

About This Sample

This is a two-chapter sample from *Disappointment — The Invisible Force*.

- **Chapter 1: The Calculation** — the neuroscience of how disappointment is generated, moment to moment, in the brain.
- **Chapter 4: Disappointment Is Not Grief** — why disappointment is its own emotion, distinct from grief, anger, regret, and frustration.

The full book contains 23 chapters across six parts, tracing disappointment from the neuron to the body, to behavior, to relationships, to society.

1. The Calculation

You're expecting the email on Thursday. That's what they said – by Thursday at the latest. You interviewed well, you know it. The conversation went great, you felt it. Thursday you wake up with something in your chest you don't immediately recognize, a slight tension, a kind of listening. You check your inbox at eight, at nine, at quarter past nine. By eleven there's still nothing. By two you think: it'll probably come at the end of the day. By five there's nothing. By six you text a friend – *I don't think I got it* – and in the typing of that sentence you feel something sink. Not break. Sink. As if something inside you shifts half a floor downward.

That sinking is not a metaphor. It is a measurement.

Deep in your midbrain, in a region called the ventral tegmental area – a name that sounds like a small town you can't find on the map – sit neurons that produce dopamine. Dopamine has gotten a bad reputation in popular psychology. It's supposedly the molecule of addiction, of scrolling and swiping, of instant gratification. That is at best a half-truth. Dopamine is not the molecule of pleasure. Dopamine is the molecule of *expectation*.

This distinction is crucial, and it is thanks to Wolfram Schultz, a neuroscientist at the University of Cambridge who in the 1990s discovered something that fundamentally changed thinking about emotions. Schultz measured the activity of individual dopamine neurons in monkeys receiving rewards – a sip of juice after a tone, a simple experiment. What he found was surprising in its elegance.

When a monkey received juice unexpectedly, the dopamine neurons fired wildly. That wasn't surprising – it fits the image of dopamine as a pleasure molecule. But over time, when the monkey had *learned* that the tone predicted juice, the activity shifted. The neurons no longer fired at the juice. They fired at the *tone* – at the expectation. The juice itself, when it arrived as predicted, produced nothing. Silence. Neural shrug. Expectation met, nothing to report.

And then the third scenario, the scenario that carries this book: when the tone sounded but the juice *didn't* come, the dopamine neurons fired below their

baseline. Not zero – *below* zero. An active negative signal. As if the neurons weren't saying "there is no reward" but "there is *less than*."

Schultz called this the *reward prediction error* signal. The reward minus the expectation. When that calculation yields a positive number – an unexpected gift, a compliment you didn't see coming – you feel a flicker of joy. When that calculation yields zero – your paycheck in your account, the subway arriving on time – you feel nothing. And when that calculation yields a negative number – the email that doesn't come, the promise that isn't kept, the life that doesn't become what you thought – you feel that sinking.

Disappointment is not a vague feeling. It is a calculation.

I want to pause here, because this is important. We like to think about emotions in soft terms. Disappointment *feels* subjective, personal, elusive. Something that happens to you like a change in weather – you can't calculate it, only endure it. Schultz's discovery says something different. It says your brain is an accountant, a relentless one, and that disappointment is the red line in the ledger. Not a mood but a difference. Not an interpretation but a *measurement*.

This has consequences. The first is that the intensity of disappointment depends not on how bad the outcome is, but on how large the gap is between the outcome and what you expected. An expected loss is bearable. An unexpected rejection is devastating – not because the rejection is worse, but because the gap is larger. This explains something you intuitively already know: that the deepest disappointments come not from the greatest disasters, but from the things that *almost* were. The job you almost had. The relationship that almost worked. The kid who almost called. In the word *almost* sits the entire neural calculation.

The second consequence is subtler. When your expectations are low, the chance of disappointment is small – but the chance of joy is too. The brain plays a zero-sum game: high expectations make joy at success smaller (it was *expected*, after all) and disappointment at failure larger. Low expectations protect against disappointment. This is the neural basis of cynicism, and I'll return to it later. For now it's enough to say: the choice to expect nothing is not levelheaded. It is a strategy with costs.

