

THE POWER OF BAD

**HOW THE
NEGATIVITY EFFECT
RULES US AND HOW
WE CAN RULE IT**

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AND ROY F.
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OF WILLPOWER**

THE POWER OF BAD

How the Negativity Effect Rules Us and How We Can Rule It

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Contents

<u><i>Prologue: The Negativity Effect</i></u>	1
<u>CHAPTER 1</u>	
<u>How Bad Is Bad? Enlisting the Rational Mind</u>	19
<u>CHAPTER 2</u>	
<u>Love Lessons: Eliminate the Negative</u>	43
<u>CHAPTER 3</u>	
<u>The Brain's Inner Demon: Wired for Bad</u>	67
<u>CHAPTER 4</u>	
<u>Use the Force: Constructive Criticism</u>	91
<u>CHAPTER 5</u>	
<u>Heaven or Hell: Prizes vs. Penalties</u>	107
<u>CHAPTER 6</u>	
<u>Business 101: Yes, We Have No Bad Apples</u>	135
<u>CHAPTER 7</u>	
<u>Online Perils: The Sunshine Hotel vs. the Moon Lady</u>	159
<u>CHAPTER 8</u>	
<u>The Pollyanna Principle: Our Natural Weapon Against Bad</u>	179
<u>CHAPTER 9</u>	
<u>The Crisis Crisis: Bad Ascending</u>	207
<u>CHAPTER 10</u>	
<u>The Future of Good</u>	239
<u><i>Acknowledgments</i></u>	247
<u><i>Notes</i></u>	251
<u><i>Index</i></u>	309

THE POWER OF BAD

PROLOGUE

The Negativity Effect

Take the bad with the good, we stoically tell ourselves. But that's not how the brain works. Our minds and lives are skewed by a fundamental imbalance that is just now becoming clear to scientists: Bad is stronger than good.

This power of bad goes by several names in the academic literature: the negativity bias, negativity dominance, or simply the negativity effect. By any name, it means the universal tendency for negative events and emotions to affect us more strongly than positive ones. We're devastated by a word of criticism but unmoved by a shower of praise. We see the hostile face in the crowd and miss all the friendly smiles. The negativity effect sounds depressing—and it often is—but it doesn't have to be the end of the story. Bad is stronger, but good can prevail if we know what we're up against.

By recognizing the negativity effect and overriding our innate responses, we can break destructive patterns, think more effectively about the future, and exploit the remarkable benefits of this bias. Bad luck, bad news, and bad feelings create powerful incentives—the

most powerful, in fact—to make us stronger, smarter, and kinder. Bad can be put to perfectly good uses, but only if the rational brain understands its irrational impact. Beating bad, especially in a digital world that magnifies its power, takes wisdom and effort.

The negativity effect is a simple principle with not-so-simple consequences. When we don't appreciate the power of bad to warp our judgment, we make terrible decisions. Our negativity bias explains things great and small: how countries blunder into disastrous wars, why neighbors feud and couples divorce, how economies stagnate, why applicants flub job interviews, how schools are failing students, why football coaches punt much too often. The negativity effect destroys reputations and bankrupts companies. It promotes tribalism and xenophobia. It spreads bogus scares that have left Americans angrier and Zambians hungrier. It ignites moral panics among both liberals and conservatives. It poisons politics and elects demagogues.

Bad is universally powerful, but it is not invincible. You are most affected by the negativity effect during your younger years, when you most need to learn from failures and criticism. As you age, the need to learn diminishes while perspective increases. Old people tend to be more contented than young people because their emotions and judgments aren't as skewed by problems and setbacks. They counteract the power of bad by appreciating pleasures each day and recalling happy moments instead of dwelling on past miseries. Their lives may not seem better by objective standards (particularly if they have health problems), but they feel better and can make sounder decisions because they can afford to ignore unpleasant learning opportunities and focus on what brings joy.

That's the sort of wisdom we're promoting in this book. We'll explain how to use the power of bad when it's beneficial and overcome it when it's not. Thanks to a recent surge of studies of the negativity effect, researchers have identified strategies for coping with it. Evolution has left us vulnerable to bad, which rules a primal region of

the brain in all animals, but it also has equipped the more sophisticated regions of the human brain with natural cognitive tools for withstanding bad and employing it constructively. Today these tools are more essential than ever because there are so many more skilled purveyors of fear and vitriol—the merchants of bad, as we call them, who have prospered financially and politically by frightening the public and fomenting hatred.

We'll show how to deploy the rational brain to keep bad at bay in both private and public life—in love and friendships, at home and school and work, in business and politics and government. Above all, we want to show how good can win in the end. It is not as immediately powerful and emotionally compelling as bad, but good can prevail through persistence, intelligence, and force of numbers.

By learning how the negativity bias affects you and everyone else, you see the world more realistically—and less fearfully. You can consciously override the impulses that cause crippling insecurities, panic attacks, and phobias like the fear of heights or public speaking. A phobia is a discrete illustration of the power of bad: an exaggerated reaction to the possibility of something going wrong, an irrational impulse that prevents you from enjoying life to its fullest. Phobias can be overcome, and so can more generalized problems once you understand the negativity effect.

Instead of despairing at a setback, you can look for ways to benefit from it. Instead of striving to be a perfect parent or partner, you can concentrate on avoiding the basic mistakes that matter much more than your good deeds. In any relationship, you can learn how to stop fights before they begin, or at least prevent them from spiraling out of control, by recognizing how easily a small affront can be misinterpreted and exaggerated, especially when romantic partners are trying to make sense of each other. At work, you can avoid the pitfalls that ruin careers and doom enterprises.

The upside of bad is its power to sharpen the mind and energize

the will. By understanding the impact of painful feedback, you become better at dealing with criticism—at absorbing the useful lessons without being demoralized. You also become better at dispensing criticism, a rare skill. Most people, including supposed experts, don't know how to deliver bad news because they don't realize how it's received. When doctors ineptly deliver a grim diagnosis, they compound the patients' grief and confusion. When students or employees are evaluated, many teachers or supervisors deliver critiques that serve mainly to dishearten, while others just duck the problems by giving everyone good grades and evaluations. They could do their jobs more effectively with techniques that have been tested recently in schools, offices, and factories.

