

Chocolate provides a unique sensory experience: Uncovering the secret of the 'chocolate craving'.

We are constantly being told that chocolate is bad for our health— but is it bad for our mind? **Mara P. Squicciarini** and **Johan Swinnen** share an excerpt from their book, *The Economics of Chocolate*, which provides an economic analysis, as well as an interdisciplinary overview on all things chocolate. Here they explore the benefits of chocolate consumption and the impact chocolate cravings have on our moods.



It is indisputable that chocolate consumption gives instant pleasure and comfort, especially during episodes of 'emotional eating', which involves searching for food (generally in large amounts) even if not physiologically hungry in order to get relief from a negative mood or bad feelings (e.g. stressful life situations, anxiety, depression).

The pleasure experienced in eating chocolate can be, first of all, due to neurophysiological components. Chocolate is high in branch-chain amino acids, and especially in tryptophan, which increases the blood level of serotonin, the neurotransmitter which produces calming and pleasurable feelings. The increase in plasma serotonin concentration has been observed especially in white chocolate eating people, probably because of the higher content of carbohydrates in this type of chocolate rather than dark chocolate. Moreover, the presence of magnesium improves the body's ability to adapt to stress.

But the pleasure experienced in eating chocolate cannot be justified solely by neurophysiological components. Chocolate can be desired because it provides a unique sensory experience. It has a hedonistic appeal to most people, based on sight, preparation, memories of past chocolate experiences, texture, and taste. Therefore, we should not underestimate the idea that chocolate consumption assumes a positive value because it is primarily linked to memories of childhood, maternal instinct, affection, moments of celebration, and emotional contexts, such as festive situations and family gatherings. In fact, there is a reciprocal relationship between mood and food: food can influence the mood of an individual and, conversely, specific emotional states can lead to the choice of a particular food. So it is no wonder if, on some occasions, we consider 'chocolate cheaper than therapy, with the appointment not necessary' (Molinari and Callus 2012).



Parker and colleagues (2006) indicate that chocolate is one of the most craved foods. The experience of 'craving' can be defined as an intense desire for a particular item. Chocolate craving was reported also by Wurtman and Wurtman (1989) to have an interesting impact on brain neurotransmitters, with antidepressant benefits, and has been used as a form of self-medication in atypical depression and in seasonal affective disorder.

Nearly three thousand individuals who had experienced clinical depression were interviewed about food cravings when depressed. Of the whole sample, 45 per cent reported craving chocolate when depressed, especially among females, with the following related explanations: its pleasure-enhancing role; its capacity to improve depression and to decrease irritation and anxiety; its unique taste; its 'feeling in the mouth'; its texture; its smell; and finally its colour (Parker and Crawford 2007). A specific association between cravings for sweets in general and, more specifically, for chocolate products during the menstrual period has been found. Women eat more and seem to have very strong cravings for chocolate just prior to and during their menstrual cycle, when feelings of tension or depression occur.

This is when progesterone levels are low and pre-menstrual symptoms tend to appear as well. It has been demonstrated that there is a physiological and hormonal basis for this kind of craving (i.e. a pre-menstrual desire for chocolate) (Tomelleri and Grunewald 1987). Chocolate may provide an antidepressant effect during this critical period and also when women enter menopause, when, in fact, they often develop a sudden strong craving for chocolate.



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Rozin and colleagues (1991) believed that chocolate contains pharmacologically active substances responsible for the craving. However, it is still not clear whether the secret of the 'chocolate craving' can be only attributed to a pharmacological effect or whether sensory properties are more important with regard to the psychological aspects of this food. It is still unknown whether these substances are present in sufficient amounts to play a major role in chocolate consumption or to cause physiological addiction. Smit (2011) thought that some publications have only fed myths about chocolate craving.

Weingarten and Elston (1991) reported that, while the craving for carbohydrates can be satisfied from any fatty or sweet food, including chocolate, the majority of the chocolate cravers cannot replace chocolate with any other food in times of strong desire. This is why it is very important not to deprive someone completely of chocolate if he/she desires it. Doing it could lead to the opposite effect: the subject, not having the opportunity to eat chocolate at will, will overconsume it as soon as it becomes available (Polivy et al. 2005). This confirms the fact that chocolate is a unique food which inspires unusually strong desires in people. It is therefore important to distinguish the phenomena of 'pure' chocolate craving from the one of 'general' carbohydrate craving in the context of emotional eating. It is probable that each phenomenon is driven by different motivations and so produces different outcomes.

A neologism referring to a perceived physical or psychological addiction to chocolate and/or its chemical composition has been devised: 'chocoholic' combining the word 'chocolate' with the word 'alcoholic' (Wilson and Hurst 2012). Chocoholics tend to be female rather than male because they are more susceptible to the effects of the two compounds phenylethylamine and serotonin, which can be mildly addictive (Salonia et al. 2006).

However, since depriving one of chocolate fails to produce scientifically relevant withdrawal symptoms, chocolate is

not technically classed as a physically addictive substance.

This is an extract from the [Economics of Chocolate](#) published by Oxford University Press. The extract originally appeared on the OUP blog and is reposted with permission.

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