There is a structure in your brain you probably don't know about, one that carries a name that sounds like a Latin insect: the lateral habenula. It is a small, bean-shaped nucleus, deeply hidden, and until recently almost no one thought it mattered. In 2007 that changed, when Masayuki Matsumoto and Okihide Hikosaka discovered that the lateral habenula does precisely the mirror image of what dopamine neurons do. Where dopamine neurons fire at positive surprises, the lateral habenula fires at negative surprises. Where dopamine is silent at expected outcomes, the habenula is silent too. But when the outcome disappoints – when expectation was higher than reality – the habenula activates.

Researchers have taken to calling the area the *disappointment center*, which may be too informal for a scientific brain region but precisely describes what it does. The habenula registers disappointment. Not as a side effect of another process, but as a core function. The brain has a structure that is *built* to track when reality falls short of expectation.

That alone would be remarkable. But what Matsumoto and Hikosaka subsequently found, and what later researchers like Proulx and Shabel confirmed, is more troubling. Under chronic stress, the lateral habenula changes. It becomes *more sensitive*. The threshold for activation drops. Outcomes that are neutral – not bad, not good – begin to trigger the disappointment signal. As if the instrument has been recalibrated, as if someone shifted the zero on the ruler.

This is a crucial finding for everything that follows in this book, so I want to say it explicitly: in people who are under prolonged stress – and chronic disappointment *is* a form of prolonged stress – the brain changes the definition of disappointment. It doesn't just become more sensitive to negative surprises. It starts classifying neutral outcomes as negative. The world no longer has to fall short. The world *falls short by definition*, because the ruler has shifted.

There is a third player in this neural accounting office, and it deserves attention because it explains why disappointment is so persistent, why it doesn't simply fade like a bad day. That player is the orbitofrontal cortex, a region just above your eye sockets that performs a particular kind of calculation: it calculates not only what *did* happen, but what *could have* happened.

This is called counterfactual thinking, and it is one of the most distinctly human capacities we know of. Animals calculate prediction errors – Schultz’s monkeys do it. But as far as we know, humans are the only ones who can construct a complete alternative reality and lay it alongside the actual one. You didn’t get the job – and simultaneously you see the version of yourself who did, who started on Monday, who said to colleagues *I’m so glad to be here*. The orbitofrontal cortex generates that parallel movie, and the difference between that movie and reality is a *second* source of pain, on top of the simple prediction error.

Giorgio Coricelli and his colleagues showed in 2005 that the orbitofrontal cortex not only compares after the fact, but also *looks ahead*. The brain anticipates how much disappointment an outcome will produce and lets that anticipation weigh into decisions. You decide not to apply for the job – not because you think you can’t get it, but because your brain has calculated how it will feel not to get it. The anticipatory disappointment is sometimes stronger than the actual one. You protect yourself against a calculation you yourself are making.

Let me return to Thursday. To you, waiting for the email.

What’s happening in your brain while you wait is this: your dopamine system has encoded an expectation. That expectation is based on the interview that went well, on the recruiter’s tone, on your own assessment of your qualifications. That expectation is not a thought – it is a neural *state*, a baseline level of activation that says: the reward is coming. Each time you check your inbox and there’s nothing, your system generates a small prediction error: the reward isn’t here yet, but the time window is still open. Not yet disappointment – tension, alertness, waiting.

At six o’clock, when you type that it probably didn’t work out, three things happen simultaneously. Your dopamine neurons fire below their baseline – the reward minus the expectation yields a negative number. Your lateral habenula activates – the disappointment signal is transmitted. And your orbitofrontal cortex generates the counterfactual movie: you on Monday, behind a new desk, in a new life that now isn’t coming.

Those three processes together – the dip, the signal, the movie – that is what you feel as sinking. It is not vague. It is not subjective. It is a machine running,

with measurable inputs and outputs, and the difference it calculates is the difference between your expectation and your reality.

Now you might say: fine, the brain calculates disappointment, interesting, but what good does that do me? I feel it regardless of whether it's a calculation or not.

