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A comparison of five methodological variants of emoji questionnaires for measuring product elicited emotional associations: An application with seafood among Chinese consumers

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ABSTRACT

Product insights beyond hedonic responses are increasingly sought and include emotional associations. Various word-based questionnaires for direct measurement exist and an emoji variant was recently proposed. Herein, emotion words are replaced with emoji conveying a range of emotions. Further assessment of emoji questionnaires is needed to establish their relevance in food-related consumer research. Methodological research contributes hereto and in the present research the effects of question wording and response format are considered. Specifically, a web study was conducted with Chinese consumers (n = 750) using four seafood names as stimuli (mussels, lobster, squid and abalone). Emotional associations were elicited using 33 facial emoji. Explicit reference to "how would you feel?" in the question wording changed product emoji profiles minimally. Consumers selected only a few emoji per stimulus when using CATA (check-all-that-apply) questions, and layout of the CATA question had only a small impact on responses. A comparison of CATA questions with forced yes/no questions and RATA (rate-all-that-apply) questions revealed an increase in frequency of emoji use for yes/no questions, but not a corresponding improvement in sample discrimination. For the stimuli in this research, which elicited similar emotional associations, RATA was probably the best methodological choice, with 8.5 emoji being used per stimulus, on average, and increased sample discrimination relative to CATA (12% vs. 6–8%). The research provided additional support for the potential of emoji surveys as a method for measurement of emotional associations to foods and beverages and began contributing to development of guidelines for implementation.

1. Introduction

1.1. Emoji surveys as a research instrument

Interest in measuring product-elicited emotional associations has markedly increased since 2010, in part driven by the field's diversification "beyond hedonics" (Meiselman, 2013). Several word-based emotion surveys for product-focused sensory and consumer research have emerged, varying in question wording, length, response scales, language, etc. (see Cardello and Jaeger (2016) for a review). Despite their growing popularity, some concerns exist over infrequent use of words by consumers when conveying food-related emotions and task completion feeling odd/weird to some participants (Jaeger, Cardello, & Schutz, 2013; Köster & Mojet, 2015). For this reason, diversification of methods for measuring consumers' emotional associations to products is warranted.

With this impetus, Jaeger, Vidal, Kam, and Ares (2017) introduced emoji as an alternative to emotion words for use in surveys that elicit emotional product associations. Emoji ("picture word" in Japanese) are graphical characters used in computer-mediated communications to convey ideas, attitudes, moods and emotions and partially substitute written language (Luangrath, Peck, & Barger, 2016; Truss, 2004). They are said to be the fastest growing language in history (Emogi Research Team, 2015) and are particularly popular in Asia. After Korean and English they are South Korea's "third language," according to Studer (2016). Jaeger et al. (2017) proposed that emoji could be more familiar and intuitive for consumers to use than emotion words and encouraged evaluation of their potential in research. To this end they conducted online surveys with consumers in the USA and China, and using food names as the stimuli established patterns of product characterisation and discrimination that matched expectations. They concluded that

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Table 1

Experimental conditions and research questions implemented in an online study with Chinese consumers (n = 150 per condition, between-subjects design) to investigate effect of question wording, stimulus context and response format on emoji questionnaires used for direct measurement of product-elicited emotional associations.

Experimental condition	Question wording	Response format/layout	Research question
EC1	Imagine you are eating < food name > . How would you feel?	CATA by clicking on emoji (all emoji visible, no scroll-down)	RQ1, RQ2
EC2	Imagine you are eating < food name > .	CATA by clicking on emoji (all emoji visible, no scroll-down)	RQ1
EC3	As EC1	CATA by clicking on check-boxes next to each emoji (scroll down required to give answers for all emoji)	RQ2, RQ3a, RQ3b
EC4	As EC1	Forced yes/no by clicking on check-boxes next to each emoji (scroll down required to give answers for all emoji)	RQ3a
EC5	As EC1	RATA by clicking on check-boxes next to each emoji (scroll down required to give answers for all emoji). 3-pt. scale used (low, medium or high)	RQ3b

For data collection, < food name > was either mussels, lobster, squid or abalone (monadic presentation).

emoji have potential for use in measurement of product-elicited emotional associations, but also noted several possible concerns and recommended further research. The present research is motivated by these recommendations and focuses on methodological aspects of data collection. The focus areas are described below.

