The price of a happy ending can be bad decision-making, say researchers

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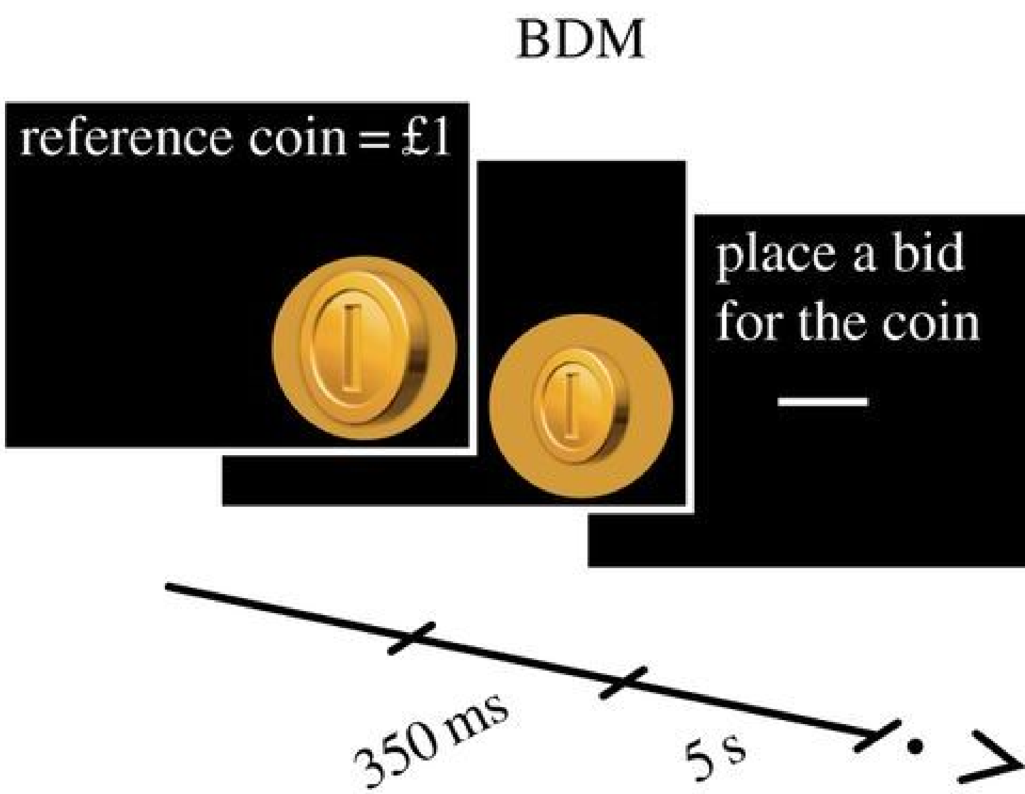

Evaluations of the virtual coins were obtained by a BDM auction. Credit: *Proceedings of the Royal Society B*, Published 10 June 2015. DOI: 10.1098/rspb.2014.1766

New research using high-speed gambling experiments shows that, for most of us, the last experience we've had can be the defining one when it comes to taking a decision, coming at the expense of other experiences we've accumulated further back in time.

The study, published today in the journal *Proceedings of the Royal Society B*, supports the idea that the 'banker's fallacy' - focusing on immediate growth at the expense of longer-term stability that would produce better results - is intuitive in the way many of us make quick decisions.

People's natural inclination towards a 'happy ending' means that we often ascribe greater value to experiences than they are worth, say researchers, meaning that we end up overvaluing experiences with a final uptick over those that taper at the last minute, despite being of equal or even lesser overall value, and making our next moves on that basis.

Writing in the journal, they use the analogy of a three-course dinner: it has mediocre starter, a fine main, and an excellent dessert. This will be viewed much more favourably - and have much more weight in any future decision - than the inverse: an excellent starter and ending with a mediocre dessert, despite the fact that overall both experiences share equal value.

Researchers say that the computational demand to try and factor in all experiences equally would be vast, so our brain constantly updates its internal 'logbook' as we go, with each new experience being condensed and then ranked against the previous few for context. Then, a new experience only has to be judged against the running total.

However, a 'temporal markdown' comes into play, meaning that the further back an experience, even if still quite recent, the less weight it carries in the next decision despite its relevant value; the most immediate experiences carry much more weight in decision-making than they should - meaning a recent 'happy ending' has a hugely disproportionate influence, say researchers.

They say that a wealth of information and experience "leaks" as a result of this cognitive mechanism, leading to false and delusional beliefs that cause wrong-headed and often short-term decision-making despite historical experience that should convince us of the contrary.

Yet a small number of those tested (nine of the 41 participants) were able to maintain an almost perfect capacity to recall previous experience accurately, without the markdown of past experiences, and make solid long-term decisions as a result - almost as if they were "looking down on time" said lead author Dr Martin Vestergaard.

"Most people we tested fall foul of the 'banker's fallacy', and make poor short-term decisions as a result. This may be because they struggle to access historical experience, or give it the correct value, but we also think they become overly impressed with the moment to moment fluctuation of experiences," said Vestergaard, from Cambridge University's Department of Physiology, Development and Neuroscience.

"While the majority of participants made decisions based only on very or most recent events, a minority were able to maintain a seemingly perfect ability - at least within the parameters of the experiment - to see time on an equal footing, unconstrained by the myopia inherent in the decision-making of most," he said.

"The next stages of our research will be to use imaging techniques to look at whether this ability is linked to certain parts of the brain, or perhaps social conditioning such as age and education."

Vestergaard did question age and occupation for the initial study, and found no correlation between those who are older, or who have a more or less technical occupation, with this panoptical ability to flatten time, but says the current sample size is too small to draw conclusions.

The experiment involved participants trying to accumulate money by gambling between two sets of gold coins of varying sizes at high reactions times so participants were forced to go on memory and instinct.

More information: Choice mechanisms for past, temporally extended outcomes, *Proceedings of the Royal Society B*, Published 10 June 2015.
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