The point is this: if disappointment is a calculation, then that calculation has variables. And variables can be examined.

The first variable is the expectation. The higher the expectation, the greater the potential fall. But expectations don't come from nowhere – they are built, layered, fed. By upbringing. By culture. By social media. By the promises others make and the promises you make to yourself. The expectation is the input of the machine, and most people have no idea what they're feeding into the machine.

The second variable is the measurement of the outcome. And that is less objective than you'd think. Whether an outcome disappoints depends not only on the outcome itself but on what you compare it to. With your expectation, of course. But also with what others have. With what you had before. With what you think you deserve. The brain doesn't measure in absolutes – it measures relatively, always, obsessively.

The third variable is what happens with the signal after the calculation. Is the prediction error processed? Is the expectation adjusted? Or is the signal suppressed, ignored, redirected toward anger or shame? This is where the difference begins between a disappointment you process and a disappointment that takes root. Between a bad day and a peat fire.

The Map and the Territory

This book uses one continuous metaphor: the map and the territory. The expression comes from the Polish-American scientist Alfred Korzybski, who wrote in 1931: *"The map is not the territory."* Every representation of reality – a road map, a theory, an expectation – is a simplification. It leaves things out. It

freezes what moves. It shows what the maker found important and hides the rest. That is not a flaw. That is what a map *is*.

In this book, the map stands for the internal model the brain builds: the whole of expectations, assumptions, and predictions with which it approaches reality. What Friston calls *priors*, what Bowlby calls the *internal working model*, what Beck calls *schemas* – they are all maps. The territory is what actually is. And disappointment is the difference between the two.

For those who find the metaphor abstract, three other entry points:

The glasses. At age three you're given a pair of glasses with tinted lenses – not by an optometrist, but by your parents, your surroundings, your culture. After a while you forget you're wearing glasses. The tint feels like the color of the world. Someone says: "the sky is gray." You say: "no, the sky is blue" – not because you're lying, but because you're looking through blue lenses and you don't know it. Disappointment is the moment the glasses come off.

The recipe. You grow up with a recipe for the good life. Ingredients: work hard, be kind, do your best. Preparation: school, college, job, relationship, house. Result: happiness. One day all the ingredients are gathered, the preparation followed – and the result doesn't taste like happiness. Not like unhappiness. Like something that isn't quite there. The recipe was wrong. Not because the ingredients were bad. Because a recipe is a simplification of something that can't be captured in steps.

The GPS. A navigation system calculates the route. The voice says: in five hundred feet, turn right. But the road is torn up. There's a barrier. Reality has changed and the map hasn't. Some systems stubbornly keep suggesting the same route, over and over, even when the barrier is still there. The brain sometimes does exactly this. Disappointment is the moment you realize you've been standing in front of the same barrier for the third time.

In every case the pattern is the same: there is a model and there is reality. The model is useful – without a model, no navigation, no expectation, no direction. But the model is not reality. And the difference – outcome minus model, territory minus map – that is what the brain calculates as disappointment.

That is what the following chapters are about. This chapter is about the calculation itself – about the fact that your brain is a machine constantly measuring the difference between what you expect and what you get. That is not a weakness. That is not a flaw in the system. It is the system. It is how the brain learns, adjusts, navigates. Without prediction errors you would learn nothing, adjust nothing, improve nothing.

The problem is not that the brain calculates disappointment. The problem begins when the calculation doesn't lead to adjustment. When the expectation stays intact despite the actual outcome. When the map refuses to follow the territory.

But that is the next chapter. For now this is enough: that sinking you feel when something doesn't become what you hoped – that is not weakness, not oversensitivity, not a character flaw. It is one of the most precise calculations your brain makes. And the first step toward living with it is understanding that it *is* a calculation.

4. Disappointment Is Not Grief

There are two women. I'm inventing them, but they exist – you know them, or you are one of them.

