A Mind of It

How You
Distorts

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For Russell

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brain, I have the deepest gratitude. And
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Chapter 1. Thank you.

A Mind of Its O

Introduction

Do you feel that you can trust y
maybe it falters for a moment, facial wi
table. It may occasionally send you into
something, only to abandon you entirely.
thing like mine, it may stubbornly refu
parking. Yet these are petty and ungrat
consider all that our brains actually do
have we been made so aware of the extra
and sophistication of those one hundre
that make up the engine of the mind. A
by when these gathered neurons aren't
paper article highlighting a newly discov
teamwork.

From day to day, we take our b
granted, but (particularly with this lool
that you're feeling a little quiet pride or

And, reading books on the subject of its own self aside, what else can't the thing do? After all, it tells you who you are, what to think, and what's out there in the world around you. Its ruminations, suggestions, and conclusions are confided to you and you alone. For absolutely everything you know about anything, you have your brain to thank. You might think that if there's one thing in this world you can trust, it's your own brain. You two are, after all, as intimate as it is possible to be.

But the truth of the matter—as revealed by the quite extraordinary and fascinating research described in this book—is that your unscrupulous brain is entirely undeserving of your confidence. It has some shifty habits that leave the truth distorted and disguised. Your brain is vainglorious. It's emotional and immoral. It deludes you. It is pigheaded, secretive, and weak-willed. Oh, and it's also a bigot. This is more than a minor inconvenience. That fleshy walnut inside your skull is all you have to know yourself and to know the world. Yet, thanks to the masquerading of an untrustworthy brain with a mind of its own, much of what you think you know is not quite as it seems.

CHAPTER 1

The Vain Brain

For a softer, kinder re

A WEEK AFTER THIS BOOK WAS COM
publisher. I discovered that I was pregn
child. The manuscript was due three d
My husband, a project manager both b
employ, drew up a project plan for me. T
failed to reflect the complexity, subtlety,
of the process of writing a book. It was
Excel spreadsheet showing the number
write per week, and when I was going t
had me scheduled to work every weeken
born.

"This plan has me scheduled to work
the baby is born," I said.

"Plus all the annual leave from you
added.

I felt that he had missed the point. "B

"Rest?" My husband pretended to examine the plan. "As I see it, you rest for two days after you finish the manuscript, shortly before going into labor, giving birth, and having your life entirely taken over by the nutritional demands of a newborn."

I had a brief image of myself in labor, telling the midwife between contractions what a treat it was to have some time to myself.

"What if I can't do it?" I asked.

My husband gave me a this-really-isn't-difficult look. "*This* is how you do it," he said, stabbing the plan. "You write this many words a week."

He was right, I told myself. Of course I could do it. It was irrelevant that I was pregnant. After all, growing a baby is easy—no project plan required. My first trimester nausea and exhaustion would soon pass. The brains of other, weaker women might be taken hostage by pregnancy hormones, but not my brain. My belly would remain small enough contained to enable me to reach the computer keyboard. And absolutely, definitely, without a doubt, the baby would not come inconveniently early. Of course I could write the book.

I then did something very foolish. I began research on this chapter—the vain brain. The vain brain that embellishes, enhances, and aggrandizes you. The vain brain that excuses your faults and failures, or simply rewrites them out of history. The vain brain that sets you up on a pedestal above your peers. The vain brain that misguidedly thinks you invincible, invulnerable, and omnipotent. The brain so very vain that it even considers the letters that appear in your name to be more attractive than those that don't.

I didn't want to know any of this. But went on to read just how essential these p They keep your head high and your hea They keep you from standing atop rail contemplatively at approaching traine deluded optimism, your immune syster whether it's worth the effort of keeping y extraordinarily, it seems that sometim manages to transform its grandiose Buoyed by a brain that loves you like a m and persevere—happily blind to your arrogantly dismissive of likely obsta achieve your goals.

I needed my vain brain back. *Immedia*

Luckily, I managed to regain my opti uscript was delivered a few days before th months later, however, my agent contacte that the publisher W. W. Norton was int In fact, they liked it so much that they w dred pages of it. (My husband didn't k first—the champagne or the spreadsheet ing prospect just writing a shopping l when there is a small baby in the house. my positive illusions triumphed once aga dispiriting thoughts of the difficulties sharpen the pencils. And, as the existence it worked for me. But now it's time for m your chances of happiness, health, and su ing you.