Criticism and penalties, when administered deftly, spur much faster progress than the everybody-gets-a-trophy approach. They inspire people to learn from their mistakes instead of continuing to jeopardize their careers and their relationships. Criticism and penalties teach people how to improve themselves and get along with others, whether they're collaborating at work, juggling family responsibilities, or trying to keep romance alive.

Properly understood, the power of bad can bring out the best in anyone.

THE NEGATIVITY EFFECT IS A FUNDAMENTAL ASPECT OF PSYCHOLOGY and an important truth about life, yet it was discovered only recently, and quite unexpectedly. Roy Baumeister's research began, as usual, with a vague question, the sort that's no longer fashionable among his fellow researchers in psychology. As an undergraduate he had wanted to become a philosopher contemplating broad questions about life, but his parents considered that too impractical a career to justify Princeton's tuition, so he compromised by going into social psychology.

Once he became a professor, first at Case Western Reserve University and then at Florida State and the University of Queensland, Baumeister did his share of highly specialized research and experiments, the kind of work favored by today's journals and tenure committees. He became known for his work on self-control, social rejection, aggression, and other topics. But he also took on questions far beyond his specialties. Why is there evil? What is the self? What shapes human nature? What is the meaning of life? He answered each one in a book by surveying the literature in psychology and other disciplines to spot patterns unseen by the specialists.

In the 1990s he became intrigued by a couple of patterns in good and bad events. Psychologists studying people's reactions found that a bad first impression had a much greater impact than a good first impression, and experiments by behavioral economists showed that a financial loss loomed much larger than a corresponding financial gain. What gave bad its greater power? When and how could it be counteracted?

To investigate, Baumeister started by looking for situations in which bad events didn't have such a strong impact. It was a logical enough approach: To understand the source of something's strength, look for examples of its weakness. To find out what's supporting a roof, look for spots where it's sagging. Baumeister and his colleagues proposed to "identify several contrary patterns" that would enable them to "develop an elaborate, complex, and nuanced theory about when bad is stronger versus when good is stronger."

But they couldn't. To their surprise, despite scouring the research literature in psychology, sociology, economics, anthropology, and other disciplines, they couldn't find compelling counterexamples of good being stronger. Studies showed that bad health or bad parenting makes much more difference than good health or good parenting. The impact of bad events lasts longer than that of good events. A negative image (a photograph of a dead animal) stimulates more

electrical activity in the brain than does a positive image (a bowl of chocolate ice cream). The pain of criticism is much stronger than the pleasure of praise. Penalties motivate students and workers more than rewards. A bad reputation is much easier to acquire and tougher to lose than a good reputation. The survey of the research literature showed bad to be relentlessly stronger than good. Almost by chance, the psychologists had discovered a major phenomenon, one that extended into so many different fields that the overall pattern had escaped notice.

While he was writing up the results, Baumeister happened to visit the University of Pennsylvania and present his findings. A professor in the audience, Paul Rozin, came up afterward and told him he was working on a similar project, although from a different approach. Rozin was already well known for his highly creative research into neglected topics, including magical thinking and disgust.

In a memorable set of experiments, he showed how little it took to contaminate something good. When a sterilized, dead cockroach was dunked into a glass of apple juice and then quickly removed, most people refused to take a sip. (The notable exception: little boys, who seemed incapable of being grossed out.) Most adults became unwilling to drink any apple juice at all, not even when it was freshly poured from a new carton into a clean glass. The slightest touch with a disgusting bug could make any food suddenly seem inedible.

But suppose an experimenter put a luscious piece of molten chocolate cake on top of a plateful of sterilized cockroaches. Would that make you willing to eat the bugs? Can you imagine any food so good that merely touching it to the plate would render the cockroaches edible? No, because there is no “anti-cockroach.” Rozin’s study of disgust and contagion confirmed an old Russian saying: “A spoonful of tar can spoil a barrel of honey, but a spoonful of honey does nothing for a barrel of tar.”

As Rozin pondered this asymmetry, he saw that this negativity

bias applied to a wide range of phenomena. In many religious traditions, a person can be damned by a single transgression or possessed by a demon in an instant, but it takes decades of good works and dedication to become holy. In the Hindu caste system, a Brahman is contaminated by eating food prepared by someone from a lower caste, but an untouchable does not become any purer by eating food prepared by a Brahman.

A few linguistic peculiarities also struck both Baumeister and Rozin. Psychologists generally describe emotional states with pairs of opposites: *happy* or *sad*, *relaxed* or *anxious*, *pleased* or *angry*, *friendly* or *hostile*, *optimistic* or *pessimistic*. But when Baumeister surveyed psychological research into good and bad events, he noticed that something was missing. Psychologists have long known that people can be scarred for years by a single event. The term for it is *trauma*, but what is the opposite? What word would describe a positive emotional state that lingers for decades in response to a single event?

There is no opposite of *trauma*, because no single good event has such a lasting impact. You can consciously recall happy moments from your past, but the ones that suddenly pop into your head uninvited—the involuntary memories, as psychologists call them—tend to be unhappy. Bad moments create unconscious feelings that don't go away. Fifty years after World War II, when researchers compared American veterans who'd fought in the Pacific with those who'd fought in Europe, there was a distinct difference in tastes: The Pacific veterans still avoided Asian food. One bad sexual experience can haunt a person for life, but the most blissful tryst will become a hazy memory. One infidelity can destroy a marriage, but no act of devotion can permanently bond a couple. One moment of parental neglect can lead to decades of angst and therapy, but no one spends adulthood fixated on that wonderful day at the zoo.

Rozin noticed some other singular bad words. For instance, there was no single word meaning the opposite of *murderer*. When the

researchers tested this notion by asking people to name one, there was no consensus. Some people couldn't think of any word; others suggested words that were not quite right, like *savior* (a broader term typically used for spiritual redemption and other kinds of rescue) and *lifesaver* (which brings to mind something on a ship's deck). Previous researchers had studied languages around the world and found a negativity bias in the distribution of words: There are more synonyms for a bad concept like pain than for its opposite, pleasure. But for *murderer* there is no opposite. The Penn researchers looked for other such "unique nouns," either good or bad, and came up with just a handful—all of them bad.