The first woman loses her husband. He was sick, for a long time, and on a morning in March he is gone. The world she knew – the bed for two, the voice in the hallway, the hand on her shoulder while she cooks – that world no longer exists. There is an emptiness where someone was. She knows exactly what she misses. She knows exactly when it began. She cries, and the crying is terrible, but it is also something: it is the body doing what it must do. Letting go. Grieving. Slowly, painfully, but in a direction.

The second woman loses nothing. Her husband is there. He sits across from her at the table, he sleeps next to her in bed, he is there on Sunday morning and on Tuesday evening and every moment in between. Nothing has disappeared. But something also never arrived. The conversation she imagined. The look she expected. The connection that seemed to be there in the beginning – or that she believed was there, or that she hoped would grow. What she feels is not grief. It is not loss. It is something for which she has no good word, and because she has no good word for it, she says what comes closest: I'm sad. Or: I'm angry. Or: nothing's wrong.

None of those words is right.

This chapter is about a distinction that sounds simple and is far-reaching: disappointment is not grief. It is not anger. It is not frustration, not regret. It is its own emotion with its own mechanism, its own direction, and its own path toward processing. The fact that this emotion is constantly confused with other emotions – named as grief when it feels softer, as anger when it feels harder, as “nothing special” when it is too diffuse to grasp – is not innocent. It is the reason why disappointment is so hard to process.

What cannot be named cannot be healed.

Let me make the distinction precisely, because the precision matters.

Disappointment Is Not Grief

Grief is a reaction to loss. Something that was there is no longer there. A person, a health, a period of your life. Grief looks backward – at what was and is no more. The object of grief is real: it existed, you knew it, it was part of your experience. Grief is the body and the mind detaching from something that was. It is an uncoupling. It hurts, but it has a direction: from held to released.

Disappointment is something else. Disappointment is a reaction to the absence of something that was expected. Not something that was there and disappeared. Something that was *never there* but that you believed – consciously or unconsciously – would be. The object of disappointment is not real. It is a prediction. An expectation. A model.

This difference sounds subtle. It is fundamental.

With grief, you know what you've lost. You can name it. You can tell people about it. You can show photographs. The grief literature – from Elisabeth Kubler-Ross to more recent approaches – offers frameworks, stages, rituals. There are sympathy cards, bereavement leave, grief therapy. The culture recognizes grief as legitimate and provides structures to bear it.

With disappointment, you often don't even know what you're missing. Because what you're missing never existed. It is a version of your life that lived only in your model. The career you imagined. The parent you needed but didn't get. The marriage the story promised. How do you grieve something that was never there? How do you explain it? There is no photograph of what should have been. There is no grave you can visit. There is only a gap, formless and nameless, between what you expected and what you have.

Neuroscientifically, grief and disappointment are different circuits.

Grief – and bereavement in particular – activates a network centered on the anterior cingulate cortex and the amygdala, together with the default mode network. These are regions involved in attachment processing, in registering the absence of someone you were bonded to, in the painful process of rewriting a neural model that encodes that person as present. Grief is, neurally speaking, the brain dismantling a model that no longer holds – the model that

says: this person is here. The dismantling takes time, it hurts, but it *happens*. The brain is equipped for loss. Not well equipped – it is terrible – but the process runs.

Disappointment activates different regions. The ventral striatum, the orbitofrontal cortex, the lateral habenula – the regions we described in the first chapter. These are not the regions of attachment and loss. These are the regions of expectation and deviation. They calculate not what has disappeared, but what *didn't arrive*. The difference seems semantic. It is neural.

With grief, the brain knows what to do: slowly dismantle the model of the present other. With disappointment, there is no model to dismantle – there is a model that was never confirmed but was also never released. The expectation hangs in the air. It is neither fulfilled nor buried. It is an open account that no one closes.

Disappointment Is Not Anger

The distinction from anger is of a different nature, and it is at least as important.

Anger is a reaction to a perceived violation. Someone has done something they shouldn't have. A boundary has been crossed. A rule has been broken. Anger is directed – at an offender, a situation, an injustice. And anger is energetic: it mobilizes the body for action. Fight. Restore the boundary. Correct the violation.

