

# Experienced pleasantness

Stephen B Hanauer

According to Plassmann *et al.*, "...a basic assumption in economics is that experienced pleasantness (EP) from consuming a good depends only on its intrinsic properties and on the state of the individual." (*Proc Natl Acad Sci* [2008] 105: 1050–1054). By contrast, it is known by so-called marketers that EP can be influenced by "...changing properties of commodities, such as prices, that are unrelated to their intrinsic qualities or to the consumer's state." To further elucidate these discrepancies, Plassmann and colleagues proceeded to investigate the neural associations of EP, by assessing both the subjectively reported perceived pleasure and the modulated blood-oxygen-level-dependent signal in the medial orbitofrontal cortex of the brain, an area of the brain in which activity is associated with the perception of EP. Subjects randomly tasted three different wines in a series of six tastings, during which the price of each wine was varied. Not only did the price of the wine influence the subjectively reported EP, but also the activity in several areas of the brain associated with behavioral ratings for taste, odors and music. There were no changes in activity in the areas associated with primary taste. These findings support the concept that EP is computed by the brain in a hierarchical manner that incorporates both actual sensory properties as well as expectations.

This study reminds me of an experiment I did for a college psychology course. I prepared cookies and milk using the same recipe, but varied the color of each. Subjects then tasted the cookies and milk in a random manner, both

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*SB Hanauer is Editor-in-Chief of Nature Clinical Practice Gastroenterology & Hepatology.*

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while blindfolded and while being allowed to see the food and drink. As expected, I found that, while blindfolded, the cookies and milk were rated similarly, but that there were different preferences according to color—the subjects did not like blue milk!

Certainly, Plassmann and colleagues have taken a step further in explaining neuronal function in economic terms that also impact on psychology. These findings are consistent with the psychological concept of cognitive dissonance and also help to explain aspects of the placebo response. Marketers have recognized the outcomes of these findings without knowledge of the neuronal mechanisms. Certainly, brand image has been used forever in advertising campaigns and we see this on a daily basis with patients who come to our offices requesting that they be prescribed a particular brand-name pharmaceutical over a cheaper (identical) generic item. One would also anticipate that higher physician charges would be perceived as providing more EP, and hence, a better subjective outcome. Similarly, the 'price' of multiple visits has been shown to enhance the placebo response in clinical trials (*Gastroenterology* [2004] 126: 1257–1269).

On a day-to-day basis, such insights into how to make our patients feel better and how the brain integrates our senses into a feeling of well being will help us to develop models for improving medical care while, hopefully, allowing us to reduce medical expenditures without reducing the perceived benefits from higher costs of care.