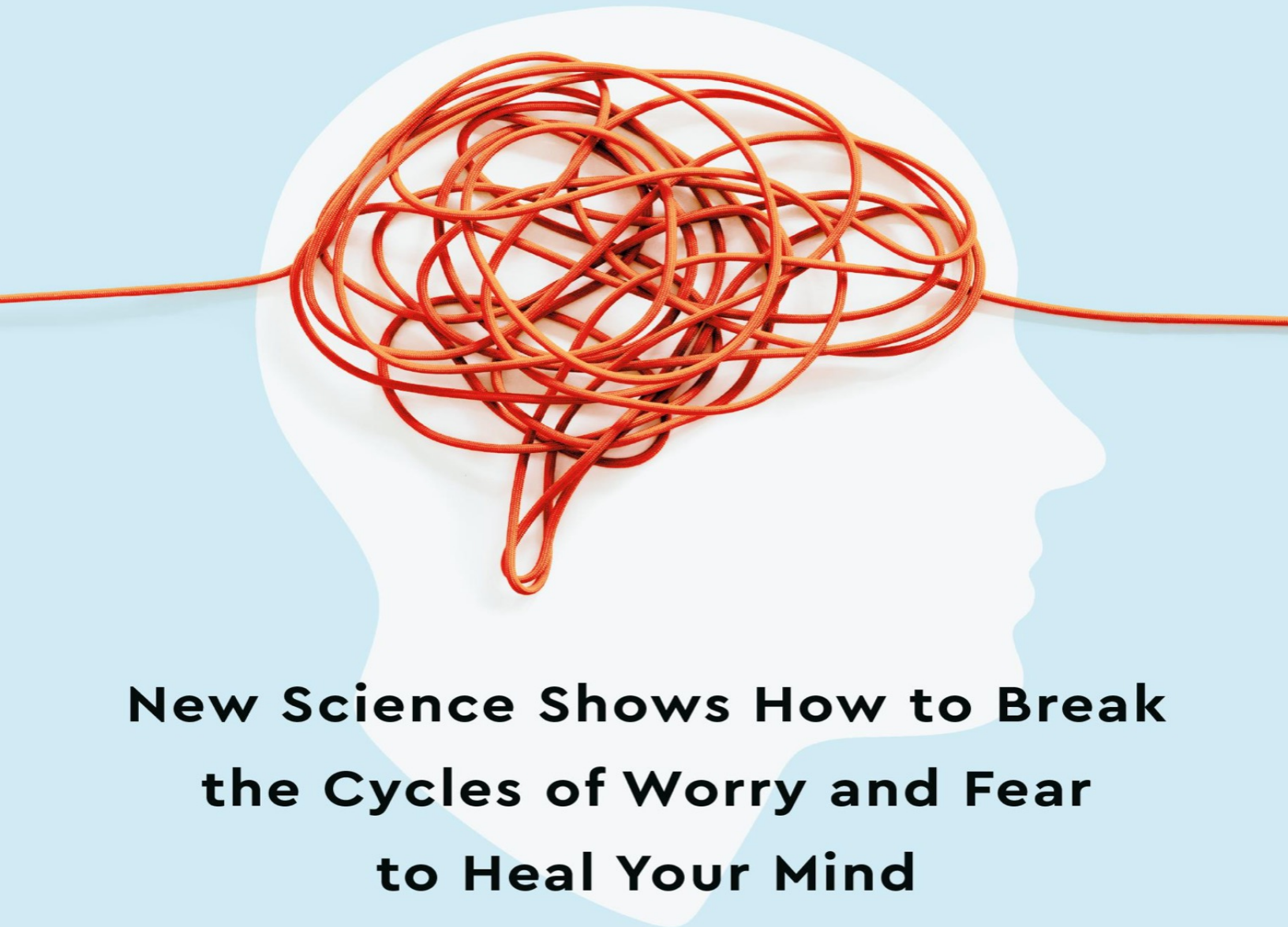


"A plan that can help us overcome our anxious thoughts, feelings, and habits to create true well-being. It is absolutely game-changing."

—ARIANNA HUFFINGTON, *New York Times* bestselling author of *Thrive*

# UNWINDING ANXIETY



**New Science Shows How to Break  
the Cycles of Worry and Fear  
to Heal Your Mind**

**JUDSON BREWER, MD, PhD**

فروشگاه کتاب الکترونیک باکتابام

<https://e-baketabam.ir>

## Praise for *Unwinding Anxiety*

“One of the hardest things about tackling a bad habit is confronting the anxiety behind it. Judson Brewer has given us a breakthrough program with great tips and hacks that anyone can use to feel better. We all need this book!”

—B. J. FOGG, PHD, *NEW YORK TIMES*–BESTSELLING AUTHOR OF *TINY HABITS*

“*Unwinding Anxiety* provides a step-by-step guide to Judson Brewer’s personally designed, clinically proven path that can alleviate your mind from anxiety, obsessive thinking, addiction, and more. It guides your brain to rewire in helpful ways as it inspires your mind to understand its inner processes more deeply and to live with more freedom, gratitude, interpersonal connection, and joy.”

—DANIEL J. SIEGEL, MD, *NEW YORK TIMES*–BESTSELLING AUTHOR OF *AWARE*

“You cannot thrive if you’re perpetually anxious. It’s that simple. Judson Brewer has given us a plan that can help us overcome our anxious thoughts, feelings, and habits to create true well-being. It is absolutely game-changing.”

—ARIANNA HUFFINGTON, *NEW YORK TIMES*–BESTSELLING AUTHOR OF *THRIVE*

“Grounded in the best of current science and totally user-friendly, *Unwinding Anxiety* reveals how a powerful set of mindfulness tools can free us from the worry that rules our lives. This is the most helpful and informative book on anxiety I’ve read!”

—TARA BRACH, PHD, AUTHOR OF *RADICAL ACCEPTANCE*

“In a world that can be overwhelming, Judson Brewer has created a plan to stop the overwhelm. He shows us accessible ways to stop worry in its tracks and mindfulness techniques that can redirect our energy in positive, healing ways. It’s exactly what we need right now.”

—U.S. REPRESENTATIVE TIM RYAN (D-OH)

“An incredibly relatable and practical guide to anxiety. Judson Brewer’s research has contributed greatly to our understanding of why anxiety is so hard to shake. This book gives us the tools to break free. Anxiety is at the root of so many of the habits we want to change. *Unwinding Anxiety* will not only help you deal with anxiety, but will also help you find freedom from the behaviors that hold you back.”

