Short communication

The effects of using a nutrition logo on consumption and product evaluation of a sweet pastry


Abstract

Nutrition logos have received a great deal of attention to stimulate people to eat a healthier diet. However, very little is known neither about actual consumption behavior related to nutrition logos nor about potential compensatory eating behaviors due to nutrition logos. The aim of this study was to assess the effects of using an existing nutrition logo on consumption and product evaluation of a chocolate mousse cake.

A cross-over design was applied with two conditions: a condition with a logo and a condition without a logo. Participants were females recruited in the university community (n = 36, mean age 22.6 ± 6.3). Data on consumption, tastefulness, perceived healthiness, dietary restraint and Body Mass Index were collected.

No significant differences between conditions were found on consumption and tastefulness. The cake was rated as significantly less unhealthy in the logo condition.

In conclusion, results cannot be extrapolated to other products, especially not to products that are perceived as healthy. In this study, the use of a nutrition logo did not result in an increased consumption and had no effect on the rating of taste of a sweet pastry among females from the university community.

© 2010 Elsevier Ltd. All rights reserved.

Introduction

The prevalence of overweight and obesity continues to increase and is associated with many health problems such as an increased risk of diabetes and cardiovascular diseases (WHO, 2004). Most people's diets do not meet the recommendations regarding for instance (saturated) fat intake, sugar intake, or total caloric intake, which is associated with overweight and obesity (Kromhout, Menotti, Kesteloot, & Sans, 2002; WHO, 2004). Furthermore, other dietary aspects are also essential for maintaining and improving health, e.g. salt intake, which is known to be associated with an increased risk of cardiovascular diseases (Strazzullo, D’Elia, Kandala, & Cappuccio, 2009).

Recently, there has been a great deal of focus on nutrition logos as an intervention to help people choose food products with a more favorable dietary composition. Several front-of-pack nutrition logos have been introduced such as the Choices logo, the Pick the Tick logo, or the Green Keyhole logo (Larsson, Lissner, & Wilhelmsen, 1999; Vyth et al., 2009; Young & Swinburn, 2002). The Choices logo, for instance, is a front-of-pack nutrition logo which indicates a favorable choice within a product group, based on criteria for saturated fat, trans fat, added sugar, salt, fiber and total energy (Dötsch-Klerk & Jansen, 2008). Study results into the effectiveness of nutrition logos are still inconclusive. Although the percentage of people that are familiar with these logos and the self-reported use of the logos can be quite high, strong behavioral effects are seldom found (Grunert & Wills, 2007; Mhurchu & Gorton, 2007; Rayner, Boaz, & Higginson, 2001; Vyth et al., Note1).

Further, the potential negative side-effects of these logos have received little notice. Research has shown that people might overeat more easily when eating products that are labeled as low fat or healthy (Provencher, Polivy, & Herman, 2009; Wansink & Chandon, 2006). Explanations for this phenomenon are that the perceived healthiness is associated with expectations about the caloric content and that food items that are perceived as healthy induce fewer feelings of guilt. People tend to underestimate the caloric content of healthy food items, and perceive a larger serving size as appropriate in these cases (Carels, Harper, & Konrad, 2006; Wansink & Chandon, 2006). In addition, a majority of women regularly experience guilty feelings related to food, especially regarding snack foods that are eaten in between meals (Steenhuis, 2009). Product characteristics, such as the perceived fat content or healthiness of products, influence anticipated consumption pleasure and guilt, which is associated with consumption volume...
It has been shown that low-fat labels can diminish guilty feelings, and thus increase consumption (Wansink & Chandon, 2006).

Comparable mechanisms might work for products with a health-related nutrition logo. Very little is known about actual consumption behavior related to nutrition logos nor about potential compensatory eating behaviors due to nutrition logos (Poelman, Vermeer, Vyth, & Steenhuis, Note2; Vyth et al., 2010).

The aim of this study was to assess the effects of using an existing nutrition logo on consumption and product evaluation of a product that can be eaten in between meals. A chocolate mousse cake with the Choices logo was selected for this study. The main hypothesis was that respondents would eat more of the product if the product was presented with the Choices logo.

Methods

Design and procedure

A cross-over design was applied with two conditions: a condition with a logo and a condition without a logo. The experiment was presented as a product evaluation study. A chocolate mousse cake was selected to be used in both conditions. In reality, this chocolate mousse cake carries the Choices logo; it contains 1.3 g of saturated fat per 100 g, 14 g of sugar and 97 kcal. Eighty grams are indicated as one serving on the package. During the experiment, the cake was served on a plate, without mentioning brand name or showing the original packaging. Participants were primed whether the product they were going to taste had the logo or not, by using an information card they were asked to read. In condition 1, it was stated that some products had a Choices logo and others did not; it was explained what the Choices logo meant, and it was explained that sometimes food producers adapt their recipes in order to fulfil the Choices criteria and obtain a logo. In addition, a statement was made that the product they were going to taste had no logo. In condition 2, exactly the same information was given, with a statement that the product they were going to taste had a logo. In addition, the chocolate mousse cake in condition 2 was presented with a food label with the logo on it. Besides the logo, no further information about nutrients, caloric content or serving size was given. In both conditions, participants were given half a chocolate mousse cake (160 g, 200% of the indicated serving size). Participants were instructed to taste and eat the cake ad libitum. All respondents came to the lab between 11 am and 1 pm and were not allowed to eat 2 h beforehand. Respondents ate the cake in a room without any other people present. They had 15 min to eat and taste the cake and to fill out a product evaluation form. A wash-out period of 1 week was applied. They had 15 min to eat and taste the cake and to fill out a product evaluation form. A wash-out period of 1 week was applied between the two conditions. The order of conditions was randomly assigned to the participants. The true purpose of the experiment was not revealed to the respondents until the entire experiment was finished.

