

 NEUROECONOMICS

Take your pick

To deal with the countless decisions that it makes, the brain must assign values to each available option. However, the perceived value of an option can be influenced by multiple factors. Two recent papers shed light on the brain regions involved in the neural representation of value.

Choosing between several equally appealing options is difficult; however, once a decision is made, our expectations of our chosen option's value often become inflated with respect to that of the rejected alternatives. Sharot *et al.* carried out functional MRI (fMRI) of participants as they estimated how much they would enjoy vacationing in various destinations before and after choosing one of two equally rated vacations. This demonstrated that the relative sizes of the blood oxygen level-dependent (BOLD) signals in the caudate nucleus in response to the initial presentation of the destinations predicted subsequent choices. As expected, after making their selection, participants rated their chosen destination higher than the

rejected destination. Furthermore, the differences in the caudate nucleus BOLD signal response to selected versus rejected options increased after the selection, suggesting that the act of choosing can itself alter the neurobiological representation of an option's value.

The 'endowment effect' is our tendency to value objects that we own and are selling more highly than identical objects belonging to others that we are thinking of buying. It is thought to arise because an object's value with respect to a reference point (in this case, owning the item) is altered by the individual's position as buyer or seller in the transaction. De Martino *et al.* asked participants how much they would accept in payment for or spend on lottery tickets with different expected payoffs. fMRI showed that activity in the ventral striatum correlated highly with the behavioural tendency to overvalue items when selling and undervalue



items when buying, suggesting that this region contributes to the reference-dependent valuation of items.

These two studies provide insights into some of the neural mechanisms involved in encoding value in the brain and how these representations may be altered by previous decisions or social context.

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ORIGINAL RESEARCH PAPERS Sharot, T. *et al.* How choice reveals and shapes expected hedonic outcome. *J. Neurosci.* **29**, 3760–3765 (2009) | De Martino, B. *et al.* The neurobiology of reference-dependent value computation. *J. Neurosci.* **29**, 3833–3842 (2009)