

The influence of the irrelevant: Researchers show stimuli unrelated to a decision can still influence the choice we make

April 3 2008

Attractive women plus cool cars equal brisk sales for auto dealers as men snap up those cars, prompted - or so advertising theory goes - by the association. But is the human male really so easily swayed? Can the irrelevant image of an alluring female posing by the merchandise actually encourage a heterosexual man to purchase it? Possibly, according to a new study by Stanford researchers.

The study showed that when heterosexual men are exposed to positive emotional stimuli - in this case, erotic photos of a man and woman - an area of the brain associated with anticipation of reward is stimulated. In the immediate aftermath of that stimulation, men are consistently more likely to take bigger financial risks than they otherwise would, said Brian Knutson, assistant professor of psychology.

"This is the first study to demonstrate that emotional stimuli can influence financial risk-taking," said Knutson, lead author of a paper describing the research in the current issue of *NeuroReport*. The hard evidence was gathered by functional magnetic resonance imaging (fMRI) of participants' brains as they viewed photographs of positive, negative or neutral subjects and then had to quickly make a decision to choose one of two levels of financial risk in a required gamble.

Knutson and collaborator Camelia Kuhnen (who received her PhD from the Stanford Graduate School of Business in 2006 and is now assistant

professor of finance at Northwestern University) had already shown in a 2005 study using fMRI that brain activity could be used to predict whether people were about to take a financial risk. When they were, an area of the brain called the nucleus accumbens showed increased activation. When they were about to choose to avoid the risk, a different area called the insula showed increased activation.

"We knew that we should be looking at [the nucleus accumbens] from the previous study. But what we didn't know is whether we could somehow control the activation in that area by presenting some completely irrelevant stimulus," Knutson said. "And whether that would change activation in that area and actually change behavior."

Knutson and his colleagues studied heterosexual male undergraduate college students. The images the men viewed were intended to stimulate an emotional response. Erotic images were used to elicit a positive response, snakes and spiders to prompt a negative response, and office supplies to trigger a neutral response.

In case any of the subjects found office supplies more repellent than snakes and spiders, the researchers had the men rate each image after the scans. They then derived personalized ratings from each of the participants, which were used to make sure that whatever brain activation they observed was properly correlated with the actual emotional response of the viewer.

After viewing each image, the participants immediately had to decide whether to take the high-risk option of gambling a dollar or the low-risk option of gambling a dime. Regardless of their choice, they had a 50-50 chance of winning or losing. Knutson and his colleagues gave each man \$10 to gamble with prior to entering the MRI scanner. "We wanted them to care," Knutson said. Depending on the men's gambles and the random outcomes, they won or lost. "We took that money back if they lost it," he

said.

"What we saw is that when they viewed the erotic pictures, the activation in their nucleus accumbens increased compared to the other stimuli, and also that they had increased activation in that region before choosing the high-risk gamble," Knutson said.

The researchers then applied a statistical analysis to determine whether the activation in the nucleus accumbens accounted for some of the behavioral effect. "The answer was yes, at least in the case of the positive stimuli," Knutson said. "After people had seen those erotic pictures, they tended to pick the high-risk gamble more often, especially if they had been picking the low-risk gamble before.

"The interesting finding from an economic standpoint is that these completely irrelevant stimuli, these pictures that have nothing to do with the gambles or the history of outcomes that people have experienced with these gambles, still influence behavior," he said. "They seem to do so at least partially by influencing activation of these brain regions."

The findings have implications for what might make emotional appeals effective or ineffective in applications ranging from advertising to finance to politics and, perhaps not surprisingly, gambling.

"If you go to the casinos, people are wearing skimpy costumes, they're giving you free alcohol, there are bells and lights and things like that, which don't necessarily seem related to the odds of the gambling," Knutson said. "But these are cues that might activate brain regions that encourage risk-taking and therefore get people to gamble more."

So does draping a seductive woman over the hood of a car in an advertisement really help sell that car?

"Well, yes and no," Knutson said. "It may work sometimes under some conditions."

"Our trials are happening relatively fast, changing on a second-to-second basis," he noted. "We're forcing people to immediately make a decision, and the emotional stimuli appear in close temporal proximity to the decision itself."

"If you have these kinds of appeals, you'd better make it easy for people to make an immediate decision. You should put them under time pressure," he said.

Knutson emphasized that there is still ample work to be done in deciphering the effects of emotional stimuli on behavior. He plans to study women's responses in the future, as well as to examine other types of emotional stimuli. He also intends to examine the influence of time, to see how transient or lasting the influences of various emotional stimuli might prove to be.

"This is just a first step," he said. "It's an existence proof that some irrelevant emotional stimuli can influence some immediate financial decisions and that we can track down one brain basis for this influence."

Source: Stanford University

Citation: The influence of the irrelevant: Researchers show stimuli unrelated to a decision can still influence the choice we make (2008, April 3) retrieved 18 April 2024 from <https://medicalxpress.com/news/2008-04-irrelevant-stimuli-unrelated-decision-choice.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.