A Mind of Its Own:
How Your Brain Distorts
and Deceives

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CHAPTER 2

The Emotional Brain

Sweaty fingers in all the pies

MY SON, THIRTEEN MONTHS OLD, is crying as if his heart will break. He sobs with his entire body, and I know that in a few seconds he will assume what my husband and I call the tragedy pose. Sure enough, soon he collapses onto the floor and flops forward so that his forehead hits the carpet. I am holding in my hand the accomplice to the act that has obliterated all joy from my son's existence. This object and I, between us, have left no other course available to my young child but to give himself over completely to unmitigated, carpet-drenching grief. I struggle painfully but successfully with the urge to ruin his character forever by returning to him this item upon which, clearly, his entire happiness depends. It is a ballpoint pen.

As it happens, I know just how it feels to have ballpoint pens taken away. My husband, as part of his stationery stationing system, has strategically located pens at three key

note-making points around the house: clipped onto the calendar, by the phone, and in the travel bag. According to the system, these pens should only ever be removed from their posts to be used for, respectively, noting events on the calendar, taking down phone messages, and filling in travel-related documents. My husband is quite strict in his enforcement of this rule, and any pen found being used for a purpose other than that intended is immediately returned to its post.

And irritating though it is to have a writing implement removed midword, I simply do not seem to feel the loss as keenly as does my son. For this I have my prefrontal cortex to thank. A mere smudge of brain cells at birth, it takes twenty-odd years or more to reach its full stature as the sergeant major of the adult brain. One of the many jobs of the prefrontal cortex is to regulate the emotional responses of less civilized brain regions, which is why it's such a useful thing to have. While earning my PhD, I studied a man who had damaged part of his prefrontal cortex in a car accident. Because he had a little problem with his temper (he liked to let a blunt instrument do his arguing for him), he had been removed to a high-security psychiatric hospital for the safety of all. I made the mistake of reading his case notes just before meeting him and I felt deeply nervous as to how the two of us would hit it off. Unfortunately, when I am anxious my palms become unpleasantly sweaty. As I began to shake hands with the patient, he rapidly withdrew his own with an expression of the utmost disgust, and ostentatiously wiped it on his trousers.

"Christ!" he remarked to my supervisor, who was relishing every moment. "It's like shaking hands with a wet haddock."

Had his prefrontal cortex been intact and doing its job, I have no doubt that he would have kept this observation to himself.

There is little doubt that, compared with the toddler or the uninhibited brain-damaged patient, we display a truly authoritative control of our emotions. Nonetheless, it is also the case that our emotions and moods enjoy an impressive mastery of us. It may seem, as we busily go about our lives—deciding what actions are best taken for the future, casting our beady eye over people and events around us and passing judgment on them, or reflecting on the past—that we are making good use of our uniquely human powers of rationality. However, research suggests that it is often our emotions that are actually wearing the pants. Our emotion's sweaty fingers fiddle with our psychological world at every level: from the seemingly straightforward issue of what we perceive in the world around us, to the rich and complex sense of meness in the world within us.

UNLIKE A COW, say, whose alternatives for action are to munch on this little patch of grass, or that little patch of grass, we humans have some labyrinthine decisions to make in our lives. One of the hottest new topics in psychology is the clout our emotions wield over our choices—even those that we might be tempted to think require impressively intellectual calculations and calibrations. The experiment that sparked off this interest in the power of feelings used a gambling game as a laboratory simulation of the complex and uncertain mix of risks and benefits that our everyday choices bring. The

researchers asked volunteers to select cards, over and over, from any of the four decks in front of them.[1] They weren't given much information about the decks, just that some worked out better than others. When they turned over a card they learned whether they had won or lost points. Two of the decks yielded high point gains but, every so often, very severe point losses. This meant that, overall, these packs were best avoided. The other two packs were actually more beneficial in the long run; they offered less dazzling point wins, but less devastating point losses. While the volunteers played the game, the researchers monitored their emotional responses. They did this by measuring their skin conductance response—the polite way of referring to how much someone is sweating. (Skin conductance equipment measures the electrical conductivity of skin, which is affected by the salt in sweat.)

