



How to make better choices

Decisions, decisions! Our lives are full of them, from the small and mundane, such as what to wear or eat, to the life-changing, such as whether to get married and to whom, **what job to take** and how to bring up our children. We jealously guard our right to choose. It is central to our individuality: the very **definition of free will**. Yet sometimes we make bad decisions that leave us unhappy or full of regret. **Can science help?**

Making good decisions requires us to balance the seemingly antithetical forces of emotion and rationality. We must be able to **predict the future**, accurately perceive the present situation, have insight into the minds of others and deal with uncertainty.

Most of us are ignorant of the mental processes that lie behind our decisions, but this has become a **hot topic for investigation**, and luckily what psychologists and neurobiologists are finding may help us all make better choices. Here we bring together some of their many fascinating discoveries in the New Scientist guide to making up your mind.



1 Don't fear the consequences

Whether it's choosing between a long weekend in Paris or a trip to the ski slopes, a new car versus a bigger house, or even who to marry, almost every decision we make entails predicting the future. In each case we imagine how the outcomes of our choices will make us feel, and what the emotional or "hedonic" consequences of our actions will be. Sensibly, we usually plump for

the option that we think will make us the happiest overall.

This "affective forecasting" is fine in theory. The only problem is that we are not very good at it. People routinely overestimate the impact of decision outcomes and life events, both good and bad. We tend to think that winning the lottery will make us happier than it actually will, and that life would be completely unbearable if we were to lose the use of our legs. "The hedonic consequences of most events are less intense and briefer than most people imagine," says psychologist Daniel Gilbert from Harvard University. This is as true for trivial events such as going to a great restaurant, as it is for major ones such as losing a job or a kidney.

A major factor leading us to make bad predictions is "loss aversion" – the belief that a loss will hurt more than a corresponding gain will please. Psychologist Daniel Kahneman from Princeton University has found, for instance, that most people are unwilling to accept a 50:50 bet unless the amount they

could win is roughly twice the amount they might lose. So most people would only gamble £5 on the flip of a coin if they could win more than £10. Yet Gilbert and his colleagues have recently shown that while loss aversion affected people's choices, when they did lose they found it much less painful than they had anticipated (*Psychological Science*, vol 17, p 649). He puts this down to our unsung psychological resilience and our ability to rationalise almost any situation. "We're very good at finding new ways to see the world that make it a better place for us to live in," he says.

So what is a poor affective forecaster supposed to do? Rather than looking inwards and imagining how a given outcome might make you feel, try to find someone who has made the same decision or choice, and see how they felt. Remember also that whatever the future holds, it will probably hurt or please you less than you imagine. Finally, don't always play it safe. The worst might never happen – and if it does you have the psychological resilience to cope.

Go with your gut instincts

It is tempting to think that to make good decisions you need time to systematically weigh up all the pros and cons of various alternatives, but sometimes a snap judgement or instinctive choice is just as good, if not better.

In our everyday lives, we make fast and competent decisions about who to trust and interact with. Janine Willis and Alexander Todorov from Princeton University found that we make judgements about a person's trustworthiness, competence, aggressiveness, likeability and attractiveness within the first 100 milliseconds of seeing a new face. Given longer to look – up to 1 second – the researchers found observers hardly revised their views, they only became more confident in their snap decisions (*Psychological Science*, vol 17, p 592).

Of course, as you get to know someone better you refine your first impressions. It stands to reason that extra information can help you make well-informed, rational decisions. Yet paradoxically, sometimes the more information you have the better off you may be going with your instincts. Information overload can be a problem in all sorts of situations, from choosing a school for your child to picking a holiday destination. At times like these, you may be better off avoiding conscious deliberation and instead leave the decision to your unconscious brain, as research by Ap Dijksterhuis and colleagues from the University of Amsterdam in the Netherlands shows (*Science*, vol 311, p 1005).

