

People are fast and accurate when making high-value decisions

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When people choose between two high-value items, their decisions tend to be fast and accurate, a new study showed—exactly the opposite of what many scientists expected.

Researchers have long thought that people are less sensitive to changes in value as the overall value of an item increases.

For example, it seems like it should be more difficult to tell the difference between a \$50,000 car and a \$55,000 car than between a \$5,000 car and \$10,000 car. Even though the difference in value is the same, the fraction of the total value is much smaller in the higher priced car, supposedly making it harder to notice.

"In our studies, we found just the opposite," said Ian Krajbich, co-author of the study and professor of psychology and economics at The Ohio State University.

"Our results showed that in high-value decisions, people were more accurate—they were making better decisions than when they chose between low-value items. And while they could make those decisions quickly, they also slowed down and considered the options more carefully when we told them they were going to make a high-value decision."

The study was released today (Jan. 31, 2022) in the journal *Proceedings of the National Academy of Sciences*. The study was led by Blair Shevlin, a doctoral student in psychology at Ohio State.

The idea that people are less sensitive to changes as the magnitude increases has a long history in the sciences. In various disciplines, it is called either the Weber-Fechner Law, diminishing marginal utility or divisive normalization.

And it makes intuitive sense. It is harder for a person to tell the difference between two heavy weights—say 100 lbs. vs. 105 lbs. – than between light weights of 5 and 10 lbs. Similarly, it would be difficult to tell which of two rock concerts was louder, but easy to tell the difference

in loudness between a whisper and a shout.

But this new study suggests that people may respond differently to value than they do in other domains, Krajbich said.

In three separate computer-based studies, Krajbich and his colleagues found that people could tell the difference in value between different types of high-value objects faster and more accurately than low-value objects in the same domain.

In one study, the researchers had participants rate their desire to eat 144 [snack foods](#) on a scale of 0 to 10. In the next part of the experiment, they were shown two [food items](#) and asked to select the food they would most like to eat at the end of the experiment.

Sometimes participants were shown two foods they rated very high (8 and 9, for example) and sometimes two foods they rated low (2 and 3, for example).

Results showed that participants were more likely to accurately choose their higher-rated food (from earlier in the experiment) and also chose more quickly when the decision involved two highly rated foods, rather than two low-rated snacks.

Similar results were found in another group of participants when they rated abstract art on a scale of 0-10. Just as in the first experiment, they later were faster and more accurate in choosing among art they rated higher when asked which piece of art they would most like to take home.

The third experiment didn't rely on participants' subjective value statements. In this experiment, they were shown multi-color blocks, like one side of a Rubik's Cube, whose colors ranged across a spectrum from blue to pink. The blocks were given points associated with cash values

ranging from about 20 cents to \$2.50.

The values were low on one end of the color spectrum and rose to the highest levels on the other end of the spectrum.

As in the other experiments, the participants were later given multiple chances to choose between two blocks. Sometimes they were both high-value blocks – \$2 and \$2.25, for example—and sometimes they were both of low value, such as 25 cents and 50 cents.

Again, participants were faster and more accurate choosing between the high-value blocks than they were when the choice was between two low-value blocks.

There was one other twist to the experiments. In half of the decisions in each experiment, the researchers alerted participants ahead of time what kind of decision they were going to make: a decision between high-value items or between low-value items.

"The idea was that if people knew they were going to choose between two high-value options, they might be happy with either one, so they wouldn't need to spend as much time or effort on the decision. With the low-value decisions, it might matter more that they choose the right one," Krajbich said.

"But again, we found the opposite. When we alerted them, people slowed down for the high-value decisions, as if they thought those were more important to get right."

Remember that in these decisions, the difference in value between the two high-value options was the same as the difference in value between the two low-value options. So why do people treat high-value decisions differently, especially when they act so differently in other sensory

domains?

"It may be that there is a factor we didn't know about before, which is unique to value, that leads people to act differently," Krajbich said.

"When people see valuable items, their brains may enter a heightened state of arousal and they become more engaged in their decisions. And with advanced warning, people seem to consciously slow down to make even better decisions between high-value, highly attractive options."

Other co-authors were Stephanie Smith, a Ph.D. graduate of Ohio State now at UCLA, and Jan Hausfeld of the University of Amsterdam.

More information: High-value decisions are fast and accurate, inconsistent with diminishing value sensitivity, *Proceedings of the National Academy of Sciences* (2022). [DOI: 10.1073/pnas.2101508119](https://doi.org/10.1073/pnas.2101508119).

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