—KELLY MCGONIGAL, PHD, AUTHOR OF *THE JOY OF MOVEMENT*

“Brewer weaves together science from his lab and stories from his clinic to expertly illustrate how anxiety develops, becomes a habit loop, and why our anti-anxiety strategies continue to fail us. *Unwinding Anxiety* provides actionable steps that you can implement into your own life to stop this cycle. Compellingly written, this compassionate book is full of insights that couldn’t have come at a better time.”

—JEWEL

“This may be the only book on anxiety you’ll ever need. Drawing on his lab’s latest neuroscience and clinically proven techniques, Dr. Brewer ingeniously reveals why anxiety loops are so hard to break. Showing clearly how and why worry is so addictive, he guides you in how to shift through the gears to break the old habits that keep anxiety going, and to unwind the rope that’s been coiled around your life. With new insights on every page, this is evidence-based psychological science at its best.”

—MARK WILLIAMS, EMERITUS PROFESSOR OF CLINICAL PSYCHOLOGY, UNIVERSITY OF OXFORD,  
COAUTHOR OF *MINDFULNESS*

“In *Unwinding Anxiety* neuroscientist Judson Brewer offers a brilliant breakthrough: brain-based methods for lessening our anxiety-driven habits. And anxiety, after all, is the common cold of our emotional life.”

—DANIEL GOLEMAN, AUTHOR OF *EMOTIONAL INTELLIGENCE*

“Judson Brewer has written a relatable, introspective guide to overcoming anxiety. Backed by research and experience, *Unwinding Anxiety* is an exploration of how anxiety grows in our brains and offers a key to unwinding those habitual thought patterns. Much more than relaying research and science, this book offers user-friendly, practical steps to the possibility of managing worry!”

—SHARON SALZBERG, AUTHOR OF *LOVINGKINDNESS AND REAL CHANGE*



---

# UNWINDING ANXIETY

---

NEW SCIENCE SHOWS HOW TO  
BREAK THE CYCLES OF WORRY AND FEAR  
TO HEAL YOUR MIND

---

JUDSON BREWER, MD, PHD

**Avery**

an imprint of Penguin Random House

NEW YORK

فروشگاه کتاب الکترونیک بایتابام

<https://e-baketabam.ir>



An imprint of Penguin Random House LLC  
[penguinrandomhouse.com](http://penguinrandomhouse.com)

Copyright © 2021 by Judson A. Brewer  
Illustrations by Julia Miroshnichenko

Penguin supports copyright. Copyright fuels creativity, encourages diverse voices, promotes free speech, and creates a vibrant culture. Thank you for buying an authorized edition of this book and for complying with copyright laws by not reproducing, scanning, or distributing any part of it in any form without permission. You are supporting writers and allowing Penguin to continue to publish books for every reader.

#### Library of Congress Cataloging-in-Publication Data

Names: Brewer, Judson, author.

Title: Unwinding anxiety: new science shows how to break the cycles of worry and fear to heal your mind / Judson Brewer, MD, PhD.

Description: New York: Avery, Penguin Random House LLC, 2021. | Includes index.

Identifiers: LCCN 2020041047 (print) | LCCN 2020041048 (ebook) | ISBN 9780593330449 (hardcover) | ISBN 9780593330456 (ebook)

Subjects: LCSH: Anxiety. | Habit breaking. | Change (Psychology). | Mindfulness (Psychology).

Classification: LCC BF575.A6 B74 2021 (print) | LCC BF575.A6 (ebook) | DDC 152.4/6—dc23

LC record available at <https://lccn.loc.gov/2020041047>

LC ebook record available at <https://lccn.loc.gov/2020041048>

Neither the publisher nor the author is engaged in rendering professional advice or services to the individual reader. The ideas, procedures, and suggestions contained in this book are not intended as a substitute for consulting with your physician. All matters regarding your health require medical supervision. Neither the author nor the publisher shall be liable or responsible for any loss or damage allegedly arising from any information or suggestion in this book.

pid\_prh\_5.6.1\_c0\_r0

TO AMAZON ADDICT



---

# Contents

## Introduction

### PART 0 Understanding Your Mind

- CHAPTER 1 Anxiety Goes Viral
- CHAPTER 2 The Birth of Anxiety
- CHAPTER 3 Habits and Everyday Addictions
- CHAPTER 4 Anxiety as a Habit Loop

### PART 1 Mapping Your Mind: First Gear

- CHAPTER 5 How to Map Your Mind
- CHAPTER 6 Why Your Previous Anti-Anxiety (and Anti-Habit) Strategies Failed
- CHAPTER 7 Dave's Story, Part 1
- CHAPTER 8 A Brief Word on Mindfulness
- CHAPTER 9 What Is Your Mindfulness Personality Type?

### PART 2 Updating Your Brain's Reward Value: Second Gear

- CHAPTER 10 How Your Brain Makes Decisions (Why We Prefer Cake to Broccoli)
- CHAPTER 11 Stop Thinking: Dave's Story, Part 2
- CHAPTER 12 Learning (and Growing) from the Past
- CHAPTER 13 Fixing the Fix: Dana Small's Chocolate Experiment

CHAPTER 14 How Long Does It Take to Change a Habit?

PART 3 Finding That Bigger, Better Offer for Your Brain: Third Gear

CHAPTER 15 The Bigger, Better Offer

CHAPTER 16 The Science of Curiosity

CHAPTER 17 Dave's Story, Part 3

CHAPTER 18 What's Good About Rainy Days?

CHAPTER 19 All You Need Is Love

CHAPTER 20 The Why Habit Loop

CHAPTER 21 Even Doctors Get Panic Attacks

CHAPTER 22 Evidence-Based Faith

CHAPTER 23 Anxiety Sobriety

EPILOGUE Six Years and Five Minutes

Acknowledgments

Notes

Index



---

## Introduction

ANXIETY IS EVERYWHERE. It always has been. But in the last several years, it has come to dominate our lives in a way that it perhaps never has.

My own history with anxiety goes back much further. I'm a doctor—a psychiatrist, to be precise. Only after years of struggling to help my patients overcome their anxiety and continually feeling like I was missing something important in their treatment did I connect the dots between anxiety, my lab's neuroscience research on habit change, and my own panic attacks. And that's when everything changed. I had a lightbulb moment when I realized that one of the reasons so many people fail to see that they have anxiety is the way it hides in bad habits. Now I think many more people are unavoidably aware of their anxiety, whether or not they are trying to conquer a habit.

I never planned to become a psychiatrist. In fact I had no idea what type of doctor I wanted to be when I started medical school. I just knew that I wanted to bring together my love of science with my desire to help people. Combined MD/PhD programs are set up so that you spend the first couple of years in medical school, learning all of the facts and concepts. After that, you switch to your PhD years, focusing on a specific scientific field and learning how to do research. Then you go back to the wards and finish your third and fourth years of medical school before heading off to residency to specialize in a particular field of medicine.