They asked students to choose one of four hypothetical cars, based either on a simple list of four specifications such as mileage and legroom, or a longer list of 12 such features. Some subjects then got a few minutes to think about the alternatives before making their decision, while others had to spend that time

solving anagrams. What Dijksterhuis found was that faced with a simple choice, subjects picked better cars if they could think things through. When confronted by a complex decision, however, they became bamboozled and actually made the best choices when they did not consciously analyse the options.

Dijksterhuis and his team found a similar pattern in the real world. When making simple purchases, such as clothes or kitchen accessories, shoppers were happier with their decisions a few weeks later if they had rationally weighed up the alternatives. For more complex purchases such as furniture, however, those who relied on their gut instinct ended up happier. The researchers conclude that this kind of unconscious decision-making can be successfully applied way beyond the shopping mall into areas including politics and management.

But before you throw away your lists of pros and cons, a word of caution. If the choice you face is highly emotive, your instincts may not serve you well. At the American Association for the Advancement of Science meeting in San Francisco this February, Joseph Arvai from Michigan State University in East Lansing described a study in which he and Robyn Wilson from The Ohio State University in Columbus asked people to consider two common risks in US state parks – crime and damage to property by white-tailed deer. When asked to decide which was most urgently in need of management, most people chose crime, even when it was doing far less damage than the deer. Arvai puts this down to the negative emotions that crime incites. “The emotional responses that are conjured up by problems like terrorism and crime are so strong that most people don't factor in the empirical evidence when making decisions,” he says.

“Whatever the future holds it will hurt or please you less than you imagine”

You might think that emotions are the enemy of decision-making, but in fact they are integral to it. Our most basic emotions evolved to enable us to make rapid and unconscious choices in situations that threaten our survival. Fear leads to flight or fight, disgust leads to avoidance. Yet the role of emotions in decision-making goes way deeper than these knee-jerk responses. Whenever you make up your mind, your limbic system – the brain's emotional centre – is active.

Neurobiologist Antonio Damasio from the University of Southern California in Los Angeles has studied people with damage to only the emotional parts of their brains, and found that they were crippled by indecision, unable to make even the most basic choices, such as what to wear or eat. Damasio speculates that this may be because our brains store emotional memories of past choices, which we use to inform present decisions.

Emotions are clearly a crucial component in the neurobiology of choice, but whether they always allow us to make the right decisions is another matter. If you try to make choices under the influence of an emotion it can seriously affect the outcome.

Take anger. Daniel Fessler and colleagues from the University of California, Los Angeles, induced anger in a group of subjects by getting them to write an essay recalling an experience that made them see red. They then got them to play a game in which they were presented with a simple choice: either take a

3

Consider your emotions

guaranteed \$15 payout, or gamble for more with the prospect of gaining nothing. The researchers found that men, but not women, gambled more when they were angry (*Organizational Behavior and Human Decision Processes*, vol 95, p 107).

In another experiment, Fessler and colleague Kevin Haley discovered that angry people were less generous in the ultimatum game – in which one person is given a sum of money and told to share it with an anonymous partner, who must accept the offer otherwise neither gets anything. A third study by Nitika Garg, Jeffrey Inman and Vikas Mittal from the University of Chicago found that angry consumers were more likely to opt for the first thing they were offered rather than considering other alternatives. It seems that anger can make us impetuous, selfish and risk-prone.



4

Play the devil's advocate

Have you ever had an argument with someone about a vexatious issue such as immigration or the death penalty and been frustrated because they only drew on evidence that supported their opinions and conveniently ignored anything to the contrary? This is the ubiquitous confirmation bias. It can be infuriating in others, but we are all susceptible every time we weigh up evidence to guide our decision-making.

If you doubt it, try this famous illustration of the confirmation bias called the Wason card selection task. Four cards are laid out each with a letter on one side and a number on the other. You can see D, A, 2 and 5 and must turn over those cards that will allow you to decide if the following statement is true: "If there is a D on one side, there is a 5 on the other".