They could find synonyms for *sympathy* (like *compassion* and *pity*) but no single word to connote empathizing with someone's good fortune. There was a word for an unexpected negative event, *accident*, and also for the chance that something bad could occur, *risk*, but most people couldn't think of an opposite for either one. (*Serendipity* is a possibility, but it apparently wasn't familiar to most people.) Nor could most people name an antonym for *disgust*. It was the same story when the researchers looked for versions of these words in twenty other languages, including the most widely spoken tongues as well as less common ones like Icelandic and Ibo. The results demonstrated an extreme version of the negativity bias: Sometimes bad is so much stronger that people don't even try contrasting it with good.

By the time they finished comparing notes, Baumeister and Rozin realized they had independently recognized the same principle, and they coordinated the publication of their papers in 2001. Both are now among the most cited papers in the social-science literature. They've inspired psychologists and a wide range of other researchers to conduct hundreds of studies of the negativity bias, discovering it in new places, analyzing its effects, and testing countermeasures. With this book we want to start sharing this growing body of research, which

has deepened our understanding of the negativity effect while also confirming the original papers.

Rozin's paper, coauthored with his Penn colleague Edward Royzman, was titled "Negativity Bias, Negativity Dominance, and Contagion." They concluded that "negative events are more salient, potent, dominant in combinations, and generally efficacious than positive events." Baumeister's paper was titled simply "Bad Is Stronger Than Good." It was cowritten with two colleagues at Case Western, Ellen Bratslavsky and Kathleen Vohs, and Catrin Finkenauer of the Free University of Amsterdam. After surveying the evidence, they concluded: "The greater power of bad events over good ones is found in everyday events, major life events (e.g., trauma), close relationship outcomes, social network patterns, interpersonal interactions, and learning processes."

Baumeister and his coauthors noted that their own profession had been skewed for a century by the power of bad. Psychology journals and textbooks had devoted more than twice as much space to analyzing problems than to identifying sources of happiness and well-being. Why? "One hypothesis might be that psychologists are pessimistic misanthropes or sadists who derive perverse satisfaction from studying human suffering and failure." But a better explanation for Baumeister's team was the pressure on researchers in this young science to come up with statistically significant results: "They needed to study the strongest possible effects in order for the truth to shine through the gloom of error variance and to register on their measures. If bad is stronger than good, then early psychologists would inevitably gravitate toward studying the negative and troubled side of human life."

Researchers had been following their own version of the Anna Karenina principle, named for Tolstoy's famous observation that all happy families are alike but each unhappy family is unhappy in its

own way. It was much easier to distinguish and measure the problems of unhappy people, so psychologists had started with them. The research was further distorted when it reached the public, because it was filtered through journalists eager for news with the most immediate impact—which, of course, meant bad news. So they wrote lots of stories about the toll of traumas and psychoses and depression, but precious little about the mind's resilience and capacity for happiness.

Post-traumatic stress syndrome became common knowledge but not the concept of post-traumatic growth, which is actually far more prevalent. Most people who undergo trauma ultimately feel that the experience has made them stronger, wiser, more mature, more tolerant and understanding, or in some other way a better person. The influential psychologist Martin Seligman has often lamented that so much attention is lavished on post-traumatic stress syndrome rather than post-traumatic growth because it causes people to mistakenly expect that bad events will have mainly negative effects. After being exposed to a terrifying event, at least 80 percent of people do not experience post-traumatic stress syndrome. Even though a single bad event is more powerful than a good event, over time people respond in so many constructive ways that they typically emerge more capable than ever of confronting life's challenges. Bad can make us stronger in the end.

Psychologists and journalists were so busy accentuating the negative that they missed the larger truth about human resilience. It was only after recognizing the negativity bias in their own field that psychologists began compensating for it by studying ways to foster hardiness, growth, and well-being rather than merely alleviate misery. To do that, they began to take a closer look at the power of bad, as did researchers in other disciplines. Cognitive scientists found new ways to counteract its effects in treating anxiety and other disorders, and to use its power to promote faster learning. Economists began to see how it could improve workers' productivity. Sociologists studying

religion saw how the power of bad inspires virtuous behavior, and why hell is such a common belief in religions that spread quickly. The Christian doctrine of original sin—that humanity is doomed to perpetual suffering by the sin of Adam and Eve—may seem harsh, just as it seems unfair that the hero in ancient Greek tragedies is doomed by a single tragic flaw. But these beliefs happen to jibe with a basic element of human psychology and evolution.

TO SURVIVE, LIFE HAS TO WIN EVERY DAY. DEATH HAS TO WIN JUST once. A small error or miscalculation can wipe out all the successes. The negativity bias is *adaptive*, the term biologists use for a trait that improves the odds of survival for an individual or a group. On our ancestral savanna, the hunter-gatherers who survived were the ones who paid more attention to shunning poisonous berries than to savoring delicious ones. They were more alert to predatory lions than to tasty gazelles. Recognizing a friend's kindness usually wasn't a matter of life or death, but ignoring an enemy's animosity could be fatal. At the group level, survival depended on what researchers call the chain principle (based on the cliché about a chain being only as good as its weakest link): The clan's safety could not be ensured by a single good person, but they could all be poisoned if one careless cook served tubers without eliminating the toxins. A single traitor could betray everyone to a hostile clan.

One mistake can still kill you. One enemy can still make your life miserable. One loss can erase many previous gains. Paying extra attention to threats still makes evolutionary sense. But our fine-tuned sense of bad can be debilitating, and what worked for hunter-gatherers doesn't always work for us. The urge to load up on fattening calories was useful in lean times on the savanna, but it can lead to obesity and ill health when junk-food merchants tempt you all day long. Bad

today also has its merchants, and they use the media just as skillfully as junk-food marketers.

That's why the modern world seems so dangerous. Terrorism is a creation of the media age. Randomly murdering a few innocent civilians was strategically pointless until the late nineteenth century. Only then, as the telegraph and cheap printing presses began quickly spreading news, did terrorists discover the power of a single horrendous act. The quest for fear accelerated with broadcast news and has been in hyperdrive since cable channels and websites and social media started competing for audiences 24/7. They tap into primal emotions by hyping threats from nature, technology, foreigners, and political opponents. The election of Donald Trump has been a ratings bonanza because it has brought out the worst on both sides, so that rarely a week goes by without some new warning that Western civilization is doomed.