When I started medical school, I wasn't dead set on becoming a certain kind of doctor. I was simply fascinated by the complexity and beauty of human physiology and cognition and wanted to learn how this human system of ours worked. Typically, the first two years of medical school give medical students the time and space to start leaning toward a field they might want to specialize in. Then they confirm this decision during their

hospital ward rotations in the third and fourth years. It takes eight or so years to complete a combined MD/PhD program, so I figured that I had plenty of time to discover what called to me, and just focused on learning everything I could. It took me four years to complete my PhD, which was just enough time for me to forget everything I had learned in my first two years of medical school.

So when I finished my PhD and went back to pick up where I had left off in medical school, I chose psychiatry as my first ward rotation so I could relearn everything I had forgotten about how to interview patients while I was off in PhD land. I had never thought of becoming a psychiatrist, as they generally aren't portrayed positively in the movies, and in medical school I had heard the joke that psychiatry is for "the lazies and the crazies"—that is to say, you become a psychiatrist if you yourself are lazy or crazy. But that psychiatry rotation opened my eyes to what I could later look back on and say was a confluence of serendipity and timing. What I learned was that I absolutely loved being on the wards and really connected to the struggles of my psychiatric patients. I could see myself being perfectly happy trying to help them understand their minds so that they could more effectively work with their problems. While I loved most of my other ward rotations, nothing called to me quite as much as psychiatry, so that's the medical specialty that I chose.

When I graduated from medical school and started my residency training at Yale, I found that not only was psychiatry a good fit for me, but I developed an even deeper connection to my patients who struggled with addictions. I had started meditating at the beginning of medical school and had continued doing so on a daily basis during my eight years of MD/PhD training. As I learned more about my addicted patients' struggles, I realized that they were talking about the same types of struggles that I had learned about in my own meditation training—those connected feelings of craving, clinging, grasping. To my surprise, I found we shared a language and a struggle.

Residency was also the period when I started having my own panic attacks, fueled by lack of sleep and the feeling that I didn't know anything, combined with the uncertainty of being on call and never knowing when my beeper was going to go off in the middle of the night and what train wreck was going to be on the other end when I called the nursing station. All of this took a collective toll on my psyche. Talk about being able to

empathize with my anxious patients! Fortunately, my meditation practice helped here as well. I was able to use my mindfulness skills to ride out full-blown panic attacks that would wake me from sleep. Better yet, and I didn't know why at the time, these skills helped me not to add fuel to the fire of panic: I learned to work with anxiety and panic so that I didn't worry or freak out about having more panic attacks, which kept anxiety at bay and kept me from developing a true panic disorder. I also started to learn that I could teach people to become aware of uncomfortable feelings (rather than habitually avoiding them); I could give them a way to handle and work with their emotions that wasn't simply prescribing them a pill.

Toward the end of my residency, I realized that virtually nobody was researching the science of meditation. Here was what seemed like a hidden gem, something that had helped me with extreme anxiety (and possibly could help my patients as well), and nobody was exploring why or how well it worked. So over the next decade, I threw myself into creating a program to help people overcome their harmful habits—which are strongly connected to and even driven by anxiety. In fact, anxiety is in and of itself a harmful habit. Now it is an epidemic. This book is the result of all that research.

In the movie *The Martian*, Matt Damon's character has an "oh shit" moment when he realizes that he's stranded on Mars. During a windstorm, all of his buddies hightail it back to the safety of their spaceship and leave him for dead. He sits down in his little Martian outpost, wearing his cute little NASA hoodie, and tries to cheer himself up with a rousing speech: "In the face of overwhelming odds, I'm left with only one option. I'm going to have to science the shit out of this," says Matt.

Taking up Matt Damon's inspiration, in this book I have sciened the shit out of anxiety.

There are loads of books out there about these topics—thick ones and thin ones, some with catchy titles, fantastic stories, and secret methods or "hacks" for success. But not all of them are, shall we say, overflowing with actual brain science.

I can promise you there is plenty of science in this book. And it's actual science, based on studies my lab has done over many years and with real participants (first at Yale, now at Brown University). I've also published the papers that other people read and write books about, so we're covered there, too.

I've been doing research for decades and I've loved learning and discovering new things. But I'd have to say, the single most interesting and important connection that I've made is the link between anxiety and habits—why we learn to get anxious, and how even that becomes a habit. Making that connection has answered the question of why we worry, which has satisfied some of my scientific curiosity about anxiety, but more important, it has been critical for helping my patients understand and work with their own anxiety.

You see, anxiety hides in people's habits. It hides in their bodies as they learn to disconnect from these feelings through myriad different behaviors. Seeing this connection, I could now help my patients understand how they had formed habits around everything from drinking too much alcohol to stress-eating to procrastinating as a way to deal with anxiety. I could also help them see why they were struggling so much and failing to overcome both anxiety and their other habits. Anxiety would feed the other behaviors, which would then perpetuate their anxiety, until all would spiral out of control, landing them in my office.

One of the main things I've learned is that in psychiatry, the maxim “the less you know, the more you say” is applicable. In other words, the less you understand about a topic or situation, the more you fill that void with words. More words don't equal a better interpretation or more insight for your patients. In fact, when you don't know what you are talking about, the more words you use, the greater the chances are that you will dig yourself into a hole, and when you find yourself in a hole, stop digging, right?

It was a painful lesson to learn, but I realized that “the less you know, the more you say” applied to me as much as to anyone. Imagine that! I *wasn't* some exception to the rule, where I could go on spouting nonsense as if the more I talked, the more it helped my patients. If I did precisely the opposite—that is, I kept my mouth shut, tried out some of that Zen “don't know” mind, and waited until I saw some clear connection instead of trying to sound like a psychiatrist—I could actually really help people.

The “less is more” adage applies to domains outside of psychiatry as well—like science. As I spoke less and listened more, I realized that the concepts I was developing concerning habit change kept boiling down and down, simplifying themselves as they went. But as a scientist, I had to be careful not to believe my own hype. The concepts were simple, but did they actually work? And could they work in settings beyond my outpatient

clinic? So back in 2011, when my first big clinical trial for smoking cessation showed a whopping *five times* greater quit rate for my program than the “gold standard” treatment, I started exploring how we could use those “weapons of mass distraction” (smartphones) to help people overcome bad habits. I scienced the shit out of that, too, finding that we could get remarkable results, in real clinical trials. And by remarkable, I mean a 40 percent reduction in craving-related eating in people who are obese/overweight, a 63 percent reduction in anxiety in people with Generalized Anxiety Disorder (and close to that level of benefit with anxious doctors), and so on. We even showed that app-based training could target specific brain networks related to smoking. Yes, with an app!