The pattern of winning and losing was too complicated for the volunteers to calculate which decks were the best. Yet by the end of the experiment, nearly all of the volunteers were choosing from the winning packs. They had developed hunches about which decks to avoid. This isn't particularly remarkable in itself, but what was rather eerie was that the volunteers' sweaty fingers seemed to work out which decks to avoid before the volunteers themselves did. In the pre-hunch stage, while the volunteers were still choosing cards haphazardly, their skin conductance responses would shoot up just before they chose a card from a losing deck. Only *after* the volunteers started showing these warning emotional jolts did they develop their gut feeling that they should avoid those decks.

The authority that these gut feelings have over our behavior became clear when the researchers gave the same gambling game to a patient with damage to part of the prefrontal cortex (the ventromedial prefrontal lobe). This man, known as EVR, had been a happy and successful businessman, husband, and father until a brain tumor developed in part of his prefrontal cortex and had to be removed. Soon after, EVR's professional and personal life went to rack and ruin because of an extraordinary inability to make decisions.[2] The simplest purchases—which razor to buy? what brand of shampoo?—required exhaustive comparisons of price and quality. And you could faint from hunger waiting for him to decide at which restaurant to eat. He would begin with an extensive discussion of each restaurant's seating plan, details of its menu, its atmosphere, and its management. Then the fieldwork would begin, in the form of drive-by inspections to see how busy each restaurant was. Yet even after all this research, EVR still found it impossible to choose. EVR's pathological vacillation was so time-consuming that it placed a terminal strain on both his marriage and his employment. And when he did manage to make decisions, they were generally bad ones. Despite numerous warnings from others that he was making a terrible mistake, this once-shrewd businessman invested all his savings in a home-building business with a partner of dubious commercial and moral credentials, and went bankrupt.

What was so odd about EVR's condition—and what made it so hard to understand why his postsurgery life was so disastrous—was that his intellect was completely unaffected by his brain injury. The researchers studying him chatted with

him for hours about current affairs, politics, and ethics, and were unfailingly impressed with his intelligence and knowledge. They quizzed him too on hypothetical social dilemmas, asking him what a person could and should do in tricky social situations. EVR had no trouble coming up with a whole range of sensible solutions to these problems even though, as he himself cheerfully admitted, he wouldn't have a clue what to decide to do if he ended up in those situations himself.[3]

In fact, it was partly this strange unconcern about his problems that triggered the researchers' suspicions that EVR's failing might be an emotional one. Nothing seemed to touch him emotionally, and this was confirmed by an experiment showing that EVR (and other patients like him) didn't show normal skin conductance increases to emotionally charged pictures (such as scenes of mayhem, mutilation, and nudity).[4] Could it be that this emotional lack was behind EVR's debilitating incapacity to make decisions? The researchers investigated this idea using their gambling game, monitoring the skin conductance responses of EVR and other similar patients while they played. In the game, as in life, the patients made poor decisions, never learning to avoid the bad decks. This was despite the fact that half of the patients even came to realize that the high-risk decks they were going for were going to burn them.[5]

Why couldn't the patients "solve" the gambling task? Unlike the non-brain-damaged volunteers, who let off an emotional skin conductance shudder right before choosing from a bad deck even before they consciously began to suspect that those decks should be avoided, the patients showed no signs of building up this sort of emotional knowledge. The

conclusion it is most tempting to draw is that these emotional tags (or somatic markers, as the researchers called them) guide our decision making. Without these emotional tags, even the most encyclopedic knowledge or powerful intellect cannot help us to pluck a bottle of shampoo off the supermarket shelf.

EVR's chaotically indecisive life vividly demonstrates how disabling it is for us not to have our emotions available as input while we are weighing up our options. Yet using emotions as information brings its own peril—the danger of mistaking the cause of those emotions. If we misattribute our emotion to the wrong source, thinking it stems from some origin other than the one that is actually causing our surge of feeling, this error can be carried forward to our judgments and decisions. Research suggests that this may happen rather more often than we realize.