Participants

Female participants were recruited from the university community by means of advertisements in the university newspaper, posters, flyers, and emails. The experiment was presented as a product evaluation study. Exclusion criteria were: following a prescribed diet, smoking, food allergies, medication influencing appetite (according to the respondent), pregnancy, breastfeeding, being a top athlete, a student of a health-related program (such as health sciences) or a dietician, and not being able to speak Dutch. Participants received a small fee for their participation. Initially, 36 females participated in the study. Five respondents were excluded from the analyses for various reasons; one respondent because she was underweight (BMI < 15), three because they ate the whole cake both times and one because the manipulation failed (she guessed the true purpose of the study). Participants were relatively young (mean 22.6, sd 6.3) and the majority had a BMI of less than 25 (80%, n = 24). All respondents had at least finished secondary school and 35.5% (n = 11) had already obtained a degree in higher education.

Analyses

Paired sample t-tests were used to test the main outcomes (consumption, taste, and health). A one sample t-test was used to test the mean score on dietary restraint against the norm score for females (Strien, 2004). Next, repeated measurement ANOVA were conducted to test for interaction of consumption with dietary restraint and BMI, as well as to test for order effects. Analyses were performed in SPSS version 15.0 (SPSS, Chicago, IL, USA).

Results

Respondents ate on average slightly more than what is considered to be one portion of the cake (see Table 1). No significant differences in consumption and tastefulness were found between the logo condition and the non-logo condition (respectively t(30) = –1.598, p = .120 and t(30) = –.303, p = .764). Respondents perceived the chocolate mousse cake with a logo as significantly less unhealthy than the same cake presented without a logo (t(30) = 3.079, p = .004). There was no indication for a carry-over effect (p = .331). Around half of the respondents were classified as restrained. The mean score on dietary restraint did not differ significantly from the Dutch norm score for females (2.86 ± .77 vs. norm score 2.97) (t(30) = –.807, p = .426). No significant interaction effect between consumption and dietary restraint was observed (p = .009). Regarding BMI, no significant interaction effect was found with consumption (p = .630).

Discussion

The hypothesis that people would eat more of the chocolate mousse cake if it was presented with a logo was rejected.
Regarding product evaluation, people rated the tastefulness the same, but perceived the product with the logo as less unhealthy. Scores on tastefulness were positive; since the scores were quite moderate, however, further improvement of the product is desirable. This is especially important because taste expectations play an important role in buying intentions (Raghunathan, Naylor, & Hoyer, 2006; Steptoe, Pollard, & Wardle, 1995). In future research, taste expectations are relevant to measure on beforehand. For the current study, it could be that respondents would have eaten more from the chocolate mousse cake if they had perceived the cake as more tasteful. Scores on perceived healthiness were negative, both for the logo and non-logo condition. Most likely, people perceive cakes as ‘unhealthy’ by definition and a logo only can make a cake seem ‘less unhealthy’.

The finding that dietary restraint was not interacting with consumption is in accordance with findings of Provencher et al. (2009), who also found that dietary restraint did not influence snack intake among a sample of female students. However, in that same study participants ate 35% more when the snack was regarded as healthy. Another study of Lemmens et al. (2010) also reported that when a food is perceived as healthy it might undermine control over food intake more than in case of a food that is perceived as ‘unhealthy’. However, in their study this seemed especially true for restrained eaters. We used a product that in itself is regarded as unhealthy, and as mentioned above the logo only could make the product look ‘less unhealthy’. Additional analyses on our data showed no significant correlations between perceived healthiness and consumption. However, people might react differently to a product with a health-related logo if the product is perceived to be healthy. Our results can therefore not be generalized to other products, and definitely not to products that score positively on perceived healthiness. A further remark is that our sample was too small to really unravel dietary restraint effects. We recommend taking dietary restraint into account in further studies into the effects of nutrition logos on consumption.

The cross-over design was suitable for our study purposes. No carry-over effect was found, and the manipulation worked well based on the manipulation check question and the fact that the healthiness of the product was rated differently between the two conditions when in fact respondents actually ate the same cake twice. The most important limitation of this study is the study sample, which consisted of relatively young and highly educated females from the university community. Results can therefore not be generalized to a wider range of consumers. Also, participants were instructed to eat the cake ad libitum, and in order to facilitate that we served 200% of the recommended serving size. As three participants ate the whole served cake both times, it might have been better to serve a larger amount than 200%.

Despite the limitations of this study, this is to our knowledge the first study in which the influence of nutrition logos on actual consumption has been studied in a controlled setting. It can be concluded that, while the use of a nutrition logo resulted in a less perceived unhealthiness of the product, it has no negative side-effects on the consumption or rating of taste of a sweet pastry among females from the university community. More studies need to be conducted in order to gain insight into whether these findings apply to other products or to a wider group of consumers.

Acknowledgment

The authors would like to thank Martijn Heymans for statistical assistance.

References


Reference notes
