



**Karolinska
Institutet**

**Institutionen för neurobiologi, vårdvetenskap och samhälle
(NVS), sektionen för tillämpad neuroendokrinologi**

EATING, CHEWING AND THE MIND

AKADEMISK AVHANDLING

som för avläggande av doktorsexamen i medicinsk vetenskap vid
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av

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ABSTRACT

The need for detailed description of eating behavior has become relevant by the limited success of simplified models in genetics and neuroscience to explain and predict eating behavior in humans. Failure of cognitive interventions, combined with the success of treatments normalising eating styles in obesity and eating disorders, demonstrates the central role of eating in dealing with these problems. In continuous recording of eating behavior and satiety over the course of a meal, women have been found to eat either at a decelerated or a constant rate. Linear eaters, unlike decelerated ones, are unable to control their food intake when the rate of eating is experimentally increased or decreased and their rating of satiety become disassociated from the actual food intake. Their responses to these experimental challenges simulate the eating patterns and the satiation ratings of anorexic and binge eating disorder patients. The development of an improved methodology for the analysis of single meals, combining video derived and intake data, allows for the analysis of the distinct behavioral elements of the meal over time. Semi-automation, high validity and reliability make this procedure ideal for comparing eating patterns among different groups of individuals. The chewing frequency, the distribution of chews within the chewing sequences and the pauses between mouthfuls remain stable across the meal both in decelerated and linear eaters. The weight of the mouthfuls decreases and the duration of the chewing sequences increases over time in the decelerated eaters, but not the linear ones, clarifying the nature of deceleration. Additionally, the default chewing frequency, quantified by the use of chewing gum, is lower in linear than in decelerated eaters, indicating that there is a baseline difference in the default chewing frequency between the two groups. It is suggested that linear eating is a behavioral risk factor for the development of disordered eating and it is hypothesized that while repeated disordered eating is the cause of eating disorders, the accompanying chewing characteristics might be the mediator of the emotional profile that characterizes patients with eating disorders.