Disappointment can look like anger. The partner who doesn't do what you expected, the employer who doesn't deliver what they promised, the government that doesn't provide what it pledged – it is tempting to see that as a violation, as something to be angry about. And often disappointment is expressed as anger. But the underlying layer is different.

Anger says: *you did something wrong*. Disappointment says: *it should have been different*. The difference is the direction. Anger points to an offender. Disappointment points to an expectation – and the question of whether that

expectation was realistic, whether it came from the other person or from yourself, whether it was ever spoken aloud, that question is neatly hidden by the anger.

This is one of the ways disappointment hides itself: it dresses up as anger. Anger is simpler, clearer, more active. Anger has an object and a direction. Disappointment is diffuse, directionless, harder to bear. And so the brain gets angry – not because someone is guilty, but because anger is a more bearable form than the formlessness of disappointment.

The man who gets angry at his wife because the house isn't tidy may not be angry about the house. Maybe he is disappointed – in the life he imagined, in the division of roles he expected, in the feeling that this is not what it was supposed to be. But that is too big, too vague, too threatening. So it becomes the house. It becomes the anger. It becomes an argument with a beginning and an end, instead of an underground current with no shore.

Disappointment Is Not Regret

There is a third emotion with which disappointment is constantly confused, and the distinction from it may be the most important of all three. That emotion is regret.

Wilco van Dijk and Marcel Zeelenberg, two psychologists at Tilburg University, have spent the past quarter century systematically investigating what distinguishes disappointment from regret. Their work is not widely known outside academic psychology, but it deserves to be, because the distinction they draw is illuminating and consistent.

Regret, Van Dijk and Zeelenberg argue, is an emotion about *one's own choices*. I should have chosen differently. I should have taken the other job, followed the other path, acted at the other moment. Regret presupposes agency – the feeling that you had influence over the outcome. And precisely because regret presupposes agency, it leads to behavioral change. Those who feel regret learn from it: next time I'll choose differently. Regret is painful but functional. It corrects.

Disappointment, by contrast, is not about one's own choices. It is about *outcomes*. It should have been different – not: I should have chosen differently. Disappointment presupposes no agency. The outcome was beyond your control. The situation should have been different, the world should have been fairer, the other person should have acted differently. And precisely because disappointment presupposes no agency, it does not lead to behavioral change. There is nothing to do differently. There is only something to feel.

Van Dijk and Zeelenberg found that disappointment, compared to regret, leads to more *rumination* – the chewing over of a situation without arriving at a resolution – and to more *inertia* – the standing still, the doing nothing, the not knowing where to go. This is recognizable to anyone who has been disappointed for a long time: the feeling of being stuck. Not actively suffering. Not actively doing. Just *being* in the gap, without direction.

Disappointment Is Not Frustration

There is one more emotion I need to mention, because it lies so close to disappointment that the two sometimes overlap, and that is *frustration*.

Frustration arises when a goal is blocked. You're trying to achieve something and something is in the way. The printer that doesn't work. The traffic that won't move. The bureaucracy that sends you back to the beginning. Frustration, like anger, is energetic – it mobilizes you to overcome the obstacle. Try again. Find another way. Push harder.

Disappointment can contain frustration, but it is not the same. The difference lies in the sense of goal attainability. With frustration, you still believe the goal is reachable – something is just in the way. With disappointment, the goal itself is in question. Not: I can't reach it. But: it is not what I thought it would be. Or worse: it doesn't exist. The promise itself was empty.

A student who fails an exam and knows they can pass if they study harder feels frustration. A student who after five years of college discovers that the degree doesn't deliver what it promised – no job, no status, no direction – feels disappointment. The first has an obstacle. The second has a debunked

expectation. The difference is the difference between a wall and a void. A wall you can climb. With a void, there is nothing you can do.

Why Does This Distinction Matter?

Not as an academic exercise. It matters because the response to each emotion is different, and because the wrong response makes the situation worse.

