



Signal detection-based satisfaction measure of the holistic product usage experience with and without the ‘double-faced applicability’ test

In-Ah Kim^a, Danielle van Hout^b, Hye-Seong Lee^{a,*}

^a Department of Food Science and Technology, College of Engineering, Ewha Womans University, Seoul 03760, South Korea

^b Unilever R&D, Olivier van Noortlaan 120, Vlaardingen, The Netherlands

ARTICLE INFO

Keywords:

Consumer test
Acceptance test
Degree of satisfaction-difference (DOSD)
Hedonic rating
Affect magnitude
Product discrimination

ABSTRACT

In the fast moving consumer goods industry, measuring consumer acceptance toward products is crucial for product development and marketing. Consumers are generally considered hedonists and, thus momentary hedonic scores are assumed to represent consumer acceptance. Yet for many product types, such as household care products, consumers might be considered utilitarian and their usage experience with the product might be equally important for consumer acceptance. To quantify consumer holistic product usage experience, a two-step signal detection rating-based satisfaction measure was used such that an independent signal detection theory index termed d'_A (d-prime affect magnitude) could be computed for each product to represent consumer satisfaction with the usage experience and with the product itself. The objective of the present study was to investigate the effect of simultaneous attribute evaluation using the ‘double-faced applicability’ (DFA) test on product discrimination of this satisfaction measure. The conventional 10-point hedonic ratings with and without the DFA test were used as control methods for comparison. Results showed that significant product discriminations were observed only in the group who performed the satisfaction measure with the DFA test. Also, significant discriminations in quality attributes of the DFA test questionnaire were more frequently observed in the group that performed the satisfaction test than in those who performed the hedonic test. These results indicate that compared to using hedonic scores, the satisfaction test with the DFA has the potential to improve research on the quality predictors of household products.

1. Introduction

Measurement of consumer acceptance is crucial for product development and marketing. In sensory and consumer science, the most common way for measuring consumer acceptance toward products is hedonic ratings, based on the assumption that the higher the momentary hedonic ratings of sensory experience of the product, the stronger the acceptance of the product (Kim, Dessirier, van Hout, & Lee, 2015). Also, in the fast moving consumer goods (FMCG) industry, based on the outcome of hedonic ratings, the relationship between consumer acceptance and product characteristics has been successfully investigated (i.e., identifying the drivers of liking/disliking) in order for competitive sustained product development, efficient optimization and product reformulation (van Trijp, Punter, Mickartz & Kruithof, 2007; Worch, Dooley, Meullenet, & Punter, 2010; Bruzzone et al., 2015). More recently, inclusion of consumer-based rapid descriptive measures for the list of attributes that allow sensory characterization of the products such as check-all-that-apply (CATA) and various CATA variants in the hedonic ratings has been regarded as a suitable approach for

simultaneously collecting hedonic and sensory information (Jaeger et al., 2013; Jaeger & Ares, 2014, 2015; Ares & Jaeger 2015; Jaeger et al., 2017).

In spite of the popularity of hedonic ratings (i.e., overall liking), they only generally elicit the consumers’ responses of the momentary appreciations and consumption of the products and are not likely to reflect the consumers’ overall affective response to the holistic usage experience. Cardello, Schutz, Snow and Leshner (2000) pointed out that liking focuses only on the hedonic aspects of the product itself, whereas satisfaction implies a generalized appreciation of the product within some broader situational contexts. The authors stressed the importance of evaluating consumer satisfaction as a more appropriate way to measure consumer acceptance of foods rather than evaluating liking (Cardello et al., 2000). Consumer satisfaction has been defined as “a judgment that a product/service provided a pleasurable level of consumption-related fulfillment” (Oliver, 1997), and thus it has been considered to be related to consumers’ affective responses to consumption (Srivastava & Kaul, 2014; Giese & Cote, 2000). It was also reported that satisfaction could be regarded as a multi-dimensional

* Corresponding author.

E-mail address: hlee@ewha.ac.kr (H.-S. Lee).

<https://doi.org/10.1016/j.foodqual.2018.02.005>

Received 9 August 2017; Received in revised form 12 February 2018; Accepted 12 February 2018

Available online 13 February 2018

0950-3293/ © 2018 Elsevier Ltd. All rights reserved.

concept or a holistic response variable (Andersen & Hyldig, 2015). Thus, for measuring the consumer acceptance of various FMCG products, a satisfaction measure based on a more holistic approach that takes into account all the stages of consumer product usage experience can be an alternative to hedonic ratings.

Kim, van Hout, Dessirier, and Lee (2018) have introduced a new signal detection-based in-direct scaling method called ‘Degree Of Satisfaction-Difference (DOSD)’ for measuring consumer acceptance towards personal care products. DOSD is similar to ‘Degree Of Difference (DOD)’ in terms of making comparisons with the reference product, but differs from DOD in terms of using consumer sensory satisfaction as the evaluative dimension rather than the overall difference. A more important difference between the two methods is that DOSD is a hybrid method where each test product presented with the reference product as a pair is assessed by both individual satisfaction evaluation - ‘satisfying’ or ‘not satisfying’, and pair-wise comparison – more or less than, or equally satisfied to the reference. Also, in their investigation, the cognitive warm-up phase of evoking consumers’ product expectation preceded the actual product evaluation with DOSD to rationalize the satisfaction evaluation and the satisfaction for the momentary sensory perception of the product was studied in a way similar to how the hedonic ratings have commonly been applied. With such condition, the authors demonstrated DOSD’s superior reliability in affective product discrimination by stabilizing the evaluative process from the product range effects and showed its potential as an alternative consumer acceptance measurement to hedonic ratings. It would be worth further investigating different ways of measuring consumer satisfaction responses and testing whether satisfaction question rather than liking would also be effective for measuring the consumer product usage experience.