While it troubles philosophers, for the rest of us it is vastly more comfortable that we can only know ourselves and the world through the distorting prism of our brains. Freud suggested that the ego "rejects the unbearable idea," and since then experimental psychologists have been peeling back the protective layers encasing our self-esteem to reveal the multitude of strategies our brains use to keep our egos plump and self-satisfied. Let's start with some basic facts. When asked, people will modestly and reluctantly confess that they are, for example, more ethical, more nobly motivated employees, and better drivers than the average person.[2] In the latter case, this even includes people interviewed in the hospital shortly after being extracted from the mangled wrecks that were once their cars. We don't consider ourselves to be in the bottom half of the heap and, statistically, that's not possible. But in a sample of vain brains, it's inevitable.

For one thing, if it's at all feasible then your brain will interpret the question in the way that suits you best. If I were asked how my driving compares with that of others, I would rate myself better than average without hesitation. My driving record at speeds above one mile per hour is flawless. Yet below this speed my car's paint, and any stationary object I am attempting to park near, are in constant peril. These expensive unions between the stationary and the near-stationary are so frequent that at one point I actually considered enveloping the vulnerable portions of my car in bubble wrap. My mother, in contrast, can reverse with exquisite precision and at whiplash speeds into a parking spot. On the other hand, she regularly runs into the back of cars that "should have gone" at intersections. She, too, considers her driving to be superb.

You begin to see how everyone is able to s
the superior half of the driving populatio
that you're being asked about is helpfu
interpret the question to suit your
strengths.[3]

Even if you are unambiguously hopele
your brain gets around this by simply din
rance of that skill. I, for example, cannot
tic equivalent of being tone deaf. Ho
bother me in the slightest because to my
unnecessary extra. I can see that it would
an artist, but in the same way that it's use
ist to be able to wrap his legs behind his
small minority, but nothing more than a s
everyone else.[4] And in a final clever enha
enhancement, we believe that our weakn
that they are really just part and parcel o
liability, while our strengths are rare and

What these strategies reveal is that a
taken a very long way by a vain brain. T
your brain's arsenal of ego defense exploits
When we explain to ourselves and to ot
gone well or badly, we prefer explanations
the best possible light. Thus we are quic
successes are due to our own sterling qua
bility for failures can often be convenient
bad luck or damn fool others. This self-
known, is all too easy to demonstrate in th

People arbitrarily told that they did wel
ple, solving puzzles) will take the credit f

arbitrarily told that they did badly will assign responsibility elsewhere, such as with their partner on the task. The brain is especially self-advancing when poor performance on the task could deliver a substantial bruise to the ego.[7] People told that puzzle solving is related to intelligence are much more likely to be self-serving than those told that puzzle solving is just something that people who don't like reading books do on trains. The bigger the potential threat, the more self-protective the vain brain becomes. In a final irony, people think that others are more susceptible to the self-serving bias than they are themselves.[8] (Allow yourself a moment to take that sentence fully on board, should you need to.)

So when life or psychology researchers are kind enough to leave the reasons for success or failure ambiguous, the self-serving bias is readily and easily engaged to protect and nurture the ego. However, our vain brains aren't completely impervious to reality. No matter how partial my explanation of why I added up the restaurant bill incorrectly, I have no intention of applying for any professorships in mathematics. This is definitely good. When we lose all sight of our ugly face in reality's mirror, it generally means that we have also lost hold of our sanity. On the other hand, who wants to see the warts and all with pristine clarity? We've already rumbled the fact that the vain brain casts our features at their most flattering angle. Now we'll rummage deeper into its bag of tricks. For by calling on powerful biases in memory and reasoning, the brain can selectively edit and censor the truth, both about ourselves and the world, making for a softer, kinder, and altogether more palatable reality.

Failure is perhaps the greatest enemy of the ego, and that's

why the vain brain does its best to barric
this unwelcome guest. The self-serving
encountered provides a few extra servi
approach is to tell yourself that, in retro
stacked against you and failure was
Researchers have found that optimists i
strategy, which has been dubbed rationa
makes failure easier to digest.[9]

Self-handicappers, as they are called, e
bias in a different way. In self-handicapp
sure that it has a nonthreatening excuse
occur. If you can blame your poor perfor
gence test on your lack of effort, for exa
tering self-image of your intelligence
remain unchallenged. Self-handicappin
sweetness of success when it occurs, eve
ation for your ego. Drug use, medical s
they can all be used to shield the ego fr
example, a group of students who repo
anxiety during tests. According to a
brusque researchers, the brains of thes
exploit their test anxiety, whenever they
ends.[10] The researchers gave their test-an
fault two-part test, purportedly a measu
gence. In the interval between the two
students were asked to say how anxio
about the test, and how much effort they
However, right before this survey, *some*
their perennial handicap snatched away
were told that a remarkable feature of th

ing was that their score was impervious to anxiety and —no matter how nervous they were—their score would be an accurate measure of their intellectual ability.

