An implicit behavioral approach to understand user satisfaction while preparing and consuming food at home

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Abstract

We developed and tested a behavioral measure to better understand the entire experience and related satisfaction for a commercial packaged food. Measures were performed at home considering the entire food experience, i.e. food unpacking, food preparation and consumption. Participants filmed their interaction at home with the food and also scored in a questionnaire their satisfaction for a list of sensory and functional attributes as well as their overall satisfaction. Whereas quantitative analyses of behaviors provided insights explaining overall satisfaction, sensory and functional satisfaction rating did not. The implicit behavioral approach seems more adapted to understand user's satisfaction during interaction with a commercial packaged food at home compared to explicit questionnaire assessment.

Introduction

Traditionally, studies of consumer satisfaction with food have measured overall liking and/or specific sensory attribute liking through questionnaires at the moment of consumption [1]. They are usually administered in controlled environment (e.g. Central Location Test). Such practices fail to capture: 1) the entire experience related for instance to packaging opening or food preparation; and 2) the everyday context of consumption, which both strongly impact food satisfaction [2-4]. In addition, questionnaire assessment does not allow to capture processes that contribute unconsciously to food satisfaction such as the duration requested to open a packaging and the time needed for cooking. Behavioral observation could be a promising approach to apprehend the impact of such processes on consumer satisfaction.

In this context, the objective of the present research was to assess the added value of implicit behavioral measure in a naturalistic environment, i.e. at home, to understand the impact of interaction with a commercial packaged food on user's satisfaction compare to outcomes from explicit questionnaire assessment.

Materials and methods

Participants and products

64 participants (aged between 20 to 55 years old) were recruited because of their willingness to buy and try the commercial packaged food chosen in this study. Participants were invited by groups of 6 to a 1-hour briefing session to receive the packaged food, the protocol instructions including a procedure to position the camera in their kitchen and to film themselves while interacting with the packaged food, a camera (Toshiba Camiléo P25, video resolution of 1920 x1080 pixel) and a tripod to stabilized the camera while filming.

Self-recorded video and self-administered questionnaire

Behavioral observations were based on videos taken by participants using a standard pocket camera to avoid the intrusive presence of a researcher. At home, participants set up the camera on its tripod so that their interaction with the packaged food was filmed from food unpacking stage to food preparation. After finishing the food preparation, participants rated their satisfaction for a list of 9 sensory (e.g. food appearance) and functional (e.g. food unpackaging) attributes covering their interaction with the food (the nature of the commercial food as well as the full list of attributes cannot be divulged for confidentiality purpose). This sensory/functional satisfaction rating is widely used in consumer research [5]. After food consumption, they scored their overall satisfaction for the

Proceedings of Measuring Behavior 2014, (Wageningen, The Netherlands, August 27-29, 2014).
Editors: A.J. Spink, L.W.S. Loijens, M. Woloszynowska-Fraser & L.P.J.J. Noldus. www.measuringbehavior.org

entire experience, i.e. from food unpacking till the end of the consumption. Rating was performed using visual analogue scales anchored at the extremity with extremely unsatisfying (left) and extremely satisfying (right).

Data analyses

A glossary combining 11 behaviors such as "food unpacking", "reading of food preparation instructions" (as for the list of attributes, the full list of behaviors is confidential) and definitions was developed during a pilot study performed in a kitchen of the Nestlé Research Center with 18 participants recruited from Lausanne and surroundings. The development of the coding scheme and coding of behaviors in terms of duration and/or frequency (for instance "food unpackaging" was only coded as duration) were performed in Observer XT 11.5 [6]. Trained staff from Noldus Information Technology company performed the behavioral coding.

Before conducting statistical analyses, behavioral and rating data non-normally distributed across participants were either log-transformed (for behavior durations and ratings) or squared root transformed (for behavior frequencies). A multiple regression analysis was computed on individual data to investigate the correlations between user overall satisfaction rating scores and the output variables, i.e. attribute rating scores and behavior frequencies/durations. Correlations were considered as significant when R-Squared p-value was below 0.05. All analyses were performed using NCSS software [7].

Results and discussions

The multiple regression model significantly estimated the overall satisfaction according to the output variables as R-Squared equal to 0.56 (p-value=0.01). Three behaviors (named A, B and C) out of the 11 significantly contributed to the overall satisfaction with R-Squared values equal to 0.08 (p-value<0.01), 0.07 (p-value= 0.01), and 0.04 (p-value=0.05), respectively. Sensory/functional satisfaction attributes measured with the questionnaire did not significantly contributed to the overall experience satisfaction as the R-Squared value for each of the 9 attributes did not reach a significant level. The final regression model was as follows:

*Overall satisfaction=-2.69*Behavior A frequency+1.68*Behavior B duration-1.24*Behavior C frequency+7.46*

According to this model, the longer the duration of behavior B and the lower the occurrence of behaviors A and C, the more satisfying the overall experience. The implicit behavioral approach highlighted that specific behaviors occurring during food unpacking and food preparation impacted the overall user's satisfaction but explicit questionnaire assessment did not significantly contributed to explain overall satisfaction.

Future perspectives

In the context of this study, the multiple regression modelling was an efficient tool to identify behaviors impacting consumer satisfaction while interacting with the product. Further research with different types of packaged foods is required to generalize the relationship between specific behaviors and consumer satisfaction and to validate the applicability of the multiple regression modelling. Today, it remains unknown whether behaviors occurring during the entire product experience can impact perception of specific food benefits (e.g. perceived quality, perceived healthiness) and additional investigations are required.

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