The problem is that our bodies seem to produce a one-size-fits-all emotional response. For a long time some psychologists had trouble accepting the idea that our hearts thump in pretty much the same way regardless of whether we're taking an exam, have just won the lottery, or are running to catch a bus.[6] These die-hard psychologists went to extraordinarily elaborate lengths in their attempts to show that the body responds differently to different emotions. And they spared no amount of emotional trauma in their volunteers along the way. (This was before the concept of research ethics, way back in the golden era of psychology when you could hurl an unsuspecting volunteer into the throes of a powerfully distressing emotion and then all have a laugh about it afterward.) For example, a researcher with the suitably ominous name of Ax asked volunteers to lie down on a medical bed.[7]

He then attached them to a complicated tangle of electrodes and wires, and told them to relax. Once they were nice and comfy, unexpectedly, they began to feel electric shocks in their little finger. When they commented on this to the experimenter, he feigned surprise and twiddled a few knobs. Moments later, sparks began to fly across the wires and the panicked experimenter, lab coat flying, exclaimed that there was a dangerous high-voltage short circuit. The volunteer lay awaiting fatal electrocution for about five minutes while the experimenter flapped about creating "an atmosphere of alarm and confusion," until he finally declared the short circuit repaired and the danger over.

There was no doubt that Ax's volunteers were genuinely scared. One volunteer remarked afterward, "Well, everybody has to go some time. I thought this might be my time." Another prayed to God to be spared death. Yet despite the admirable success of Ax and others in inducing gut-wrenching emotions in their volunteers, it was all in vain. They failed to discover any interesting differences between the physiology of the person trembling with terror and wondering whether his will is in order, and the person about to, say, keel over dead from rage. It is the thoughts that go alongside your emotional arousal that enable you to distinguish between one emotion and another. There's no great mystery to human emotions. All you need to know is one simple equation:[8]

EMOTION = AROUSAL + EMOTIONAL THOUGHTS

Because the arousal is the same whatever the emotion (it only varies in intensity), your brain has the job of matching

the arousal with the right thoughts. In fact, when it comes to emotions, your brain is a bit like a laundry assistant matching socks in a hurry before his coffee break. When you have two socks that are bright blue with a cartoon dog on them, there's no trouble matching them together. (My brain had little difficulty pairing myself confined in a small room with a dangerously uninhibited frontal lobe patient with my sweaty palms.) But when it comes to pairing up all those workaday socks that are only slightly different lengths, styles, and hues of black, things get a bit trickier. And your brain isn't all that careful. In lieu of a perfect match, it's happy to snatch up any old black sock that looks about right. The consequence of this is that you attribute your arousal to the wrong thing.

In one such experiment, researchers asked three groups of men to ride an exercise bike for long enough to build up a decent sheen of sweat.[9] They were then given the arduous task of watching an erotic film and reporting their level of sexual arousal. The first group of men watched and rated the film for its sexually invigorating nature long after they'd recovered from the exercise. Their brains didn't have any problems because there were only two socks to match: the arousal from looking at naked women and thoughts about the naked women. The second group of men viewed the film right after exercising. Their brains weren't fooled either. They easily matched the extra arousal with the exercise, and the arousal from the naked women with the thoughts about the naked women. But the last group saw the film a little while after the exercise. By this time, although the men were still physically aroused from the cycling, they weren't aware of it. They had, as it were, lost a sock. This meant that they

tidily paired up the arousal from the film *and* the arousal from the exercise bike with their thoughts about the film. As a result, they rated themselves as significantly more excited by the film than did the other two groups of men. Their emotional brains misled them about how erotic they had found the film. (You might want to bear this experiment in mind next time someone starts flirting with you at the water cooler in the gym: he [or she] may have read this book.)

In fact, our emotional brains leave a whole variety of judgments vulnerable to the influence of our moods. When you are walking on the sunny side of the street, your worries really do seem to be left behind on the doorstep. Life seems more satisfying, the grim reaper seems less industrious, and politicians even seem less offensive when you are in a cheerful frame of mind.[10] And it can be a remarkably trivial event that tints our spectacles in this rosy fashion. In one classic experiment, a researcher lurking in a shopping mall posed as a company representative and offered some customers (but not others) a small gift to "introduce them to the company's products."[11] Then a second researcher standing a short distance away asked them (as part of a "customer survey") to rate the performance of their cars and televisions. The free gift was about as desirable as the contents of a gumball machine. Nonetheless, it put the customers who received it into a rather jolly mood, compared with the others. These happy customers—clutching their newly acquired nail clippers—rated their cars and TVs significantly more positively than did the customers without gifts. In another well-known experiment, when researchers called students on either a sunny or a rainy day, and asked them about their current happiness and their

satisfaction with life in general, the students contacted during good weather were in better moods than the students contacted while it was raining.[12] In line with what we've already learned, their weather-influenced mood affected the students' satisfaction with their lives: students contacted on sunny days were more satisfied.

