

# YOU ARE NOT SO SMART

Why You Have Too Many Friends on Facebook,  
Why Your Memory Is Mostly Fiction, and  
46 Other Ways You're Deluding Yourself

DAVID McCRANEY



ROTHMAN BOOKS



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G O T H A M B O O K S

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*For Jerry, Evelyn, and Amanda*

# INTRODUCTION

## *You*

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THE MISCONCEPTION: *You are a rational, logical being who sees the world as it really is.*

THE TRUTH: *You are as deluded as the rest of us, but that's OK, it keeps you sane.*

You hold in your hands a compendium of information about self-delusion and the wonderful ways we all succumb to it.

You think you know how the world works, but you really don't. You move through life forming opinions and cobbling together a story about who you are and why you did the things you did leading up to reading this sentence, and taken as a whole it seems real.

The truth is, there is a growing body of work coming out of psychology and cognitive science that says you have no clue why you act the way you do, choose the things you choose, or think the thoughts you think. Instead, you create narratives, little stories to explain away why you gave up on that diet, why you prefer Apple over Microsoft, why you clearly remember it was Beth who told you the story about the clown with the peg leg made of soup cans when it was really Adam, and it wasn't a clown.

Take a moment to look around the room in which you are reading this. Just for a second, see the effort that went into not only what you see, but the centuries of progress leading to the inventions surrounding you.

Start with your shoes, and then move to the book in your hands, then look to the machines and devices grinding and beeping in every corner of your life—the toaster, the computer, the ambulance wailing down a street far away. Contemplate, before we get down to business, how amazing it is humans have solved so many problems, constructed so much in all the places where people linger.

Buildings and cars, electricity and language—what a piece of work is man, right? What triumphs of rationality, you know? If you really take it all in, you can become enamored with a smug belief about how smart you and the rest of the human race have become.

Yet you lock your keys in the car. You forget what it was you were about to say. You get fat. You go broke. Others do it too. From bank crises to sexual escapades, we can all be really stupid sometimes.

From the greatest scientist to the most humble artisan, every brain within every body is infested with preconceived notions and patterns of thought that lead it astray

without the brain knowing it. So you are in good company. No matter who your idols and mentors are, they too are prone to spurious speculation.

Take the Wason Selection Task as our first example. Imagine a scientist deals four cards out in front of you. Unlike normal playing cards, these have single numbers on one side and single colors on the other. You see from left to right a three, an eight, a red card, and a brown card. The shifty psychologist allows you to take in the peculiar cards for a moment and poses a question. Suppose the psychologist says, “I have a deck full of these strange cards, and there is one rule at play. If a card has an even number on one side, then it must be red on the opposite side. Now, which card or cards must you flip to prove I’m telling the truth?”

Remember—three, eight, red, brown—which do you flip?

As psychological experiments go, this is one of the absolute simplest. As a game of logic, this too should be a cinch to figure out. When psychologist Peter Wason conducted this experiment in 1977, less than 10 percent of the people he asked got the correct answer. His cards had vowels instead of colors, but in repetitions of the test where colors were used, about the same number of people got totally confused when asked to solve the riddle.

So what was your answer? If you said the three or the red card, or said only the eight or only the brown, you are among the 90 percent of people whose minds get boggled by this task. If you turn over the three and see either red or brown, it does not prove anything. You learn nothing new. If you turn over the red card and find an odd number, it doesn’t violate the rule. The only answer is to turn over both the eight card and the brown card. If the other side of the eight is red, you’ve only confirmed the rule, but not proven if it is broken elsewhere. If the brown has an odd number, you learn nothing, but if it has an even number you have falsified the claims of the psychologist. Those two cards are the only ones which provide answers. Once you know the solution, it seems obvious.

What could be simpler than four cards and one rule? If 90 percent of people can’t figure this out, how did humans build Rome and cure polio? This is the subject of this book—you are naturally hindered into thinking in certain ways and not others, and the world around you is the product of dealing with these biases, not overcoming them.

