

Mind vs stomach? Food perceptions may also influence hunger and fullness

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A study published online ahead of print in the journal *Health Psychology* found that when people with different mindsets drank identical milkshakes, they experienced different levels of satiety. Researchers concluded that people's food perceptions may influence hormonal regulation of hunger and fullness, beyond the intrinsic nutrients of the food on the plate.

Scientists from Yale University and Arizona State University, USA, set out to observe the power of beliefs on appetite. To achieve this, they asked 46 healthy men and women to drink milkshakes labelled as "620-kcal indulgent" or "140-kcal sensible." Participants rated the taste and label of the milkshakes, and reported their subjective feelings of fullness. To measure physiological fullness, blood samples were drawn before, during, and after the milkshake, and were analysed for changes in ghrelin. Ghrelin is a gut hormone that transports hunger messages between the stomach and the brain; ghrelin levels increase in the absence of food, and decrease when food enters the stomach.

Here is the interesting bit: unknown to the participants, underneath the labels, both the "indulgent" and "sensible" milkshakes contained 380-kcal. Even more intriguing, the researchers discovered that subtle changes in drinking mind-set altered ghrelin levels, independent of the identical nutritional content. When drinking the "indulgent" milkshake, participants experienced more satiety, reflected by a sharper decrease in ghrelin levels. In comparison, drinking the "sensible" shake resulted in a less pronounced ghrelin response, suggesting that despite drinking the same nutrients, "sensible" food perceptions left the participants less physiologically satisfied.

These observations are important, given that ghrelin regulation is essential for weight maintenance. Previous research has connected high ghrelin levels with increased food consumption and weight gain, and there is a growing interest in the pharmacological use of gut hormones for weight loss. In principle, the rise and fall of ghrelin should complement the stomach's reception of food, however this study confirms that communication between stomach and brain is not straightforward.

The study had several limitations, namely the small sample size, and lack of control group to standardise the procedure. Regardless, further research is needed to understand ghrelin's mechanism of action, and explore the power of the mind on appetite.

For practical application, can the influence of food perceptions be used to promote healthy eating behaviours? The authors propose, "Perhaps if we can begin to approach even the healthiest foods with a mind-set of indulgence, we will experience the physiological satisfaction of having had our cake and eaten it too."

For more information:



[Crum AJ, et al. \(2011\). Mind Over Milkshakes: Mindsets, not just nutrients, determine ghrelin response. Health Psychology. 2011 May 16 ahead of print. doi:10.1037/a0023467.](#)