Holbrook (1999) describes active *versus* reactive dimensions for consumer evaluation. Active value can be defined as consumer value resulting from the physical or mental manipulation of a product (e.g., fun and efficiency), while reactive value can be defined as the consumer value that comes from appreciating, apprehending or admiring a product (e.g., aesthetics, excellence). When measuring consumer satisfaction of the product usage experience, accordingly, DOSD can be modified to include two dimensions: ‘satisfied product usage experience (active)’ and ‘satisfying product (reactive)’. It would also be interesting to investigate whether consumers are more sensitive to either one of these two dimensions of satisfaction response.

Recently, Kim, Hopkinson, van Hout and Lee (2017a) introduced the ‘double-faced applicability’ (DFA) test which uses a two-step rating process (1st step: forced-choice Yes/No questions, 2nd step: 3-point sureness rating) in the evaluation as an alternative to a descriptive measure. Such an overall satisfaction measure of holistic product usage experience can also be used in combination with the DFA test to obtain information on the product characteristics and predict the quality attributes that significantly influence the overall satisfaction. As ‘double-faced’ attributes (a pair of semantic-differential positive and negative descriptors) are used in the DFA test, using the satisfaction measure in combination with the DFA test facilitates investigating which of the positive and negative descriptors are more influential on the consumer satisfaction perception. It can be hypothesized that using the satisfaction measure in combination with the DFA test is beneficial for product discrimination for measuring consumer product usage experience. This is feasible because consumer-relevant product attributes listed in the DFA test can be used as memory cues for consumers to recall their expectation and usage context, and in turn remind them of their own evaluative criteria.

The objective of present study was to explore whether the inclusion of the DFA test would improve the sensitivity in product discrimination of the satisfaction test. The satisfaction measure using a two-step rating was used as an acceptance test method for studying both consumer product usage experience and the product itself in the context of signal detection theory (SDT). For the SDT analysis of responses obtained from

the DFA test, Kim, Hopkinson, van Hout and Lee (2017b) introduced the novel measure of affect magnitude (d-prime affect magnitude, d'_A). This d'_A estimate represents the affect (positive or negative) magnitude of each sample for each attribute and it was computed from the responses of the two-step rating-based DFA test by considering the response ratio of positivity to negativity as the ratio of signal to noise in the context of SDT (Kim et al., 2017b). In the present study, this d'_A analysis is extended and applied to derive the quantitative output measure of consumer satisfaction with the product as perceived through the holistic product usage experience. The 10-point hedonic ratings (i.e., overall liking for product) with and without the DFA test were also used as control methods. The conventional ANOVA was applied for the hedonic ratings to reflect the overall liking differences of products in comparison to the satisfaction d'_A analysis.

2. Materials and methods

2.1. Consumers and experimental design

Two hundred and forty female consumers aged 18–56 years old were recruited through on-line and off-line bulletin boards at Ewha Womans University and around the campus (Seodaemun-gu, Seoul, South Korea), as well as on job-search websites. A pre-survey was conducted during the recruitment process in order to prove that the consumers who participated in this experiment were the actual users of the worktop and surface cleaner used in this study. The pre-survey also included questions about surface cleaners and cleaning experiences to confirm that the participating consumers had cleaned the kitchen sink and worktop at least once a month and had used surface cleaner products for at least a year.

Two different types of acceptance test method (Satisfaction test using forced-choice question with two-step rating vs. 10-point hedonic ratings) were studied with and without inclusion of the DFA test in 2×2 design using an independent samples design. Considering the age and responses to the pre-survey questions, sixty consumers were divided into four groups as follows:

- Satisfaction test using forced-choice question with two-step rating (age: 24.7 ± 7.8 yrs);
- Satisfaction test using forced-choice question with two-step rating with the DFA test (age: 24.7 ± 7.7 yrs);
- 10-point hedonic ratings (age: 24.7 ± 6.7 yrs);
- 10-point hedonic ratings with the DFA test (age: 24.7 ± 6.7 yrs)

Among these four experimental groups, there was no difference in cleaning experience.

This study was approved on ethical and safety grounds by the Institutional Review Board (IRB) of Ewha Womans University. The study participants had to meet the following inclusion criteria: 1) they did not have any skin or respiratory ailments, especially provoked by cleaner products for kitchens or bathrooms; and 2) they had no pain or hand tremors after moving hands, wrists or arms repeatedly. All participants submitted the consent form before the study began. After the test, they received some monetary compensation for their participation.

2.2. Samples

Five different household surface cleaner samples were created and supplied by Unilever R&D. These five samples were coded as S1, S2, S3, S4, and S5 for convenience. Among these five samples, S1 and S5 with the most similarity in characteristics were used in the practice sessions as well. Approximately 600 mL of a sample was put into a 750 mL clear yellow plastic trigger spray bottle. The bottles were identified by 3-digit random numbers on the labels.

Download English Version:

<https://daneshyari.com/en/article/8838433>

Download Persian Version:

<https://daneshyari.com/article/8838433>

[Daneshyari.com](https://daneshyari.com)