The results of my clinical psychiatry practice, research, and concept distillation make up this book, which I hope will be a useful and pragmatic guide to changing how you understand anxiety so that you can work with it effectively—and as a bonus, break all those unhelpful habits and addictions.



# PART 0

## Understanding Your Mind

*A problem can't be solved by the same consciousness that created it.*

—INTERNET MEME ATTRIBUTED TO ALBERT EINSTEIN

(YOU MAY BE wondering why I'm calling the beginning of this book Part 0 instead of Part 1. It's because Part 1 is what happens once you understand what is going on. Part 0 is all about what happens before you are even conscious of being anxious.)

Keep this in mind as you read: Part 0 will teach you the psychology and neuroscience of how anxiety gets set up, giving you the framework with which to start working with it. Part 1 will show you how to identify anxiety triggers (and what anxiety itself triggers). Part 2 will help you understand why you get stuck in cycles of worry and fear and how to update your brain's reward networks so that you can get unstuck. Part 3 will teach you simple tools that tap into your brain's learning centers to break anxiety cycles (and other habits) for good.





## Anxiety Goes Viral

ANXIETY IS LIKE pornography. It's hard to define, but you sure know it when you see it.

Unless of course, you can't see it.

In college, I was a type A go-getter who loved a challenge. I grew up in Indiana as one of four kids of a single mother, and when it came time to pick a college, I applied to Princeton because my college counselor told me I'd never get in. When I arrived on campus (sight unseen), I felt like a kid in a candy store: I was blown away by all of the opportunities that I was exposed to and wanted to do everything. I tried out for an a cappella singing group (and was rightfully rejected), joined the crew team (for a semester), played in the orchestra (becoming co-chair of its governing body my senior year), led backpacking trips for the outdoor program, rode for the cycling team (another relatively short stint), learned how to rock-climb (religiously spending hours at the climbing wall several times a week), joined a whimsical running group called the Hash House Harriers, and much more. I loved my college experience so much that I stayed on campus each summer, where I cut my teeth in the lab learning how to do research. Oh, and I supplemented my chemistry degree with a certificate in music performance to round out my education. Four years went by like a blur.

As I was nearing the end of my senior year, preparing to head to medical school, I made an appointment to see the doctor at student health, because despite all of my activity, I was feeling distinctly unhealthy. I was getting severe bloating and stomach cramps, accompanied by a dash-for-the-bathroom urgency to relieve my bowels like I'd never had before. It got so bad that I had to plan my daily running routes to make sure I was within pooping distance of a bathroom. When I explained my symptoms to the doctor (this was pre-Google, so I couldn't just come in having smugly self-diagnosed myself), he asked inquisitively if I could possibly be stressed or anxious. I blurted out something to the effect of no way, that was impossible, because I exercised every day, ate healthfully, played the violin, and on and on. While he patiently listened, my anxiety-denying mind spat

out a (hardly) plausible possibility: I had recently led a backpacking trip, so I must not have correctly purified my water (though I'm pretty careful with this kind of stuff, and nobody else on the trip got sick).

"It must be giardiasis," an amoebic infection that you get from drinking unpurified water in wilderness settings that manifests as severe diarrhea, I posited to the doctor as convincingly as possible. Yes, he knew what giardiasis was (he was a doctor, after all), and no, my symptoms didn't sound quite like actual giardiasis. I didn't want to see what was staring me in the face: I was so stressed out that my anxiety was showing up in my body, because my mind was either ignoring the anxiety or in frank denial of it. Anxious? No way. Not me.

After I spent about ten minutes trying to convince the doctor that I couldn't possibly be anxious, nor did I have something that the doctor called irritable bowel syndrome (which manifests itself with the exact symptoms I had just described to him), he shrugged his shoulders and wrote me a prescription for the antibiotic that would supposedly clear my guts of *Giardia*, the theoretical cause of my diarrhea.

Of course my symptoms continued, until I finally learned that anxiety is quite a shape-shifter, ranging from a little bit of nervousness before a test to full-blown panic attacks to even the bowel-emptying blowouts that forced me to keep the locations of all the public restrooms in Princeton, New Jersey, in my head.

The online dictionary defines anxiety as "a feeling of worry, nervousness, or unease, typically about an imminent event or something with an uncertain outcome." This encompasses, well, just about anything. Since any event that is about to happen is imminent and the only thing we *can* be certain about is that things are uncertain, anxiety can rear its head in just about any place, situation, or time of day. We can have a little pinprick of anxiety when a colleague in a meeting puts up a slide about the company's quarterly results, or a shot of anxiety when those results are followed by said colleague saying that there will be layoffs in the coming weeks and the powers that be aren't sure just how many people will lose their jobs.

Some people wake up with anxiety in the morning, that nervousness prodding them awake like a hungry cat, followed by unshakable worry that spins them more and more awake (no coffee needed) and builds throughout the day because they can't figure out why they are anxious. This is the case

for my patients with Generalized Anxiety Disorder (GAD), who wake up anxious, worry their way through the day, and then continue their binge-worrying late into the night, fueled by thoughts of *Why can't I get to sleep?* Other folks have panic attacks that come out of the blue or (as happens with me) that wake them from sleep in the middle of the night. Still others worry about specific things or themes, yet oddly are unaffected by other events or categories that one would think should drive them bonkers.

And of course it would be very un-psychiatrist-like of me to not mention that there is quite a lengthy list of anxiety disorders. Despite my medical training, I'm a bit hesitant to label things as disorders or conditions myself, because as you'll see shortly, a lot of this stuff shows up simply from a slight misalignment of one of our brain's natural (and generally helpful) processes. It's like labeling "being human" as a condition. When "conditions" happen, I think of the mind/brain as more akin to a violin string that has gone slightly out of tune. In this situation, we don't label the instrument as defective and throw it away, but instead listen to what is wrong and tighten (or loosen) the strings a bit so we can continue making music. Yet for diagnostic and billing purposes, anxiety disorders run the orchestral gamut from specific phobias (e.g., fear of spiders) to obsessive-compulsive disorder (e.g., constant worrying about germs and resultant constant handwashing) to Generalized Anxiety Disorder (which is basically what it sounds like: excessive worry about everyday things).

What flips the switch from everyday anxiety to "disorder" is somewhat in the eye of the diagnostician. For example, to meet a threshold for a diagnosis of GAD, someone must have excessive anxiety and worry about a "variety of topics, events, or activities," and this must occur "more often than not for at least six months and is clearly excessive." I love that last part: "clearly excessive." Maybe I slept through the medical school lecture on how to determine exactly when worry moves from insufficiently to clearly excessive and signals that it's time to pull out my prescription pad or call in the meds.

