

Swedish consumers' cognitive approaches to nutrition claims and health claims

Eva Svederberg^{1*} and Karin Wendin^{2,3}

¹Kristianstad University, Kristianstad, Sweden; ²SIK AB – The Swedish Institute for Food and Biotechnology, Göteborg, Sweden; ³Department of Food Science, University of Copenhagen, Copenhagen, Denmark

Abstract

Introduction and Aim: Studies show frequent use of nutrition claims and health claims in consumers' choice of food products. The aim of the present study was to investigate how consumers' thoughts about these claims and food products are affected by various types of food-related experiences.

Material and Methods: The data collection comprised 30 individual interviews among Swedish consumers aged 25 to 64 years.

Results: The results indicated that participants who expressed special concern for their own and their families' health were eager to find out the meaning of concepts and statements made. A lack of understanding and lack of credibility of concepts and expressions often caused suspicion of the product. However, in some cases this was counterbalanced by confidence in manufacturers, retailers, and/or the Swedish food legislation.

Discussion and Conclusion: To achieve effective written communication of food products' health-conductive properties on food labels, there is a need to consider the importance many consumers attach to understanding the meaning of concepts and expressions used and the importance of credibility in certain expressions. Consumers' varying cognitive approaches are suggested as a basis for pre-tests of nutrition claims and health claims.

Keywords: *nutrition claims; health claims; food labels; qualitative research interviews; cognitive segmentation; Sweden*

Received: 17 December 2010; Revised: 17 December 2010; Accepted: 27 February 2011; Published: 23 March 2011

Health claims describe the relationship between a food, food component or dietary supplement, and reducing the risk of disease or health-related condition (1). Regulation (EC) No 1924/2006 of the European Parliament and of the Council of 20 December 2006 on nutrition and health claims was applied 1 July 2007. Consumers' perspectives are emphasised in different parts of the content in the Regulation. In the introductory part, the concept 'the average consumer' is introduced and the necessity to 'give the consumer the necessary information to make choices in full knowledge of the facts' is stated, as well as the importance that claims on food can be understood. This introductory statement is later on reinforced in the Regulation by stating that: 'The use of nutrition and health claims shall only be permitted if the average consumer can be expected to understand the beneficial effects expressed in the claim' (Article 5:2). Health claims have been shown to influence the consumer best when two conditions exist. First, the consumer must be

made aware that the product carrying the health claim possesses the target nutrient. Second, the consumer must be made aware that the target nutrient provides a health benefit relevant to them (2). However, whether consumers are interested in nutrition and health claims depends on the claim type in combination with the product and product-nutrient concept (3–5).

From a consumer perspective, the statements in the Regulation (EC) No 1924/2006 do indeed represent progress and show awareness of research results that have shown that the understanding of health-related claims on package food labels is low (6–8) and that many consumers tend to misunderstand the messages. Also to guarantee trustworthiness, many sceptical consumers welcome strong governmental regulation (9).

As the point of departure for a lawful list of claims, in January 2008 a great number of health claim proposals were sent from countries in Europe to the EU Commission, all of them based on Article 13 (1) in the Regulation (EC) No 1924/2006. The proposed health claims are now being

scrutinised by EFSA, the European Authority for Food Safety, who will determine if the scientific foundation for each health claim is satisfactory. A positive list of lawful health claims and conditions for their use was announced to be published in January 2010. In the Regulation it is moreover stated that by January 2013 the Commission shall submit a report on applications of the Regulation, for example ‘on the consumers’ understanding of claims’ to the European Parliament and to the Council (Regulation (EC) No 1924/2006, Article 27).

In relation to the Regulation and in light of future assessment of consumers’ understanding of nutrition and health claims, research is needed as a basis for the elaboration of nutrition and health claims as well as for the successful communication of them to different consumer segments. According to van Trijp and van der Lans (10), as well as Sanchez and Casilli (11), and Vassallo and Saba (5), consumers in different countries perceive nutrition and health claims substantially differently and this has to be taken into consideration. Further, Sanchez and Casilli (11) state that the use of food products with health claims are also driven by (1) the meal structure, (2) the influence of medical discourses and (3) social representations of the food.

