

## Should Food Cravings be Controlled or Understood?

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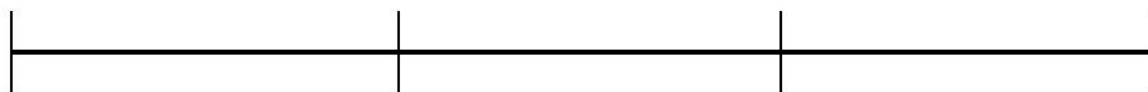
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Food Cravings (FC) is the term commonly used to describe sensations related to an intense desire for specific consumption [1], and there are features that we separate into internal and external aspects related to FC [2]. The internal ones would be dietary restraint, food reward, impulsivity/inflexibility, emotions/thoughts/feelings about food, hunger/satiety/appetite and symptoms of anxiety/depression. External aspects would be positive/negative events, food environment, advertising, cultural beliefs about food, specific places (i.e. kitchen) and the food itself. FC entails the food choice process (between two

options the most desired tends to be chosen), thus being related to habits and memories. FC is also associated with events of emotional memory – when a desire for food occurs, but it is actually the search for the sensation a memory provides [3].

Our review of FC in EDs entitled “The body asks and the mind judges: Food Cravings in Eating Disorders” aimed to gather how FC was assessed in Anorexia Nervosa (AN), Bulimia Nervosa (BN) and Binge Eating Disorder (BED). Thirty-seven studies available that used eight different methodologies, such as Visual Analog Scales [4-10] (Figure 1) and different questionnaires [11-14] were under discussion [2]. The smallest part of the studies

- a. How strong is your urge to eat?
- b. Set on the bar, from 0 (not at all) to 100 (extremely), the level of food craving you experience at this time
- c. How much do you crave this product at this moment?
- d. How strong is your feeling of desire to eat?



**Figure 1:** Visual Analog Scales types. **a)** Jansen et al. [4]; **b)** Ferrer-Garcia et al. [9]; **c)** Ferrer-Garcia et al. [5]; **d)** Douglas and Leidy [34].

(n= 3) which investigated AN [5,15,16] as well as the role of dietary beliefs and inflexibility seems to differentiate AN in opposition to BN and BED. Such distinction is due to the fact that they have lower levels of FC in relation to BN, and also report higher levels of FC low-fat foods [5]. Future studies may investigate the role of neuropsychological characteristics and neural changes in this group.

Ten studies investigated neural aspects in BN and BED [14,17-25]. Possibly due to the culturally influenced view that FC is only related to binge eating, most studies have investigated individuals with BN and BED. However, a more neutral view of FC in the future may provide readings that will verify whether the evolution in AN is related to an increase in FC. The use of Repetitive transcranial stimulation (rTMS) seems to be a potential therapeutic intervention [26], and 1 session could reduce ratings of want to eat, urge to eat and sense of hunger for caloric foods (FC) according to Sutoh and colleagues [27]. rTMS aims to modulate cortical excitability and reduction of FC is measured by VAS. One single session of rTMS reduces FC in BN outpatients [27,28], and also reduction of salivary cortisol [21] that could be related to arises of FC to reduced negative sensations (emotional eating). Functional magnetic resonance imaging (fMRI) also could be applied for the study of neuronal related structures and alterations in EDs. For BN individuals, processing visual food stimuli and comparing oneself to other slim women increase anxiety, but not FC. When comparing their body against slim women, BN uses the insula more (i.e. reflect more on themselves) and the fusiform gyrus less (i.e. look less at the other's actual shape) [23].

Also, we have seen a large increase in EDs in the population, and the progress of nutrition science coupled with the growth of nutritionism in popular discourses have been influencing the "search for health" by rigid means, sometimes called lifestyle [29]. In 2019, we found that 25% of university students had practiced a low-carb diet [30]. Within the group that carried out the diet, 35% associated with Intermittent Fasting (a practice spread by the simplification of the science of nutrition combined with lifestyle). Those who self-report low-carb practice had higher weight and levels of binge eating according to the Binge Eating Scale and higher FC levels (trait and state).

Eating Disorders (EDs) represent the best examples of a troubled relationship with food, where a series of behaviors and beliefs that have been influenced by the cultural factor, thus, it is common to believe that FC are wrong or responsible for the failure of treatments. Questioning studies that defend Food Addiction seems important: how will a compulsive individual

see "tempting" food in a more neutral way, managing to include it in the appropriate context, quantity and frequency, if the relationship established with food is called addiction?

Understanding that the triggers are more significant than the desire itself, as the latter should not be subject to moralization, demands new approaches for the treatment of EDs, considering that a good relationship with food has been related to the unconditional permission to eat [31]. Intuitive Eating was developed by Evelyn Tribole and Elyse Resch in 1995, and since then a series of publications and reviews have been showing their role in the treatment of EDs [32,33].

The importance of multi-professional treatment and the possibility of pharmacological intervention aimed at FC can be associated with a nutritional approach that studies and recognizes the importance of FC. Besides, the attempt to stop eating food is often what sustains the loss of control. Taking this into account, during treatments that use the concept of Intuitive Eating, such as the one conducted in the Eating Disorders Program (AMBULIM/PROTAD) in Brazil, nutritionists use the premise that the prohibition relationship (cognitive restraint and distorted beliefs) are associated with the emergence and maintenance of ED's symptoms. Moreover, during treatment, the nutrition team works on unconditional permission to eat, combined with body perception (signs of hunger and satiety), awareness of FC and emotional triggers. Thus, the act of eating occurs for physical rather than emotional reasons, but FC can still be fulfilled. Psychological aspects and third-generation approaches are also useful for the association with FC, their study, and better understanding, both in aspects of research, as well as in clinical practice.

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