



Review

From mood to food and from food to mood: A psychological perspective on the measurement of food-related emotions in consumer research

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ARTICLE INFO

Article history:

Received 15 December 2014

Received in revised form 29 March 2015

Accepted 2 April 2015

Available online 11 April 2015

Keywords:

Emotion
Eating and drinking behaviour
Emotion measurement
Explicit vs. implicit methods

ABSTRACT

The bi-directional influences between emotion and food consumption are discussed in view of recent efforts to find emotional factors that influence food choice and eating- and drinking behaviour independently from traditional factors as liking, wanting and appropriateness. Distinctions are made between conscious and unconscious emotions and their relative importance in food-related behaviour is discussed. In response to eating disorders like obesity, much more is known about the influence of emotion and mood on food choice and intake than about the influence of food on mood and emotion, which only recently gained prominence in food-related emotion research. This led to a number of emotion measurement methods that differ strongly in their explicit or implicit measurement approach and in the extent to which they demand conscious emotion awareness and verbal understanding on the part of the participants. These methods are critically discussed and questions are raised about the specificity of their emotional contents and about their use at different moments in time, such as before, during and at different moments after consumption. Furthermore, doubts were raised about the independency of their contributions from the traditional measurements (liking, wanting and appropriateness) and suggestions are made for improving the practical applicability of an efficient emotion measurement.

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1. Introduction

Food and emotion are linked in a number of different ways. On the one hand there is the influence of mood and emotion on food choice

and intake and on the other hand consuming food can have an influence on people's mood and feelings. The first of these two relationships has been investigated quite extensively in other reviews (Canetti, Bachar, & Berry, 2002; Gibson, 2006a,b; Macht, 2008), whereas the second one has only recently gained more attention as a possible aspect that might play an important role in food choice, independent of traditional factors such as liking and wanting (Berridge & Winkelman, 2003; Meiselman, 2013). Both, the influence of mood on eating behaviour

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and the influence of food on mood and emotions are very complex relationships involving physiological factors such as hunger, satiation and physiological reward mechanisms, psychological factors such as age, expectations based on previous experiences, memory and habit formation, emotional coping mechanisms, restrained eating tendencies or personality traits such as manic–depressive tendencies and sociological factors such as economic status, social nature of the eating situation or eating culture. To cope with this multitude of factors seems almost impossible and like in other studies dealing with eating behaviour, most investigators have neglected this diversity and used reductionist approaches focussing on only one or a few of these aspects (Köster, 2009). Segmentation of the experimental subjects on the basis of age, sex, education and economic status and on traits like food neophobia has sometimes been taken into account, but situational factors such as eating alone in the kitchen or in front of the TV or with family and friends, which are of prime importance in both the effects of mood on food and of food on mood are almost never considered. Memories of rather personal situations evoked by eating experiences may also be more important than those related to the nature of the food itself and may provide strong links to emotional early childhood experiences, or special occasions later in life. Nevertheless, for such memories to arise it is necessary that the food experience is sufficiently similar to the original experience. Even slight changes in a common food, such as the addition of another spice or a change in texture, will readily be consciously detected and lead to pleasant surprise or may disturb the intimate memories and evoke feelings of disappointment and dissatisfaction, instead of the upcoming pleasant reminiscences raised when the food is conform to our expectations (Köster et al., 2014). Strangely enough the role of memory is almost always neglected in food-related consumer research, although it is probably much more important than the first impression experiences that are commonly investigated. The emotions, evoked by remembering a product, are essential in the expectations that guide repurchase decisions. The neglect of memory in combination with the superficiality of first impression measurements is probably the main reason for the high volatility of the market and the high flop rate of new food products (Köster & Mojet, 2007, 2012a,b).

2. Mood and emotion: some definitions

Mood and emotion both reflect emotional states and are often used interchangeably in common language. In the present paper they will be distinguished according to the principles indicated by Gibson (2006a) in his overview of the sensory, physiological and psychological factors determining the role emotions play in food choice. He defines emotions as “short-term affective responses to the appraisal of particular stimuli, having reinforcement potential” (Frijda, 1999; Mathews & Deary, 1998; Rolls, 1999), whereas moods are described as “more long-lasting psychological arousal states with interacting dimensions related to energy, tension and pleasure (hedonic tone) that may appear and persist in the absence of obvious stimuli and may be more covert to observers” (Thayer, 1989). Thus, pleasant mood is related to high energy and low tension and negative unpleasant mood is related to low energy and high tension. As indicated by Gibson the relationships between mood, emotions and physiological arousal may be complex, since they depend on a number of the factors mentioned above in the Introduction.