All day long, the power of bad governs our moods and guides our decisions. It drives news and shapes public discourse as it's exploited by journalists, politicians, marketers, bloggers, social-media vipers, Internet trolls, and anyone else seeking attention on our screens. The past quarter century has been extraordinarily peaceful by historical standards, but people have witnessed more battles and bloodshed than ever before. The rate of violent crime in America has plummeted, but most people think it has gone up because they see it so often in the media. The steady diet of bad news makes people feel helpless. They start catastrophizing their personal worries and despairing at the state of the world.

As life expectancy increases, we use our extra time to click on headlines like "Why Your Diet Is Killing You." No matter how happy your home life, you're assailed with listicles of the seven signs your partner is cheating and the five tips to prevent your child from being abducted. No matter how virtuously you live, clickbaiters will find a way to frighten you. You're not safe even in the web's realm of adorable-animal videos, not when there's an algorithm alerting you

to articles aimed at pet owners: “Would Your Dog Eat You If You Died? Get the Facts.”

Until we learn how to override the disproportionate impact of bad, it distorts our emotions and our view of the world. It has made the luckiest people in history feel cursed. For thousands of years, the normal human lot was a short life of hard toil on a farm. In 1950 most people in the world subsisted on less than \$1 per day and didn’t know how to read, but today the rates of extreme poverty and youth illiteracy are below 10 percent and still falling. We are richer, healthier, freer, and safer than our ancestors could have ever hoped to be, yet we don’t enjoy our blessings. We prefer to heed—and vote for—the voices telling us the world is going to hell. Instead of seizing opportunities and expanding our horizons, we seethe at injustices and dread disasters—and all too often respond by making things worse.

The negativity bias causes us to pay special attention to external threats and thus exaggerate those dangers, but we’re prone to a different bias when looking inward. We typically exaggerate our virtues, and our capacity for self-delusion can be astonishing. When prisoners serving time for assault, robbery, fraud, and other crimes were asked to compare themselves with the general population, they rated themselves as being more moral and honest, and also more compassionate and self-controlled. There was just one quality in which they didn’t outshine the rest of society. When it came to being law-abiding, these convicted criminals modestly rated themselves as only average.

We’re all prone to overestimate our abilities as well as our power to control our destiny. People have a false sense of security on the highway because they consider themselves above-average drivers and expect their skill to protect them, even though many accidents are caused by factors beyond their control. Similarly, when asked how long it will take to complete a project, people typically underestimate the time because they’re too confident in themselves and don’t allow for delays beyond their control. This “optimism bias” causes people

to underestimate the risk of some types of negative events in their own lives. They're fully aware that something bad can happen—in fact, they often have an unrealistically high expectation it will happen—but they tell themselves it will happen to someone else.

Over and over, this toxic combination of fear and overconfidence leads to disaster. Political scientists have used it to understand some of the most puzzling mistakes of modern history, starting with the carnage of World War I. Why was Germany so eager for a war that proved so futile? Before the war, Germany was the greatest economic and military power in Europe, so strong that its neighbors would have been foolhardy to attack. Yet German leaders obsessed over any signs of hostility from other nations. In 1912 the German chancellor wondered whether it would be worthwhile to plant trees on his estate because he assumed “the Russians would be here in a few years in any case.” While historians have struggled to come up with rational reasons for this paranoia, the best explanation lies in the psychological literature, according to the political scientists Dominic Johnson and Dominic Tierney (no relation).

They've recently drawn on the work of Baumeister and Rozin to explain the fears that led German leaders into World War I and also spurred the American decision to invade Iraq in 2003. Like the Germans, the Americans overestimated the threat from their enemy, mistakenly believing Saddam Hussein had weapons of mass destruction. And like the Germans, who expected a quick victory, the Americans suffered from optimism bias when estimating their own ability to replace Saddam with a stable democratic government, so in their zeal to eliminate an imagined danger they created a real one by fostering the chaos that enabled ISIS and other jihadist groups to thrive.

These wars are examples of what we call the Crisis Crisis: the never-ending series of hyped threats leading to actions that leave everyone worse off. The United States is the greatest military power in history, but politicians want us to believe the nation is mortally

threatened by Iran and North Korea. The safer that streets become, the harder the media search for new menaces, like the imagined waves of violence by illegal immigrants (who are probably less likely than natives to commit crimes) or the supposedly rampant “stranger danger” from homicidal abductors of children (a risk that’s much lower than the risk of being killed by lightning). If it’s a slow news day, there are always future doomsdays to fear—a virus wiping out humanity, a takeover of the world by robots, a global environmental collapse. Apocalyptic predictions have become so common that when a national sample of preteen children in America were asked what the planet would be like when they grew up, one in three of the children feared that Earth would no longer exist.

The precise term for the adults scaring these children is *availability entrepreneurs*. They’re the journalists, activists, academics, trial lawyers, and politicians who capitalize on the human tendency to gauge a danger according to how many examples are readily available in our minds. The number of people killed worldwide by al-Qaeda and ISIS and their allies in the past two decades is smaller than the number of Americans who died in their bathtubs, but we see the victims of terrorism over and over on our screens. The result is a self-perpetuating process that Timur Kuran and Cass Sunstein have termed an availability cascade: News coverage of a danger creates public fear, inspiring further coverage and more fear, which is why 40 percent of Americans worry that they or a family member will die in a terrorist attack. Meanwhile, lacking the sensational media coverage of their death toll, bathtubs fail to inspire dread, and millions of Americans climb in and out without pausing to fear for their lives.

WE WANT TO COUNTERACT THE CASCADES OF FEAR THAT PRODUCE needless personal angst and destructive public policies. We hope to

start a different sort of cascade. We fully expect Earth to be around when today's children grow up, and we'd like them and their parents to share our optimism. Life is no longer "nasty, brutish and short," as Thomas Hobbes described the plight of early humans, but psychologists have found that even the most affluent and long-lived people still see it that way. When the researchers asked adults in the United States, Canada, and India whether life is long or short, and whether it's easy or hard, the North Americans were no more sanguine than the Indians despite their statistical advantages in life expectancy and income. Barely one in eight of the North Americans considered life to be both long and easy, while a majority considered it both short and hard. The optimists, not surprisingly, were significantly happier than the pessimists, and they were also more public-spirited—more likely to vote, to donate to charity, and to do volunteer work in their community.

