



## How does it make you feel? A new approach to measuring emotions in food product experience



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### ABSTRACT

The objective of this study was to define an approach to describe the emotional profile specific to a product category able to solve some limitations of the current approaches. A multistep approach was applied to measure emotions related to consumer liking for a specific food product category, chocolate and hazelnut spreads, chosen as the first case of application. Three interrelated experiments were conducted: (1) selection of products that spanned the most relevant sensory variation within the considered product category; (2) development of a product specific questionnaire (*EmoSemia*) based on interviews conducted with a modified version of the Repertory Grid Method and analysed with a semiotic approach; and (3) collection of liking and emotional consumer responses with *EmoSemia* and with *EsSense Profile™* questionnaires. Both questionnaires used to measure emotional responses produced information that is not captured by only measuring acceptability. However results from ANOVA model applied on emotion ratings highlighted important differences between the two questionnaires. The product specific questionnaire was found to discriminate across the products more effectively, with a higher percentage of discriminating emotions and a higher number of sample groups discriminated by each emotions (LSD<sub>99%</sub> post hoc test). Different factors contributed to these results: (a) the product-specific and language/culture-specific nature of the questionnaire; (b) a different and clearer way to express emotions in *EmoSemia*: not using single adjectives but full sentences helps to reduce ambiguity; and (c) a reduced length – 23 instead of 39 items. For these reasons, *EmoSemia* approach seems to be appropriate when the emotional profile of a specific product category is of interest, allowing a fine-grained analysis with relatively modest costs as to the benefits (25 interviews). Further studies are needed to experiment *EmoSemia* on other product categories, testing its reliability and suitability with different food and also non-food products.

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## 1. Introduction

### 1.1. The role of emotions and other affective phenomena in consumer perception

Understanding the motivations that drive consumer choices is one of the major challenges for marketing and consumer studies. Emotions can play a leading role in product experience and the importance of the optimisation of products from both sensory and emotional perspectives has been recently emphasised (Thomson, 2007). Since measurement of the acceptability alone is not a sufficient benchmark for product development and testing (King, Meiselman, & Carr, 2010; Thomson 2007), recently several studies have investigated the relationships between sensory

characteristics and emotional responses comparing different product categories (Cardello et al., 2012; King & Meiselman, 2010) or within a specific product category, such as dark chocolate (Thomson, Crocker, & Marketo, 2010), blackcurrant squashes (Ng, Chaya, & Hort, 2013a) and softeners (Porcherot, Delplanque, Gaudreau, & Cayeux, 2013).

These studies focused on different affective phenomena that do not consist only of emotions; the *EsSense Profile™* includes emotions but also diffuse affect states such as moods, characterised by a relative enduring predominance of certain types of subjective feelings (e.g. *loving or affectionate*; King & Meiselman, 2010), while the “conceptual profile” includes a mix of emotions and abstract conceptualisations with emotional connotations (e.g. *masculine or sensual*; Thomson et al., 2010).

Among psychologists, there is no universal agreement about exactly what an emotion is (see the reviews in Frijda, 2008; Frijda & Scherer, 2009; Galati, 2002; Scherer, 2005; see also the discussion

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about a working definition of emotion in Mulligan & Scherer, 2012). However, there is now a rather widespread acceptance that they have multiple components, including physiological arousal, motivation, expressive motor behaviour, action tendencies and subjective feeling. Emotions are characterised by a response synchronisation (they prepare appropriate responses to an event that disrupts the flow of behaviour), rapidity of change (they continuously readjust to changing circumstances or evaluations), behavioural impact (they prepare adaptive action tendencies), high intensity and relatively short duration; for these reasons, emotions can be distinguished from other affective phenomena such as preferences, attitudes, moods, affect dispositions and interpersonal stances (Scherer 2005).

However, it is clear that not only emotions, but also other affective phenomena are of interest for consumer sciences. In turn, this allows us to go beyond the problem of the scientific definition of the concept: product perception is mediated not only by the emotion that is elicited by the product at the moment, but also by the preferences and the affective disposition of the subjects, their moods and attitudes and by the feelings associated with the product in the mind of the consumer. In fact, emotions can be associated with a product by the brand or elicited by specific sensory properties that characterise it (e.g. sweet makes one feel happy, etc.), and especially by odours. A large number of studies have pointed out the tendency of odours to elicit emotions, suggesting a close relationship between olfactory and affective information processing (Chu & Downes, 2002; Herz, 2002; Herz, Schankler, & Beland, 2004; Herz & Schooler, 2002; Soudry, Lemogne, Malinvaud, Consoli, & Bonfils, 2011).

