

# Expertise provides buffer against bias in making judgments

June 6 2011

---

Gratuities, gifts, sponsorship, product price, free samples, favors all can influence judgment and decision-making. If a person is influenced in their choice of cereal, the result is a bit of income for a manufacturer. But a lot of people can be impacted if a politician is influenced by support from a special interest; or the health of a handful of patients can be affected if a physician is influenced by gifts from drug reps.

Scientists with the Virginia Tech Carilion Research Institute have demonstrated through behavioral research and brain scans using functional MRI ([fMRI](#)) that monetary favors can influence people's assessments of [art](#) works, but not if the viewer is an art expert.

The new research shows that a region of the brain associated with [cognitive control](#) and [emotion regulation](#), the [dorsolateral prefrontal cortex](#) (DLPFC), removes the influence of a monetary favor in experts by controlling responses in the reward circuitry of their brains.

"Most institutions guard against bias by constructing rules that limit the kinds of favors allowed. But a scientific understanding of the connection between favors and covert biases in judgment is largely missing, leaving open the possibility for many pathways to inadvertent bias," said P. Read Montague, founding director of the Human Neuroimaging Laboratory and the computational psychiatry unit at the Virginia Tech Carilion Research Institute. "Influences can include price, brand knowledge, and monetary favors, to name a few."

The new research about behavior and corresponding [brain function](#) in experts appears in the online early edition of the [Proceedings of the National Academy of Sciences](#) (*PNAS*) the week of June 6 in the article, "Domain expertise insulates against judgment bias by monetary favors through a modulation of ventromedial prefrontal cortex," by Ulrich Kirk, research assistant professor, and Ann Harvey, research scientist, both with the Human Neuroimaging Lab at the Virginia Tech Carilion Research Institute; and Montague, who is also professor of physics at Virginia Tech.

The article builds upon previous research by Harvey, Kirk and Montague, which demonstrated that sponsorship will bias viewers' art judgment.

The researchers enlisted 20 non-experts and 20 experts for their study. The experts were selected based on formal education in a visual art-related area and a minimum of five-year's experience working in a visual-art area. The subjects were shown two logos from fictitious businesses and each individual was told which one of the companies was paying them \$300 for their participation. Then they were shown works of art with the logo of one of the companies next to the image. Contemporary art made by art students from the Slade School of Art, University College London, was used to ensure that all paintings were unfamiliar to the participants.

"There are many ways to bias preferences in artwork", Harvey said. "The social gestures can be any number of things – telling someone how much a painting costs, that it is famous, that it is owned by someone famous" all can bias preference about artwork.

For the study, the researchers chose money as the biasing tool because "monetary favors are powerful social gestures. And from a biological standpoint, favors are important to track since humans are social

creatures and have repeated interactions with people in their environment. A good deed today may need to be repaid tomorrow, so there are almost certainly responses in the brain dedicated to tracking these types of social gestures," Harvey said.

In the behavioral study, most non-experts preferred the paintings displayed next to the sponsoring logo of the company that they had been told was paying them, while there was no effect of sponsorship within the expert group.

The researchers asked, "If this is happening in the behavior study, then what is happening in the brain?" Kirk was interested in learning what part of the brain mitigates sponsorship preference in art experts. Using functional MRI to observe blood-oxygen level signals in particular regions of interest as people in the scanner viewed art, he found that art experts and non-experts activated different regions of their brains when making decisions.

Previous neuroimaging findings have established that monetary favors result in responses from the area of the brain associated with forming preferences and making value judgments – the ventromedial prefrontal cortex (VMPFC). Those regions of the brain are more active in non-experts when art is shown with the logo of the business that is purported to be paying them.

However, the VMPFC was not significantly lit up in the art experts' brains. Instead, the DLPFC region was more active in the experts' brains, "which suggests that the experts are engaging this area of the brain to regulate bias susceptibility," said Kirk.

Interestingly, DLPFC activity was also elevated in the few non-expert subjects who had not displayed a significant sponsorship bias in their art preferences. "These people were not as susceptible to social gestures or

favors as other subjects," said Harvey.

The researchers could also see this behavior in the neuroimaging portion of the research when they looked at the connectivity of the two regions of the brain. "The subset of the non-experts who did not have a sponsorship bias have a greater coupling between the DLPFC and VMPFC regions of the brain," said Kirk.

"The standard maneuver for insulating someone from biased judgments is to publicly expose their financial obligations and connections," the authors note in the PNAS article. "The degree to which such public exposure actually increases effective self-censuring remains an important and open question. The study shows that expertise within a domain demonstrates a behavioral and neural route that insulates against biasing influences of favors," the article concludes.

Mike Friedlander, executive director of the Virginia Tech Carilion Research Institute, said, "The team of (research institute) investigators has made a discovery that shifts the entire paradigm for understanding how the brain constructs our reality. The demonstration that a mechanism has evolved to allow learned expertise to override deep biological processes whereby the [brain](#) constructs associations changes our view of human cognition. This innovative work should have potentially far reaching implications for how to build effective and principled policies for business, policymakers, and for the delivery of medical care."

**More information:** *PNAS* early edition:  
[www.pnas.org/content/early/recent](http://www.pnas.org/content/early/recent)

Provided by Virginia Tech

Citation: Expertise provides buffer against bias in making judgments (2011, June 6) retrieved 24 April 2024 from <https://medicalxpress.com/news/2011-06-expertise-buffer-bias-judgments.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.