Even our perception of something as physically grounded as pain can be swayed by lightness of heart; and not simply because we are distracted from our physical symptoms. I must confess that, pregnant for the second time and reading a list of pain management techniques for labor, I scoffed loud and hard at the suggestion that expectant parents keep the birthing room sweetened with the smell of aromatherapy oils. Yet research suggests that, even when we are completely focused on our bodily discomfort, the lifting of mood that comes from a pleasant olfactory environment can reduce suffering. Volunteers were asked to rate the intensity and unpleasantness of heat pain applied to their arm.[13] At the same time, their nasal region was suffused with either a pleasant or an unpleasant smell. The volunteers' ratings of the intensity of the pain weren't much affected by whether they were inhaling a delicious scent or a foul stench. However, their mood was very sensitive to the prevailing aroma. With spirits lifted by fragrant wafts, the volunteers found the pain significantly less unpleasant, compared with their experience when the odor was unpleasant. (Despite the findings of this experiment, I have yet to hear a new mother utter the words, "Yes, labor was pretty tough . . . until Darren lit the aromatherapy candles, that is.")

Gloom has just the opposite effect on our view of the world

around us. Life seems more hazardous, relationship conflicts seem more of our own doing, and racial minorities seem less likable when we are in a bad mood.[14] Psychologists are still squabbling over exactly how and when moods influence our judgments.[15] However, it looks as though at least some of the time our moods mislead us in the same way that misattributed arousal can. If we haven't registered why we're in a particular mood, then sometimes we erroneously use that mood to inform our opinions about things. In the experiment in which students were asked about their lives over the phone, on either sunny or rainy days, some students were asked casually at the start of the interview, "By the way, how's the weather down there?" These students didn't let their present mood color or confuse their judgments when it came to their feelings about their life satisfaction. Reminded by the telephone surveyer that their mood was probably due to the weather, these students successfully and appropriately must have dismissed their spirits as irrelevant to the question at hand.

It is certainly disquieting that our emotions and moods have such an impact on our judgments. However, as the weather-sensitive telephone survey experiment shows, at least we can sometimes protect ourselves from the undulations of our humor, so long as we are aware of being off our usual emotional keel. Yet emotion's meddlesome fingers can act more surreptitiously still, striking so early on in the process of interpreting what is around us that there is no hope of resistance. For emotions enjoy the dangerous ability to affect *what* we experience, not just how we interpret it. To see how even mildly experienced emotions influence perception, researchers

manipulated people's mood by using happy or sad music and films.[16] Then the volunteers watched two movies of the face of an actor. In one movie, the actor's beaming smile gradually faded until his expression was neutral. In the other movie, it was a sad pout that disappeared into neutrality, frame by frame. The task of the volunteers was to stop the movie at the point they felt that the person they were watching was no longer happy (or sad). The volunteers' artificially induced mood had a remarkable effect on their perception of the actor's facial expression: cheerful volunteers saw a smile lingering for longer than they did the frown. To the eyes of the gloomy volunteers, however, it was the mopey face that reflected their own state of mind that made the most protracted departure from the actor's face. The world may not really be smiling with you when you smile; it might just look that way thanks to the distortions of the emotional brain. Our visual experiences are so compelling, so real, and seemingly objective that it is hard to acknowledge the furtive role played by the brain in creating what we see. Could it really be that the unpleasant look that you saw, plain as day, pass over your spouse's face has more to do with your own frazzled mood than that fleeting arrangement of his facial features? It is all but impossible to believe, but the research suggests that his protestation of innocence may actually be genuine.