If you replace the numbers and colors on the cards with a social situation, the test becomes much easier. Pretend the psychologist returns, and this time he says, “You are at a bar, and the law says you must be over twenty-one years old to drink alcohol. On each of these four cards a beverage is written on one side and the age of the person drinking it on the other. Which of these four cards must you turn over to see if the owner is obeying the law?” He then deals four cards which read:

23—beer—Coke—17

Now it seems much easier. Coke tells you nothing, and 23 tells you nothing. If the seventeen-year-old is drinking alcohol, the owner is breaking the law, but if the seventeen-year-old isn’t, you must check the age of the beer drinker. Now the two cards stick out—beer and 17. Your brain is better at seeing the world in some ways, like social situations, and not so good in others, like logic puzzles with numbered

cards.

This is the sort of thing you will find throughout this book, with explanations and musings to boot. The Wason Selection Task is an example of how lousy you are at logic, but you are also filled with beliefs that look good on paper but fall apart in practice. When those beliefs fall apart, you tend not to notice. You have a deep desire to be right all of the time and a deeper desire to see yourself in a positive light both morally and behaviorally. You can stretch your mind pretty far to achieve these goals.

The three main subjects in this book are cognitive biases, heuristics, and logical fallacies. These are components of your mind, like organs in your body, which under the best conditions serve you well. Life, unfortunately, isn't always lived under the best conditions. Their predictability and dependability have kept confident men, magicians, advertisers, psychics, and peddlers of all manner of pseudoscientific remedies in business for centuries. It wasn't until psychology applied rigorous scientific method to human behavior that these self-deceptions became categorized and quantified.

Cognitive biases are predictable patterns of thought and behavior that lead you to draw incorrect conclusions. You and everyone else come into the world preloaded with these pesky and completely wrong ways of seeing things, and you rarely notice them. Many of them serve to keep you confident in your own perceptions or to inhibit you from seeing yourself as a buffoon. The maintenance of a positive self-image seems to be so important to the human mind you have evolved mental mechanisms designed to make you feel awesome about yourself. Cognitive biases lead to poor choices, bad judgments, and wacky insights that are often totally incorrect. For example, you tend to look for information that confirms your beliefs and ignore information that challenges them. This is called confirmation bias. The contents of your bookshelf and the bookmarks in your Web browser are a direct result of it.

Heuristics are mental shortcuts you use to solve common problems. They speed up processing in the brain, but sometimes make you think so fast you miss what is important. Instead of taking the long way around and deeply contemplating the best course of action or the most logical train of thought, you use heuristics to arrive at a conclusion in record time. Some heuristics are learned, and others come free with every copy of the human brain. When they work, they help your mind stay frugal. When they don't, you see the world as a much simpler place than it really is. For example, if you notice a rise in reports about shark attacks on the news, you start to believe sharks are out of control, when the only thing you know for sure is the news is delivering more stories about sharks than usual.

Logical fallacies are like math problems involving language, in which you skip a step or get turned around without realizing it. They are arguments in your mind where you reach a conclusion without all the facts because you don't care to hear them or have no idea how limited your information is. You become a stumbling detective. Logical fallacies can also be the result of wishful thinking. Sometimes you apply good logic to false premises; at other times you apply bad logic to the truth. For instance, if you hear Albert Einstein refused to eat scrambled eggs, you might assume scrambled eggs are probably bad for you. This is called the argument from authority. You assume if someone is super-smart, then all of that person's decisions must be good ones, but maybe Einstein just had peculiar taste.

With each new subject in these pages you will start to see yourself in a new way. You will soon realize you are not so smart, and thanks to a plethora of cognitive biases, faulty heuristics, and common fallacies of thought, you are probably deluding yourself minute by minute just to cope with reality.

Don't fret. This will be fun.

# 1

## *Priming*

**THE MISCONCEPTION:** *You know when you are being influenced and how it is affecting your behavior.*

**THE TRUTH:** *You are unaware of the constant nudging you receive from ideas formed in your unconscious mind.*

You are driving home from the grocery store and you realize you forgot to buy spinach dip, which was the only reason you went there in the first place. Maybe you could buy some at a gas station. Nah, you'll just get it next trip. Thoughts of dip lead to ruminations on the price of gas, which lead to excogitation over bills, which leads to thoughts about whether you can afford a new television, which reminds you of the time you watched an entire season of *Battlestar Gallactica* in one sitting—what the hell? You are home already and have no recollection of the journey.