How to increase the ranks of optimists? We certainly don't expect to eliminate the negativity effect, but we hope to show you how not to be ruled by it. First, we'll explore its power—how much stronger bad is than good, how it operates in the brain, how it distorts your perceptions of people and risks, and how you can minimize those distortions. In the middle of the book, we'll discuss how to use the power of bad for positive purposes, and how to deal with the particular challenges of the negativity effect in business and the online world. Then we'll look at the innate human strengths and conscious strategies that can be marshaled against the modern barrage of bad.

Humans are unique among animals in our ability to control—or at least recognize—the negativity bias. Other creatures have innate aversions to danger as well as mechanisms enabling them to learn to dislike things, often quite rapidly, but humans have a singular ability to overcome aversion. We often come to love activities that initially terrified us, like watching a horror movie or riding a roller coaster. We recoil at our first taste of coffee or garlic or hot peppers, but then

we learn to appreciate the experience. The fear of falling is innate—infants display it before they can speak—but some people become devotees of skydiving and bungee jumping.

We can gain the perspective to see that there's much more to celebrate than mourn in our lives and in the world, and to use that knowledge to make things still better. We can flourish despite the power of bad, but we must learn how, starting with the most basic strategy: Know the enemy.

CHAPTER 1

How Bad Is Bad?

Enlisting the Rational Mind

Early in his career, long before he published anything on the negativity effect, Baumeister conducted what might charitably be called a pilot study. The study sample consisted of himself. He was in a relationship with a partner who was brilliant, charming, and loving—most of the time. But sometimes she was provoked into screaming rages that left him despondent and confused. He'd never heard his parents raise their voices at each other, and he'd never been involved with anyone so volatile. She could be angered by what seemed to him innocent mistakes, like dripping water on the bathroom floor during a shower or forgetting to turn off the iron when he finished pressing his shirts. She once got so upset that she smashed a dish by hurling it at the kitchen wall. He knew he had his failings, and he realized relationships took work, but these confrontations were tough to endure.

Afterward, though, she'd be genuinely remorseful. She'd apologize, accepting the blame while calmly explaining why he'd upset her

and what he could do differently the next time. His doubts would vanish as he listened to her, seeing her brilliance and charm shining through once again. He'd think back on their early times together, those thrilling moments of discovering a soul mate, and he knew he still loved her. They'd passionately reconcile, promising each other to try harder. She'd work on her temper, and he'd try to be a more considerate partner. Good times would return, but before long things would deteriorate. When he responded as she had suggested he do to help her, she discounted it as a ploy and remained furious at him, leaving him determined to end the relationship. But the next morning his hopes would revive again.

He could see that bad and good are not necessarily opposites. They can exist side by side, in separate domains. He knew a lover was supposed to follow his heart, but which heart on which day? On the bad days he desperately wanted to be free, but he didn't want to be alone, either. He'd grown up in a family where love seemed to be more of an obligation than a joy, so falling in love had been a world-changing discovery for him. Was it reckless to walk away from a relationship that brought bursts of such intense happiness? If he'd learned anything from his psychology classes, it was how easily the human mind could be whipsawed by emotions. He didn't trust his feelings, not when they swung so violently between bliss and despair. He wanted some way to invite his rational mind back into the conversation.

We all know the feeling. You're trying to assess something—a romance, a job, a friendship, a project—and you see the pluses and the minuses. You want to follow through and honor your commitment, but when is the cost too high? Your gut may be telling you to get out, but since bad is more viscerally powerful than good, your gut isn't necessarily reliable. In a heated or difficult moment, bad will loom larger. To properly weigh bad against good, you need to engage your rational mind—System 2, as the psychologist Daniel Kahneman calls

the logical, slower-moving part of the brain. It takes more mental effort in the short run than going with your gut—Kahneman’s System 1, the instinctive and emotional part that’s quickly swayed by the power of bad—but in the long run it can spare you both energy and anguish.

IN HIS ROMANTIC QUANDARY, THE YOUNG BAUMEISTER FELL BACK ON the classic strategy of confused social scientists: collect data. He devised a crude binary measure. Each evening, he would look back on the day, ask himself if he was glad to be in the relationship, and mark a yes or no answer in his notebook. He also established a couple of limits. If it turned out that the bad days outnumbered the good days, he told himself, that would be a clear reason to break up. If there were at least four good days for every bad day, that would be a reason to stay together. In between would be, well, in between. He realized these parameters were arbitrary, but he was desperate for some kind of clarity.

After several months of record keeping, he could see that the ratio was remaining fairly steady—and that there was still no clarity. They had two good days for every bad day, a ratio midway between his limits. What to do? He could see that the good days outnumbered the bad days by a sizable margin, yet he was feeling more miserable than ever on the bad days. He decided to break up with her, a decision based on his gut rather than his data, but eventually other scientists provided a rationale for his decision—and also for his research method.

With those daily entries in his notebook, he had happened on a concept that would later be termed the *positivity ratio*, which is the number of good events for every bad event. This simple ratio can’t measure the full complexity of love or life, but it’s a valuable tool for understanding the negativity effect. It enables researchers to measure

bad and gauge its impact. It gives therapists and counselors a way to diagnose problems and assess progress.

Perhaps most important, it gives all of us a way to deal with the power of bad: to use the rational part of the brain to understand and override the debilitating fears and anxieties that constrict lives, warp decisions, and ruin relationships. To figure out how well a person or a couple or a group is doing, and to overcome the negativity bias, you need a method of weighing the positive against the negative to determine their relative strength. You need to ask: Just how bad is bad?

Let Us Count the Ways

One of the pioneering researchers into the positivity ratio was Robert Schwartz, a clinical psychologist who wondered how much help he and his fellow therapists were providing to patients. He wanted a more precise measure of progress than “the client was less depressed after treatment.” Over several decades starting in the 1980s, he compared the number of positive and negative feelings reported by people undergoing psychotherapy. He found that severely depressed people tended to have twice as many negative feelings as positive feelings, and that this ratio could be improved by talk therapy and antidepressant drugs.

