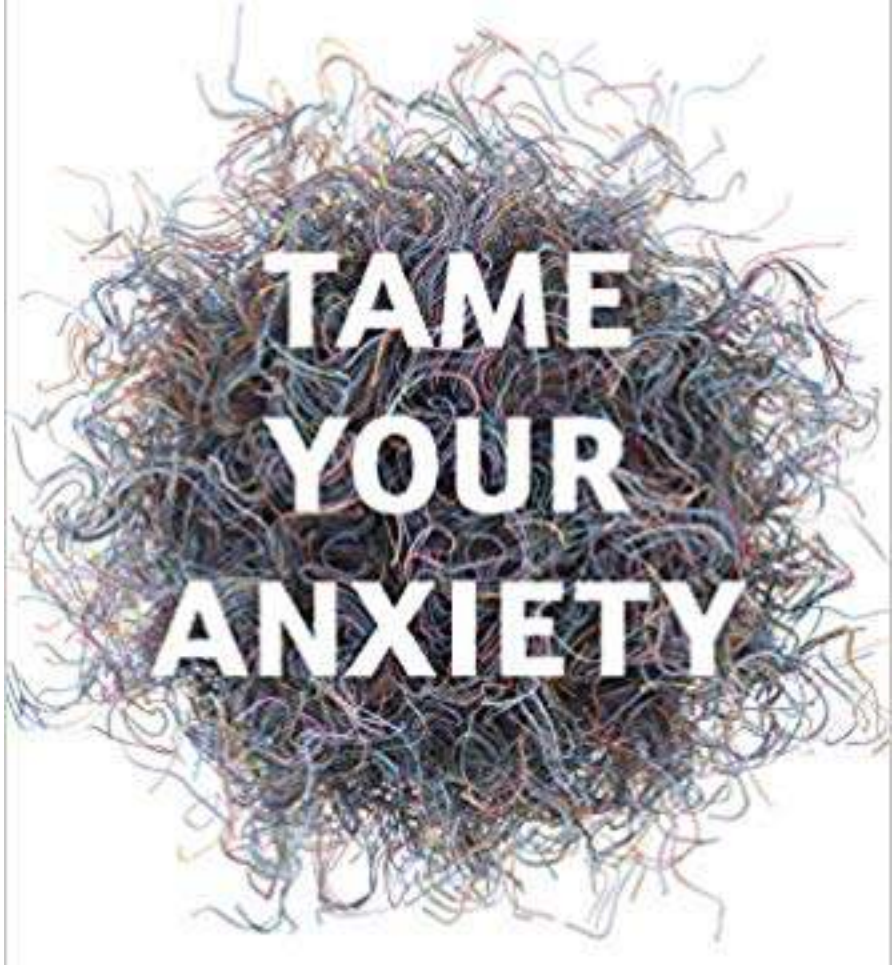
Rewiring Your Brain for Happiness



TAME YOUR ANXIETY

LORETTA BREUNING

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WHAT IS TAME?

You can tame the relationship between your horse and rider.

The word *tame* has many negative associations. I think of a "lion tamer" with a whip and a chair. That is not how I want to treat my brain! "The Taming of the Shrew" is another unattractive image. Where can we find a positive image of "tame"?

A tame animal, like a pet, may seem appealing at first. But pets lack basic survival skills as a result of domestication. They do not use their brain for the job it evolved for—finding food, avoiding threats, and managing social alliances. They spend their adulthood in childlike dependence, often at the expense of their reproductive system. You do not want that kind of tame.

Philosophers often compare the mind to a rider struggling to tame a horse (or elephant or donkey). It's tempting to think of anxiety as a wild horse. But this analogy suggests an acrimonious relationship between horse and rider. The horse resists the rider's harsh control. The horse blames the rider and the rider blames the horse. You cannot tame your anxiety by pitting your horse and rider against each other.

But you can tame the relationship between your horse and rider. This is the positive approach to anxiety.

We humans have two brains. On the outside, we have a spaghetti of neurons that is unique to humans, but on the inside, we have the same core structures that all mammals have in common (the amygdala, hippocampus, thalamus, and so on, collectively called the limbic system). Your two brains must get along in order to have a good quality of life. Tame the relationship between your verbal brain and your mammalian operating system and you will enjoy the ride wherever you go.

Here is a simple example. Imagine a rider frantically flailing at a horse that refuses to budge. Now imagine a steep cliff on the trail ahead. The rider doesn't see it because it's not on the trail map. The horse sees it, so the pair will survive if the rider accepts the horse's knowledge. They're in trouble if the rider focuses only on the map and ignores the horse.

But sometimes the horse is wrong. Imagine a horse running wild after seeing a snake. Survival depends on the horse accepting guidance from the rider. But the rider must communicate in a way that the horse understands instead of just in words.

