

Transcript

Robyn Williams: Starting this week on *The Science Show* we shall be meeting those young scientists coming up, the students, and what they are doing, hopefully at the very beginning of what may be a brilliant career. Our first is Adrian Camilleri from psychology, University of New South Wales. Ever thought how you make decisions and how you could do so rather better?

Adrian Camilleri: Life is filled with choices, ranging from the trivial, such as where to lunch and whether to carry an umbrella, to the life changing; whom to marry and which football team to support. Many of these decisions are made in the context of uncertainty. In order to make a choice, the best approach is to try and resolve some of the uncertainty by seeking out some useful information.

In the lab we've been examining two ways of acquiring the useful information. Imagine that it's an overcast winter morning and you're about to leave home for the day when you spot your Harry Potter umbrella. You wonder, should I bring it? The answer of course depends primarily on whether you believe it will rain or not, and to make the choice you need information. One option is to pull out your new smart phone and look up the predicted chance of precipitation. You could quickly discover the potential outcomes, rain or no rain, and their likelihoods of occurring. In the lab we call this a decision from description because all the information is explicitly laid out for you.

An alternative option is to stick your head out the front door and take a quick look at the threatening clouds above, compare them with the previous days that had similar-looking skies and then try to remember how frequently it rained then. In the lab we call this a decision from experience.

What Associate Professor Ben Newell and I have shown at the University of New South Wales is that this meta-decision (to rely on personal experience) can often influence and sometimes even change your choice.

So let's just say that on this particular morning there was a small chance of it actually raining. We define a rare event as one that occurs with less than 20% probability. According to our results, you are much more likely to bring along the umbrella if you check the online forecast than if you rely on your own judgement.

The implications of this finding go well beyond whether or not you will impress your colleagues with the Harry Potter umbrella because there are many situations in which you can rely on a summary description or your own personal experience.

Example, doctors recommending a particular treatment will have access to both the statistics and their own feedback from administering the treatment. CEOs judging which new product to launch will have access to financial projections, but also their own gut instincts honed over years of experience. Even the punter will be able to contrast the bookie's odds with their own flawless betting strategy.

Of course we have also spent a lot of time trying to explain why this gap exists. In particular, we have noted a number of psychological factors that contribute to the overlooking of rare events in experience-based choice. The first is that people tend to rely on a relatively small sample of information. For example, imagine a new colleague asks your recommendation for a good lunch spot. You might recommend an Italian cafe down the street after recalling a couple of delicious lasagnes. You shouldn't really be so confident because we can show mathematically that you are likely to under-experience rare events when relying on small samples. If the cafe occasionally serves absolutely awful lasagne, you are very likely to escape the taste trauma with just a few visits. In contrast, if your colleague consults an online evaluation website that integrates reviews from many past diners, they would undoubtedly read about the possibly toxic lasagne and perhaps opt for the burger joint instead.

Psychologically there are at least two reasons why people tend to rely on small samples. First, we don't have the time or money to conduct extensive searches. Second, there are constraints on cognitive processing and memory that limit how much information can be considered at any one time.

Even if you were able to collect a large representative sample that you could perfectly recall, there are still biases that can lead you astray. For example, when confronted with a decision that must be made repeatedly, like the daily choice between salad and a Hungry Jacks' ultimate double whopper, people tend to adopt a short horizon strategy, ignore rare events and select the alternative that is better now. This may help to explain expanding waistlines.

In contrast, when people adopt a long horizon strategy, they tend to pay more appropriate attention to potential rare outcomes which can lead them to select the alternative that is better on average. So you might now be wondering, how can I make an unbiased decision?

Here are a couple of strategies that you could employ. First, collect a sufficiently large sample of information from which to base your choice. As a starting point you could try to collect a dozen samples. Second, instead of relying on your memory, you could lay out all observed outcomes in one visual scene. For example, all favourable outcomes could be coloured green, and all unfavourable outcomes could be coloured red. This visual scene will give you a quick but accurate representation of the possible outcomes and their likelihoods.

Finally, when considering a choice that will be made frequently, like choosing between walking or driving to work each morning, rather than adopting a short horizon strategy and repeatedly making the choice each day, adopt a long horizon strategy and make a single choice at the beginning of the year, outlining the relative frequency with which you will make each choice. It's like a New Year's resolution, except one that you actually stick to.

Robyn Williams: Strategic decision-making. That was Adrian Camilleri from the University of New South Wales. He is now off to Duke University in the US. Another strategic decision. I bet he cased the joint carefully, with lots of input. Another PhD student next week.