

# Price tag can change the way people experience wine, study shows

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In a demonstration of the power of marketing, researchers in California showed you can increase a person's enjoyment of wine by just sticking a higher price on it, according to a study released Monday.

A rose by any other name might smell as sweet, but slap on a hefty price tag, and our opinion of it might go through the roof. At least that's the case with the taste of wine, say scientists from the California Institute of Technology and Stanford University.

Antonio Rangel, an associate professor of economics at Caltech, and his colleagues found that changes in the stated price of a sampled wine influenced not only how good volunteers thought it tasted, but the activity of a brain region that is involved in our experience of pleasure. In other words, "prices, by themselves, affect activity in an area of the brain that is thought to encode the experienced pleasantness of an experience," Rangel says.

Rangel and his colleagues had 20 volunteers taste five wine samples which, they were told, were identified by their different retail prices: \$5, \$10, \$35, \$45, and \$90 per bottle. While the subjects tasted and evaluated the wines, their brains were scanned using functional magnetic resonance imaging, or fMRI.

The subjects consistently reported that they liked the taste of the \$90 bottle better than the \$5 one, and the \$45 bottle better than the \$35 one. Scans of their brains supported their subjective reports; a region of the

brain called the medial orbitofrontal cortex, or mOFC, showed higher activity when the subjects drank the wines they said were more pleasurable.

There was a catch to the experiment, however. Although the subjects had been told that they would taste five different, variously priced wines, they actually had sampled only three. Wines 1 and 2 were used twice, but labeled with two different prices. For example, wine 2 was presented as the \$90 wine (its actual retail price) and also as the \$10 wine. When the subjects were told the wine cost \$90 a bottle, they loved it; at \$10 a bottle, not so much. In a follow-up experiment, the subjects again tasted all five wine samples, but without any price information; this time, they rated the cheapest wine as their most preferred.

Previous marketing studies have shown that it is possible to change people's reports of how good an experience is by changing their beliefs about the experience. For example, says Rangel, moviegoers will report liking a movie more when they hear beforehand how good it is. "Our study goes beyond that to show that the neural encoding of the quality of an experience is actually modulated by a variable such as price, which most people believe is correlated with experienced pleasantness," he says.

The experiment doesn't reveal whether the subjects truly experienced more pleasure from the wines that they thought were more expensive. "The area of their brain that is thought to encode for the pleasantness of the experience was more active when they drank wine they believed had higher prices. Strictly speaking, that is the only hard finding of the paper," he says. However, he adds, "it is hard to believe that this is not affecting their actual experience somehow, but we don't have hard evidence for that."

The results, while puzzling, actually make intuitive sense, Rangel says:

"The brain encodes pleasure because it is useful for learning which activities to repeat and which ones to avoid, and good decision making requires good measures of the quality of an experience." But the brain is also a noisy environment, and "thus, as a way of improving its measurements, it makes sense to add up other sources of information about the experience. In particular, if you are very sure cognitively that an experience is good (perhaps because of previous experiences), it makes sense to incorporate that into your current measurements of pleasure." Most people believe, quite correctly, that price and the quality of a wine are correlated, so it is therefore natural for the brain to factor price into an evaluation of a wine's taste.

Could the findings be used by marketers to mess even more with consumers' heads? "Not directly," Rangel says. "But it certainly points out a channel through which prices affect the consumer experience and thus sales."

The paper, "Marketing actions can modulate neural representations of experienced pleasantness," was published January 14 in the early online edition of the *Proceedings of the National Academy of Sciences*.

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