1.2. Methodological issues of interest

A large, and increasing, number of emoji are available (> 1200) (Emojipedia, 2016). Amidst this diversity, emotional expression is just one of multiple uses of emoji (e.g., Hogenboom et al., 2015; Schlichtkrull, 2015; Thompson & Filik, 2016). Thus, while it is standard practise in emotion-word surveys to instruct participants to consider how they feel/what emotions they experience (Cardello & Jaeger, 2016), such explicit instructions may not be warranted in emoji survey. People often use emoji to personalise their messages and express humour, irony, sarcasm, etc. (e.g., Kaye, Wall, & Malone, 2016; Thompson & Filik, 2016; Thompson, Mackenzie, Leuthold, & Filik, 2016), but they may not actively think of it as expressing emotions. Although that is in fact what they are doing (Jaeger & Ares, 2017), drawing this to their attention may make some respondents feel odd/weird, as noted by Jaeger, Cardello and Schutz (2013). Comparing emoji responses elicited with and without explicitly instructing respondents to consider how they feel as they complete the survey task is, therefore, worthwhile. Moreover, it is also a methodological question that remains to be addressed in word-based emotion surveys (Jaeger & Cardello, 2016).

In their online studies, Jaeger et al. (2017) found that consumers selected few rather than many emoji per stimulus. Although this response pattern was consistent with spontaneous emoji use in food-related Twitter messages (Vidal, Ares, & Jaeger, 2016), the use of CATA questions could also be a factor. Methodological investigations of CATA questions (and variants hereof) for sensory product characterisation by consumers show CATA questions to be associated with lower term citation frequencies, on average, than yes/no forced-choice questions (Jaeger et al., 2014). Although Jaeger et al. (2017) suggested that selection of 1–2 emoji per stimulus reflect natural use, some adopters of the proposed emoji method may prefer less sparse data. Tentatively, yes/no forced-choice questions could be implemented in such pursuit. Rate-all-that-apply (RATA) questions, proposed by Ares et al. (2014), is a variant of CATA questions wherein selected terms are also rated on a 3-pt. scale ('low', 'medium' or 'high'). Considering results from use of RATA questions for sensory product characterisation by consumers, this question format may also increase frequency of emoji use and have some advantage over CATA questions in ability to significantly discriminate between stimuli (Meyners, Jaeger, & Ares, 2016; Vidal, Ares, Hedderley, Meyners & Jaeger, 2016). In light of the findings by Jaeger et al. (2017) that sample discrimination for some emoji was low, especially between similar stimuli (e.g., pear and kiwifruit), improvements in this regard, achieved through methodological variations

warrant attention.

Layout of questions and questionnaires has been extensively studied in the survey research literature and found to exert various influences on elicited responses, including response frequency (e.g., Christian, Parsons, & Dillman, 2009; Groves et al., 2009; Oppenheim, 2000; Stern, Dillman, & Smyth, 2007; Toepoel, Das, & Van Soest, 2009). For hedonic measurement it has also been demonstrated that choice of scale can influence consumers' product evaluations (e.g., Lim, 2011; Schutz & Cardello, 2001). This suggests that question layout could influence CATA responding, but empirical research is lacking.

2. Materials and methods

2.1. Research questions

A between-subjects experimental design was used to address three research questions as motivated above: RQ1) What is the effect of question wording in CATA emoji questions, stating (or not) that participants must consider "how would you feel?"; RQ2) What is the effect of CATA question layout on emoji responding?; and RQ3) What is the effect of response format on emoji responding (CATA vs. yes/no forced-choice questions - RQ3a; and CATA vs. RATA - RQ3b). Table 1 summarises the research questions and the experimental conditions used to address these. A web survey was used for data collection.

2.2. Participants

A total of 750 Chinese consumers took part in a web study, with about 150 people for each of the five experimental conditions. All were highly proficient in Mandarin, and, overall, the sample was diverse with respect to key demographic, socio-economic and behavioural characteristics (Table 2). The distribution of socio-economic and behavioural characteristics was not statistically different across the 5 experimental conditions ($p > 0.24$, except for ownership of tablet/iPad, for which $p = 0.04$).

To be eligible for participation, consumers must like many types of seafood and have eaten the focal seafood products in the past three years. Participants who abstained from eating a major food group and/or otherwise had a restricted diet were excluded (e.g., nut free, dairy free, gluten free or fat free). Additionally, to be eligible for participation, ownership of a hand-held mobile device was required (proxy for familiarity with/use of emoji).

2.3. Food names and emoji selection

The stimuli were the names of 4 seafood products: mussels, lobster, squid and abalone. Seafood is widely consumed in China (e.g., Fabinyi, 2012; Lindkvist, Trondsen, & Xie, 2008; Xu, Zeng, Fong, Lone, & Liu, 2012), an important global commodity (e.g., Gephart & Pace, 2015; Swartz, Sumaila, Watson, & Pauly, 2010; Watson, Green, Tracey,