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Use of emoticon and emoji in tweets for food-related emotional expression

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ABSTRACT

Emotional responses to food and beverages has been established as a significant research topic within sensory and consumer science. The current research contributes to this activity by building new insights regarding consumers' spontaneous expressions of food-related emotional experiences. This was done by analysing 12,260 tweets about breakfast, lunch, snack and dinner eating situations, previously retrieved by Vidal et al. (2015). A descriptive approach was adopted, wherein focus was direct to capturing frequency and diversity of emoticon and emoji use. It was found that consumers express a wide range of positive and negative emotions and that emoticon and emoji use is tailored to the content of the tweets. Emoji were used more frequently than emoticons to express emotions. While it was rare for tweets to include more than one emoticon or emoji, their use was almost exclusively in addition to other content of the tweet. Our results suggest that emoji and emoticon seem to be an easy and intuitive way to express emotions in a food context. This could represent an opportunity for development of non-verbal subjective methods to measure food-related emotions.

1. Introduction

Emotions, defined as short-term affective responses to the appraisal of stimuli with reinforcing potential, contribute to the control of basic human behavioural systems (Frijda, 1986; Gibson, 2006). Food and emotions have been reported to share a bi-directional relationship: on the one hand, emotions can shape food choice, food intake and liking; while, on the other hand, food consumption can influence consumers' mood and emotions (Canetti, Bachar, & Berry, 2002; Macht, 2008).

Studying emotional responses to food and beverages has become a major research interest within sensory and consumer science in recent years and has prompted the development of methodological approaches that seek product discrimination, independently of traditional hedonic responses (Meiselman, 2015).

The most common approach for studying food-elicited emotions has focused on explicit emotions, which are consciously perceived and, therefore, can be directly reported by consumers (Köster & Mojet, 2015). Several food-related emotion questionnaires have been developed by researchers in the last ten years by reviewing emotion lists or by directly asking consumers to state how they feel when consuming specific products (Chrea et al., 2009; Ferrarini et al., 2010; Gmuer, Nuessli Guth, Runte, & Siegrist, 2015; King & Meiselman, 2010; Ng, Chaya, & Hort, 2013; Porcherot et al., 2010; Spinelli, Masi, Dinella, Zoboli, & Monteleone, 2014). These questionnaires typically include 25–39 emotion words and have been used to characterise a wide range of product categories (Meiselman, 2015).

Although consumers have been reported to find these emotion questionnaires easy and intuitive, some of them think it is an odd/weird task (Jaeger, Cardello, & Schutz, 2013). This suggests that the use of emotion questionnaires can lead to demand characteristic bias, encouraging consumers to select emotional terms that are cognitively associated with the products, even if they are not actually experiencing them before, during or after consumption (Thomson & Crocker, 2015).

Therefore, a need exists for research on how consumers spontaneously express food-related emotions in their daily life. Determining if people actually report explicit emotions before/during/after food consumption can contribute to increasing the ecological validity of self-reported emotion measurements and demonstrate the real contribution of these methodologies for explaining consumers' food choices.

Internet, and particularly social media, represents an opportunity to obtain spontaneous consumer information elicited in real-life situations (Citrin, Stem, Spangenberg, & Clark, 2003). Twitter

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is one of the most popular social media, enabling users to send and receive text-based messages of up to 140 characters, called tweets, which can include photos and videos (Barash & Golder, 2010). Twitter has recently attracted interest from marketing and consumer science researchers (Carr et al., 2015; Fried, Surdeanu, Kodbourov, Hingle, & Bell, 2014; Ghiassi, Skinner, & Zimbra, 2013; Worch, 2014). The use of the internet for studying how consumers spontaneously express their food-related emotions could have the potential to change the way in which emotion research is carried out (Mostafa, 2014).

In a recent study, Vidal, Ares, Machín, and Jaeger (2015) reported that tweets about eating (breakfast, lunch, snack and dinner) included information about what was consumed, when, where, with whom, and why. These authors reported that consumers included references to mood and emotions in approximately 25% of the tweets. However, words were less frequently used than emoticons and emoji for this purpose, which suggests that the use of these graphical characters to express food-related emotions deserve further exploration.