Our emotional feelings toward other people can also inspire the mind's eye liberally to engage its artistic license. There is empirical proof that we can be almost literally blinded (or at least seriously visually impaired) by love or hatred; or rather—in the low-key fashion of the ethically guided modern laboratory experiment—by liking and dislik-

ing. To inspire such sentiments in unsuspecting volunteers, a stooge was trained to behave in either an exceptionally likable or objectionable fashion.[17] For some volunteers, the charming stooge (supposedly another volunteer in the experiment) sported a sweatshirt from the real volunteer's own university. When her tardiness was commented on by the experimenter, she was winningly apologetic and made amends by generously proffering cookies all around. In the other scenario, the stooge advertised on her clothing her allegiance to a rival university. In response to the experimenter's mild remark about her late arrival, she snapped irritably words to the effect that if they could just cut the chat then they could all get on with it. Then, helping herself (and herself alone) to cookies, the stooge rammed in the earphones of her Walkman and, in an act that guaranteed rousing feelings of enmity, cranked up the volume to a level audible to all.

The volunteers were then assigned to be either the player or observer of a very simple computerized tennis game. By means of one of those rigged draws at which social psychologists are so proficient, the stooge was deputed to play the tennis game against the computer. The true volunteers were chosen to be the observers. Their task was to individually watch the game in an adjacent cubicle, and for every volley (a flash of light appearing on the screen), to indicate whether it fell in or out of bounds. Crucially, the volunteers were told that their calls as linesmen would have no effect whatsoever on the game. They were merely providing the experimenter with information about the clarity of the game. The computer itself could of course determine whether the flash of light fell in or out of bounds, and points would be won or lost

according to this more authoritative source. So, to belabor the point, the volunteers knew that they had no influence on the game and that there was no purpose to be served—either benevolent or malevolent, depending on their feelings toward the stooge playing the game—by reporting untruthfully whether balls fell in or outside the boundary line.

Yet, remarkably, the volunteers' sentiments toward the stooge still biased what they actually saw. When a ball hit by the stooge fell just a few pixels within the line, volunteers still seething from her incivilities were more likely to mistakenly call it "out." When the stooge's computerized opponent hit a ball outside the line, volunteers were more likely to say it was "in." Equally partisan, and exactly opposite, were the perceptions of those who felt warmly toward the amiable stooge. Their errors in calling balls that were just in or out favored the stooge over her computerized adversary. There was presumably no agenda being served, either consciously or unconsciously, by the volunteers' mistakes, since they were well aware that they were incapable of affecting the outcome of the game. Yet their attitude toward the stooge powerfully influenced what they actually saw, at the most basic level.

The emotional brain does not just tinker with our impression of the here and now, as we have already seen from the previous chapter. An habitually overcheerful mental outlook goes hand-in-hand with unrealistically optimistic predictions about the future. Conversely, those of us who are sadder but wiser seem to be more realistic about what is likely to lie ahead. Nor does the past lie safely untouched by the emotional brain's reparative activities. Using a strategy known as the fading affect bias, the brain tampers with our memory of events

we have experienced.[18] History is rewritten such that the distressing emotions we experienced when things went wrong are looked back on as having been less and less intense, as time goes by. In contrast, the brain's biographer does its best to lovingly nurture and sustain the vigor of memories of our past joys. This differential treatment of the past leaves us susceptible to believing that our past was happier than it truly was.

At this point you might be wondering whether the humble cow, unperturbably munching grass, might not have a more accurate view of her world than we do of ours. Our decisions, opinions, perception, and memory can all be set adrift by our emotional undercurrents, often without our even noticing that our anchor has slipped. Perhaps more surprising still, though, is the role that these squeakings and creakings of the emotional brain in action play in generating our sense of self. For as we will learn, they seem to be what generate our very sense of existence, or *being*.

Think back to the most nerve-wracking experience of your life. Did you feel as if you weren't actually there? It's very likely that you felt an eerie detachment from yourself, as if some sort of out-of-body you were dispassionately observing you. Perhaps most curious of all is that, rather than experiencing the shakes and quakes merited by the situation, you felt peculiarly emotionless.

My own traumatic experience of this sort occurred in the unlikely venue of a science museum. I was newly employed as an instructor, a lone psychologist amidst a cluster of biochemists. While the biochemists admired the genetic material they had cleverly unleashed from onion cells—an activity deemed suitable for children aged five and up—I gazed

bewildered at my *soupe d'oignon*, and not a chromosome in sight. These über-instructors pipetted, centrifuged, and chromatographed their way through the training with ease, while I knocked over every test tube in reach, and wished that I had been born with hands rather than paws.