This was cunning as well as mean. If a test-anxious student merely reports accurately how anxious she is feeling, with no self-serving motivations, it should make no difference to her whether she thinks that anxiety might reduce her score on the test—she should declare the same level of anxiety regardless. However, if test anxiety is used to protect self esteem, then it will be important whether she thinks that anxiety offers a plausible excuse for poor performance on the test. If she thinks that scores are adversely affected by nerves, she will be tempted to protect herself against possible failure by claiming greater susceptibility to the jitters. This is exactly what the researchers found. Only students who thought that their anxiety offered its usual nonthreatening excuse for low marks hoicked up their self reports of anxiety. The other students, who knew that they wouldn't be able to blame their nerves, didn't bother. They did something else instead. In place of their handicap of choice, these students claimed to have made less effort on the test. It takes more than a few psychologists to stymie the cunning of a determinedly vain brain.

Even when your brain does accept responsibility when things go wrong, research shows that just a few days later it may have conveniently cast off the more unflattering explanations for failure. In one experiment investigating this phenomenon, male university students were given a task that supposedly assessed their "manual dexterity and cognitive perception coordination."[12] ("I'm handy and I'm coordinated.") You can of course imagine a male ego immediately

wanting a piece of that pie. The students either that they were dexterous virtuosos tion or that, frankly, the average china sh more warmly welcome a bull into his sh then asked either immediately afterward to explain why they had done well or ba students whose vain brains were given a memory of the experiment were much in their explanations of why they had suc comparison with the students who we explanations immediately afterward.

Memory is one of the ego's greatest all things about ourselves tend to secure a f brain cells, while bad stuff —opsie—has grasp and slipping away. Imagine being test and then a list of behaviors that, accor are likely to perform. Would you later re ative behaviors (such as, "You would m because of their looks" and "You would n ents") or more positive behaviors (such as, handicapped neighbor paint his house" an secrets, you would")? Intuitively you mi rather surprising predictions that you are and untrustworthy would so jar with you self-concept that they would be more me when researchers gave people a bogus per sort, this is not what they found.[12] Instead tions of caring and honorable acts that stuc ories. The reason was that their brains allocate as much processing time to nasty p

nice ones. It seems that it is easier for a camel to pass through the eye of a needle than for negative feedback to enter the kingdom of memory.

Not only does memory collude with the brain in the information that it lets in but, as you might begin to fear, it also controls the information it lets out. All brains contain an enormous database of personal memories that bear on that perennially fascinating question, Who *am* I?, or the self-concept. But the self-concept, psychologists have discovered, is conveniently self shifting.[3] If the self-concept you are wearing no longer suits your motives, the brain simply slips into something more comfortable. The willing assistant in this process is memory. It has the knack of pulling out personal memories that better fit the new circumstances. Two Princeton researchers observed this metamorphosis directly by tempting the vain brains of their volunteers with an attractive change of self-concept.[4] They asked a group of students to read one of two (fabricated) scientific articles. The first article claimed that an extroverted personality helps people achieve academic success. The second article, handed out to just as many students, claimed instead that introverts tend to be more academically successful. You can guess what's going to happen. Imagine it. You're a vain brain. You're a vain brain at *Princeton*, for goodness sake. Someone's offering you a shimmering, glistening, dazzling self-concept that says, "Hey, world, *I* am going to make it." A personality trait that you've been told offers the crystal stairway to triumph might not be quite your size, but if you can make it fit with a bit of tweaking, then you will. Whichever personality trait the students thought was the key to success, they rated themselves more highly as possessing.