Pictographs, such as emoticons and emoji, have been considered a partial substitute of standard language (Truss, 2004), as well as an effortless and automatic way of expressing emotions (Cowie et al., 2001). These symbols are basically abstractions of facial expressions or bodily gestures, which have been developed to help communicating emotions or mood in computer-mediated communications (Walther & D'Addario, 2001). Emoticons are basically typographic displays created by alphanumerical characters, for example. :) for happy and :(for sad (Wikipedia, 2015). Graphical characters are also used to convey emotional expressions, and these are called emoji, a Japanese word meaning "picture word" (refer to tables/Supplementary material for exemplars). Research has shown that emoticon and emoji are increasingly used in social networks, blogs and other applications by males and females of different ages (Huang, Yen, & Zhang, 2014; Huffaker & Calvert, 2005; Wolf, 2000).

Against this background, the present work aimed to better understand how emoticons and emoji are used by consumers to spontaneously express food-related emotional experiences. Focus was placed on eating situations as context and the situational appropriateness are expected to have a larger impact on emotional reactions than products themselves (Köster & Mojet, 2015). This was done by further analysing tweets about breakfast, lunch, snack and dinner, previously retrieved by Vidal et al. (2015). Considering the paucity of information regarding food-related emoticon use, a descriptive approach was adopted, wherein focus was on capturing frequency and diversity of emoticon and emoji use. The latter considered the different emoticons and emoji used in tweets, as well as associations between emoticon/emoji use and content of the tweets as it related to different characteristics of the eating situations. It was beyond the scope of this work to undertake a detailed comparison of emoticon and emoji use across different eating situations. Results from the present work are expected to provide insights on how consumers spontaneously express emotional reactions to eating and drinking (and the products they consume) and to support methodological development in relation to emotion research within the field of sensory and consumer research.

2. Methodology

2.1. Retrieval of the tweets and content analysis

The present work consists of a re-analysis of a study by Vidal et al. (2015), who presented a thematic content analysis of tweets about eating situations. This section summarises the process followed by these authors for retrieval of tweets and content analysis (see Vidal et al. (2015) for full details).

Tweets containing each of four English keywords – *breakfast, lunch, dinner,* and *snack* – were retrieved using the twitteR package (Gentry, 2014) of R software (R Core Team, 2013). Between 16,285 and 20,490 tweets for each eating situation were retrieved using multiple searches during five working days in September 2013. Repeated tweets and re-tweets were discarded, which led to 11,016–13,045 tweets being retained for content analysis in each of the four eating situations.

Due to the time-consuming nature of manual content analysis, this was performed on 4000 randomly selected tweets within each eating situation. Using a process of inductive coding (Krippendorff, 2004), two coders fluent in English and with more than 2 years of experience in consumer research classified the content of the tweets (and accompanying pictures/videos). The final themes and sub-themes (see Section 3 for details) were established by consensus and their frequency of mention determined. According to its content, each tweet was assigned to one or more themes. Tweets in which the content was not related to the eating situation, that were posted in languages other than English or tweets by companies/organizations were not considered for further analysis.

The total number of tweets included in this research was 12,260, roughly evenly distributed across the four eating situations.

2.2. Identification and classification of emoticons and emoji in tweets

In this research further analysis of the tweets described above was performed. Focus was directed towards tweets containing emoticons, created with alphanumerical characters, or pictographic emoji characters.

For alphanumerical emoticons, searches for 242 different emoticons were performed, comprising the Western style emoticon list from Wikipedia (2015) and possible variations (e.g., the emoticon (: was considered as a variation of :)). The Western list of emoticons was used because only tweets in English were considered. For purposes of data simplification, the different alphanumerical emoticons were grouped into 39 categories using the classification listed in Wikipedia.

Searches for the 631 emoji characters available in Twitter were also performed. For purposes of data simplification the emoji characters were grouped into seven categories listed in the Emojipedia (2015). Considering the descriptive focus of this research and comparison of emoticon and emoji use being of low priority, it was considered acceptable to use existing classification schemes rather than developing a unified classification scheme for both emoticons and emoji. The twitteR package retrieves emoji characters as specific character codes, as explained by Vidal et al. (2015). For example, using examples from Table 3, the emoji named *smiling face with smiling eyes* is represented by the code í ½íŠ, while the code í ½í corresponds to *loudly crying face*. In order to access the code for all the 631 emoji characters, they were posted in the Twitter account of one of the authors, and those tweets were retrieved using the twitteR package.

The valence of emoticons and emoji was classified by the authors into positive, negative and neither positive nor negative according to the facial expression or gesture they intended to convey and/or their written description (Emojipedia, 2015; Wikipedia, 2015). Published emotion classifications were considered (Ekman, 1994; Jiang, King, & Prinyawiwatkul, 2014; Laros & Steenkamp, 2005). Although interpretation of emoticons and emoji can differ among people, it was beyond the scope of the present paper to study these individual differences and therefore a single classification was considered.