

Research Report

Sources of positive and negative emotions in food experience

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Received 20 June 2006; received in revised form 24 July 2007; accepted 17 August 2007

Abstract

Emotions experienced by healthy individuals in response to tasting or eating food were examined in two studies. In the first study, 42 participants reported the frequency with which 22 emotion types were experienced in everyday interactions with food products, and the conditions that elicited these emotions. In the second study, 124 participants reported the extent to which they experienced each emotion type during sample tasting tests for sweet bakery snacks, savoury snacks, and pasta meals. Although all emotions occurred from time to time in response to eating or tasting food, pleasant emotions were reported more often than unpleasant ones. Satisfaction, enjoyment, and desire were experienced most often, and sadness, anger, and jealousy least often. Participants reported a wide variety of eliciting conditions, including statements that referred directly to sensory properties and experienced consequences, and statements that referred to more indirect conditions, such as expectations and associations. Five different sources of food emotions are proposed to represent the various reported eliciting conditions: sensory attributes, experienced consequences, anticipated consequences, personal or cultural meanings, and actions of associated agents.

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Keywords: Emotion; Food experience; Tasting; Sample testing

Introduction

A person's motivation to eat and the quantity, frequency, and choice of food intake are affected by variables not necessarily directly related to his or her physiological needs or the nutritive value of the food (Booth, 1994). It is generally acknowledged that human eating behaviour, which is influenced by cues from foods, the body, and the social and physical environment, is affected by and associated with emotions. The relationships between food, eating behaviour, characteristics of the individual, and emotions have been studied from various angles and with a wide variety of methods. These studies can be classified in two basic types: studies that focus on the effects of emotion on eating behaviour versus studies that focus on the effects of eating behaviour on emotion.

The first type of study investigates the effects of people's feeling states on food preferences, food consumption, and the characteristics of eating behaviour (see Canetti, Bachar,

& Berry, 2002; Ganley, 1989; Greeno & Wing, 1994 for reviews). For instance, in a questionnaire study, Macht (1999) examined the effects of anger, fear, sadness, and joy on a number of eating characteristics. Participants were asked to imagine themselves in these emotional states, and then reported for each emotion to what extent 33 eating-related statements matched their state. The degree of agreement with these statements, which were related to included feelings, cognitions, and behavioural tendencies, were rated on seven-point scales. For anger, participants reported to experience an increase of impulsive eating (i.e. fast, irregular and careless eating directed at any type of food available), whereas for joy participants reported to experience an increase of hedonic eating (i.e. a tendency to eat in order to enjoy food). Lyman (1982) demonstrated similar effects of emotion qualities on food preferences. His participants reported a greater tendency to consume healthy foods during positive emotions and a greater tendency to consume junk food during negative emotions. A study by Mehrabian (1980) focused on the relationship between emotional states and the amount of food intake. Higher food consumption was reported during boredom,

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depression, and fatigue, and lower food intake was reported during fear, tension, and pain. Compared with low arousal states, high arousal states were seen as inhibiting food consumption. Patel and Schlundt (2001) found that meals eaten in positive and negative moods were significantly larger than meals eaten in a neutral mood, and that a positive mood had a stronger impact on food intake than a negative mood.

The influence of emotions on the quantity and quality of consumed food is often explained by two conceptually different effects: emotion-congruent eating versus emotion regulating eating (Christensen, 1993; Macht, 1999; Macht, Roth, & Ellgring, 2002; Macht & Simons, 2000). The emotion-congruent modulation effect implies that positive emotions increase and negative emotions decrease the motivation to eat and the pleasures of eating. Patel and Schlundt (2001), for example, propose that positive affect may increase food intake via an associative learning mechanism where happiness has been associated with eating more food. Emotion regulation eating implies that a person starts to eat in order to decrease an unpleasant feeling state, also termed 'mood control eating' (Booth, 1994). An example of emotion regulating eating is a person who decides to eat ice-cream in order to relieve sadness.