By the day of my first workshop my well-founded anxieties about my competence were alleviated only by the knowledge that I would be joined by one of the superbly competent instructors. I anticipated expertly assisting in the distribution of lab coats and then allowing the biochemist to pull her weight by running the workshop. However, I turned out to be a superior instructor to her in one important respect: I remembered to attend the workshop.

I was terrified. My mission was to guide twelve prepubescents through the Frankensteinian mutation of *E. coli* bacteria. The children were beginning to fidget: some choosing to play with the alarmingly expensive scientific equipment; others preferring to jiggle the flimsy petri dishes containing a potentially lethal bacteria. It was at that moment that my brain divested itself of its "self." My "me," so to speak, slipped out of my body and watched impassively as Cordelia Fine ran a science workshop. Thanks to my brain, I was able to do a much better job than if I had remained in there, gripped in the clutch of terror. The *E. coli* may have remained unmutated—and the children possibly wondered what all that scientific equipment was actually *for*—but there were no fatalities or lawsuits. (Despite this, shortly after this incident it was suggested to me that I might prefer to refrain from offering any further instruction in the museum.)

What I was experiencing in those few hours of intense anx-

iety was what psychologists call depersonalization. It's an ace your brain keeps up its sleeve for when the chips are down. You feel detached from your thoughts, feelings, and body, and the world may seem dreamy and unreal. Once the coast is clear your brain brings you back again, and the world is real once more.

What is your brain up to during depersonalization episodes? Thanks to those pesky research ethics that prioritize bothersome issues such as people's welfare and rights over furtherance of scientific knowledge, psychologists can't simply recruit a handful of generous volunteers, throw them into a terrifying situation, and then take a few measurements. Instead, they have been studying people with a psychiatric condition called depersonalization disorder that leaves them in an almost constant state of out-of-bodyness.[19] Like the depersonalization you may have experienced yourself, it is often set off by intensely anxious episodes. This is almost certainly no coincidence. Depersonalization seems to be the emotional brain's emergency response to stress and anxiety. In the face of severe threat, your brain throws up its hands in defeat and turns the volume of the emotions right down. This prevents you from becoming overwhelmed with anxiety, which could be literally fatal in a dangerous situation.

But if the emotions are silenced, they are silenced. There aren't separate controls for crazy-psychologist-telling-me-I'm-about-to-be-electrocuted-to-death emotions and damn,-I've-got-a-parking-ticket emotions. So if the theory about depersonalization is right, patients should be unemotional about everything. Sure enough, when psychologists showed depersonalization disorder patients nasty pictures, they didn't

show the normal leap in skin conductance response.[20] The patients just weren't emotionally aroused by the unpleasant pictures in the way people usually are.

The same research group then looked directly into the brains of the depersonalization patients using functional magnetic resonance imaging, the whiz-bang imaging technology that measures brain activity.[21] They wanted to see how the patients' brains responded to disgusting things. Going to the patients' houses and performing an enema on the kitchen table wasn't in the cards (darn those research ethics committees) so it was back to the pictures. Normally, a part of the brain called the insula goes wild when you see disgusting things. It's the part of your brain that stays forever eight years old. But the insulas of the depersonalization patients actually responded *less* to disgusting pictures than they did to boring pictures. What *was* getting overly excited, however, was our old friend, the prefrontal cortex.

Because the prefrontal cortex is in charge of keeping our emotions in check, there is a huge amount of communication between the prefrontal cortex and areas of the brain like the insula that respond to emotional stimuli. This is why it was so interesting that the sergeant major of the brain was overactive in the patients with depersonalization disorder when they looked at disgusting pictures in the brain-imaging study. Unlike my charming patient with the damaged prefrontal cortex, whose emotions were allowed to run wild and free, the prefrontal cortices of the depersonalization disorder patients seemed to be holding the emotions on too tight a rein. It looked as if, at the merest glimpse of something a little juicy, the prefrontal cortex started shooting commands

down to the insula, warning it to keep its mouth shut. This excessive nannying by your prefrontal cortex may be how your emotions are able to keep so quiet during depersonalization episodes.

