

Contents lists available at ScienceDirect

Food Quality and Preference

journal homepage: www.elsevier.com/locate/foodqual

Short Communication

Consumer evaluation of healthy, unpleasant-tasting food and the post-taste effect of positive information



Food Quality and Preference

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ARTICLE INFO

Keywords: Healthy food Unpleasant taste Information Order effect Mobilization-minimization hypothesis Judgement

ABSTRACT

Previous research on taste evaluations has often featured tasty foods. However, some foods taste unpleasant, particularly those that are good for our health. In two experiments, we showed that for unpleasant-tasting foods, the effect of positive information on taste experiences differs from the findings in the previous literature. When positive information about the food was given after tasting, participants evaluated the product experience more positively than when the same information was given before tasting. Here, we propose the mobilization-minimization hypothesis as a potential explanation for this post-tasting positive information effect. Furthermore, mediation analysis revealed a significant indirect effect of information order on product evaluation through emotional change. Taken together, learning positive information about unpleasant-tasting foods, particularly about their health benefits, may minimize the negative emotional impact of that experience, thereby positively influencing product evaluation. The theoretical and practical implications of this research are discussed.

1. Introduction

Generally, we prefer tasty, delicious foods to unpleasant-tasting ones. However, some foods taste unpleasant, particularly those that are good for our health (Raghunathan, Naylor, & Hoyer, 2006; Wansink, Park, Sonka, & Morganosky, 2000). One such example is a green juice with fresh kale, ginger, celery, cucumber, and green apples. Promoting a healthy diet is important because obesity remains a major public health problem in many developed countries, including the United States (Senthilingam, 2017). Thus, considering how marketers could shape individuals' experiences with healthy but unpleasant-tasting foods is important.

Previous research has shown that positive product information enhances an individual's taste experience when provided before rather than after consumption (Braun-LaTour & LaTour, 2005; Lee, Frederick, & Ariely, 2006; Levin & Gaeth, 1988; Litt & Shiv, 2012; Wilcox, Roggeveen, & Grewal, 2011). For example, Wilcox et al. (2011) demonstrated that when participants were informed that chocolate was from a Swiss manufacturer (i.e., positive information) before (vs. after) sampling, their evaluations of the chocolate became more positive (negative).

However, for unpleasant-tasting foods, we argue that the order effect of positive information is reversed. In other words, when positive

information is given *after* tasting, individuals evaluate the product experience more positively than when the same information is given *before* tasting. Here, we propose the mobilization-minimization hypothesis (Taylor, 1991) as a potential explanation for the underlying mechanism of this post-experience positive information effect on unpleasant-tasting foods. This theory suggests that negative events elicit stronger affective responses and prompt more cognitive analysis than neutral or positive events. In other words, this theory assumes that negative stimuli, such as extremely unpleasant-tasting foods, elicit strong negative emotional responses. These negative emotional states lead to an intensified attributional information search, which can cope with and mitigate the negative states.

Thus, this study's key contributions are twofold. First, although previous research has focused on the positive information effect for tasty foods, our research is a novel demonstration of how positive information can change an individual's experiences of unpleasant-tasting foods. Second, our proposed theory extends the literature on positive information's order effect on taste experiences by demonstrating that in some cases, such as unpleasant-tasting foods, the result could be the opposite (i.e., positive information is more effective when provided after tasting than before). Thus, our findings clearly show that the positive information effect on taste experiences differs between pleasantand unpleasant-tasting foods.

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https://doi.org/10.1016/j.foodqual.2018.01.006

Received 27 August 2017; Received in revised form 9 January 2018; Accepted 9 January 2018 Available online 31 January 2018 0950-3293/ © 2018 Elsevier Ltd. All rights reserved.

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1.1. Effect of product information on taste experience evaluation

Previous research has shown that product information affects an individual's taste perception. For example, brown (vs. green) coloured and "dark chocolate" (vs. "milk chocolate") labelled m&m's were evaluated as being richer in flavour (Shankar, Levitan, Prescott, & Spence, 2009). In addition, a number of studies confirmed that colour had a significant influence on the flavour identification of drinks (see Spence, 2015 for a review).

Furthermore, research has investigated the order effect of product information on an individual's judgement (Braun, 1999; Braun-LaTour & LaTour, 2005; Lee et al., 2006; Levin & Gaeth, 1988; Wilcox et al., 2011). For example, Braun-LaTour and LaTour (2005; see also Braun, 1999) found that advertisements could have positive effects on both memory-based and immediate quality judgements. Wilcox et al. (2011) explained that when positive information was presented before tasting, it could have an assimilation effect, such that the individuals evaluated the experience more positively (i.e., individuals' evaluation of the product experience is assimilated with the product information). These researchers then extended the work above by demonstrating that when positive information is presented after tasting, it results in a contrast effect such that individuals evaluate the same experience more negatively (i.e., individuals' evaluation of product experience is contrasted with the product information).