Typically, 75 per cent of people pick the D and 5, reasoning that if these have a 5 and a D respectively on their flip sides, this confirms the rule. But look again. Although you are required to prove that if there is a D on one

side, there is a 5 on the other, the statement says nothing about what letters might be on the reverse of a 5. So the 5 card is irrelevant. Instead of trying to confirm the theory, the way to test it is to try to disprove it. The correct answer is D (if the reverse isn't 5, the statement is false) and 2 (if there's a D on the other side, the statement is false).

The confirmation bias is a problem if we believe we are making a decision by rationally weighing up alternatives, when in

WASON CARD SELECTION TASK

Each of these cards has a letter on one side and a number on the other. Which two cards should you turn over to allow you to decide if the following statement is true: "If there is a D on one side, there is a 5 on the other"?

D	A	2	5
---	---	---	---



Disgust also has some interesting effects. "Disgust protects against contamination," says Fessler. "The initial response is information-gathering, followed by repulsion." That helps explain why in their gambling experiments, Fessler's team found that disgust leads to caution, particularly in women. Disgust also seems to make us more censorious in our moral judgements. Thalia Wheatley from the National Institutes of Health in Bethesda, Maryland, and Jonathan Haidt from the University of Virginia, used hypnosis to induce disgust in response to arbitrary words, then asked people to rate the moral status of various actions, including incest between cousins, eating one's dog and bribery. In the most extreme example, people who had read a word that cued disgust went so far as to express moral censure of blameless Dan, a student councillor who was merely organising discussion meetings (*Psychological Science*, vol 16, p 780).

All emotions affect our thinking and motivation, so it may be best to avoid making important decisions under their influence. Yet strangely there is one emotion that seems to help us make good choices. In their study, the Chicago researchers found that sad people took time to consider the various alternatives on offer, and ended up making the best choices. In fact many studies show that depressed people have the most realistic take on the world. Psychologists have even coined a name for it: depressive realism.

fact we already have a favoured option that we simply want to justify. Our tendency to overestimate the extent to which other people's judgement is affected by the confirmation bias, while denying it in ourselves, makes matters worse (*Trends in Cognitive Sciences*, vol 11, p 37).

If you want to make good choices, you need to do more than latch on to facts and figures that support the option you already suspect is the best. Admittedly, actively searching for evidence that could prove you wrong is a painful process, and requires self-discipline. That may be too much to ask of many people much of the time. "Perhaps it's enough to realise that we're unlikely to be truly objective," says psychologist Ray Nickerson at Tufts University in Medford, Massachusetts. "Just recognising that this bias exists, and that we're all subject to it, is probably a good thing." At the very least, we might hold our views a little less dogmatically and choose with a bit more humility.

"Searching for evidence that could prove you wrong is a painful process"

5

Keep your eye on the ball

Our decisions and judgements have a strange and disconcerting habit of becoming attached to arbitrary or irrelevant facts and figures. In a classic study that introduced this so-called "anchoring effect", Kahneman and the late Amos Tversky asked participants to spin a "wheel of fortune" with numbers ranging from 0 to 100, and afterwards to estimate what percentage of United Nations countries were African. Unknown to the subjects, the wheel was rigged to stop at either 10 or 65. Although this had nothing to do with the subsequent question, the effect on people's answers was dramatic. On average, participants presented with a 10 on the wheel gave an estimate of 25 per cent, while the figure for those who got 65 was 45 per cent. It seems they had taken their cue from the spin of a wheel.

Anchoring is likely to kick in whenever we are required to make a decision based on very limited information. With little to go on, we seem more prone to latch onto irrelevancies and let them sway our judgement. It can also take a more concrete form, however. We are all in danger of falling foul of the anchoring effect every time we walk into a shop and see a nice shirt or dress marked "reduced". That's because the original price serves as an anchor against which we compare the discounted price, making it look like a bargain even if in absolute terms it is expensive.