If you treat disappointment as grief, you try to mourn something that was never there – and mourning without an object is a bottomless pit. There is nothing to let go of, because there was nothing to hold on to. The grief never gets processed, because there is nothing to process. Only a model that was wrong.

If you treat disappointment as anger, you go looking for an offender – and the offender isn't there, or the offender is never enough. You can be angry at your parents, at your employer, at society, at fate. But the anger changes nothing about the expectation that lies beneath it. You are angry at the terrain while the problem is the map.

If you treat disappointment as regret, you go looking for the choice you should have made – and that choice doesn't exist. The disappointment is not about your choice. It is about an outcome that was not in your hands. The search for the mistake you could have prevented is endless and fruitless, and it leads to a specific form of self-torment: the rewriting of the past in endless variants, none of which exist.

And if you treat disappointment as “nothing special” – if you ignore it, push it away, normalize it – then you do precisely what the brain already does: weaken the signal, push the precision weight down, protect the model. And the disappointment doesn't disappear. It relocates. To your shoulders. To your sleep. To the way you say “fine” when someone asks how you're doing.

Lisa Feldman Barrett, a neuroscientist at Northeastern University who has profoundly changed thinking about emotions in recent decades, introduces in her book *How Emotions Are Made* the concept of *emotional granularity*. It is a

simple concept with far-reaching implications: the more precisely you can name an emotion, the better you can regulate it.

People with high emotional granularity distinguish disappointment from grief from regret from frustration. They have for each of those experiences a separate word, a separate mental concept, a separate recognition. And that enables their brain to activate the right response for each emotion.

People with low emotional granularity experience an undifferentiated “bad feeling.” They feel “lousy” or “down” or “crappy” – and all of those words are true, but they are not precise enough. They describe the temperature but not the weather. And without knowing what weather it is, you can’t know what jacket you need.

Barrett showed that emotional granularity is not a personality trait – something you have or don’t have – but a skill. It can be learned. Through language, through attention, through the practice of distinguishing. And learning that skill has measurable effects: less impulsive behavior, better emotion regulation, lower risk of depression.

Because recognition is the beginning. You cannot work with something you cannot see. And you cannot see what you cannot name.

Let me return to the two women.

The first woman – she who lost her husband – will grieve. It will take a long time and it will go deep and there will be moments when it seems unbearable. But there is a path. The path is not straight and not upward and not fast, but it is there. The grief literature, the culture, the body itself – everything points in the same direction: slowly letting go. Dismantling the model that says: he is here. Step by step accepting that the terrain has changed. And over time – months, years – space opens up. Not for replacement. For something else.

The second woman – she whose husband is there but whose expectation is not fulfilled – has no path. There is no ritual for the unfulfilled expectation. No sympathy card for the marriage that didn’t become what the model predicted. No leave for the disappointment in a life that looks exactly as she planned it and still doesn’t feel the way it should feel.

And so she searches. She searches in the language of grief – but it is not grief, because nothing was lost. She searches in the language of anger – but who should she be angry at, at whom? She searches in the language of regret – should I have chosen differently? a different man, a different life? – but that leads nowhere, because the problem is not the choice. The problem is the expectation.

Eventually she says to a friend, on an evening that doesn't matter and for precisely that reason matters: "I'm not unhappy. But I'm also not what I thought I would be. I feel a kind of missing. And I don't know what to do with it."

That is disappointment. In its purest, most unadorned form. Not the dramatic loss. Not the hot fury. Not the sharp self-reproach. But the quiet, formless realization that the model was wrong and that there is no one to pin it on. Not the world. Not the other person. Not yourself. Only the gap, and you in it.

In the following chapters we will examine that gap more closely – the two directions in which disappointment can move, the way it lodges itself in the body, the way it takes the wheel on behavior you no longer recognize as choice. But it begins here: with naming. With distinguishing. With acknowledging that disappointment is its own emotion, with its own grammar, and that this grammar must be learned before the sentence can be understood.

Disappointment is not grief. Grief is the answer to what was and is no more. Disappointment is the answer to what never was and was yet expected. In the next chapter, we turn to fear, and its kinship with disappointment.