At the other extreme were people with positive feelings 90 percent of the time, who seemed dangerously unrealistic and prone to egotism, mania, and denial. Life isn’t relentlessly happy, and the healthy person shows some reaction to the bad—but not too much. Schwartz concluded that people with equal numbers of positive and negative feelings tended to be “mildly dysfunctional,” while those with “normal functioning” averaged about two and a half positive feelings for every negative one. The patients who achieved “optimal functioning”

least 2 to 1, and sometimes more, depending on how much money is involved and other factors. The economist Richard Thaler has found much bigger ratios by upping the emotional stakes.

The Rule of Four

We've seen that it takes somewhere between two and five good things to offset one bad thing. It's not surprising that the results at the lower end of the range come from studies involving money, because in those situations it's easier for the brain to overcome the negativity bias by concentrating on numbers instead of feelings. As much as it hurts to lose money, you can tell yourself that a loss of \$100 is fully offset by a gain of \$100. Gamblers routinely train themselves to play according to the mathematical odds rather than their gut instincts. Not everyone can do that, but in the experiments with money some people were no doubt able to balance gains and losses fairly rationally, and so the average ratio was about 2 to 1.

When money is not involved, though, it's much tougher to make precise comparisons, and most of the good and bad events in our lives don't evoke such rational responses. As we've mentioned, the ratio tends to be higher than 2 to 1 for people dealing with depressing thoughts or conflicts with their spouses. Research tracking workers' moods during the day shows that a setback has between two and five times as much emotional impact as a positive event. Emotions make us less rational, and therefore more susceptible to the power of bad.

Some of the most often cited measurements of emotional well-being have been made by the psychologist Barbara Fredrickson. After giving diagnostic tests to students when she was at the University of Michigan, she classified them into two categories: the flourishing and the languishing. The flourishing students felt a strong sense

of purpose and control over life, accepted themselves, and got along well with others, as indicated by their test results. The languishing students were having more personal struggles and didn't feel as well integrated into the community.

Over the next month, both groups of students kept daily records of their highs and lows. Each evening they logged on to a website and rated how strongly, if at all, they had experienced different emotions during that day. The list included positive emotions (such as amusement, awe, joy, compassion, contentment, gratitude, and love) and negative ones (such as anger, contempt, sadness, embarrassment, guilt, and fear). When Fredrickson added up all the daily reports, she found that the languishing students had more positive than negative emotions, but the overall positivity ratio was only about 2 to 1. For the flourishing students, the overall positivity ratio was slightly more than 3 to 1.

The finding attracted attention because it pointed to the wider benefits of positive psychology. Fredrickson and other researchers had done earlier experiments in the laboratory demonstrating that when people are prompted with positive stimuli, they do better at creative tasks. They literally see the bigger picture. Their eyes sweep a wider field of vision instead of just focusing on what's straight ahead, as they do when prompted with negative stimuli. Fredrickson developed what she called the "broaden and build" theory: Positive emotions broaden your perspective and enable you to build skills that help you flourish both personally and professionally. The theory became one of the most influential ideas in positive psychology, and the study with the students' diaries offered real-world confirmation as well as a method for gauging how well someone is doing.

Researchers kept finding similar positivity ratios when measuring other kinds of good and bad effects. One of the simplest measures—and our favorite, because it was what Baumeister did during his troubled romance—is to count the number of good and bad days. Some

researchers have done this by asking people whether they're having a good day, a bad day, or a typical day, as the psychologist Randy Larsen did in studies that tracked people's daily moods over periods ranging from one to three months. Besides identifying which positive and negative emotions they'd experienced, people also singled out the best and worst event of the day, and rated how intensely each event had affected them. Larsen combined all these answers to classify each day as predominantly positive or negative. Overall, he found that the typical person had three good days for every bad day.

To do better than average, then, you'd want to have at least four good days for every bad one. That strikes us as a useful goal, and not just because it happens to be the same one that the young Baumeister picked when he was counting the good and bad days of his romantic relationship. Since he made that guess, researchers have repeatedly found that bad things are at least twice as powerful as good things, and generally at least three times as powerful when dealing with emotions and relationships rather than with dollars and cents. For the good to outweigh the bad, that means the positivity ratio should be at least 3 to 1, and preferably a little higher. So we'll suggest a guideline that we've taken to calling the Rule of Four: *It takes four good things to overcome one bad thing.*

We offer this as a rough gauge. We're not claiming to have discovered a universal constant like the speed of light or Avogadro's number. It's a rule of thumb, not a law of nature. It doesn't apply to every person in every situation, nor to every kind of good and bad event. Some forms of bad are incomparably powerful. As we noted earlier, there are a handful of negative words like *trauma* and *murderer* that have no opposite positive word.

But virtually all negative words do have antonyms, because we juxtapose most bad things against good things. We spend most of our time dealing with a mix of good and bad experiences and feelings. We assess ourselves and our prospects by weighing the two. The Rule of

Four can help you evaluate a relationship or a job by using the same day-counting technique employed by Baumeister. If you have four good days at work Monday through Thursday, that's probably enough in a typical week to make up for a bad Friday. Obviously, that 4-to-1 ratio won't be much comfort if on Friday you get fired, but that wouldn't be a typical week. The rule is relevant only when the events are comparable in magnitude, like ordinary successes and setbacks at work or displays of affection and hostility at home. If you and your partner are engaging in sex at least four times as often as you argue, the relationship looks pretty healthy. If the ratio is only 2 or 3 to 1, your prospects are less certain. And if the count is 1 to 1, that's not a tie. That's trouble.

When you start a self-improvement regimen, like resolving to exercise every day or eat a healthier diet, the Rule of Four can make a useful target. People often abandon New Year's resolutions because they set unrealistic goals for themselves and then give up after the first slip. Dieters routinely succumb to what nutrition researchers call the what-the-hell effect: *Now that I've broken the diet with that bowl of ice cream, I may as well finish off the carton.* Instead of demanding perfection and despairing when you fail, you could aim to stick to your regimen at least four days out of five. That goal may be too lax for some undertakings—to quit smoking, a strict cold-turkey policy is often essential—but you'll probably benefit most of the time by keeping the virtue-to-vice ratio at 4 to 1 or better.

