

Research report

Hedonic ratings and perceived healthiness in experimental functional food choices

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Abstract

The associations of liking and perceived healthiness ratings between repeated food choices were studied in two experiments. Participants' snack bar ($n = 41$, Experiment I) and beverage ($n = 60$, Experiment II) choices among six product alternatives were monitored for 4 and 3 weeks, respectively. In Experiment I, participants were allowed to familiarise themselves with snack bar alternatives ("familiar assortment") prior to making choices. In Experiment II, the participants started making their beverage choices without familiarising themselves ("unfamiliar assortment"). In both experiments, the participants were divided into three groups according to their choice behaviour for each alternative: non-interested (0 choices), experimenters (1 choice) and potential frequent users (2 or more choices). In Experiment I, the overall difference between non-interested and potential frequent users of a product was 1.3 points in expected liking and 2.6 points in actual liking on a 7-point scale (ANOVA, $p < 0.001$). In Experiment II, the overall differences in blind hedonic ratings between non-interested participants and potential frequent users of a product were within a range of 0.9 points ($p < 0.001$). The difference was wider for expected liking ratings, 1.3 points ($p < 0.001$). Neither the perceived healthiness of the samples nor the background attitudes could be consistently associated with the choices (Pearson's correlation coefficient).

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Introduction

When purchasing food, we make a considerable number of minor choices every day. We process the alternatives through our individual attitudes, perceptions, use context and available resources. The hedonic properties derived from tasting a food are certainly one of the most essential factors in repetitive food choices, and hedonic ratings (Peryam & Pilgrim, 1957) have been widely used in predicting the future success of novel food products, but there is also evidence that the attitudes contribute to real food choices (Roininen & Tuorila, 1999). So, can the hedonic measurements correspond to the actual behaviour (de Graaf et al., 2005; Köster, 2003; Köster et al., 2002; Rosas-Nexticap et al. 2005)? How can we choose food

products based on hedonic liking when purchasing a new, "untasted" product? This dilemma has lately instigated discussions on the usefulness of the hedonic ratings in predicting long-term choices.

The criticism has mainly focused on the hedonic tests that are performed in non-realistic laboratory settings (Meiselman, 1992) and on using methods that are not relevant to consumers (Lucas & Bellisle, 1987; Zandstra et al., 1999). Single liking measurements do not necessarily take into account the inconsistency of individual ratings (Levy & Köster, 1999; Lähteenmäki & Tuorila, 1995), the environmental aspects (de Graaf et al., 2005), the context and situation (King et al., in press) and consumption aspects after the product is purchased (Grunert, 2003; Kozłowska et al., 2003). Most importantly, the role of such product attributes, which are not derived from direct experience of a food (Nelson, 1970), needs more investigation.

In addition to direct experience of the food (i.e., tasting), the expectations have found to have an impact on

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pleasantness and acceptance of foods (Cardello & Sawyer, 1992; Deliza & MacFie, 1996; Hurling & Shepherd, 2003; Jaeger & MacFie, 2001; Tuorila et al., 1998). Expectations thus have an impact not only on choosing the food but also on consumer liking and success on the market. Cardello and Sawyer (1992) showed that positive expectations increased the liking ratings compared to the ratings based on neutral expectations. In turn, negative expectations decreased the pleasantness ratings compared to the ratings based on neutral expectations (assimilation model). The actual perception can also be opposite to the expectations (contrast effect), but it seems rarer than the assimilation model (Cardello, 2003; Cardello & Sawyer, 1992; Deliza & MacFie, 1996; Hurling & Shepherd, 2003).

Consumers' expectations are typically guided by marketing communication. One interesting type of foods is functional foods, because their marketing is strongly based on health-related information attached to a single product (Diplock et al., 1999), but from consumers' point of view the healthiness seems to be only one choice factor among price, pleasantness, convenience and familiarity (Urala & Lähteenmäki, 2003). Earlier studies have shown that health-related information influences not only the healthiness perception but also the liking ratings of foods (Kihlberg et al. 2005; Mialon et al., 2002; Westcombe & Wardle, 1997), the effect of health-related information seems to be product dependent (Kähkönen et al., 1997) and the effect may depend on the degree of liking (Kihlberg et al. 2005). Yet, Stein et al. (2003) found that health-related information did not affect the hedonic ratings of beverages. The effect on choice-behaviour was, however, clear: participants who were given information on the health effects of an unfamiliar beverage chose more bottles as a reward after the experiment compared to the group who did not receive the information.

Similarly to other food products, sensory properties and hedonic pleasure are important in functional products, but we still know little about their relative importance in relation to health claims. In Belgium, neither most of women nor men have been willing to use functional foods that were stated to have a worse taste than their conventional counterparts (Verbeke, 2005, 2006).

Studies including actual tasting of functional foods indicate that excellent hedonic properties in functional foods are necessary and, for instance, a bitter taste in functional foods does not support the perceived healthiness of such foods (Tuorila & Cardello, 2002). Huotilainen et al. (2006) showed that the liking ratings of new functional drinks were the strongest predictors of the preferred use frequencies and Bower et al. (2003) reported that Scottish participants' purchase intent of spreads labelled with a proven health benefit was strongly related to the degree of liking, in addition to the health label.

The expectations, actual liking, healthiness perception and consumers' attitudes form a complex entity. In the current study, we try to understand better how the perceived healthiness, expected and actual liking ratings

and consumers' attitudes are related to the repetitive food choices. The research questions of our study were as follows.

- (1) How are the perceived healthiness, expected and actual liking ratings related to the choices of food alternatives that have been tasted several times before the choice period ("familiar assortment") compared to the more realistic situation where the available alternatives have not been tasted before ("unfamiliar assortment")? We assume that the actual liking correlates strongly with the choices made freely from the familiar assortment and that the expectations correlate with the choices made from the unfamiliar assortment.
- (2) How do background attitudes influence the repetitive choices of so-called functional products (labelled with health-related claims), organic products (have positive health image among consumers) and their conventional alternatives? We assume to find associations between background attitudes and choices. We expect that positive attitudes towards healthy eating and functional foods would positively correlate with the choices of samples labelled with a health-related claim and that interest towards natural products would positively correlate with the choices of samples labelled as organic.

Methods

Participants

Two panels of Finnish volunteers were recruited separately for two choice experiments. Participants were told that the aim of the study was to examine the liking for different types of snack bars (Experiment I) or beverages (Experiment II). Participants were not working in food or health-related areas. For both experiments, all participants were recruited from work places using the convenience sampling method and only users of snack bars (Experiment I) or beverages (Experiment II) were recruited in both experiments. There were more women than men and the participants were relatively well educated (Table 1). The majority reported that they bought at least half of their household food supplies and, in general, they reported their own health as being good (Table 1). All participants in both experiments were very motivated: no one withdrew from the study. Participants were debriefed and given a small gift after they completed the study.

For Experiment I, 41 participants were recruited from VTT (Technical Research Centre of Finland). Motivation to use products with health claims was inquired by asking participants' need to pay attention to health issues linked to the products. In all, 66% of the participants rated at least 5 on the 7-point scale (1, no need at all; 7, very strong need) their need to pay attention to the well-being of their gut, 64% to their physical condition, 42% to fibre intake and 44% to physical recovery after exercise. Respondents reported being familiar with snack bars, in general, as

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