What happens is that the vain brain
make sure that the most attractive self-co
enormous wardrobe of rich and complica
cal events from your life, your memory
those memories that best match the self
ing to achieve. When people are told that
to be more successful than shy and reti
memories that bear out their sociable an
that rush quickly and easily to consciousn
already seen, memory keeps the gate at th
someone who's been told that one type of
success a bit of personality feedback, and
much more of the feedback that shows th
supposedly more favorable attribute.[5]

Reasoning is the vain brain's other pos
This might seem a little odd. Isn't reason
the compass that guides us toward the
from it? It seems not—particularly whe
attack. In fact, the best we can say for our
these circumstances is that we do at least
clusions cannot be drawn out of thin air
dence to support our case. The problem is
a smart lawyer searching for evidence to
case, rather than a jury searching for th
seen, memory is often the overzealous sec
this process by hiding or destroying
unwanted information. Only when enoug
able stuff has been shredded dare we tak
that supports your case is quickly accep
assistants are sent out to find more of the s

dence that threatens reason's most important client—you—is subjected to grueling cross-examination. Accuracy, validity, and plausibility all come under attack on the witness stand. The case is soon won. A victory for justice and truth, you think, conveniently ignoring the fact that yours was the only lawyer in the courtroom.

Time now to watch your hotshot lawyer in action. Imagine there's a rumor afoot that certain things about you augur badly for how well you will do in your chosen profession. Your reputation is at risk, and your lawyer is engaged to defend you from this potential slander. This was the situation created in a study demonstrating that the client is always right. University students were asked to take part in an experiment to do with the reasons for success in law, medicine, and business.[8] They were given fictitious descriptions of people who supposedly did well or badly at professional school. The sorts of attributes they read about were things like being the youngest or oldest child, being Catholic or Protestant, and having had a mother employed outside the home or a stay-at-home mother.

Now, say one of the students is the youngest child of a Catholic family whose mother stayed at home rearing her and her ten older siblings, and she longs to be a doctor. Then she reads about a successful doctor who is Catholic, the oldest child, and whose mother went out to work. Wouldn't it be nice if she could convince herself that the things she has in common with the doctor are what make for success, but that the things they differ on aren't important? This is just what happens. The student decides that a Catholic upbringing brings success, but that the other two factors are relatively unimportant. However,

if the student had been told that the same
cessful, suddenly her Catholicism would
(what could religion possibly have to do
order and mother's employment – the fac
would suddenly become crucial. Your l
constructs the most flattering and self-ser
the available data.

The next step is the evaluation of evide
poses a threat to your ego, a good lawy
fault. In one such experiment, high-sc
given an intelligence test.[9] Some of them
had done well; others that they had done
were also given a few pages to read co
from scientists both for and against the va
tests. Even though everyone was given th
the poor guinea pigs whose egos had been
ative feedback decided that intelligence
cruder tool for measuring intellectual de
dents who were told that they'd done b
because memory had hidden the pro-int
Actually, no. In fact, the ego-threatened
bered *more* of the pro-intelligence-test a
the others. This seems a little odd. Until y
vain brain's lawyer must have put forth a
to disparage those particular arguments. I
deal of effort cross-examining a witness
memory for what he said, even if you d
damn word of his lies.

On the whole, it seems we are content
piest of reasoning . . . until some thre

appears, at which point we suddenly acquire the strictest possible methodological standards.[4] The smart lawyer inside us is also skilled at finding supporting witnesses to bolster our case. Remember the experiments in which people were told that either being outgoing or withdrawn by nature is more conducive to success? Well, your brain not only biases your memory to make you think that you've been blessed with the more favorable personality attribute but it also then encourages you to spend time in the company of people who think you're really like that.[5]

It's RATHER unsettling to know that your ego is so very well-protected from reality. And it's not just your ego that's kept so safely removed from the truth. Perhaps understandably, given the slings and arrows of fortune we must dodge every day, your vain brain calls upon many of the same strategies to keep your perception of your future health, happiness, and fortune pleasantly unrealistic.

Just as we all believe ourselves to be better-than-average people, so too we think ourselves relatively invulnerable to life's trials. As with anything that threatens our egos, we push absurdly high our standards for evidence that might challenge our rosy beliefs. For example, brains prefer not to have to take too seriously any medical information that challenges our sense of physical invincibility. My father-in-law enjoys a lifestyle that, to put it bluntly, would leave the hardiest of cardiologists weeping over their public health information pamphlets. Statistically, he should probably have died shortly before he was born. Concerning all those pesky smoking-

disease–death studies he is breathtaking dismissive. Yet he is not immune to the discovery when it suits. For example, he u age me to push aside my bottle of wate healthy glass of red wine. In an experim phenomenon, known as motivated skept given an article to read that set out the r women (but not men) of drinking too muc women who drank little or no coffee fo Men who drank a lot of coffee found it co no prizes for guessing which group chang caffeine and disease unpersuasive.