Keep that ratio in mind when considering the impact of your actions. If you're late for one meeting, you won't redeem yourself by being early the next time. If you say or do something hurtful, don't expect to atone for it with one bit of goodwill. Whether you're evaluating a romantic partner or an employee, plan on at least four compliments to make up for one bit of criticism. (We'll have more to say later about how and when to blend the compliments.) You can't always take the rule literally, of course. It doesn't mean that you should

send four orders of flowers to make up for one faux pas. But it does mean that one batch of flowers probably won't undo the damage. Throw in some other forms of reparation. Remembering that ratio can help you deal with mistakes in relationships, at work, and in the rest of your life.

The Rule of Four can also be a useful gauge for assessing how well a company or a product is faring. Successful companies typically have at least three satisfied customers for every unsatisfied one, whether those feelings are assessed in surveys or in online reviews. Among the millions of businesses on Yelp, there are three positive reviews (4 or 5 stars) for every negative review (1 or 2 stars). So if you want to do better than average, aim for at least a 4-to-1 positivity ratio and pay special attention to unhappy customers (we'll discuss them in chapter 7).

Similarly, it pays to make special efforts to deal with any bit of bad publicity. Correcting the problem isn't enough. The bad publicity needs to be swamped with lots more good publicity, the way that the Cadbury chocolate company's subsidiary in India dealt with a public-relations fiasco in 2003. During October, the peak month for chocolate sales because of the annual Hindu "festival of lights," Diwali, some customers in Mumbai reported finding worms in their Cadbury bars. The Indian government announced an investigation of the company's factories, prompting a wave of news stories that caused Cadbury sales to plunge. The investigation exonerated the factories, showing that the problem was improper storage by retailers unaffiliated with Cadbury, but the firm's executives realized that the good news wouldn't overcome the impact of the bad publicity.

The company launched a multifront offensive called Project Vishwas, or Project Trust, to counter images of worm-infested candy bars. It introduced foil-lined "purity-sealed" packaging for Cadbury chocolate and provided retailers with metal containers and coolers for proper storage. It publicized these innovations by holding press

most days there are a lot more than four good things happening for every bad one. That's why life has been improving for most people in the world. And that's why, when you lose perspective and overreact to the bad, you're liable to make things worse.

Safety Junkies

Of all the forms of addiction, the most costly is the one that gets the least attention: an addiction to safety. We pay so much attention to bad things—reliving them, imagining them, avoiding them—that we let fear run our lives and become irrationally cautious. We're so focused on averting one obvious danger that we fail to foresee more subtle pitfalls. So we pass up opportunities for happiness and success in our personal lives, and we adopt public policies that leave us paradoxically less safe.

Consider how the American public and government responded to the plane hijackings on September 11, 2001. Until that morning, the best strategy during a hijacking was for the pilot to let the hijacker take control of the plane, because it was assumed that the hijacker wanted to land the plane safely rather than kill himself along with everyone else. That tragically mistaken assumption created a vulnerability that allowed hijackers to crash three planes into their targets on September 11. But the fourth plane failed to reach its target, because the hijackers were overpowered by passengers who'd gotten word of the earlier attacks and quickly realized that this new tactic required a new response: Don't let the hijackers pilot the plane.

From that moment on, no terrorist could count on this hijacking strategy to work again. Even if passengers weren't willing to intervene, a pilot could simply seal himself in the cockpit and ignore the

hijackers' demands. The one bit of good news on September 11 was that this new terrorist threat to aviation was already obsolete.

But the horror of the bad news overwhelmed everyone's judgment. Fears of another hijacking prompted a ban on all airline flights for two days, giving the terrorists another propaganda victory and causing more economic disruption than the attack itself. When flights resumed, passengers were forbidden to board with nail clippers and scissors, as if anyone could ever use these to hijack another plane. In its rush to protect air travelers, Congress created a bloated bureaucracy to screen passengers, the Transportation Security Administration, that would become notorious for inefficiency and incompetence as it squandered more than \$50 billion over the next decade. The TSA, known to frustrated travelers as "Thousands Standing Around," has repeatedly flunked tests of its ability to detect genuine threats like bombs in luggage. Its folly was obvious from the start to aviation-security experts, who warned Congress in 2001 that a centralized bureaucracy would be much less effective than the decentralized systems used in Israel and other countries experienced in fighting terrorism.

But in the aftermath of September 11, Congress was too panicked to act rationally, and so were the American people. In the ensuing year, millions of them avoided air travel and chose instead to drive to their destinations, resulting in what has been dubbed "9/11, Act II." Since driving is riskier than flying, it's been estimated that the switch from planes to cars resulted in an additional 1,600 deaths.

Safety addiction is a problem even when the stakes are much lower, and even for people who have all the expertise and incentives to make smart decisions. Any golfer knows that making a birdie on a hole (one stroke under par) will fully offset a bogey on another hole (one stroke over). Yet even the best professionals don't play as if they believe it. They consider it more important to avoid a bogey than to

make a birdie. “You don’t ever want to drop a shot,” Tiger Woods once explained. “The psychological difference between dropping a shot and making a birdie, I just think it’s bigger to make a par putt.” But by yielding to the power of bad, Woods and his fellow pros are consigning themselves to worse scores and less prize money, as the economists Devin Pope and Maurice Schweitzer found by analyzing millions of their putts.

When these pros have a chance for a birdie, they putt differently than if they were trying to make par. Instead of going all out to sink the ball, they soften their stroke and are more likely to leave it just short of the hole, guaranteeing themselves an easy putt for par rather than risking the chance of overshooting the hole by so much that they end up taking two more putts for the dreaded bogey. While this strategy does help them avert a bogey, it more often costs them a birdie, so at the end of a tournament they’re typically one shot worse off than if they’d gone for the birdies. Over the course of a season, the economists calculate, this fear of bogeys costs the leading pros more than \$600,000 apiece in prize money.

Professional football coaches in America are even more extreme safety addicts. They continually study performance statistics looking for any slight advantage, anything to score more points and justify their multimillion-dollar salaries. Yet they go on making the same simple mistake week after week when faced with the fourth-and-short decision. On fourth down, when they need to gain just one or two yards to retain possession of the ball, they routinely refuse to go for it. Instead, they send in their kicker to punt to the other team, sacrificing a chance to keep the ball in return for improving their field position by about forty yards.

