A new method of measuring satiety in clinical trials of hyperphagia and obesity

Prader-Willi Syndrome (PWS) is associated with impaired satiety control: not knowing when you have had enough to eat. Symptoms include hyperphagia (over-eating) and extreme obesity. Caregivers of people with PWS need constant vigilance around food, as uncontrolled or unsupervised eating may result in gastric rupture and death. The development of effective hyperphagia treatments is a priority for the PWS community.

We are currently testing new drugs for obesity that could be life-changing for people with PWS. However, we currently have no objective way of measuring hyperphagia, which makes it difficult to chart improvements during clinical trials. Measures such as the Hyperphagia Questionnaire or BMI are limited as they rely on environmental control measures, such as food security. Our study aimed to develop a novel biomarker of satiety by using eye-tracking and food-related attentional bias (FAB). Drawing on skills and knowledge from neuroscience, endocrinology, psychiatry and psychology, we designed a FAB task as a biomarker. It involves tracking people's eye movements as they look at food stimuli. The FAB task can apply at all stages of development and different levels of cognitive ability. We used it to show that adults look longer at food stimuli when hungry (after a four-hour fast) than when satiated (30 minutes after eating).

"Developing a biomarker of satiety for clinical trials of hyperphagia is a challenging task and requires expertise, skills and resources from multiple disciplines and stakeholders."

Sarah-Marie Feighan
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Our next step is to validate the FAB task in children and adults with PWS. If successful, it will be the first objective biomarker of satiety that could be used to monitor the effectiveness of medicines for hyperphagia in PWS. The FAB task may also be used as a stratification marker to compare behavioural characteristics in clinical trials of obesity.