It might seem rather appealing, the idea of remaining so untouched by the emotional flotsam of life. One imagines depersonalization patients greeting an astronomical phone bill with a lackadaisical shrug, a leaking roof with a careless laugh. But in fact depersonalization is an extremely unpleasant state to be in for any length of time. Self-injury and self-mutilation aren't uncommon in depersonalization patients, perhaps as an attempt to just feel *something*. Life is flat and disturbingly unreal:[22]

> Music usually moves me, but now it might as well be someone mincing potatoes. . . . I seem to be walking about in a world I recognise but don't feel. . . . It's the terrible isolation from the rest of the world that frightens me. It's having no contact with people or my husband. I talk to them and see them, but I don't feel they are really here.

As one patient put it, "I would rather be dead than continue living like this. It is like the living dead." That's the problem with depersonalization. You no longer feel as if you're experiencing life:

> It is as if the real me is taken out and put on a shelf or stored somewhere inside of me. Whatever makes me me is not there.

> I feel as though I'm not alive—as though my body is an empty, lifeless shell.

This is what suggests that it is our emotional brain that gives us our sense of self. It is our feelings, no matter how trivial, that let us know we are alive.[23] We see the toilet seat left up *again*, and, while we writhe in fury, the brain chuckles to itself, "Yep, still here." According to this line of argument, if the emotions were shut off tight enough we might actually begin to believe that we no longer exist:

> One day I went out for a walk, right round town and ended up at my mother-in-law's and said to her, "I'm dead" and started stabbing at my arm to try and get some blood out. It wouldn't bleed so I was saying "Look, I must be dead—there's no blood."[24]

This man wasn't mucking around trying to embarrass his mother-in-law in front of her friends from the tennis club. He genuinely believed himself to be dead. In the same way another patient, a young woman, expressed guilt about drawing social security payments. She was worried that, being dead, she wasn't really eligible for her benefits. These patients suffer from the Cotard delusion, which some researchers think might be the result of a brain being even more excessive in its depersonalization strategy. While to depersonalization patients the world seems distant or unreal, Cotard patients may deny that the world even exists. While depersonalization disorder patients may feel as if their body no longer belongs

to them, Cotard patients may claim that parts of their body have rotted away altogether. And while depersonalization disorder patients may feel *as if* they were dead, the Cotard patient may actually believe it.

In these extreme cases of the Cotard delusion, patients are so detached from their feelings, thoughts, body, and the world that nothing can persuade them that they are alive. One of the first Cotard patients to be reported, described by a psychiatrist in the nineteenth century, insisted upon being laid out on a shroud. She then began to fuss over the inadequate appearance of the linen, provoking the psychiatrist to complain irritably that "even in death she cannot abstain from her female habit of beautifying herself." The feeling of nonexistence is inescapably compelling. Psychologists asked the young female Cotard patient with concerns about her eligibility for social security how she could feel heat and cold, feel her heart beat, feel when her bladder was full yet, despite this, nonetheless claim to be dead. The young woman cleverly replied that since she had these feelings despite being dead, they clearly could not be taken as good evidence that she was alive; a rebuttal that would possibly have stymied Descartes himself.

In fact, when Descartes famously wrote "cogito, ergo sum," *cogito* referred not just to thinking, but to a rich variety of experiences, including emotions. Depersonalization suggests that when the brain turns down the volume on the emotions, sense of self begins to slip away.

THE BALANCE that the sergeant major of the emotional brain has to achieve is a delicate one. Too much emotion and

we wind up bawling over a ballpoint pen that someone has taken from us, detained in a secure psychiatric hospital, or paralyzed with terror in the face of a few schoolchildren and several million *E. coli* bacteria. Yet if the emotional brain becomes too stingy with the emotions, the consequences can be no less devastating. As the chronically indecisive patient EVR demonstrates, remove the ability to use emotions as information and the simplest decision becomes irredeemably perplexing. Dampen down the emotions too much and we begin to lose grasp of our precious sense of self. And even when the sergeant major gets the balance about right, we are left mildly deluded about our past, present, and future. Emotional aftermath from incidental circumstances (the gift of a cheap freebie, a spot of rain, the agitation of light exercise, a pungent air freshener) can all color our seemingly dispassionate views. Your brain has its sweaty fingers in all the pies, from the shampoo you try to the smiles you spy. Considering how much backstairs influence it has in constructing your outer and inner worlds, better hope that your emotional brain is doing a reasonable job.

35. For a very readable account of Martin Seligman's research on explanatory style see Trotter, R. J. 1987. Stop blaming yourself. *Psychology Today* 21: 31–39.
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