Communication between the verbal brain and the animal brain is a huge challenge. Let's say the rider offers a carrot to the agitated horse. Carrots are like candy to a horse. A big reward builds a big connection in the mammal brain, wiring it to seek more rewards in the ways that worked before. So, the next day, the horse acts frenzied in the spot where it got the carrot. The well-meaning rider offers another carrot. A day later, it takes two carrots to stop the frenzy. The animal brain is just doing the job it evolved for—repeating behaviors that get rewards.

Taming the relationship between your horse and rider is a challenge. Sometimes your horse runs wild, but if you soothe it with sweet rewards it might make things worse. How can your big spaghetti of neurons guide your inner mammal through a world full of snakes?

You have to communicate with your inner mammal in a way that it understands. This book shows you how. You will learn about the brain chemicals that motivate it, and the neural pathways that control these chemicals. You will discover your power over these neural pathways so you can guide your inner mammal from unhappy to happy chemicals. To do this, you will have to blaze a trail that's not on your map.

Sometimes there's a cliff on your path and your horse's agitation can save you. Other times, the agitation is just a bad carrot habit. You must constantly interpret your horse's responses in order to choose your best next step. The more you know about the mammal brain, the better you can choose.

TAME IN NATURE

If you were a gazelle, your cortisol would be triggered by the smell of a lion. That would motivate you to run, and escape would relieve your cortisol. If you were a gazelle, hunger would trigger your cortisol, and finding food would relieve it. In nature, bad feelings are tamed by meeting needs and avoiding harm. But a gazelle is never completely safe from predator threat

and hunger. Why doesn't it surge with cortisol all the time? Because natural selection built a brain that promotes survival. Constant anxiety would not promote a gazelle's survival. The brain built by natural selection is always analyzing the situation and deciding when cortisol would promote survival.

A gazelle doesn't do its analyzing with words and abstractions. It does it with neural pathways. The cortisol spurts of its youth built pathways that turn on its cortisol today. The happy-chemical spurts of its youth likewise built pathways that turn on happy chemicals in similar future circumstances. In each moment, a gazelle is weighing its options with the pathways it has.

For example, a gazelle does not always run when it sees a lion. It knows the difference between a lion on the prowl and a lion just passing through. A gazelle would rather keep eating than run from every potential threat signal. It needs to eat a lot of grass to survive. On the other hand, a little hunger is better than instant death. The gazelle brain is constantly taking in the evidence available to its senses. Those sensory inputs flow down the neural pathways it has. When inputs match past threats, electricity flows to the "on" switch of its cortisol, and the gazelle acts to relieve the cortisol. When the inputs do not match past threats, electricity keeps flowing to the reward of eating grass.

Your brain is constantly responding to the world with neural pathways built from your past experience. Your pathways are similar to a gazelle's in some ways and different in others. They are similar to those of other people in some ways but also unique. You have more power over your neural pathways when you understand them. You can blaze new trails in your brain to enjoy more good feelings and relieve more bad feelings.

We humans often want to change ourselves. A gazelle never feels the need to change. It just accepts its neurochemical responses without judging them. Gazelles are not happy all the time the way you might think. Sometimes a gazelle sees its child get eaten alive. Sometimes it drinks at a waterhole next to the predator that ate its child. But a gazelle does not dream of disconnecting its internal alarm system. It honors the valuable survival information. It strives to turn it off the way nature intended: by escaping threats and seeking rewards.

Life is different when you have a big spaghetti of extra neurons. Our big cortex allows us to anticipate future threats instead of just waiting until the threat is upon us. Predators don't eat our babies because we anticipate threats in time to prevent them. But we end up feeling threatened a lot.

If you tamed your anxiety the way a gazelle does, you would spend your day eating and reproducing, and ignore threats until they were about to get you. The flaw in this strategy is obvious to your big cortex. It is so

skilled at anticipating threats that it even sees how today's pleasures can cause tomorrow's threats. We humans build neural pathways that anticipate future consequences instead of just focusing on immediate rewards and threats. These pathways shape our eating and reproductive behavior, leaving us with diets, grooming rituals and PTA meetings that gazelles don't have. They shape our threat perceptions, motivating an endless quest for "news." But all that anticipating doesn't relieve our sense of threat. On the contrary. When we succeed at taking action to relieve a potential threat, our cortex skillfully moves on to the next potential threat.

BLAZING A NEW TRAIL

Anxiety is just a trail in your brain. It's a neural pathway connecting an input pattern to your cortisol's on switch. You have a lot of these pathways because you have a lot of experience with potential threats. But some of your pathways have grown huge because you've used them so often.