You drove home in a state of highway hypnosis, your mind and body seemingly floating along in parallel. When you stopped the car and turned the key, you snapped out of a dreamlike state sometimes called line hypnosis when describing the dissociative mental world of an assembly line worker stuck in a repetitive grind. In this place, consciousness drifts as one mental task goes into autopilot and the rest of the mind muses about less insipid affairs, floating away into the umbra.

You split your subjective experience into consciousness and subconsciousness all the time. You are doing it right now—breathing, blinking, swallowing, maintaining your posture, and holding your mouth closed while you read. You could pull those systems into conscious control or leave them to the autonomic nervous system. You could drive cross-country consciously adjusting your foot on the gas pedal, shifting your hands on the wheel, mulling over the millions of micro decisions needed to avoid gnashing metallic death at high speeds, or you could sing along with your friends while the other parts of your mind handle the mundane stuff. You accept your unconscious mind as just another weird component of the human experience, but you tend to see it as a separate thing—a primal self underneath consciousness that doesn't have the keys to the car.

Science has learned otherwise.

A great example of how potent a force your unconscious can be was detailed by researchers Chen-Bo Zhong at the University of Toronto and Katie Liljenquist at Northwestern in a 2006 paper published in the journal *Science*. They conducted a study in which people were asked to remember a terrible sin from their past, something they had done which was unethical. The researchers asked them to describe how the memory made them feel. They then offered half of the participants the opportunity to wash their hands. At the end of the study, they asked subjects if they

would be willing to take part in later research for no pay as a favor to a desperate graduate student. Those who did not wash their hands agreed to help 74 percent of the time, but those who *did* wash agreed only 41 percent of the time. According to the researchers, one group had unconsciously washed away their guilt and felt less of a need to pay penance.

The subjects didn't truly wash away their emotions, nor did they consciously feel as though they had. Cleansing has meaning beyond just avoiding germs. According to Zhong and Liljenquist, most human cultures use the ideas of cleanliness and purity as opposed to filth and grime to describe both physical and moral states. Washing is part of many religious rituals and metaphorical phrases used in everyday language, and referring to dastardly deeds as being dirty or to evil people as scum is also common. You even make the same face when feeling disgusted about a person's actions as you do when seeing something gross. Unconsciously, the people in the study connected their hand washing with all the interconnected ideas associated with the act, and then those associations influenced their behavior.

When a stimulus in the past affects the way you behave and think or the way you perceive another stimulus later on, it is called priming. Every perception, no matter if you consciously notice, sets off a chain of related ideas in your neural network. Pencils make you think of pens. Blackboards make you think of classrooms. It happens to you all the time, and though you are unaware, it changes the way you behave.

One of many studies that have revealed how much influence your subconscious mind has over the rest of your thinking and behavior and how easily it can be influenced by priming was conducted in 2003 by Aaron Kay, Christian Wheeler, John Barghand, and Lee Ross. People were separated into two groups and asked to draw lines between photos and text descriptions. One group looked at neutral photos. They drew lines to connect kites, whales, turkeys, and other objects to descriptions on the other side of the paper. The second group connected lines to descriptions for photos of briefcases, fountain pens, and other items associated with the world of business. Participants were then moved into isolated rooms and told they had been paired off with another subject. The other person was actually in on the experiment. Each person was then told they were now going to play a game in which they could earn up to \$10. The researchers presented the subject with a cup and explained two strips of paper waited inside, one with the word "offer" written on it and another with the word "decision." The subject was then given a choice—blindly pluck a slip of paper from the cup, or allow the other person to blindly select. The catch? Whoever pulled out the "offer" slip would get the \$10 and choose how it was divided between both parties. The partner would then choose to accept or reject the offer. If the partner rejected, both received nothing. This is called the ultimatum game, and its predictability has made it a favorite tool of psychologists and economists. Offers below 20 percent of the total amount are usually turned down.

Most people chose to do the picking. They didn't know both slips had "offer" written on them. If they instead let the other person do the picking, the actor pretended to get the "decision" slip. So everyone in the study was put in the position of making a reasonable offer, knowing if they did not, they would miss out on some free cash. The results were bizarre, but confirmed the scientists' suspicions about priming.