This trade-off was worthwhile in the old days of low-scoring football, when defenses dominated and teams had a hard time advancing. But maintaining this tradition makes no sense with today’s pass-driven offenses that move so readily down the field. After

crunching the numbers from thousands of games in the National Football League, analysts have repeatedly concluded that unless a team is trapped deep in its own territory, punting on fourth and short is a bad strategy because the improved field position is so much less valuable than the chance to keep the ball and go on to score.

Gregg Easterbrook, the Tuesday Morning Quarterback columnist, has calculated that the typical NFL team would win one additional game each season—often the difference between making the playoffs and being eliminated—if it took more chances on fourth down. He advises teams to go for it on fourth and short unless they're inside their own twenty-yard line. The number crunchers at the *New York Times*' Upshot figure that when a team needs to gain just one yard, it should go for it anywhere on the field beyond its own eight-yard line. While the recommendations may sound foolhardy, in these fourth-and-short situations the odds are very much in the team's favor: They can expect to succeed twice for each time they fail.

But a 2-to-1 ratio, as we've seen, isn't usually enough to overcome the negativity bias. A coach knows that if he goes for it and succeeds, he'll get a little credit for it, but the play probably won't make the highlight reel of the game. If the attempt fails and the other team goes on to score, it will loom large. The sportscasters will denounce him as reckless and warn that this "loss of momentum" could be the "turning point" in the game. If the team ends up losing a close game, that failed attempt on fourth down will be blamed for the loss and replayed endlessly afterward.

So it takes a brave coach to make the smart play. It takes someone with the iconoclastic streak—and job security—of Bill Belichick, the New England Patriots coach renowned for his Super Bowl victories and strategic brilliance. But even Belichick goes for it only occasionally on fourth and short, and his reputation doesn't protect him from being denounced by sportscasters and fans when the attempt fails. A few other coaches have looked at the numbers and said they plan to

take more risks on fourth down, but they have a hard time following through when the moment comes.

A coach can try telling himself that the odds are in his favor, but he's got those images of past highlight reels in his head, so he can much more vividly imagine failure than success—and therefore, as in those coin-toss experiments, his gut overestimates the chance of failure. Even if he went into the game resolved to make the smart statistical play, when the moment comes he'll be reluctant. He'll look for an excuse to play it safe, telling himself that the statistics don't apply here because the other team's defense is so strong, or one of his linemen is injured, or his running back is having a bad day. He'll ignore the numbers, send in the punter, and breathe a sigh of relief. Whatever happens, no one will blame him for playing it safe. The power of bad has prevailed.

There is one football coach, though, who has figured out how to overcome it, and his strategies are worth applying off the field, too.

Just Go for It

When asked how he became the football coach who never punts, Kevin Kelley's first explanation involves his reading habits. He spends less time reading books on football than books on psychology and behavioral economics. He knows all about the principle of loss aversion.

He realizes that the power of bad can make everyone irrational, including himself. Just before he spoke with us, he'd been trying to plug a charging cable into his phone, and on his first try he'd inserted it upside down. "It feels like I do that just about every time," he said. "I know the odds must be fifty-fifty of plugging it in right, but I

things that matter more to us, like preserving and protecting the self and presumably also a romantic partner or a family member. But if the decision involves a stranger, as it did for the people in the gambling experiments, then the brain isn't as susceptible.

So when you're facing a potentially costly decision of any kind, you can avoid safety addiction by heeding someone who understands the risks but has nothing personal to lose, like a colleague or a friend or a counselor. In the stock market, for instance, one of the most common mistakes that investors make is to hold on to a falling stock for too long because they're reluctant to take the loss. This is a version of what economists call the sunk-cost fallacy, which occurs when individuals or companies refuse to give up on a doomed project because they don't want to write off all the time and money they've sunk into it. They'd be better off cutting their losses, but that decision is so painful that it often isn't made until an outsider comes in with a different perspective—and no personal stake in the loss.

Once Kelley overcame his safety addiction, once he followed a rule based on others' expert analysis, he discovered that the statisticians had actually underestimated the benefits. As predicted, his players usually succeeded on fourth and short, and they often succeeded on fourth and long, too, resulting in scoring drives that more than made up for the times they failed. But that wasn't all. One fringe benefit was in the way they drilled during the week: They didn't have to practice punts anymore, which gave them an extra twenty-five minutes every day to work on other plays. Another advantage was extra flexibility throughout the game. When a conventional offense faces third down and long yardage, the other team's defense can drop back, concentrating on stopping a pass rather than a run, because it knows the offense has only one chance left. Defending against Kelley's team is much tougher. It can do whatever it wants on third down—run or pass, short or long—because it knows it'll have another chance on fourth down.

The team also benefits from an unexpected psychological effect. Coaches love to talk about the “morale factor” when explaining why they don’t heed statisticians. It has been one of their standard excuses for playing it safe on fourth down: If the team takes a risk and fails, the players will get discouraged and their performance will suffer. That sounds plausible—bad events, after all, do have a disproportionate emotional impact—but it didn’t happen to Kelley’s team. Its play didn’t deteriorate after a failure. When Kelley analyzed the numbers to gauge the impact of his fourth-down strategy, the only psychological effect he found was on the *other* team.

If the opponent’s defense failed to stop Pulaski on a fourth down, it suddenly became much more likely to make a mistake and yield a long gain on one of the next few plays. Kelley’s players could handle a setback on fourth down because he’d taught them to look at the big picture, but the other team was flummoxed because it was focusing on the one failure. Kelley hadn’t merely taught his players to overcome their negativity bias. He was using the power of bad to psych out the opposition.

The sum of these advantages has created a new powerhouse in Arkansas. When a conventional high-school offense gets the ball, it will go on to score a touchdown or a field goal about a third of the time. Kelley’s will score three times out of four, averaging about fifty points a game, and those points virtually all come from touchdowns, because his strategy forbids kicks of any kind. Other coaches, when facing a fourth down near the other team’s goal line, will settle for the safety of a three-point field goal rather than risk going for the six-point touchdown. But Kelley won’t settle except in a situation when the odds overwhelmingly favor a field-goal attempt, which happens about once a season. The rest of the time, no matter where his team is on the field or how many yards it needs to gain, he goes for it—with phenomenal success.

During the three decades before Kelley’s arrival, Pulaski Acad-