What should you do if you think you are succumbing to the anchoring effect? "It is very hard to shake," admits psychologist Tom Gilovich of Cornell University in Ithaca, New York. One strategy might be to create your own counterbalancing anchors, but even this has its problems. "You don't know how much you have been affected by an anchor, so it's hard to compensate for it," says Gilovich.



SCIENCEFACTORY/GETTY

6

Don't cry over spilt milk

we can be duped by it. They got students to imagine that they had bought a weekend skiing trip to Michigan for \$100, and then discovered an even cheaper deal to a better resort – \$50 for a weekend in Wisconsin. Only after shelling out for both trips were the students told that they were on the same weekend. What would they do? Surprisingly, most opted for the less appealing but more expensive trip because of the greater cost already invested in it.

The reason behind this is the more we invest in something, the more commitment we feel towards it. The investment needn't be financial. Who hasn't persevered with a tedious book or an ill-judged friendship long after it would have been wise to cut their losses? Nobody is immune to the sunk cost fallacy. In the 1970s, the British and French governments fell for it when they continued investing heavily in the Concorde project well past the point when it became clear that developing the aircraft was not economically justifiable. Even stock-market traders are susceptible, often waiting far too long to ditch shares that are plummeting in price.

To avoid letting sunk cost influence your decision-making, always remind yourself that the past is the past and what's spent is spent. We all hate to make a loss, but sometimes the wise option is to stop throwing good money after bad. "If at the time of considering whether to end a project you wouldn't initiate it, then it's probably not a good idea to continue," says Arkes.

"The more we invest in something the more committed we feel to it"

Does this sound familiar? You are at an expensive restaurant, the food is fantastic, but you've eaten so much you are starting to feel queasy. You know you should leave the rest of your dessert, but you feel compelled to polish it off despite a growing sense of nausea. Or what about this? At the back of your wardrobe lurks an ill-fitting and outdated item of clothing. It is taking up precious space but you cannot bring yourself to throw it away because you spent a fortune on it and you have hardly worn it.

The force behind both these bad decisions is called the sunk cost fallacy. In the 1980s, Hal Arkes and Catherine Blumer from The Ohio State University demonstrated just how easily

Consider this hypothetical situation. Your home town faces an outbreak of a disease that will kill 600 people if nothing is done. To combat it you can choose either programme A, which will save 200 people, or programme B, which has a one in three chance of saving 600 people but also a two in three chance of saving nobody. Which do you choose?

Now consider this situation. You are faced with the same disease and the same number of fatalities, but this time programme A will result in the certain death of 400 people, whereas programme B has a one in three chance of zero deaths and a two in three chance of 600 deaths.

You probably noticed that both situations are the same, and in terms of probability the outcome is identical whatever you pick. Yet most people instinctively go for A in the first scenario and B in the second. It is a classic case of the "framing effect", in which the choices we make are irrationally coloured by the way the alternatives are presented. In particular, we have a strong bias towards options that seem to involve gains, and an aversion to ones that seem to involve losses. That is why

programme A appears better in the first scenario and programme B in the second. It also explains why healthy snacks tend to be marketed as "90 per cent fat free" rather than "10 per cent fat" and why we are more likely to buy anything from an idea to insurance if it is sold on its benefits alone.

At other times, the decisive framing factor is whether we see a choice as part of a bigger picture or as separate from previous decisions. Race-goers, for example, tend to consider each race as an individual betting opportunity, until the end of the day, when they see the final race as a chance to make up for their losses throughout the day. That explains the finding that punters are most likely to bet on an outsider in the final race.

In a study published last year, Benedetto De Martino and Ray Dolan from University College London used functional MRI to probe the brain's response to framing effects (*Science*, vol 313, p 660). In each round, volunteers were given a stake, say £50, and then told to choose between a sure-fire option, such as "keep £30" or "lose £20", or a gamble that would give them the same pay-off on average. When the fixed option was presented as a gain (keep £30), they gambled 43 per cent of the time. When it was presented as a loss (lose £20), they gambled 62 per cent of time. All were susceptible to this bias, although some far more so than others.