So how did the two groups differ? In the group who connected neutral photos to

their descriptions before the ultimatum game, 91 percent chose to split the money evenly—\$5 each. In the group who connected the business photos, only 33 percent offered to split the money evenly; the rest tried to keep a little more for themselves.

The researchers ran the experiment again with real objects instead of photos. They had participants play the ultimatum game in a room with a briefcase and leather portfolio on the far end of a table along with a fountain pen in front of the participant's chair. Another group sat in a room with neutral items—a backpack, a cardboard box, and a wooden pencil. This time, 100 percent of the neutral group chose to split the money evenly, but only 50 percent of those in the group sitting in a room with business-related items did the same. Half of the business-primed group tried to stiff the other party.

All of the subjects were debriefed afterward as to why they behaved as they did, but not one person mentioned the objects in the room. Instead, they confabulated and told the researchers about their own feelings on what is and is not fair. Some described their impressions of the people they were playing the game with and said those feelings influenced them.

Mere exposure to briefcases and fancy pens had altered the behavior of normal, rational people. They became more competitive, greedier, and had no idea why. Faced with having to explain themselves, they rationalized their behavior with erroneous tales they believed were true.

The same researchers conducted the experiment in other ways. They had subjects complete words with some of the letters omitted, and again those who first saw business-related images would turn a word like “c—p—tive” into “competitive” 70 percent of the time while only 42 percent of the neutral group did. If shown an ambiguous conversation between two men trying to come to an agreement, those who first saw photos of business-related objects saw it as a negotiation, whereas the neutral group saw an attempt at compromise. In every case, the subjects' minds were altered by unconscious priming.

Just about every physical object you encounter triggers a blitz of associations throughout your mind. You aren't a computer connected to two cameras. Reality isn't a vacuum where you objectively survey your surroundings. You construct reality from minute to minute with memories and emotions orbiting your sensations and cognition; together they form a collage of consciousness that exists only in your skull. Some objects have personal meaning, like the blow-pop ring your best friend gave you in middle school or the handcrafted mittens your sister made you. Other items have cultural or universal meanings, like the moon or a knife or a handful of posies. They affect you whether or not you are aware of their power, sometimes so far in the depths of your brain you never notice.

Another version of this experiment used only smell. In 2005, Hank Aarts at Utrecht University had subjects fill out a questionnaire. They were then rewarded with a cookie. One group sat in a room filled with the faint smell of cleaning products while another group smelled nothing. The group primed by the aroma in the clean-smelling room cleaned up after themselves three times more often.

In a study by Ron Friedman where people were merely shown but not allowed to drink sports beverages or bottled water, those who just looked at sports drinks persisted longer in tasks of physical endurance.

Priming works best when you are on autopilot, when you aren't trying to consciously introspect before choosing how to behave. When you are unsure how best to proceed, suggestions bubble up from the deep that are highly tainted by subconscious primes. In addition, your brain hates ambiguity and is willing to take shortcuts to remove it from any situation. If there is nothing else to go on, you will use what is available. When pattern recognition fails, you create patterns of your own. In the aforementioned experiments, there was nothing else for the brain to base its unconscious attitudes on, so it focused on the business items or the clean smells and ran with the ideas. The only problem was the conscious minds of the subjects didn't notice.

You can't self-prime, not directly. Priming has to be unconscious; more specifically, it has to happen within what psychologists refer to as the adaptive unconscious—a place largely inaccessible. When you are driving a car, the adaptive unconscious is performing millions of calculations, predicting every moment and accommodating, adjusting your mood and manipulating organs. It does the hard work, freeing up your conscious mind to focus on executive decisions. You are always of two minds at any one moment—the higher-level rational self and the lower-level emotional self.

Science author Jonah Lehrer wrote extensively about this division in his book *How We Decide*. Lehrer sees the two minds as equals who communicate and argue about what to do. Simple problems involving unfamiliar variables are best handled by the rational brain. They must be simple because you can juggle only four to nine bits of information in your conscious, rational mind at one time. For instance, look at this sequence of letters and then recite them out loud without looking: RKFBIIRSCBSUSSR. Unless you've caught on, this is a really difficult task. Now chunk these letters into manageable portions like this: RK FBI IRS CBS USSR. Look away now and try to recite them. It should be much easier. You just took fifteen bits and reduced them to five. You chunk all the time to better analyze your world. You reduce the complex rush of inputs into shorthand versions of reality. This is why the invention of written language was such an important step in your history—it allowed you to take notes and preserve data outside the limited capacity of the rational mind. Without tools like pencils, computers, and slide rulers, the rational brain is severely hampered.