Vain brains are reluctant to accept hints tibility even when it's staring them in th demonstration of self-protective incredul were told about a fictitious medical rhioamine acerylase (TAA) deficiency." T viduals, they were reliably informed, were rible to a variety of pancreatic disorders" one by one the volunteers were led into was it?) to test themselves for the condition cial piece of test paper (or was it?) into Some of the volunteers were told that if were normal, the strip would remain yell lucky ones. The rest of the volunteers we TAA levels were normal the strip would They were the unlucky ones. The rest st ordinary yellow paper, wasn't going to cha ter how much spit it encountered.

These unlucky volunteers, the ones who

reaction test, were determinedly optimistic about the perils of TAA deficiency. They reckoned that both TAA deficiency and pancreatic disease were far less serious and far more common than did people who "passed" the test. Those volunteers who failed also rated the saliva reaction test as less accurate. Even more defensive was their behavior while they were taking the saliva test. The researchers were secretly spying on them, of course, while it took place. Everyone had been told that color change in the test paper took from ten to sixty seconds, but was generally complete within twenty. Volunteers were asked to pop their strips into an envelope as soon as the test was done. The supposedly deficient volunteers were much slower to do this, giving their yellow paper a generous extra half a minute or so to change color, compared with the other volunteers. What's more, the majority of the volunteers who failed engaged in some kind of illicit retesting to help their recalcitrant strips along. Some people used a fresh saliva sample. Others retested using a new strip. Some placed the strip directly onto their tongue. The strips were shaken, blown, wiped, and saturated with enormous volumes of saliva. These unlucky volunteers didn't like their diagnosis and they were seeking second, third, and fourth opinions on the matter.

Vain brains can even trick us into unconsciously manipulating the outcome of a medical diagnosis to make it more acceptable. To show this, a group of experimentees were asked to immerse their forearm in a vat of icy cold water (yes, painful) and to keep it there for as long as they could bear.[8] They had to do this both before and after physical exercise. Some volunteers were told that if they could keep their arm in

the ice water for longer *after* exercise, that
life expectancy. The other volunteers wer
Although they weren't aware that they w
exercise the volunteers changed their tole
water in whichever direction they'd been to
and healthy life. Of course manipulating th
way couldn't possibly affect actual life exp
not really what's important to a vain brain.

The rose-tinted spectacles through wh
information about our health can also
inevitable demise to a more distant horiz
confronted with a precisely calculated act
time of departure, we blithely estimate that
ten years longer than we are allotted by
recently came across a website that, on the
sinent pieces of information, furnishes you
date of death. (For those with a morbid int
to make very long-term plans, the webs
clock.com.) From this helpful website I lea
die on Sunday, May 10, 2054, at the age
"That seems very young," I thought, and inst
another—well—ten years, mostly on the gr
long eschewed sausages, a product which
statistically impair longevity. Indeed, it seems
gaze into the future we take care only to pe
hoof lenses. Who, at the wedding altar, is
fifty chance of this working—let's keep our
Possibly most of the congregation, but proba
or groom. Remember our Catholic student w
uries to explain why she was likely to suc

school? In the same study the researchers showed that people use the same sort of self-serving speculations to persuade themselves that *their* marriage will be happy.[16]

Nor does the self-deceit stop with our dismissal of the possibility that there may be trouble ahead. We also have an inflated sense of control over what is to come. Take, for example, a task in which volunteers are asked to try to get a light to come on by pressing a button.[17] Volunteers are told that the button might control the light; in fact, the light comes on and off randomly and is illumination is entirely unrelated to what the volunteer does with the button. Yet although the volunteers have absolutely no control over the light, their perception is very different. They experience an illusion of control, as it is known, and claim to have an influence over the light. As subjects of further vanity, people rate their personal control more highly if the light happens to come on more often. In other words, we are even more susceptible to the self-flattering impression that we are responsible for how things have turned out when they turn our well.

