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**Press Information**

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Dissecting the decision making process

**New research improves our understanding of the decision making process and could help individuals make decisions that are more in line with their long-term goals. The findings also pave the way for further research in the area.**

Consider an individual who is trying to make choices that are more healthful, e.g. by eating healthy foods and avoiding junk food. However, junk food is designed to be quite tasty and tempting. Healthiness and tastiness attributes of foods often come into conflict when one is trying to forego junk food. A new paper by Silvia Maier, Anjali Raja Beharelle and researchers at the University of Zurich and the ETH, published in Nature Human Behaviour, has made significant progress in our understanding of the decision making process in these situations.

**Consideration order and weighting of attributes are independent cognitive processes**
While we are making a decision, various attributes come to our mind and are considered. In the abovementioned case, the attributes could be the crunchiness and taste of the French fries, the crunchiness and taste of carrots and the health benefits or downsides of the two choices. These attributes are weighted and a decision is made. 'Traditionally, theories and models of decision making have combined attribute timing – the speed at which an attribute enters our mind - and weighting of these attributes into a single metric or process,' explains Silvia Maier, 'However, our research shows that this assumption is incorrect. How fast or slowly information about distinct attributes enters into consideration has a specific and dissociable influence on decision outcomes, which is independent from the weighting it receives during the consideration process.' Discovering this new fact about the decision-making process has important implications for further research as well as concrete implications for behavioural interventions.

**New methodology applicable to other decision contexts**
This new work used a combination of computational modelling together with cognitive and neural interventions across four independent experiments to demonstrate that these two processes are, in fact, distinct and at least partially independent. The fact that these two processes are separate makes accurately analysing decisions more complicated than traditionally assumed. Fortunately, the analysis methodologies the authors validate and utilize in this paper are widely applicable to many other decision contexts as well.

Returning to our junk food example Anjali Raja Beharelle notes 'our research shows that healthier choices can be facilitated by either speeding up the time at which health aspects are

considered or by increasing the amount of weight health relative to taste aspects are given once both factors have come into play. Now that we know that separate processes govern attribute timing and weighting,' she adds, 'researchers can work on developing strategies and interventions that target one specific process, the other, or both in order to help people make more goal-appropriate choices.'

Paper
Maier, S.U., Raja Beharelle, A., Polanía, R. *et al.* Dissociable mechanisms govern when and how strongly reward attributes affect decisions. *Nat Hum Behav* (2020). https://doi.org/10.1038/s41562-020-0893-y

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