The second type of investigation focuses on the effects of taste and food intake on people's feeling states. Several studies have demonstrated an effect of taste quality on affect (see Bolles, 1991; Macht, Meininger, & Roth, 2005 for reviews). For example, it was demonstrated that newborns experience positive affect to sweet solutions dropped on their tongue, and negative affect to bitter solutions (Rosenstein & Oster, 1988). Although most studies focus on general valence (i.e. pleasant versus unpleasant experience), the few studies that did measure distinct emotions have demonstrated that solutions of tastants and food stimuli also influence the nature of one's feeling state. For example, using solutions that represent the primary taste qualities sweet, salty, sour, and bitter, Robin, Rousmans, Dittmar, and Vernet-Maury (2000) found a significant stimulus effect on the distribution of associations over the emotions happiness, surprise, sadness, fear, disgust, and anger. The sweet solution was mainly associated with happiness and surprise, whereas the bitter solution was mainly associated with anger and disgust. Salty and sour solutions were associated with all emotions, reflecting more variable taste associations.

Measuring distinct emotions instead of general valence responses is of particular interest to those who aim to study the experience of food emotion in the context of everyday life. This is because the actual experience of an emotion does not only represent the positive or negative evaluation of the stimulus itself, but also an evaluation of the social and situational circumstances in which the emotion is experienced (Barrett, Mesquita, Ochsner, & Gross, 2007). Macht and Dettmer (2006), for example, examined the emotional changes women experienced after eating a chocolate bar in everyday life. Participants rated the extent

to which anger, fear, guilt, sadness, joy, boredom, and loneliness matched their present state. Significant effects were found only for the emotions joy and guilt: whereas joy was elicited by the sensory pleasure of eating chocolate, guilt appeared to be induced by negative thoughts associated with eating chocolate, like the thought that eating chocolate had an unwanted effect on slimness and body weight.

The emotions measured in the studies discussed above were drawn from small sets of basic emotions that have been assembled in evolutionary psychology (e.g. Ekman, 1972; Plutchik, 1980). For two reasons these sets have been claimed to be of limited use to general emotion research (Frijda, 1986; Ortony, Clore, & Collins, 1988) and to consumer emotion research (Laros & Steenkamp, 2005; Richins, 1997). First, they show a disproportionate amount of unpleasant emotions. Typically only one pleasant emotion is identified for every three or four unpleasant emotions (Ellsworth & Smith, 1988). Second, these sets represent only a small part of the variety in emotions that human beings generally experience in daily life (Scherer, 2001). For that reason, many emotion theorists work with emotion sets that are balanced for valence and represent a wider variety of emotions, including also emotions like admiration, hope, and relief (e.g. Ortony et al., 1988; Roseman, 2001).

It remains unclear to what extent the emotions that have been measured in the previous food studies represent the variety of emotions that are generally experienced in response to food or food intake. Given the fact that food intake is submerged in personal daily routines and elaborate social rituals, and is connected to various behaviours, such as acquiring, conserving, preparing, consuming, and sharing food (Bourdieu, 1984), we expect more than only the basic emotions to be relevant. The present study aims to explore the variety of emotions that can be experienced in response to food and food intake.

A second issue that remains unclear is related to the internal and external conditions that underlie and influence food emotions that are experienced in everyday life. First of all, emotions evoked by food may depend on the internal state of the individual, such as the nutritional state (time since last meal, hunger, or thirstiness), mood, and overall physical state (fitness or fatigue). In addition, the pleasure of eating has been found to depend on features of the physical environment, like the table setting and lighting, and social factors, like the social interaction during eating and social activities associated with eating (e.g., Macht et al., 2005; Pudel & Westenhöfer, 1991). Following a holistic, multi-component perspective on hedonic eating, Macht et al. (2005) proposed that affective food responses can best be understood as responses to configurations of stimuli of which the food itself is only a single component. Therefore, the present studies explored both the food-related and the context-related stimulus conditions associated with emotional responses elicited by food and food intake.

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