



## Distinguished Fellowship Award Brief

### How do learned dietary associations influence attention? (2016 – 2018)

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**Research Question:** How do learned dietary associations (e.g., your love of donuts and your disdain for broccoli) influence attention?

**Interdisciplinary Approach:** This fellowship integrates physical measures, dietary measures, and brain recording methods to explore the neural mechanisms underlying distraction by high-fat foods and explore how these are moderated by individual differences in dietary characteristics.

**Potential Implications of Research:** This research will directly inform theories of attention by investigating how long-term goals influence where we attend. Furthermore, this project will elucidate the role of attentional mechanisms in learned dietary behavior and can inform future weight management programs.

In the United States, more than two-thirds of adults are overweight or obese (Ogden et al., 2014). While the majority of interventions to tackle obesity attempt to change consumer behaviors (e.g., eating healthier options), there has been little work investigating the underlying implicit behavioral and neurological associations individuals develop with unhealthy foods. Specifically, what do we learn about unhealthy foods and how does that influence how we interact with them? Dietary decisions are supported by a lifetime of learning (e.g., what foods (1) are culturally relevant, (2) your parents eat, (3) are available in your neighborhood). Therefore, our goal is to investigate what characteristics of dietary behavior influence how we initially look at unhealthy foods.

Our study investigates how naturally formed associations with high-fat foods influence attention. We developed an experimental procedure that implicitly probes distractibility for images of high-fat foods. Specifically, we examined whether we look at high fat foods differently than low fat foods, or non-food objects. Our results suggested that while observers looked more at images of high-fat foods in comparison to non-food objects and even low-fat foods, there were individual differences in the degree of distraction.

The proposed project investigates how differences in dietary behavior influence attention to high-fat foods. We will examine dietary behavior using the following physical and dietary measures: 1) body mass index (BMI), 2) a dietary intake screener for usual intake of high-fat foods (e.g., how often do you eat cake?), and 3) a measurement of self-efficacy for healthy food behavior (e.g., how confident are you that you will be able to resist overeating). Participants will perform our experimental procedure while we also measure electrical activity in the brain, which is recorded with little electrodes on the head. We predict that participants with higher BMI, higher intake of high-fat foods, and lower self-efficacy for healthy food behaviors will be more distracted by images of high-fat foods and will show differential neural activity in the way that their brains process high-fat foods. This research will elucidate the role of attentional mechanisms in dietary behavior and can inform weight management programs.

The proposed research presents a theoretically and methodologically rigorous approach that unifies expertise from cognitive neuroscience and public health nutrition in order to investigate a learning problem that affects both fields. By coupling physical and dietary measures from public health nutrition for investigating preexisting dietary behaviors and a novel attentional paradigm from cognitive neuroscience that implicitly measures how distracted people are by images of high-fat foods, we can draw new insights about the interaction of cognition and nutrition. Furthermore, the lack of knowledge of how long-term goals influence attention, and more specifically dietary goals, limits our basic understanding of the framework of goal-driven attention. These findings will advance theoretical frameworks of attention and inform behavior change interventions used in weight management programs.