Wilcox et al. (2011) argued that the order in which information is presented (before or after tasting) should influence how distinct the information is perceived to be and what effect it has on the evaluation of the experience. When information is presented before tasting, the information is accessible while individuals evaluate the product, whereas when information is presented after tasting, the information is not accessible until after they form their initial evaluation. This difference in when information becomes accessible affects individuals' product evaluation. Based on the above findings, we argue that for unpleasant-tasting foods, individuals will better evaluate the product experience when they first taste foods and then receive positive information.

While previous studies such as that reported by Lee et al. (2006) have explored a similar question on the effect of information on unpleasant-tasting food, our study is distinct in three ways. First, Lee et al. examined the effect of negative information. In their study, the secret ingredient (a few drops of balsamic vinegar) added to the regular beer was disclosed before or after tasting. In contrast, we examined the effect of positive information. Second, although Lee et al.'s result suggested that information, when presented after tasting, did not modify the interpretation of the experience, we showed that positive information does change the evaluation of an unpleasant-tasting food when presented after tasting. Third, the unpleasantness of taste is different between Lee et al.'s study and our study. Lee et al. reported that the taste of beer was not degraded (p. 1055). In other words, the stimuli were actually tasty. In contrast, our stimuli really tasted unpleasant. The taste of ku ding tea used in the experiment was extremely bitter. Thus, this research would be the first of its kind to study and examine the effect of positive information on unpleasant-tasting foods.

2. Study 1

Our first study primarily tested our prediction that positive information would enhance the participants' evaluation of an unpleasanttasting food when it is presented after tasting rather than before tasting. Based on Lee et al. (2006), we compared overall product evaluations across three conditions: a control condition, in which the information was not provided, and two disclosure conditions, in which the information was provided either before tasting or after tasting.

2.1. Method

2.1.1. Stimuli

Ku ding tea (*ku* means bitter in Chinese) was selected as the healthy but unpleasant-tasting product stimulus through a pre-test conducted on 30 undergraduates. Participants were asked to evaluate one of three healthy but unpleasant-tasting drinks: *Ku ding* tea, *Healthya* tea, and *Jiaduobao* drink. The unpleasantness of the drinks was assessed using a single item (unpleasantness) on a seven-point scale (1 = very unpleasant to 7 = not unpleasant at all, reversed item). *Ku ding* tea was evaluated as being the most unpleasant tasting (M_{Ku} ding = 5.50, $M_{Jiaduobao}$ = 3.70, $M_{Healthya}$ = 2.10). Indeed, it tasted very bitter.

2.1.2. Participants and procedure

In the experiment, 89 undergraduates (12 females, $M_{age} = 22.98$ years, SD = 4.82) participated. Positive information concerned the tea's health benefits (e.g., lowers cholesterol and blood sugar level and prevents diabetes). Participants were randomly assigned to one of three conditions: information before tasting (pre-tasting), information after tasting (post-tasting), or no information (control). In the pre-tasting condition, participants were given information on Ku ding tea's health benefits and then instructed to taste the tea served in a paper cup and answer several questions about the tea. However, participants in the post-tasting condition were first instructed to taste the tea; then, before completing evaluations, they were informed about the tea's health benefits. In the control condition, participants were only instructed to taste the tea and then to evaluate it. A post hoc power analysis using G*Power 3.1.9 (Faul, Erdfelder, Lang, & Buchner, 2007) revealed that the sample had a power of 95% to detect group differences.

Overall product evaluation was measured using two items on a seven-point scale (1 = not at all satisfied with the drink to 7 = very much satisfied with the drink; 1 = dislike the drink very much to 7 = like the drink very much; Cronbach's α = .91). An institutional review board approved this study before data collection.

2.2. Results and discussion

We tested our hypothesis using one-way analysis of variance (ANOVA) with product evaluation as the dependent variable and information order as the independent variable. The main effect of information order was significant ($F(2, 86) = 7.69, p = .001, \eta^2 = .15$). Planned contrasts indicated that evaluations were higher for the posttasting condition (M = 3.55, SD = 1.54) than for the pre-tasting condition (M = 2.13, SD = 1.41, t (86) = 3.77, p < .001, d = 0.96). Furthermore, the control condition's evaluation (M = 2.48, SD = 1.41) significantly differed from that of the post-tasting condition (t(86) = 2.81, p = .006, d = 0.72); however, the pre-tasting condition did not (t(86) = -.92, p = .36). These findings indicated that when positive product information was presented after tasting, the product evaluations were more positive; however, when this was presented before tasting, the information did not influence evaluations. This result supported our hypothesis.

3. Study 2

Study 2 had two objectives. The first objective was to replicate the effects observed in the previous study using different positive product information. Specifically, we used social value-related information (e.g., prestige) instead of functional value-related information (e.g., health). We expected the participants' choices to be consistent with the previous experiment's results such that participants would highly evaluate the unpleasant-tasting food when the information was provided after tasting rather than before tasting. To simplify the experiment, we dropped the control condition and merely focused on order effects (Wilcox et al., 2011). We used the same stimuli, *Ku ding* tea, for

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