

Direct and indirect effects of the reward value of observed food stimuli on motor behavior

Wednesday, September 25, 2024 9:00 AM (20 minutes)

Several studies testing cognitive control in the general population using images of food of varying palatability showed that cognitive performance was increased for high- than low-calorie food suggesting a fine-tuning of cognitive processing for foods with different salience. The interaction between dealing with different degrees of rewarding stimuli and cognitive performance highlights the critical role of the reward system in shaping perception. Here we show evidence of direct and indirect effects of the reward value of observed food stimuli on motor behavior. In the first study we explored the behavioral and cortical excitability signatures of improved performance for high- than low-calorie food images during a food go-no task. Crucially, in this case the caloricity of the food was task-relevant. In the second study we administered an action prediction task using high- was low-calorie food objects to normal-weight and obese individuals under a fasting or a satiety state. Here, the caloricity of the observed food objects was not task-relevant. We provided evidence of altered sensitivity to the reward value of food stimuli in obesity, despite a conserved sensitivity to hunger and of the beneficial effects of fasting, which may sharpen senses independently from individual weight. In conclusion our findings 1) confirm the improved performance when dealing with images of food with higher palatability in normal-weight participants independently from the relevance of caloricity during task instructions; 2) show evidence of reward dysfunction in obese individuals and 3) point at beneficial effects of fasting on perceptual/cognitive performance during social prediction tasks.

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

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No

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