Taming anxiety means blazing a new trail in your brain—a trail that leads to your happy chemicals instead of your threat chemicals. That is hard to do for many reasons. You don't know how to build trails because your old ones weren't built intentionally. You don't feel safe when you leave the trails you know. And it seems like a lot of work.

But the trails you have lead to a bad place sometimes. You can imagine a better place. You can get there by learning to build a new trail.

Yes, it's work. But this book shows you how to make that work effective. You will learn to design the trail that's right for you, to stimulate your happy chemicals in moments when you feel threatened. Your trail-blazing effort will be richly rewarded.

There is no one perfect trail. This book has no secret trail map to offer. It helps you discover your unique trails, and reroute them toward your unique happy circuits.

YOUR POWER OVER YOUR BRAIN

You may find it hard to believe that your feelings come from trails in your brain. Our feelings seem urgent and real, so it's hard to think of them as accidental connections between neurons. Of course your feelings are real in the sense that a real chemical molecule is released that triggers a real physical response in your body. We presume these responses are real infor-

mation about the world around us because that's how the mammal brain is designed to work.

Your verbal cortex struggles to make sense of your mammalian responses. The cortex has no insider information about the mammal brain it's attached to, as unbelievable as that seems. Your verbal mind just guesses at the reason for a neurochemical spurt based on past experience. Sometimes it just ignores the spurts.

But your neurochemicals are powerful. They evolved to create urgent impulses to approach rewards and escape harm. They make you feel like it's a matter of life and death because brains that did that survived and their children survived. This is why life-and-death feelings creep up on us without our conscious awareness. You almost feel like they didn't come from you because your verbal inner voice did not decide to turn them on. When you understand the relationship between your two brains, you can improve that relationship.

Each of us is born with billions of neurons but very few connections between them. The connections we build shape the responses we have. Fortunately, you can build new connections by feeding your brain new experiences. But it's a conundrum: how can you have new experiences with the old pathways?

This conundrum explains why you can't just relax when someone tells you to "just relax!" Your brain is not designed to just relax. It's designed to seek rewards and avoid harm. A gazelle does not survive by relaxing.

Nothing is wrong with you. You are using your brain for the job it evolved for: to promote your survival by responding to the world with a sense of urgency.

And yet, we long for relief from the endless anticipation of threats and lost rewards. I learned about this longing as a docent at my local zoo. Visitors often asked me whether animals break out of the zoo and I had to tell them that more animals break in than break out. What animal wouldn't want to get into a place where all your needs are met effortlessly?

But our brain did not evolve for life in a zoo. It does not release happy chemicals when your needs are met by a zookeeper. The more you know about your happy chemicals, the better you can blaze a trail that turns them on in healthy ways.

A gazelle's happy chemicals turn on when it steps toward meeting its needs. It feels good before the grass is digested and the nutrition is absorbed. Just seeing a patch of green grass turns on the good feeling, and that initiates a step toward it. A gazelle does not need a world of perfect safety to feel good. It only needs to step toward rewards with no immediate threat.

The mammal brain rewards you with a good feeling when you take a step. It is not designed to reward you for imagining yourself on a tropical beach. It rewards you for actual steps toward rewards or away from harm.

We can't guarantee that our steps are the right ones, of course. Our big brain anticipates possible missteps. A gazelle expects its steps to succeed because they have succeeded before. It has escaped a predator before. It has found grass before. It anticipates relief, and if it doesn't come, cortisol keeps surging and new steps are tried. Gazelles die young, but they don't imagine everything going wrong while they're alive. They don't have enough neurons to do that.

We do. We have enough neurons to imagine missteps that we have never actually experienced. Our imagined threats feel real enough to trigger our cortisol. But we can also imagine new steps that tame our cortisol.

REMEMBER:

1. We have two brains—a spaghetti of neurons that is unique to humans (the cortex), and a standard mammalian operating system (the amygdala, hippocampus, thalamus, etc.).
2. Your mammal brain controls the chemicals that make you feel good or bad. If you want to feel good, you have to get it from your mammal brain.
3. Natural selection built a brain that is focused on survival. It rewards you with a good-feeling chemical when you meet a survival need and a bad-feeling chemical when you see a survival threat.
4. We define rewards and threats with neural pathways built from experience. Your pathways build each time your reward chemicals and threat chemicals are released.
5. The human cortex can construct abstractions instead of being limited to the information that comes in from your eyes or ears or hands. The future is an abstraction and the cortex constructs information about the future.
6. The brain anticipates threats in order to prevent them and thus feel safe.
7. We anticipate threats with neural pathways built from past threats.
8. The brain anticipates rewards and motivates steps toward them. A reward is anything you expect to meet a need.
9. Our brain evolved to promote survival so it creates life-and-death feelings about meeting your needs and avoiding potential threats.