

# How much will we pay for something? Depends on the value of what we've just encountered

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The value of the products we encounter influences how much we'll subsequently pay for other items, new neuroscience research has found.

The results point to a previously undetected factor that affects consumer behavior.

The study, which appears in the journal *Proceedings of the National Academy of Sciences (PNAS)*, shows that when we come across low-valued items, we're willing to pay more for products we later face; by contrast, when we see high-valued items, we'll pay less for products we view in the future.

"How people value an item is not a simple function of that item alone," explains Kenway Louie, a research assistant professor at New York University's Center for Neural Science and one of the authors of the paper. "The valuation process is inherently relative, with people valuing the same exact item more or less depending on the environment they recently inhabited. Our study shows that rewards cannot be evaluated in isolation, but instead must be viewed through the lens of the recent past."

It's been long established that our brains process information by relying on comparisons rather than on absolute judgments. This dynamic is fundamental in [sensory processing](#), where our perception of [sensory stimuli](#) in the world depends on the context in which those stimuli appear. For example, a gray square will appear darker to someone coming in from bright sunlight than to someone who's been in a dark room.

Less clear is how sensory processing can influence decision-making—or, specifically, evaluations we make.

In the *PNAS* work, the researchers, who also included NYU's Paul Glimcher, a professor of neuroscience, and Mel Khaw, an NYU doctoral student at the time of the study and now a post-doctoral researcher at Columbia University, studied how different environments could affect how people valued food items.

To do so, a set of experimental [subjects](#) viewed 30 different food items on a computer screen and reported how much they would pay for those items. The researchers then calculated these responses to establish a ranking of all the items—from lowest to highest price, based on the subjects' answers.

Following this, the study's subjects underwent a series of trials in which they viewed only the 10 lowest-valued items—a "low-value" condition labeled "the adapt block."

The researchers then repeated the first part of the experiment, once again asking the subjects how much they would pay for each of the 30 items. Here, the study sought to determine if viewing the lowest-valued items would cause the subjects to say they'd pay more for these 30 items than they originally indicated. As predicted, after viewing the lower-priced items, the subjects did indeed say they'd pay more for these 30 items than first stated.

Next, the researchers repeated the adapt block—but, this time, subjects were shown the 10 highest-value items (a high-value, or rich, environment). Conversely, and as hypothesized, after seeing the higher-priced items, the subjects said they'd pay less for all 30 items than previously indicated.

"Collectively, these findings provide the first evidence that adaptation extends to the economic value we place on products," explains Louie. "Moreover, they suggest that adaptation is a universal feature of cognitive information processing."

**More information:** Mel W. Khaw et al., "Normalized value coding explains dynamic adaptation in the human valuation process," *PNAS* (2017). [www.pnas.org/cgi/doi/10.1073/pnas.1715293114](http://www.pnas.org/cgi/doi/10.1073/pnas.1715293114)

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