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Bristol Satiety Toolkit informs clinical practice and food product reformulation

Obesity can lead to a range of diseases including stroke, heart disease and cancer. To help people maintain a healthy weight, food companies and scientists study consumer behaviour, particularly when it is influenced by appealing and sensory characteristics of food. One such example of this is satiation, or how full we feel. Satiation can govern portion size and has been shown to influence our choices even before a meal begins.

What translational research was done?

Researchers from Bristol developed software to visualise portion sizes. This formed the basis for a **portion-selection tool** that creates digital representations of food portions on a computer screen. With this approach, they were able to quantify 'expected satiation' (anticipated fullness) and 'expected satiety' (anticipated relief from hunger) of different foods[1].

This work showed that both expected satiety and satiation influence meal size, and confirmed they are learned and can be manipulated over time. It also showed that food expectations can be affected by modern food processing methods and by the rate we eat at, and that they also play a key role in food choice and decisions about diet.

References

1. Brunstrom et al., Appetite, 2008;DOI:10.1016/j.appet.2008.04.017
2. Kissileff et al., Appetite, 2016:DOI:10.1016/j.appet.2015.11.026
3. Hamm et al., Physiology and Behavior, 2020;DOI:10.1016/j.physbeh.2020.113001

Translation into later phase research, clinical practice and patient benefit

The 'Bristol Satiety Toolkit' has enabled international food industry leaders such as Nestlé, Kraft Foods and Mars-Wrigley to estimate and compare the likely impact of reformulating their products on consumers' expected satiation and satiety. These changes are likely to promote maintaining a healthy weight, whilst also ensuring the products are still acceptable.

Over 13 years, **14 companies** have applied the toolkit to a broad range of savoury, sweet, main meal, and snack foods, including sugary products which are a key target for public health measures.

In clinical practice the Bristol Satiety Toolkit has been used to:

- Study the effects of sleep loss on portion selection
- Quantify and understand levels of anxiety associated with food
- Predict the severity of illness in patients with anorexia nervosa[2]
- Explore drivers of food choice in obesity
- Be considered for application in the treatment of childhood obesity

Finally, it has been used extensively by collaborators at Columbia University to develop a way to predict whether weight loss is likely to be sustained after weight loss surgery[3].