We also succumb more readily to a false sense of influence on occasions when a little omnipotence would be particularly helpful. Offer a hamburger as a prize in a random draw from a deck of cards, and hungry volunteers will optimistically persuade themselves of greater clout on the task than will volunteers who have already eaten.[18] And desperate times call for desperate delusions. In the painfully sleep-deprived months just after the birth of our second child I was convinced that I, and I alone, knew the best and quickest way to get the baby back to sleep. "No, no!" I reprimanded my husband one afternoon, walking in on his attempt to settle the

baby for a nap. "You have to sit him on yo
curved to the left and hum *Humpty Dump*
his forehead with your thumb. Really, it's
works."

"Well, no wonder it takes you so long t
my husband replied with paying score,
actually finds most soothing is to be wa
between the crib and the window with a p
ing motion. Would you mind adjusting th
out? It needs to be raised to exactly two
above the sill."

When it comes to babies, an illusion of
the best one can hope for.

The conceit that we show in our thinki
goes further still than self-aggrandizing
our own power and prospects. We are ne
that our favored political parties or sports t
rious. Ask a group of people who they *thi*
coming election, and then divide them up
they *hope* will win (Republicans and Demo
will see something rather curious. The R
significantly more hopeful about the
Republican party than are the Democra
And the more fervently you want your
higher you rate its chance of success.[19]

From where does this eternal hope s
lawyer may play a part, hiding or disto
information. Yet even promises of cash p
predictions—which should surely serve
predisposition to be unrealistic—can't rid

expectations. It is the same, too, in the stadium. Even in the betting booth, where people put their hard-earned money where their mouth is, judgment is swayed by desire.[30] Another possible explanation for our undue positivism is that we are tempted into complacency by the company we keep; if everyone you know is a Democrat, the chance of victory may begin to seem more hopeful than it really is.[31] Yet this cannot be the whole story. Even people with the most up-to-date polling information at their fingertips are susceptible to the wishful thinking effect.[32]

We think it will be so, simply because we would prefer it to be so, the research suggests. This was made starkly clear in a laboratory study of wishful thinking in which the researchers randomly assigned college students to two teams, and then pitted the teams against one another in a dart-throwing competition.[33] As one person from each team stood ready, dart in hand, everyone else scribbled down a guess as to which of the two would throw closer to the bull's-eye—the teammate or the opponent. Then the next two competitors stepped up for a throw-off. Their chances were rated by everyone else, and so on, until everyone had thrown a dart.

Although the teams were put together in an entirely haphazard fashion, the flame of fellow feeling was nonetheless sparked. When asked, the students confessed to a desire that their own team would triumph. And, in line with their desires, each team thought it more likely that their own team would prevail against the opposition. Not only that, but almost all of the students were confident that their predictions about which team would win were unaffected by their hankering for their own team's victory. Yet what could have

been biasing their judgments, other than would be on the winning side? Indeed, w took a closer look at the data, he found th yearning, the greater the confidence. Hop from hope, it seems.

As we draw toward the end of this chap morals to be drawn. One, never trust a s Two, never trust your brain. They both ma option of reality, thus tricking you into e ties. (Of course, in the case of the social vanities are then permanently recorded in professionals may be entertained by them should trust social psychologists even less brain.) But don't feel too angry with you shielding you from the truth. There is a people who get unusually close to the truth and the world. Their self-perceptions ar they assign responsibility for success and f handedly, and their predictions for the futu istic. These people are living testimony t self-knowledge. They are the clinically dep

Psychologist Martin Seligman and collea fied a pessimistic explanatory style that depressed people.[35] When pessimists fail t selves and think that the fault is in themsel "I'm useless"), will last forever, and will they do. This is a far cry from the sorts of happy, self-serving people give for failure.

What is more, it is becoming clear that pessimism can seriously endanger your physical, as well as your mental, health. The deathclock asks only four questions in order to calculate how many years to shear off your expected time of dearth. Are you male? Do you smoke? Are you overweight? And are you a pessimist? You may be surprised to see your personal disposition up there as a risk factor along with gender, smoking, and obesity, but the research does seem to bear out its right to be in the Big Four. In one remarkable study of the effect of mental outlook on longevity, researchers analyzed brief autobiographies written more than seventy years ago by North American nuns about to take their final vows.[36] The researchers scrutinized the passages, counting how often the nun expressed a positive emotion. This yielded, for each nun, what one might (bearing the joyful heroine of *The Sound of Music* somewhat wryly in mind) refer to as a "Maria measure." The researchers then looked to see whether their emotional outlook was related to their life span. The statistics showed that the more cheerful a nun's autobiographical account, the longer the nun had on this earthly plane before being gathered up to the celestial empire. In fact, on average, the jovial nuns lived almost a decade longer than their more somber sisters.[37]