Another important general point to be discussed here is the question of the conscious or unconscious nature of emotion, a topic that has been subject of serious debate in emotion theory. Berridge and Winkielman (2003) discussed the traditional view that emotions are defined as the conscious subjective experiences that accompany the affective states created by bodily sensations (Clore, 1994; Ellsworth, 1994; Frijda, 1999). They show that Ellsworth in later publications (Ellsworth 1995; Ellsworth & Scherer, 2003) mitigated his position somewhat leaving the question of the existence of unconscious emotions open. Kihlstrom, Mulvany, Tobias, and Tobis (2000) argued for the existence

of an emotional unconscious in analogy to other psychological processes that take place without conscious awareness such as is the case in implicit memory. Thus he made a distinction between explicit emotion as a person's conscious awareness of an emotion and implicit emotion as an emotional state that expresses itself in experiences, thoughts or actions without conscious awareness of that state by the person. Along with Kihlstrom et al. (2000), Berridge and Winkielman come to the conclusion that “for an emotion to be unconscious, people must not be able to report their emotional reaction at the moment it is caused. Yet there must be clear evidence of the emotional reaction in their behaviour, or physiological response or subsequent subjective impression of an affect-laden event.” They illustrate this with two experiments (Winkielman, Berridge, & Wilbarger, 2005) in which people were subliminally (and unconsciously) exposed to happy, neutral or angry faces that were immediately followed by a second supraliminal masking photograph of a neutral face that they could perceive consciously. People then rated their own subjective emotion and were asked to pour themselves as much of a fruit-flavoured drink as they wanted and to drink and evaluate it. The results showed that the exposure to the subliminally presented facial expressions influenced the people's pouring and drinking behaviour, but only when they were thirsty. In that case they poured and drank about 50% more after subliminal presentation of a happy face than after a neutral face and less than after a neutral face when they had been unconsciously exposed to a neutral face. Nevertheless the thirsty participants reported no conscious awareness of any change in their subjective emotion. Non-thirsty people showed no effect at all. These results were reconfirmed in a second, more extensive experiment along the same lines and with the same results, except for the fact that this time the non-thirsty subjects who did not change their pouring and drinking behaviour reported some impact on their subjective emotion ratings, whereas the thirsty subjects who poured and drank depending on the exposure did not report conscious emotional changes. Winkielman, Berridge, and Scher (2011) conclude that these experiments demonstrate the existence of unconscious affective reactions of which the person is simply not aware, even when explicitly asked to report on their conscious mental state.

The fact that Winkielman et al. chose drinking behaviour as the means of verifying the effect of the unconscious affective manipulation is interesting in the context of the present paper, because it illustrates both the close relationship between emotion and food or drink intake and the complexity of the reactions due to the physiological state (thirsty or non-thirsty) of the participants. The possible specificity of the relationship between food and emotion is furthermore illustrated by the fact that Monahan, Murphy, and Zajonc (2000) using mere exposure to subliminal visual stimuli (Chinese ideographs) reliably found conscious mood effects, whereas the thirsty participants in Winkielman et al. did not. This might not only be due to procedural differences or to differences in the nature of the subliminal stimuli (emotional faces vs Chinese ideographs), but might above all be related to the fact that in the thirsty subjects the subliminally raised affect could be coupled directly to an action that implicated ingestion of an unknown drink. In the non-thirsty subjects the need to drink was not present and as a result the effect of the subliminally presented faces was translated in the awareness of a slight mood change. The fact that olfaction, as the only sense with a direct connection to the amygdala, was involved in the ingestion, may also have played a role. Whalen et al. (1998), using also subliminal presentation of angry and happy faces, showed that this resulted in strong stimulation effects in the amygdala without any conscious awareness of the faces or their emotional effects. It is well known that the amygdala plays an important role in fear conditioning (Aggleton, 1992; Li, 2014) and in the automatic and unconscious processing of emotional facial expressions (Adolphs, Tranel, Damasio, & Damasio, 1995; Cahill et al., 1996; Reimann, Lane, Ahorn, & Schwarz, 1997). Thus, it might be that the subliminal angry or happy faces in the experiment of Winkielman et al. provoked an automatic caution or thirst reaction in the thirsty subjects, who planned to drink a

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