Because anxiety generally lives internally rather than manifesting itself as a big growth on the side of someone's head, I have to ask my patients a bunch of questions to see how their anxiety shows up. I certainly didn't know that I was anxious back in college until I put two and two together and finally connected my keeping track of all the bathrooms on my running route to worrying. Per the medical manuals, some of the typical symptoms

of anxiety include edginess, restlessness, tiring easily, impaired concentration, irritability, increased muscle aches, and difficulty sleeping. But as you can clearly see, these symptoms by themselves don't pin a THIS PERSON IS ANXIOUS sign on your back for everyone to read. Critically, similar to my experience denying that I was anxious in college, I have to help my patients make the link between these manifestations and what's going on inside their head before we can move forward.

To help highlight how differently anxiety can show up in a person's life, let me give you two examples from high-powered, put-together women.

My wife, Mahri, a forty-year-old college professor who is beloved by her students and internationally known for her research, can't remember when her anxiety came of age. It wasn't until she was in graduate school and had a conversation on this topic with her sister and cousin that she started recognizing family mannerisms as manifestations of anxiety. Putting a label on what seems quirky in isolation but is blazingly clear as a pattern was a lightbulb moment for her. She put it this way: "Anxiety was so subtle that it wasn't until we could name it in our family that we could recognize it in ourselves." She noticed that her grandmother, her mother, and her aunt all had some level of anxiety, and that this had been the case for as long as she could remember. For example, when Mahri was a kid, her mom would get caught up in excessive planning as a way to try to control her situations. This was especially evident when they were going on a trip. Mahri hated getting ready for traveling because her mom's anxiety would show up in the form of snapping (irritability) at her, her father, and her sister.

Only when Mahri could recognize anxiety in her family members did she realize that she had it as well. In a not-so-formal, before-breakfast interview for this book, she reflected about what anxiety feels like to her: "It is a low-grade feeling that has no object in itself. It attaches to any particular situation or thought that it can. It's as though my mind is looking for something to be anxious about. It's a feeling that I would previously have labeled as nervousness about certain things. It was hard to disconnect from my life experiences, because I thought it was just attached to legitimate life changes and circumstances." Yes, this is a key characteristic of generalized anxiety: our mind picks an innocuous object and starts worrying about it. For many, anxiety is a wildfire in the wilderness that starts with the strike of a match at dawn and is fueled by everyday experiences, burning brighter and stronger as the day unfolds.

At the end of our conversation as we headed to breakfast, Mahri added, “People who don’t know me wouldn’t suspect that this is something that I’m always working with.” Shrink training or not, I can attest to that: she comes across as cool as a cucumber to her colleagues and college students. Yet both she and I can sense the times when she’s anxious, often being clued in by her focusing on something in the future and starting to plan. It’s as though her brain picks an object or period that has a bit of inherent uncertainty (e.g., the weekend), starts to rev up simply because it lacks form, and then with each mental planning stroke tries to mold that clay into a familiar shape. To artists, a block of clay says possibility. To travelers, a weekend promises adventure. To the nervous, that lack of structure screams anxiety. Mahri and I have a running joke in which I ask her some variation of “Have you planned this morning to plan this afternoon to plan for the evening?”

In contrast to the slow burn of generalized anxiety, some people have intermittent periods of panic. Consider Emily, Mahri’s college roommate (a good friend of ours who is married to one of my best friends from medical school—they inadvertently introduced Mahri and me). As an attorney, Emily works on high-level political issues, including international negotiations. When she was in law school, she started having panic attacks. I asked her to explain what those were like for her. In an email response, she described them:

It was the summer between my second and third years of law school, when I was fortunate enough to have scored a summer associate position at a big law firm. As a summer associate, you are often invited to the homes of firm partners for dinner with their families, and a few other “summers” and full-time associates. It is supposed to be a bonding experience, and lets you see what personal life is like for those who worked at the firm. After one of these dinners in July, which was indeed enjoyable, I came home and went to bed, falling asleep easily. About two hours later, however, I jolted awake, heart pounding, sweating, gasping for air. I had no idea what was wrong—I couldn’t remember having any sort of bad dream or anything. I quickly got out of bed and walked around, trying to stop it. I was so worried that I called my husband, who was working an overnight shift at the emergency department

of a hospital, and begged him to come home, which he did. My symptoms eventually eased, and I realized I would survive, but I still didn't quite understand what had happened.

As I returned to law school for my final year that fall, with a full-time job offer from the firm in hand, I relaxed and didn't have any other incidents that I can remember. But by the next summer, the panic attacks returned—almost always the same as before, jolting me awake just a few hours after falling asleep easily. I was studying for the bar exam, which is a miserable experience, and simultaneously my parents, who had been married for thirty years (happily, as far as I knew), suddenly announced they were getting divorced. In addition, as I started my new job at the law firm, working some very long hours, an older associate whose office was right next to mine decided to “haze” me and treat me like his property, lecturing me about how I had no control over my life because the firm basically owned me, and how grateful I should be for this opportunity. This horrible combination of events/circumstances, seemingly stripping me of control over what I understood to be my life, led to a series of panic attacks over a six-month time period. I saw a therapist for a few sessions and did my own research, and by this point recognized what was happening. Once I knew what it was [panic attacks], I felt like I had more control. I would tell myself, “You feel like you're going to die, but you won't. This is your brain playing games with you. *You* decide what happens next.” I learned how to deep-breathe my way out of an attack and focus my thoughts intensely on the very act of calming down.

Now, not everyone has the Mr. Spock-like superhuman reasoning and focus of Emily, yet in contrast to Mahri's description of the slow burn of generalized anxiety, Emily's story shows how anxiety can be like a tea kettle, heating up and heating up until it blows—often in the middle of the night. And critically for both Emily and Mahri, it wasn't until they could name their particular variety of anxiety that they could start working with it.

Whether someone is a bona fide physician or simply Dr. Google, the bottom line here is that anxiety, clinical or otherwise, is a bit of a sticky wicket to diagnose. We all get anxious—it's a part of life—yet how we deal

with it is critical. If we don't know how anxiety shows up or why, we might get caught up in temporary distractions or short-term fixes that actually feed it, creating bad habits in the process (have you ever eaten ice cream or cookies when you're stressed?). Or we might spend our whole lives adding to our anxiety by trying to cure it (*why can't I just find why I'm anxious and fix it?*). That's what this book is all about.

Together, we'll explore how anxiety grew out of our brain's very basic survival mechanisms, how it can even become a self-perpetuating habit, and what you can do to change your relationship to it so that it unwinds on its own. Here's the bonus: in the process, you'll also learn about how it can set other habits in motion (and how to work with them as well).

