

Investigation of the food choice process using hand movements in binge eating disorder

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Background: Navigating today's food environment with a high degree of immediate food availability requires frequent food choices. The decision of whether and what to eat is influenced by situational factors and interindividual differences. Moreover, eating-related psychopathologies such as binge eating disorder (BED) are likely to moderate such food choices. BED is characterized by recurrent binge eating episodes, including eating large amounts of food accompanied by a sense of lack of control over eating, and commonly occurs in obese individuals. Food-related decision making in BED and its situational determinants is only partially understood.

Objective: To analyse the outcome and time-course of the food choice process in individuals suffering from binge-eating disorder (BED) as compared to overweight and normal-weight controls.

Methods: Participants will be tested during both hungry and satiated conditions in a counterbalanced design. A mouse-tracking paradigm will be used to record peoples' continuous hand-movements during repeated forced choices between healthy and unhealthy foods. To model situational variables such as food availability, one half of the displayed food items will be declared available for consumption whereas the other half will be declared as unavailable. The degree of curvature in response trajectories during forced mouse-based choice will be calculated as a metric of the competition between choice options.

Expected findings: When actual consumption is expected (available condition), BED individuals are hypothesized to choose high-calorie food less often as compared to healthy participants because of their negative associations with the consequences of indulgence (e.g., weight gain). In contrast to healthy controls, this effect should not depend on hunger/satiety state in BED. We assume that the competition between choice options is stronger in BED than in control participants, manifested in an increased trajectory curvature toward high-calorie

food items. Furthermore, we expect the extent of the curvature to be correlated with the severity of the disorder.