CAN AN ODOR HAVE AN INFLUENCE ON BRAIN ACTIVITY ACCORDING TO THE WEIGHT STATUS?

Obesity represents a major public health problem. Worldwide, in 2016, 39% of adults were overweight and 13% were obese. As this rate continues to rise, there is a need to better understand the mechanisms underlying food choices in order to propose relevant interventions to prevent excessive weight gain.

What is the impact of weight status on food information processing? Previous research have shown that overweight/obese individuals are more attracted to food images than normal weighted individuals[1,2]. Other studies have shown that brain activity in response to food images differs according to the weight status[3,4].

Knowing that an odor can influence our food choices, we tested the impact of a non-attentive (non-conscious) perceived odor on the perception of food images. To do so, we asked normo-weighted, overweight and obese adults to look at images of low or high energy density foods (images of fruits or cakes) while recording their brain activity. During this session, participants were non-attentively exposed to either a pear or pound cake odor or no odor at all.

Our results reveal that weight status influences brain processing of food images in the presence of a food odor: overweight and obese individuals, in terms of brain activity, would react very early to odors, which could represent a certain vulnerability.

This vulnerability to non-consciously perceived stimuli (in this case, a food odor) could explain, at least in part, why very explicit health recommendations often have only a limited impact on the target populations.

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To know more

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Keywords
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[1] Hendrikse, 2005, Obes Rev; [2] Mas, 2020, PlosOne ; [3] Hendrikse, 2015, Obes Rev, [4] Carbine, 2018, Appetite