

# Too much choice leads to riskier decisions, new study finds

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The more choices people have, the riskier the decisions they make, according to a new study which sheds light on how we behave when faced with large amounts of information.

Researchers at the University of Warwick and the University of Lugano set up a [gambling game](#) in which they analysed how decision-making is affected when people are faced with a large number of potential [gambles](#). They found that a [bias](#) in the way people gather information leads them to take more risks when they choose a gamble from a large set of options, a phenomenon which researchers have labelled 'search-amplified risk'.

This means that, when faced with a large number of choices - each having outcomes associated with different probabilities of occurring - people are more likely to overestimate the probabilities of some of the rarest events.

The study, published in the journal *Psychonomic Bulletin and Review*, found that with large choice sets, people took riskier gambles based on a flawed perception that there was a higher [probability](#) of 'winning big' – but in reality they more often went away empty-handed.

Dr Thomas Hills of the Department of Psychology at the University of Warwick said: "It's not that people just give up and make random decisions when faced with a large number of options.

"They are making [rational decisions](#), but these decisions are based on faulty information gathering.

"The problem is with the information search strategies people use when faced with a large number of options.

"People search more when they have many choices, increasing the likelihood that they will encounter rare, risky events.

"The problem is that they don't sample any given choice enough to understand its underlying probabilities. This leaves the rare events sticking out like sore thumbs.

"As a consequence, people choose these riskier gambles more often."

For the study, 64 participants took part in a game where they had to choose one box out of a varying number of boxes presented on a [computer screen](#). Each box contained a different sum of money – for example £1 or £5 – and each box had a certain probability of paying out – for example, 1 out of 10, 1 out of 3, or every time. Participants were able to 'sample' each box by opening it as many times as they liked to determine the payout amount and to try to deduce the probability of a payout. Once they were satisfied with the information they had gathered, they committed to their final choice by choosing a single box.

The game consisted of five turns, with either an increasing or decreasing number of boxes per turn. The first group could initially choose from two boxes, this was then increased to four, then eight, then 16 then 32. Another group started with 32, then this decreased to 16, eight, four then two.

The researchers found that both the number of boxes per turn and whether the number of boxes was increasing or decreasing affected the

quality of decision-making among the participants.

With a higher number of boxes, people made a higher total number of samples. For example one group on average made 12 samples when there were two boxes on screen and 50 samples when there were 32 boxes on screen. However, as these figures show, the increase in sampling was not in proportion with the increase in box numbers.

For example in one group, people made six samples per box when there were two boxes on screen, but only two samples per box when there were 32 boxes. These results show that with large choice sets, people gathered a broad range of information on the value of the potential sum they could win, so were aware that there were boxes with higher payout values.

However they were not delving deeply into that information, which in this context meant they were not fully investigating the probability of the payout of the higher-value boxes.

They came across a 'rare event' – say a £5 payout which was rarer than a £1 payout – and gambled on it, even though they had not fully researched the probability of that payout occurring.

This kind of gamble was more likely to result in a zero payout.

The researchers also found differences in decision-making between the 'many-to-few group' – those who started with a large number of choices which were then decreased – and the 'few-to-many group' where the order was reversed.

The study showed that people who started with smaller choice sets were more likely than the other group to gather more information across all choice set sizes. In other words, there appeared to be a carry-over effect

where people gathered a lot of information with a small choice set, and this comparatively higher rate of information gathering was repeated for larger choice sets.

Conversely, people who started with a large choice set gathered less information than the other group when it came to the smaller choice sets. However when there were many options, neither group was able to consistently choose options with the highest expected values.

**More information:** The paper, Information overload or search-amplified risk? Set size and order effects on decisions from experience, is authored by Thomas T. Hills & Takao Noguchi & Michael Gibbert and is published in *Psychonomic Bulletin Review*. [DOI 10.3758/s13423-013-0422-3](https://doi.org/10.3758/s13423-013-0422-3)

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