Indeed, a Maria-style outlook could be just the ticket when the dog bites or the bee stings. Thinking about raindrops on roses and whiskers on kittens in the face of adversity may help to subdue the damaging cardiovascular effects of sadness.[38] And the cheery Pollyannaism of optimists is matched by a similar can-do attitude in their immune systems.[39] Optimists make fewer doctor visits, are more likely to survive

cancer, are less likely to suffer recurrent h
less likely to meet with an untimely de
chants may find it hard to cultivate a mo
tive in the face of such data, for it's certai

While both our emotional and physical
benefit from a careful filtering of the har
there not a price to pay for being blind
(Aside, that is, from the small matter of
turning out to be little more than ar
Certainly, blind optimism can sometimes
self-serving tendency to blame anything a
selves for mistakes in our past can doom
This was the dismal conclusion of a study
students to predict when they would fi
they had just been given.[41] As we have al
many occasions, the students seriously u
long it would take. Even asking the stu
their failures to finish similar assignmen
had allotted themselves on previous occasi
challenging this immoderate confidence. T
dismissed those botch-ups as irrelevant
were late due to freakish obstacles that w
arise again.

This planning fallacy, as it is known, i
from the take-home work that lies untouch
all weekend, to the years-long delays in co
struction projects that have project mana
cials reaching for their blood pressure pill

Not only is time money, but we may a
directly for the vain brain's sleight of han

their profits, bookkeepers and casinos should offer up heartfelt thanks to the wishful thinking phenomenon. And if your salary happens to depend on your ability to predict the future, an illusion of control can become an extremely expensive psychological luxury. Researchers asked a hundred traders from investment banks to play a computerized financial market version of the "press the button and hope for the light to come on" task.[12] Instead of trying to get a light to come on, the traders had to try to increase an index value. Afterward, the traders filled in questionnaires about the game that revealed how readily they were seduced into the erroneous belief that they could control changes in the value of the index. Interestingly, the statistics showed that the more arrogant the trader about his influence on the computer task, the less he earned on the trading floor. According to the researchers' analyses, traders with a high score on the illusion of control scale earned about $50,000 per annum less than traders with only an average score.[13]

Inevitably, our unrealistic expectations and our reluctance to admit to our weaknesses and limits will sometimes trip us up. However, the brain does have a helpful strategy in place to minimize such mishaps. When we're faced with a choice to make, we actually view ourselves and life unusually realistically as we quietly contemplate our future. Volunteers asked to deliberate a decision they had yet to make (to go on vacation, for example, or end a relationship), were less grandiose about themselves, more pensive, more attuned to the risks of life, and less susceptible to the illusion of omnipo-

tence, than were other volunteers not ind
contemplative frame of mind.[14] This "wi
the researchers term it, is presumably wh
rons from becoming too fanciful, our st

Once our decision is made, however, t
ism is snapped shut more tightly than eve
told to reflect on a decision that they had
even more exaggeratedly buoyant about t
prospects than normal. And there is good
brain to speed into high gear just as soon
put our plans into action.[15] The shamele
the conceited brain ("Sure! I can do that
someone else's fault . . .)"—is like a psy
propels you upward, but provides a soft
rapidly descend. The tracks of the vain b
pursue your ambitions while keeping y
harm. Self-handicappers, who protect th
providing themselves in advance with a r
son for poor performance, gain another
strategy. By buffering their delicate egos
ure, self-handicappers can try anything,
edge that they have an excuse on hand sho
People who habitually protect their prid
given the opportunity to self-handicap by
ball machine.[16] By allowing the volunte
long to practice beforehand, the researche
how self-handicapping (by practicing les
vents the psychological leeway they needa
sist at playing pinball, even when they w
weren't terribly good at it.

Ego-friendly excuses for unrealized aspirations are also invaluable in the classroom. Schoolchildren doing badly in reading or math, when encouraged to blame their difficulties on lack of effort rather than lack of ability, show remarkable gains in both persistence and accomplishment.[17] And persuading yourself that the sun *will* come out tomorrow—that the setbacks you are experiencing are only temporary and nothing to do with any personal deficiencies—lends strength to persevere with your goals. First-year undergraduates worried about their poor grades were enticed by researchers into thinking that grades naturally improve after the first semester.[18] In a spectacular demonstration of the self-fulfilling prophecy, these students went on to get better grades (both a week and a year later) and were less likely to drop out, compared with similarly concerned students who were not persuaded to be optimistic about the future in this way.