The emotional brain, Lehrer argues, is older and thus more evolved than the rational brain. It is better suited for complex decisions and automatic processing of very complex operations like somersaults and break dancing, singing on key and shuffling cards. Those operations seem simple, but they have too many steps and variables for your rational mind to handle. You hand those tasks over to the adaptive unconscious. Animals with small cerebral cortices, or none at all, are mostly on autopilot because their older emotional brains are usually, or totally, in charge. The emotional brain, the unconscious mind, is old, powerful, and no less a part of who you are than the rational brain is, but its function can't be directly observed or communicated to consciousness. Instead, the output is mostly intuition and feeling. It is always there in the background co-processing your mental life. Lehrer's central argument is "you know more than you know." You make the mistake of believing only your rational mind is in control, but your rational mind is usually oblivious to the influence of your unconscious. In this book I add another proposition: You are unaware of how unaware you are.

In a hidden place—your unconscious mind—your experience is always being crunched so suggestions can be handed up to your conscious mind. Thanks to this, if a situation is familiar you can fall back on intuition. However, if the situation is novel, you will have to boot up your conscious mind. The spell of highway hypnosis on a long trip is always broken when you take an exit into unfamiliar territory. The same is true in any other part of your life. You are always drifting back and forth between the influence of emotion and reason, automaticity and executive orders.

Your true self is a much larger and more complex construct than you are aware of at any given moment. If your behavior is the result of priming, the result of suggestions as to how to behave handed up from the adaptive unconscious, you often invent narratives to explain your feelings and decisions and musings because you aren't aware of the advice you've been given by the mind behind the curtain in your head.

When you hug someone you love and then feel the rush of warm emotions, you have made an executive decision which then influenced the older parts of your brain to deliver nice chemicals. Top-down influence makes intuitive sense and isn't disturbing to ponder.

Bottom-up influence is odd. When you sit next to a briefcase and act more greedy than you usually would, it is as if your executive brain centers are nodding in agreement to hidden advisers whispering in your ear. It seems mysterious and creepy because it's so clandestine. Those who seek to influence you are sensitive to this, and try to avoid creating in you the uncomfortable realization that you have been duped. Priming works only if you aren't aware of it, and those who depend on priming to put food on the table work very hard to keep their influence hidden.

Let's look at casinos, which are temples to priming. At every turn there are dings and musical notes, the clatter of coins rattling in metal buckets, symbols of wealth and opulence. Better still, casinos are sensitive to the power of the situation. Once you are inside, there are no indications of the time of day, no advertisements for anything not available inside the box of mutually beneficial primes, no reason to leave, whether to sleep, eat, or anything else—no external priming allowed.

Coca-Cola stumbled onto the power Santa Claus has to prime you during the holidays. Thoughts of childhood happiness and wholesome family values appear in your subconscious as you choose between Coke or a generic brand of soda. Grocery stores noticed an increase in sales when the smell of freshly baked bread primed people to buy more food. Adding the words "all natural" or including pictures of pastoral farms and crops primes you with thoughts of nature, dissuading thoughts of factories and chemical preservatives. Cable channels and large corporations prime potential audiences by adopting an image, a brand, so as to meet you halfway before you decide how to engage and judge them. Production companies spend millions of dollars to create trailers and movie posters to form first impressions so you are primed to enjoy their films in a certain way right up until the opening titles. Restaurants decorate their interiors to communicate everything from fine dining to psychedelic hippie communes in order to prime you to enjoy their cheese sticks. From every corner of the modern world advertisers are launching attacks on your unconscious in an attempt to prime your behavior to be more favorable for the bottom lines of their clients.

Businesses discovered priming before psychologists did, but once psychology

started digging into the mind, more and more examples of automaticity were uncovered, and even today it isn't clear how much of your behavior is under your conscious control.

