

Electrophysiological correlates of food preference and risky decision-making.

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Food is a key reward stimulus that drives human behaviour according to individual preferences. Behavioural mechanisms and neural processing underpinning food attitudes and reward values have been investigated independently from one another, but a more detailed investigation of the processes involved in individual food preferences and of the potential relationship with food and monetary reward is still lacking. The present study investigated the electrophysiological (EEG) correlates of food-related implicit attitudes and decision-making under risk with food and monetary reward stimuli.

The EEG of 43 healthy volunteers was recorded while they underwent Implicit Associations Tests (IAT) on tasty/high calories versus tasteless/low calories food (food-IAT) and flowers versus insects as control (flower-IAT), in addition to loss aversion tasks presenting participants with gain-loss gambles involving monetary or food rewards. Analyses on the IATs revealed significant differences between the congruent and incongruent condition of the food-IAT in late time-windows (400-700 ms) and in components located in the anterior/middle cingulate gyrus and caudate nucleus previously associated with emotion processing and attentional allocation to relevant stimuli. Preliminary results on the loss aversion tasks showed behavioural differences in participants' tendency to accept gambles related to food vs. money, correlating with individual food preferences, although EEG correlates were not significantly different between the two types of reward stimuli.

These findings support the role of semantic and emotional control processes in implicit food preferences, and highlight the relevance of individual attitudes in evaluating reward values of food.

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Food challenge to neurocognitive functions: evidence from healthy and pathological populations with eating disorders

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