### 1.2. Emotion questionnaires in sensory and consumer studies

There are a number of reasons why well-established questionnaires developed in clinical psychology are unsuitable for measuring emotions associated with consumer products. Firstly, such questionnaires are typically focused on negative emotions while, in commercial product experience, positive emotions are predominant (Schifferstein & Desmet, 2010) and, secondly, because many of the terms included in psychological scales are not considered relevant by consumers to describe the emotions elicited by the tested product (Delplanque et al., 2012; King & Meiselman, 2010). Several marketing studies have tried to develop a set of descriptors (a lexicon) that should represent the full range of emotions that consumers most frequently experience in consumption situations (Laros & Steenkamp, 2005; Richins, 1997; Thomson & Crocker, 2013). In recent years, there have been concentrated efforts to develop standardised questionnaires to measure emotions in a product development context. GEOS (Geneva Emotions and Odour Scale) was developed to specifically study emotions associated with odours (Chrea et al., 2009; Porcherot et al., 2010) and recently was applied to actual products (Porcherot et al., 2013). The original GEOS consisted of 36 adjective emotional terms, but the new version of the method, ScentMove™ (Delplanque et al., 2012; Porcherot et al., 2010; Porcherot et al., 2012), consists only of six items, each labelled by a phrase identifying a class and illustrated by three words (nouns and adjectives). The *EsSense Profile*™ (originally developed by King & Meiselman, 2010), which has been applied to both food names and food products, employs a list of 39 emotions and mood presented as adjectives, only 3–5 of which are negative. The questionnaire was validated using different food categories for its discriminating power but few validated data are available to evaluate its application in a commercial context within the same product category (Cardello et al., 2012; Ng, Chaya, & Hort, 2013b; Ng et al., 2013a).

In the last few years, other approaches have appeared aside from the standardised questionnaires, with the aim of developing

a reduced list of emotions the most suitable for a specific product category (Ferrarini et al., 2010; Ng et al., 2013a; Thomson et al., 2010). Both of these approaches, standardised and product-specific, boast some advantages but also have some limitations. Standardised questionnaires are cheaper and easier to use than product-specific ones, but they can be less discriminating because of their general nature (Ng et al., 2013a). Such questionnaires also need to include many items to be certain not to miss important emotional dimensions, but that can have negative consequences on the respondents, such as fatigue or boredom (Jaeger, Cardello, & Schutz, 2013; Jaeger & Hedderley, 2013; Ng et al., 2013a). For this reason, it is suggested not to use *EsSense* with more than two samples (King, Meiselman, & Carr, 2013). On the other hand, *ad hoc* questionnaires reveal more about the product specificity and can furnish more fine-grained analyses, but they usually require substantial preliminary work – including interviews, focus groups, term selections – to develop the questionnaire.

### 1.3. Language and emotions: background and motivation for the research

Apart from the procedure chosen to develop questionnaires – standardised or an *ad hoc* – all these approaches do not really differ in the final format. Each presents to respondents a previously defined list of adjectives or nouns to select and/or rate in order to describe their emotional experience of the product. Adjectives are commonly recognised as the suited “labels” to indicate emotions and they are usually preferred to nouns in the studies because they seem to be more easily associated with immediate emotional experience (Plutchik, 1980). However, the emotional lexicon includes also verbs, adverbs, nouns and interjections (Gius, Cozzi, & Spagnotto 1992; Majid, 2012).

What is not generally considered is that there is not a strict correspondence between emotions and the words used to indicate them. Different phenomena have to be considered, such as the “slicing discrepancy”, which is due to the fact that emotional structures include more components than those denoted by natural languages. For instance, English, Dutch and Italian do not have different words to indicate different kinds of fear (Frijda & Zammuner, 1992) and Italian does not have different words to indicate the sadness characterised by rage or the quiet/sadness of boredom (D’Urso & Galati, 1990). Often, in absence of a specific word, emotions are expressed using a sentence that paraphrases the meaning.

The problem with many emotional words so is that each has multiple and thus ambiguous meanings, depending on the contexts on the individual experience of each speaker (Kagan, 2007). In each text, in fact, the meaning of a word is selected by the context defined by the other words that surround it in a sentence and by the situation in which the sentence is included: the topic of the text fixes which semantic properties are “activated” and consequently have to be considered and which of them could potentially be activated, but they were not in that context (Eco, 1979; Eco, 1990). Thus, it should be considered that words need a context to be interpreted correctly, that is to say in this case to be interpreted in the way the researcher expects that they should be interpreted.

Questionnaires are particularly sensitive to this problem of ambiguity in wording (Belson, 1981). Jaeger et al. (2013) pointed out the problem of lack of understanding and misunderstanding in the *EsSense* emotion list and emphasised the absence of a meaningful context that could help to reduce ambiguity. Presenting emotions organised in groups and not in a unique list has been tried as a way of addressing this problem (ScentMove™: Porcherot et al., 2010; Geneva Emotions Wheel: Scherer, 2005). Such a choice can be useful to help the respondent to better understanding the

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