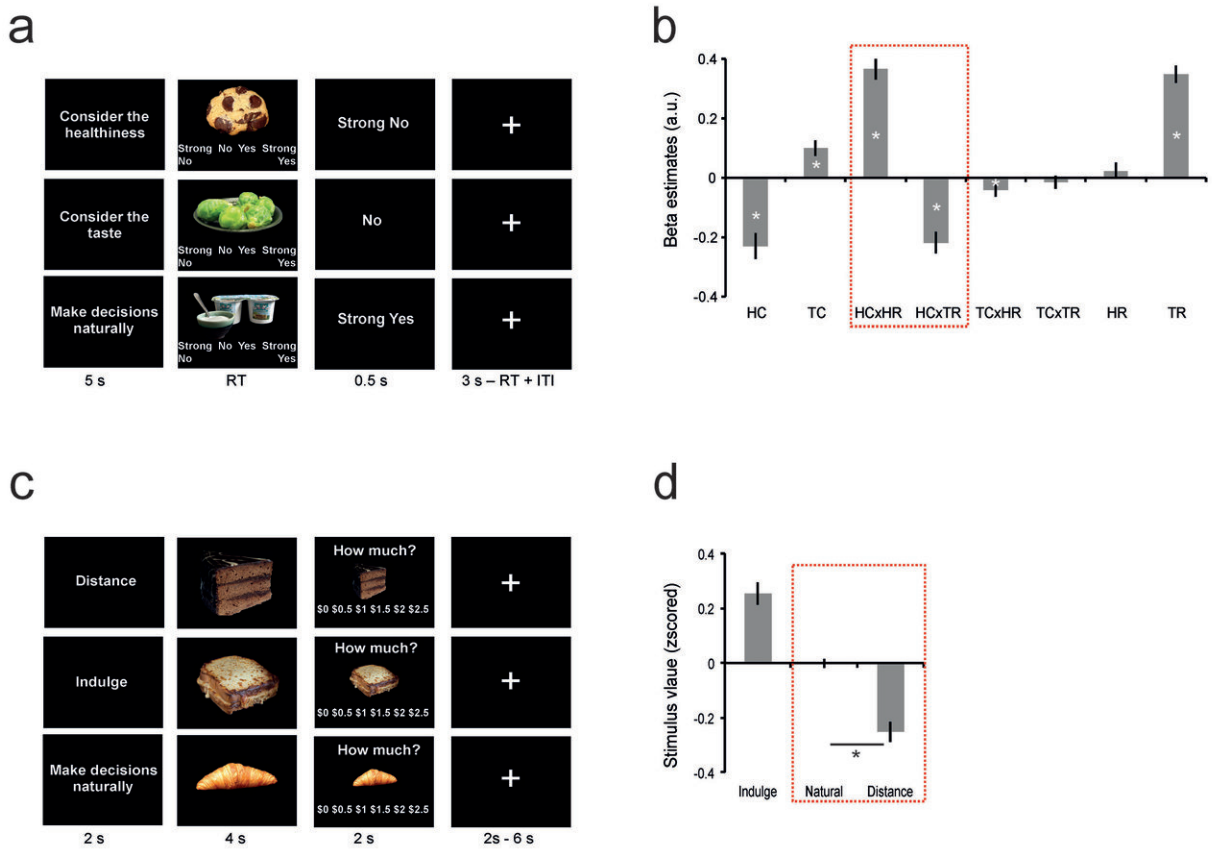
Brain structure may predict diet success

June 4 2018



A: This is a behavioral task dataset 1. Screenshots display successive events within one trial of each condition (i.e., health focus [HC], taste focus [TC], and natural focus [NC] conditions) during the dietary decision-making task performed by the participants of dataset 1 with durations in seconds. Conditions were presented in blocks, randomly intermixed. Each block started with an instruction to focus attention on the healthiness, taste, or natural preference. Next, a food item was displayed on the screen and participants had to evaluate how much they would like to eat it by pressing buttons corresponding to strong

no, no, yes, and strong yes. B: Behavioral results in dataset 1 (N = 91). The bar graph depicts mean beta estimates for each regressor of equation i. The dotted red lines indicate the behavioral measures of interest: the weight of the healthiness [HR] and the tastiness [TR] on stimulus value computation during the health focus condition [HC]. C: Behavioral task dataset 2. Screenshots display successive events within one trial of each condition (i.e., distance [DC], indulge [IC], and natural [NC] conditions) during the dietary decision-making task performed by the participants of dataset 2 with durations in seconds. Conditions were presented in blocks, randomly intermixed. Each block started with an instruction to try to distance oneself from food cravings, indulge in food cravings, or make decisions naturally. Next, a food item was displayed on the screen and participants had to evaluate how much they would be willing to pay for the food item by pressing buttons corresponding to $0, $0.50, $1, $1.50, $2, and $2.50. D, Behavioral results in dataset 2 (N = 32). The bar graph depicts mean stimulus value of food items in each condition. The asterisks (*) indicate significance against zero at p JNeurosci (2018)

Differences in the structure of the prefrontal cortex predict an individual's ability to make healthier food choices, according to a new analysis of previous research in healthy men and women. The paper, published in *JNeurosci*, suggests an important role of these anatomical markers in decisions that have long-term effects on health and wellbeing.

Maintaining a healthy diet requires consistently choosing healthy foods over perhaps more tempting ones that may satisfy an immediate craving but have negative health consequences. People vary in their ability to exercise such self-control, which has been linked to individual differences in real-time brain activity. In this study, Liane Schmidt and colleagues examined whether more stable differences in the anatomy of the brain could account for variations in self-control.

Analyzing data pooled from three previous studies and generalizing their

results to a fourth independent dataset, the researchers found that greater volume in the dorsolateral and ventromedial prefrontal cortex was associated with improved dietary self-control across different diet goals and participant groups. Since brain structure, like connectivity, can change over time in response to lifestyle, these brain regions represent key targets to explore in the design of interventions that promote healthy choices.

More information: Neuroanatomy of the vmPFC and dlPFC predicts individual differences in cognitive regulation during dietary self-control across regulation strategies, *JNeurosci* (2018). DOI: 10.1523/JNEUROSCI.3402-17.2018

Provided by Society for Neuroscience