We have many reasons, then, to be grateful to the brain for its careful stretching of the truth. Indeed, without our vain brains, would we even bother to get up in the morning? One final, glorious reason to thank your brain for its little white lies is that they make life itself endurable. According to the sensationally named "terror management theory," developed by a psychologist rejoicing in the surname Pyszczynski,[19] a healthily vain brain is "a protective shield designed to control the potential for terror that results from awareness of the horrifying possibility that we humans are merely transient animals groping to survive in a meaningless universe, destined only to die and decay." I'm sure you will agree that if a few positive illusions can keep at bay the disturbing thought that in truth you are of no more significance in the universe than,

as Pyszczynski cruelly puts it, "any ind
apple, or porcupine," then we all owe a la
to our vain brains.

But let us end on a more comforting
grand scheme of things you may not be
than a porcupine, you are almost certain

CHAPTER 2

The Emotional

Sweaty fingers in all t

My son, thirteen months old, is
will break. He sobs with his entire body,
few seconds he will assume what my hu
tragedy pose. Sure enough, soon he coi
and flops forward so that his forehead
holding in my hand the accomplice to th
ated all joy from my son's existence. This
us, have left no other course available to
to give himself over completely to
drenching grief. I struggle painfully bet
urge to ruin his character forever by re
item upon which, clearly, his entire happ
ballpoint pen.

As it happens, I know just how it fe
pens taken away. My husband, as part
tioning system, has strategically locate

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 have no doubt that he would have kept himself.

There is little doubt that, compared wi uninhibited brain-damaged patient, authoritative control of our emotions. N the case that our emotions and moods mastery of us. It may seem, as we busily deciding what actions are best taken fo our beady eye over people and events aro judgment on them, or reflecting on the making good use of our uniquely human ory. However, research suggests that it is that are actually wearing the pants. Our gers fiddle with our psychological world the seemingly straightforward issue of the world around us, to the rich and co ness in the world within us.

Consider a cow, say, whose alternativ munch on this little patch of grass, or that we humans have some labyrinthine decis lives. One of the hottest new topics in psy our emotions wield over our choices—might be tempted to think require impr calculations and calibrations. The exper off this interest in the power of feeling game as a laboratory simulation of the co mix of risks and benefits that our everyda

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
tor became clear when the researchers
bling game to a patient with damage to
cortex (the ventromedial prefrontal lobs
as EVR, had been a happy and successf
band, and father until a brain tumor de
prefrontal cortex and had to be remove
professional and personal life went to ra
of an extraordinary inability to make dec
purchases— which razor to buy? what b
required exhaustive comparisons of pr
you could faint from hunger waiting f
which restaurant to eat. He would beg
discussion of each restaurant's seating
menu, its atmosphere, and its managem
work would begin, in the form of drive-
how busy each restaurant was. Yet even a
EVR still found it impossible to choose
vacillation was so time-consuming that
strain on both his marriage and his emp
he did manage to make decisions, they
ones. Despite numerous warnings from
making a terrible mistake, this once-s
invested all his savings in a home-build
partner of dubious commercial and mo
went bankrupt.

What was so odd about EVR's conditi
it so hard to understand why his postsu
astrous—was that his intellect was comp
his brain injury. The researchers studyi

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 these 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 harm 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
tags for somatic markers, as the researche
our decision making. Without these emo
most encyclopedic knowledge or power
help us to pluck a bottle of shampoo off th

EVR's chaotically indecisive life vividl
disabling it is for us not to have our e
input while we are weighing up our opti
tions as information brings its own pain
taking the cause of those emotions. If
emotion to the wrong source, thinking
origin other than the one that is actually
feeling, this error can be carried forwar
and decisions. Research suggests that this
more often than we realize.

The problem is that our bodies seem to
fits-all emotional response. For a long t
gists had trouble accepting the idea that
pretty much the same way regardless of w
an exam, have just won the lottery, or are
bus.[6] These die-hard psychologists went
elaborate lengths in their attempts to s
responds differently to different emotion
no amount of emotional trauma in their
way. (This was before the concept of r
back in the golden era of psychology whe
unsuspecting volunteer into the throes o
tressing emotion and then all have a lo
ward.) For example, a researcher with th
name of Ax asked volunteers to lie down