---

ANXIETY IS NOT NEW: In a letter to John Adams back in 1816, Thomas Jefferson wrote: "There are indeed gloomy & hypochondriac minds, inhabitants of diseased bodies, disgusted with the present, & despairing of the future; always counting that the worst will happen, because it may happen. To these I say how much pain have cost us the evils which have never happened!" While I'm not even close to a historian, I can imagine Jefferson had quite a bit to be anxious about, from helping to birth a new country to living with his hypocritical attitude toward slavery. (He wrote that "all men are equal," that slavery was a "moral depravity" and a "hideous blot," that it presented a great threat to the survival of the new American nation, but he also enslaved more than six hundred people over his lifetime.)

In our modern world, with technological advances helping to provide a more stable food supply and the United States now being about a quarter of a millennium old, we might expect that there is less to worry about. BC—that is, before COVID-19—the Anxiety and Depression Association of America estimated that 264 million people worldwide had an anxiety disorder. In a study that now seems ancient because the data were collected between 2001 and 2003, the National Institute of Mental Health reported that 31 percent of U.S. adults experience an anxiety disorder sometime in their lives, and that 19 percent of the population had an anxiety disorder within the past year. Over the past two decades, things have only gotten worse. In 2018, the American Psychological Association surveyed a thousand U.S. adults about their sources and levels of anxiety. The APA

found that 39 percent of Americans reported being more anxious than they were in 2017, and an equal amount (39 percent) had the same level of anxiety as the last year. That's nearly 80 percent of the population.

Where is all of this anxiety coming from? The same APA poll found that 68 percent of respondents reported worries about health and safety made them somewhat or extremely anxious. Some 67 percent of folks reported finances as their source, followed by politics (56 percent) and interpersonal relationships (48 percent). In their "Stress in America" survey (2017), the APA found that 63 percent of Americans felt that the future of the nation was a large source of stress, and 59 percent checked the box that "the United States is at the lowest point they can remember in history." Remember, this was back in 2017, three years before COVID-19 hit.

Based on observations that mental illness tends to be more common in regions of the United States that also have a lower socioeconomic status, some have wondered whether less wealthy countries—where basic needs such as steady sources of food, clean water, and safety might be substantial stressors—would have higher rates of anxiety. To address this question, a study published in *JAMA Psychiatry* in 2017 looked at rates of Generalized Anxiety Disorder across the globe. Ready for this? Lifetime prevalence was highest in high-income countries (5 percent), lower in middle-income countries (2.8 percent), and lowest in low-income countries (1.6 percent). The authors opined that individual differences in the tendency to worry may show up more under conditions of relative wealth and stability found in high-income countries. Speculation proliferates as to why this is. For example, having our basic needs met may provide more idle time to let our survival brains look for something to be threatened by or worried about, leading some to dub this population the "worried well." Yet people with GAD are far from healthy: half of the individuals in this study reported severe disability in one or more life domains. I think of my patients with GAD as Olympians in the endurance "sport" of anxiety—they can worry longer and harder than anyone else on the planet.

With the emergence of the COVID-19 pandemic, early estimates report (surprise!) that anxiety levels skyrocketed. A cross-sectional survey of people in China from February 2020 found the prevalence of GAD to be 35.2 percent—and this was relatively early in the grand scheme of the pandemic. A report from the United Kingdom from late April 2020 reported that "mental health had deteriorated" compared with pre-COVID-19 trends.



A study in the United States in April 2020 found that 13.6 percent of respondents reported severe psychological distress. That's a whopping 250 percent increase compared to 2018, where only 3.9 percent reported this level of woe.

You only have to look as far as your own experience or social media feed to confirm this for yourself. Large-scale disasters such as the COVID-19 pandemic are almost always accompanied by increases in a broad range of mental disorders, including substance use and anxiety. For example, nearly 25 percent of New Yorkers reported increasing their alcohol use after the 9/11 attack back in 2001, and six months after the 2016 Fort McMurray wildfire (the costliest disaster in Canadian history), area residents showed a spike to 19.8 percent in Generalized Anxiety Disorder symptoms.

Anxiety isn't a loner. It tends to hang out with friends. That same *JAMA* study from 2017 found that 80 percent of people with GAD experienced another lifetime psychiatric disorder, most commonly depression. A recent study from my lab found something similar: 84 percent of individuals with GAD presented with comorbid disorders.

And anxiety doesn't just come out of the blue. It is born.



## The Birth of Anxiety

ANXIETY IS A strange beast.

As a psychiatrist, I learned that anxiety and its close cousin, panic, are both born from fear. As a behavioral neuroscientist, I know that fear's main evolutionary function is helping us survive. In fact, fear is the oldest survival mechanism we've got. Fear teaches us to avoid dangerous situations in the future through a brain process called negative reinforcement.

For example, if we step out into a busy street, turn our head, and see a car coming right at us, we instinctively jump back onto the safety of the sidewalk. That fear reaction helps us to learn quickly that streets are dangerous and to approach them with caution. Evolution made this really simple for us. So simple that we need only three elements in situations like this to learn: an environmental cue, a behavior, and a result. In this case, walking up to a busy street (the environmental cue) is our signal to look both ways before crossing (the behavior). Crossing the street uninjured (the result) teaches us to remember to repeat the action again in the future. We share this survival tool with all animals. Even the sea slug, a creature with the most "primitive" nervous system known in science (twenty thousand neurons total, as opposed to roughly a hundred billion in the human brain), uses this same learning mechanism.

Sometime in the last million years, humans evolved a new layer on top of our more primitive survival brain; neuroscientists call this the prefrontal cortex (PFC). (From an anatomical perspective, this "newer" brain region is located just behind our eyes and forehead.) Involved in creativity and planning, the PFC helps us to think and plan for the future. The PFC predicts what will happen in the future based on our past experience. Yet critically, the PFC needs accurate information to make accurate predictions. If information is lacking, our PFC plays out different versions of what might happen to help us choose the best path forward. It does this by running simulations based on previous events in our lives that are most similar. For example, trucks and buses are similar enough to cars that we

can safely assume we should look both ways to avoid any fast-moving vehicle.

Enter anxiety.

Anxiety is born when our PFCs don't have enough information to accurately predict the future. We saw this with COVID-19, when it exploded onto the world stage in early 2020. As would be true of any newly discovered virus or pathogen, scientists raced to study the characteristics of COVID-19 in order to find out precisely how contagious and deadly it was so that we could act appropriately. Yet especially in the early days of discovery, uncertainty abounded. Without accurate information, our brains found it easy to spin stories of fear and dread, based on the latest reports that we had heard or read. And because of the way our brains are wired, the more shocking the news—increasing our sense of danger and feelings of fear—the more likely our brains are to remember it. Now add elements of fear and uncertainty—the illness or death of family members; the prospect of losing your job; hard decisions about whether or not to send your kids to school; concerns about how to safely reopen the economy; and so on—and you get a big heap of badness for your brain to try to sort through.