The question of who is truly in the driver's seat was made far more complex in 1996 by a series of studies published by John Bargh in the *Journal of Personality and Social Psychology*.

He had New York University students unscramble thirty separate five-word sentences. He told them he was interested in their language abilities, but he was really studying priming. He assembled three groups. One unscrambled sentences with terms associated with aggression and rudeness such as "brazen," "disturb," and "bluntly." Another group unscrambled words from a bank of polite terms like "courteous" and "behaved." A third group served as a control with words like "gleefully," "prepares," and "exercising."

The experimenters told the students how to complete the task and once they were done to come find them to receive the second assignment, but this was the real experiment. When each student approached the researcher he or she found him already engaged in a conversation with an actor who was pretending to be having trouble understanding the word puzzles. The researcher completely ignored the student until he or she interrupted the conversation or ten minutes passed.

The results? The polite-word group waited on average 9.3 minutes to interrupt; the neutral group waited about 8.7 minutes; and the rude-word group waited around 5.4 minutes. To the researchers' surprise, more than 80 percent of the polite-word group waited the full 10 minutes. Only 35 percent of the rude-word group chose not to intrude. The subjects were interviewed after the experiment and couldn't pinpoint why they chose to wait or to interrupt. The question never entered their minds because as far as they knew, their behavior had not been influenced. The scrambled sentences, they believed, had not affected them.

In a second experiment, Bargh had participants unscramble sentences that contained words associated with old age, like "retired," "wrinkled," and "bingo." He then clocked participants' speed as they walked down a hall to an elevator and compared it to the speed they walked when they first strolled in. They took about one to two extra seconds to reach their destination. Just as with the rude-word groups, the old-word groups were primed by the ideas and associations the words created. To be sure this was really a result of priming, Bargh repeated the experiment and got the same results. He ran it a third time with a control group who unscrambled words related to sadness to be sure he hadn't simply depressed people into walking slower. Once again, the old-age group tottered along the longest.

Bargh also conducted a study in which Caucasian participants sat down at a computer to fill out boring questionnaires. Just before each section began, photos of either African-American or Caucasian men flashed on the screen for thirteen milliseconds, faster than the participants could consciously process. Once they completed the task, the computer flashed an error message on the screen telling the participants they had to start over from the beginning. Those exposed to the images of African-Americans became hostile and frustrated more easily and more quickly than subjects who saw Caucasian faces. Even though they didn't believe themselves to be racist or to harbor negative stereotypes, the ideas were still in their neural networks

and unconsciously primed them to behave differently than usual.

Studies of priming suggest when you engage in deep introspection over the causes of your own behavior you miss many, perhaps most, of the influences accumulating on your persona like barnacles along the sides of a ship. Priming doesn't work if you see it coming, but your attention can't be focused in all directions at once. Much of what you think, feel, do, and believe is, and will continue to be, nudged one way or the other by unconscious primes from words, colors, objects, personalities, and other miscellany infused with meaning either from your personal life or the culture you identify with. Sometimes these primes are unintended; sometimes there is an agent on the other end who plotted against your judgment. Of course, you can choose to become an agent yourself. You can prime potential employers with what you wear to a job interview. You can prime the emotions of your guests with how you set the mood when hosting a party. Once you know priming is a fact of life, you start to understand the power and resilience of rituals and rites of passage, norms and ideologies. Systems designed to prime persist because they work. Starting tomorrow, maybe with just a smile and a thank-you, you can affect the way others feel—hopefully for the best.

Just remember, you are most open to suggestion when your mental cruise control is on or when you find yourself in unfamiliar circumstances. If you bring a grocery list, you'll be less likely to arrive at the checkout with a cart full of stuff you had no intention of buying when you left the house. If you neglect your personal space and allow chaos and clutter to creep in, it will affect you, and perhaps encourage further neglect. Positive feedback loops should improve your life, not detract from it. You can't prime yourself directly, but you can create environments conducive to the mental states you wish to achieve. Just like the briefcase on the table, or the clean aroma in the room, you can fill your personal spaces with paraphernalia infused with meaning, or find meaning in the larger idea of owning little. No matter, when you least expect it, those meanings may nudge you.