The brain scans showed that when a person went with the framing effect, there was lots of activity in their amygdala, part of the brain's emotional centre. De Martino was interested to find that people who were least susceptible had just as much activity in their amygdala. They were better able to suppress this initial emotional response, however, by drawing into play another part of the brain called the orbital and medial prefrontal cortex, which has strong connections to both the amygdala and parts of the brain involved in rational thought. De Martino notes that people with damage to this brain region tend to be more impulsive. "Imagine it as the thing that tunes the emotional response," he says.

Does that mean we can learn to recognise framing effects and ignore them? "I don't know," says De Martino, "but knowing that we have a bias is important." He believes this way of thinking probably evolved because it allows us to include subtle contextual information in decision-making. Unfortunately that sometimes leads to bad decisions in today's world, where we deal with more abstract concepts and statistical information. There is some evidence that experience and a better education can help counteract this, but even those of us most prone to the framing effect can take a simple measure to avoid it: look at your options from more than one angle.

7

Look at it another way



8

Beware social pressure

You may think of yourself as a single-minded individual and not at all the kind of person to let others influence you, but the fact is that no one is immune to social pressure. Countless experiments have revealed that even the most normal, well-adjusted people can be swayed by figures of authority and their peers to make terrible decisions (*New Scientist*, 14 April, p 42).

In one classic study, Stanley Milgram of Yale University persuaded volunteers to administer electric shocks to someone behind a screen. It was a set-up, but the subjects didn't know that and on Milgram's insistence many continued upping the voltage until the recipient was apparently unconscious. In 1989, a similar deference to authority played a part in the death of 47 people, when a plane crashed into a motorway just short of East

Midlands airport in the UK. One of the engines had caught fire shortly after take-off and the captain shut down the wrong one. A member of the cabin crew realised the error but decided not to question his authority.

The power of peer pressure can also lead to bad choices both inside and outside the lab. In 1971, an experiment at Stanford University in California famously had to be stopped when a group of ordinary students who had been assigned to act as prison guards started mentally abusing another group acting as prisoners. Since then studies have shown that

"If you find everyone in your group agreeing, play the contrarian"

groups of like-minded individuals tend to talk themselves into extreme positions, and that groups of peers are more likely to choose risky options than people acting alone. These effects help explain all sorts of choices we might think are unwise, from the dangerous antics of gangs of teenage boys to the radicalism of some animal-rights activists and cult members.

How can you avoid the malign influence of social pressure? First, if you suspect you are making a choice because you think it is what your boss would want, think again. If you are a member of a group or committee, never assume that the group knows best, and if you find everyone agreeing, play the contrarian. Finally, beware situations in which you feel you have little individual responsibility – that is when you are most likely to make irresponsible choices.

Although there is no doubt that social pressure can adversely affect our judgement, there are occasions when it can be harnessed as a force for good. In a recent experiment researchers led by Robert Cialdini of Arizona State University in Tempe looked at ways to promote environmentally friendly choices. They placed cards in hotel rooms encouraging guests to reuse their towels either out of respect for the environment, for the sake of future generations, or because the majority of guests did so. Peer pressure turned out to be 30 per cent more effective than the other motivators.

9

Limit your options

You probably think that more choice is better than less – Starbucks certainly does – but consider these findings.

People offered too many alternative ways to invest for their retirement become less likely to invest at all; and people get more pleasure from choosing a chocolate from a selection of five than when they pick the same sweet from a selection of 30.