Notice how fear itself does not equal anxiety. Fear is an adaptive learning mechanism that helps us survive. Anxiety, on the other hand, is maladaptive; our thinking and planning brain spins out of control when it doesn't have enough information.

You can get a sense of this simply by looking at how quickly a fear response happens. If you step into a busy street and a car bears down on you, you reflexively jump back onto the sidewalk. In this situation you don't have time to think. Processing all of that information (car, speed, trajectory, etc.) in your PFC takes much too long, and making a decision about what to do (“should I step back or will the car swerve around me?”) takes even longer. We can break it down into three very different time scales that differentiate reflexes from learning from anxiety:

1. Immediate (milliseconds)
2. Acute (seconds to minutes)
3. Chronic (months to years)

That *immediate reaction* happens at the survival level. We aren't learning anything in this situation; we're simply getting out of harm's way. This has to happen really quickly and instinctually. Jumping back onto the sidewalk is something that happens so quickly that you realize what just happened only after the fact. That's a reaction that starts in your older brain's autonomic nervous system, which acts quickly and outside of your conscious control to regulate all sorts of things, like how much blood your heart pumps or whether your muscles get more blood than your digestive tract. It is lifesaving because when there is an immediate threat, you don't have time to think—thinking is a much slower process. In other words, this fight/flight/freeze reaction keeps you alive long enough to get to the next phase and actually learn from it.

Once you are safely out of harm's way, *that's* when you feel the acute adrenaline rush and start processing what just happened (*acute learning*). The thought that you almost got killed helps you link up stepping out into the street with danger. Your brain might even dredge up a distant memory or two, as your parent's voice pops into your head and you remember the first time your mom or dad scolded you for not looking both ways before crossing the street. The unpleasantness of the fearful physiological reaction helps you learn: put your phone away and look both ways before crossing the street. Notice how quickly learning happens here. You don't need to spend months in therapy trying to decipher whether you have a death wish or were a defiant kid when you were growing up; it's a simple matter of learning to pay attention in dangerous situations. You connect the dots between a busy street and a close encounter with a car; ironically, you rapidly learn what your parents kept trying to teach you when you were a kid. (Notice how much more effective learning from experience is than extrapolating from a concept—our brains are really good at this.) Importantly, like zebras who jump and kick, or dogs who shake their bodies after surviving stressful situations, you need to learn how to safely discharge the excess energy associated with that “I almost died” adrenaline surge, so that it doesn't lead to chronic or post-traumatic stress and anxiety. Simply talking to someone doesn't count here; you may really have to do something physical, like shout, shake, dance, or engage in some type of physical exercise.

Your older and newer brains work well together to help you survive: when you act instinctively (jump out of the street) and learn from those

situations (look both ways before crossing), you live long enough to be able to start planning for the future (“I should make sure my kids know that this is a dangerous intersection”). When everything is working well, this is where the PFC shines. The PFC takes information from past experience and projects it into the future as a way to model and predict what might or could happen, so instead of constantly reacting to what is happening right now, you can plan for what’s next. This is all well and good as long as you have enough information to make a good prediction. The more certain you can be of what is about to happen, the more you can predict and plan ahead.

Like a seed needing fertile soil, the old survival brain creates the conditions for anxiety to sprout in your thinking brain (*chronic*). This is where anxiety is born. Fear + uncertainty = anxiety. For example, how does it feel the first time that your kids want to walk to school or a few blocks to a friend’s house alone? You’ve carefully taught them safe street crossing, stranger danger, and all the rest. But the moment they are out of sight, what does your mind do? It starts filling with all of the worst-case scenarios.

In the absence of past experience and/or (accurate) information, you will find it really hard to shut off that worry switch and calmly plan for the future. Your thinking/planning brain doesn’t have an information switch such that when it runs low on information, it goes into sleep mode until more information is available. Quite the opposite. Anxiety urges you into action. “Go get me some information!” it screams in your ears (oddly, from inside your head). And you find yourself trying to remember all of the spy movies that you’ve seen so you can secretly tail your kids to make sure they get to their destination safely (without you).

Broadly speaking, it seems that more information should be a good thing (when you can get it). After all, knowing more should help us be more in control, because information is power, right? With the advent of the Internet, there is no shortage of information, yet accuracy gets buried under the volume of the content. When virtually anyone can post anything that they want to and are rewarded not for accuracy, but instead for humor or outrage or shock value, the web quickly fills with so much information that we find it nearly impossible to wade through it all. (Fake news spreads six times faster than real news.) This does the opposite of helping us feel like we are in control. From a scientific standpoint, the impact of having too much information to make choices when planning has been dubbed *choice overload*.

Alexander Chernev and his colleagues at the Kellogg School of Management at Northwestern University even identified three factors that significantly diminish our brain's ability to make choices: higher levels of task difficulty, greater choice set complexity, and (surprise!) higher uncertainty. Life in the age of 24/7 information availability brings with it greater complexity due simply to sheer volume. Getting a bazillion possible articles from a Google search can feel like going to the beach to dip your toe in the water, then looking up and seeing a tidal wave coming right at you. The sense that you can never stay current with the news cycle (because you now can know what is happening anywhere in the world at any time) or even keep up with your social media circle can feel like picking up a glass of water because you are thirsty, feeling the need to drink all of it, and failing to realize that the glass is bottomless.

Not only does information overload feel overwhelming, but then add in the nature of the information: contradictory (and potentially purposely misleading) information naturally leads to higher uncertainty. You don't need me to point out how much our brains hate contradictory stories. Why? They are the epitome of uncertainty (more on the evolutionary origins of this in chapter 4). And unfortunately, complexity and uncertainty will only increase as techniques of manipulation of information become more sophisticated (e.g., deep fakes).

The less certain the information, a state usually accompanied by an urge to editorialize (which adds more to the volume of information to be waded through), the more your PFC starts spinning faster and faster, taking whatever substrate is available as it tries to quickly spit out all possible what-if scenarios for you to ponder. Of course, this hardly counts as planning, but your brain doesn't know any better. The more inaccurate the information your PFC incorporates, the worse the outcome. And as the scenarios become more worst-case (which tends to happen as the PFC starts to go off-line, ironically due to the ramping up of the anxiety), your fight/flight/freeze physiology can get triggered to the point that just thinking about these possible (but highly improbable) situations can make you feel that you're in danger, even though the danger is only in your head. Voilà! Anxiety.