These are two of the discoveries made by psychologist Sheena Iyengar from Columbia University, New York, who studies the paradox of choice – the idea that while we think more choice is best, often less is more. The problem is that greater choice usually comes at a price. It makes greater demands on your information-processing skills, and the process can be confusing, time-consuming and at worst can lead to paralysis: you spend so much time weighing up the alternatives that you end up doing nothing. In addition, more choice also increases the chances of your making a

mistake, so you can end up feeling less satisfied with your choice because of a niggling fear that you have missed a better opportunity.

The paradox of choice applies to us all, but it hits some people harder than others. Worst affected are "maximisers" – people who seek the best they can get by examining all the possible options before they make up their mind. This strategy can work well when choice is limited, but flounders when things become too complex. "Satisficers" – people who tend to choose the first option that meets their preset threshold of requirements – suffer least. Psychologists believe this is the way most of us choose a romantic partner from among the millions of possible dates.

"If you're out to find 'good enough', a lot of the pressure is off and the task of choosing something in the sea of limitless choice becomes more manageable," says Barry Schwartz, a psychologist at Swarthmore College, Pennsylvania. When he



10

Have someone else choose

investigated maximising and satisficing strategies among college leavers entering the job market, he found that although maximisers ended up in jobs with an average starting salary 20 per cent higher than satisficers, they were actually less satisfied. "By every psychological outcome we could measure they felt worse – they were more depressed, frustrated and anxious," says Schwartz.

Even when "good enough" is not objectively the best choice, it may be the one that makes you happiest. So instead of exhaustively trawling through the websites and catalogues in search of your ideal digital camera or garden barbecue, try asking a friend if they are happy with theirs. If they are, it will probably do for you too, says Schwartz. Even in situations when a choice seems too important to simply satisfice, you should try to limit the number of options you consider. "I think maximising really does people in when the choice set gets too large," says Schwartz.

● We tend to believe that we will always be happier being in control than having someone else choose for us. Yet sometimes, no matter what the outcome of a decision, the actual process of making it can leave us feeling dissatisfied. Then it may be better to relinquish control.

Last year, Simona Botti from Cornell University and Ann McGill from the University of Chicago published a series of experiments that explore this idea (*Journal of Consumer Research*, vol 33, p 211). First they gave volunteers a list of four items, each of which was described by four attributes, and asked them to choose one. They were given either a pleasant choice between types of coffee or chocolate, or an unpleasant one between different bad smells. Once the choice was made they completed questionnaires to rate their levels of satisfaction with the outcome and to indicate how they felt about making the decision.

As you might expect, people given a choice of pleasant options tended to be very satisfied with the item they picked and happily took the credit for making a good decision. When the choice was between nasty options, though, dissatisfaction was rife: people did not like their choice, and what's more, they tended to blame themselves for ending up with something distasteful. It

didn't even matter that this was the least bad option, they still felt bad about it. They would have been happier not to choose at all.

In a similar experiment, subjects had to choose without any information to guide them. This time they were all less satisfied than people who had simply been assigned an option. The reason, say the researchers, is that the choosers couldn't give themselves credit even if they ended up with a good option, yet still felt burdened by the thought that they might not have chosen the best alternative. Even when choosers had a little information – though not enough to feel responsible for the outcome – they felt no happier choosing than being chosen for.

Botti believes these findings have broad implications for any decision that is either trivial or distasteful. Try letting someone else choose the wine at a restaurant or a machine pick the numbers on your lottery ticket, for example. You might also feel happier about leaving some decisions to the state or a professional. Botti's latest work suggests that people prefer having a doctor make choices about which treatment they should have, or whether to remove life support from a seriously premature baby. "There is a fixation with choice, a belief that it brings happiness," she says. "Sometimes it doesn't." ●

Reporting by Kate Douglas and Dan Jones

FURTHER READING:

Intuition: Its power and perils by David G. Myers

The Paradox of Choice by Barry Schwartz

Why Choose This Book? by Read Montague

Why Smart People Make Big Money Mistakes and

How to Correct Them by Gary Belsky and Tom Gilovich