Let's return to the example of letting your kids head out on their first three-block adventure to school or their friend's house. Back in the "olden days" (i.e., before cell phones), our parents had to send us out into the wild

and simply wait for us to come home (or call from our friend's house to let them know we'd arrived safely). Now parents can load their children down with every conceivable tracking device before sending them out the door so that they know where their kids are at any moment. And as they can track every step, they can worry about everything along the way. (*She stopped. Why did she stop? Was she talking to a stranger or tying her shoe?*) With each bit of uncertain information, the brain spins out every conceivable what-if scenario. This is the planning brain trying to think through all of the contingencies in an effort to help out. Does this substantively increase the child's safety? Probably not, especially when weighed against the increase in anxiety that it spawns.

Yes, anxiety is an evolutionary add-on. When fear-based learning is paired with uncertainty, your well-intentioned PFC doesn't wait for the rest of the ingredients (e.g., more information). Instead, it takes whatever it's got in the moment, uses worry to whip it together, fires up the adrenaline oven, and bakes you a loaf of bread you didn't ask for: a big hot loaf of anxiety. And in the process of making the loaf, your brain stores a bit of the dough—like sourdough starter—away for later. The next time you plan for something, your brain pulls that anxiety starter out of your mental pantry and adds it as an “essential ingredient” to the mix, to the point where that sour taste overpowers reason, patience, and the process of gathering more information.



LIKE COVID-19, ANXIETY is also contagious. In psychology, the spread of emotion from one person to another is aptly termed *social contagion*. Our own anxiety can be cued/triggered simply by talking to someone else who is anxious. Their fearful words are like a sneeze landing directly on our brain, emotionally infecting our PFC, and sending it out of control as we begin to worry about everything from whether our family members will get sick to how our jobs will be affected. Wall Street is a great example of social contagion. We watch the stock market spike and crash, the stock indexes being an indicator of how feverish our collective anxiety is at the moment. Wall Street even has something known as the Volatility Index (VIX), also known as the fear index, and I bet you won't be surprised that it hit a ten-year high back in March of 2020, as stock traders started to realize what an unprecedented mess the world was in.



When we can't control our anxiety, that emotional fever spikes into panic (defined online as "sudden uncontrollable fear or anxiety, often causing wildly unthinking behavior"). Overwhelmed by uncertainty and fear of the future, our PFCs—the rational thinking parts of our brains—go off-line. Logically, we know that we don't need to store a six-month supply of toilet paper in our basement, but when we're running through the grocery store and see someone's cart piled high with Charmin, their anxiety infects us, and we go into survival mode. Must. Get. Toilet. Paper. Our PFC comes back online only when we're out in the parking lot trying to figure out how to fit all that toilet paper into our car or carry it onto the subway.

So how do we keep our PFCs online in uncertain times? How can we avoid panic? Too many times, I've seen my anxious clinic patients try to suppress or think themselves out of anxiety. Unfortunately, both willpower and reasoning rely on the PFC, which at these critical moments has shut down and isn't available. Instead, I start by teaching them how their brains work so that they can understand how uncertainty weakens their brain's ability to deal with stress, priming it for anxiety when fear hits. Learning that uncertainty triggers anxiety, which in turn can lead to panic, allows them to be on the lookout. And simply knowing that this is their survival brain kicking into high gear (even if it is a little misguided because it doesn't have enough information) helps put my patients a little more at ease.

But this is only the first step. Our brains are constantly asking "what if?" When we log on to social media and scroll for the latest information, all we see is more speculation and fear. Social contagion knows no physical boundaries and can be spread from anywhere in the world. Instead of desperately searching for information, we need to add something more reliable to help us work with our emotions. Ironically, the antidote to panic relies on our survival instincts—leveraging these same learning mechanisms that lead to worry and anxiety in the first place.

To hack our brains and break the anxiety cycle, we must become aware of two things: that we are getting anxious and/or panicking and what results from anxiety/panicking. This helps us see if our behavior is actually helping us survive or in fact is moving us in the opposite direction. Panic can lead to impulsive behaviors that are dangerous; anxiety weakens us mentally and physically and also has more long-term health consequences. Becoming aware of these damaging effects helps our brain's learning system

determine the relative worth of behaviors: more valuable (rewarding) behaviors are placed higher in a reward hierarchy in our brain, and thus are more likely to be repeated in the future, while the less valuable (unrewarding) behaviors fall to the bottom (more on this in chapter 10).

Once we are aware of how unrewarding anxiety is, we can then bring in the *bigger, better offer*, or BBO (more on this in chapter 15). Since our brains will choose more rewarding behaviors simply because they feel better, we can practice replacing old habitual behaviors such as worry with those that are naturally more rewarding.

For example, early on in the COVID-19 pandemic, public health officials warned us to stop touching our faces, because we can more easily catch a virus if we've touched a doorknob or contaminated surface and then touch our face. If you notice that you have a habit of touching your face (which many of us do: one study published back in 2015 found that we do this, on average, twenty-six times an hour), you can be on the lookout for when you carry out that behavior. With that trigger, you can step back and notice if you are starting to worry as a mental behavior ("oh no, I touched my face—maybe I'll get sick!"). Instead of panicking, you can take a deep breath and ask yourself, "When was the last time I washed my hands?" Just by taking a moment to pause and ask such a question, you give your PFC a chance to come back online and do what it does best: think ("oh, right! I just washed my hands"). Here you can leverage certainty: if you've just washed your hands, haven't been in public, and so forth, the likelihood that you're going to get sick is pretty low.

Self-awareness also helps to foster good hygiene habits through reinforcement learning: you feel better when you've been in the habit of washing your hands, and you can more easily reassure yourself in the moments when you accidentally or habitually touch your face (or scratch an itch). At the same time, if you're not great at regular handwashing, awareness plus uncertainty gives you a kick in the pants to wash your hands more regularly, or at least wash them when you've just come from a real-world social space; that natural feeling of dis-ease urges you into action. The more you can clearly see the positive feeling and effects of good hygiene and compare them to the negative feeling of uncertainty or anxiety, the more your brain naturally moves toward the former, because it feels better.

Understanding these simple learning mechanisms will help you “keep calm and carry on” (which is how Londoners dealt with the uncertainty of constant air raids in World War II) instead of getting caught in anxiety or panic in the face of uncertainty. At times when your mind starts to spin out in your worry du jour, you can pause and take a deep breath while you wait for your PFC to come back online. Once it’s up and running again, you can then compare the feeling of anxiety to that of calmness and think clearly. To our brains, it’s a no-brainer. More important, once you are able to tap into your brain’s power to overcome anxiety, you can broaden your learning to work with other habitual tendencies as well. It simply takes a little practice so that the bigger, better offers become new habits not just for anxiety, but far beyond.

While anxiety is born from fear, it needs nourishment to grow and flourish. To help you see more clearly what feeds anxiety, you need to know how habits get set up in the first place to help you understand how your mind works.