Consumers’ knowledge and their own understanding, as the basis for every day choices, have become more and more important in today’s society and also in choices of foods. From a consumer perspective, consumers’ possibilities for learning as a prerequisite for informed choices before purchase need to be facilitated. Since the 1970s there has been plentiful international qualitative research on school children’s and students’ preconditions for learning especially, but also on consumers’ preconditions for learning. Results show that learners approach a specific learning object from earlier experiences of the object, which might promote or hinder continued learning and change. Variation in preconditions for learning as a deliberate strategy in relation to specific learning objects to obtain learning in educational situations was exhaustively described by Marton and Booth (12).

The improvement of consumers’ possibilities to make informed choices is not only a societal but also a market responsibility. For improved market competence in this matter, traditional market segmentation based on i.e. demographic, psychographic, and behavioural segmentation (13) need to be complemented with market segmentation based on cognitive variables to reflect qualitative differences in consumers’ experiences and understanding.

The aim of the current study was to investigate how various types of food- and nutrition-related experiences were expressed in consumers’ thoughts when they were presented with nutrition claims and health claims on two types of packaged food and from there suggest future uses of consumer approaches in the communication of claims. It is our belief that this study can add to the

knowledge of how to handle claims and information on food packages in order to increase the consumers’ understanding and lay a foundation for future discussion.

Material and methods

The respondents in this study were selected from among 449 consumers who participated in a questionnaire study on consumers’ use of information on food package labels. The participants who answered the questionnaire (65%) indicated by their signature if they were interested in taking part in an interview study in order to answer more questions about information given on food packages. In all, 80 persons signed for it.

The basis for selection of the respondents for the interview study was an equal representation of sexes, widely differing ages, levels of education, as well as persons with and without experience of food-related health problems. The selection of respondents resulted in 30 Swedish consumers between 25 and 64 years of age: 16 men and 14 women. Three of them had at most 9-year compulsory school education, 15 had upper secondary school education, and 12 had education at university level. Seventeen of the respondents reported one or two food-related health problems (overweight, diabetes type-1 and type-2, elevated blood pressure, elevated blood cholesterol, allergy or hypersensitivity, or constipation).

In order to have a variety of background factors represented by the consumers chosen, the selection was also made based on their different experience of food. One assumption made is that the individual’s thoughts and pattern of behaviour regarding food and health are developed over time. This relation, we believe, is the result of earlier formal and informal experiences within his/her socio-cultural context. A context that includes not only social aspects but also economical, ecological, regional, and educational ones as well as the individual’s own professional experiences.

The points of departure in the semi-structured qualitative research interviews (14) were two food packages and an interview guide containing specific questions that were expanded in an exploratory way during the interview conversation. The main focus in the interviews, as well as in the later analysis, was the participants’ thoughts about various nutrition and health claims on the label of a package of table margarine and a loaf of bread produced in Sweden (Table 1).

Contextual analysis

The qualitative analysis of the interview data was carried out based on a methodology called contextual analysis (15–17). Contextual analysis is a case-based methodology as described by Miles and Huberman (18), where a case is an investigated phenomenon, and the case is also the main unit of analysis. Most forms of qualitative analysis start with individual data as singular, significant units

Table 1. The following nutrition claims and health claims found on a package of table margarine and a loaf of bread were included in the study

Claims on the margarine

With Omega 3

A healthy balance between different fatty acids

Research shows that a low level of saturated fats has a favourable influence on cholesterol levels and can, thereby, contribute to the prevention of coronary heart diseases. X has a low level of saturated fats and also contains the oil Omega 3 of vital importance to health.

Claims on the loaf of bread

Palatable bread rich in the type of dietary fibre that might help you to lower cholesterol levels.

+ Omega 3

It is important to eat a sufficient amount of dietary fibre to keep your stomach in good trim. X is rich in wholesome dietary fibre from the wholemeal rye, oat bran, and linseed.

Some soluble gel-forming types of dietary fibres found in both rye flour and oat bran can contribute to lowering the level of cholesterol in the blood. X contains plenty of fibres of this sort.

that are codified and/or categorised. These are then grouped into larger, meaning units in an inductive way. Contextual analysis starts from the complete unabridged data, is then preliminary delimited with the criterion that it relates to the investigated phenomena, and it includes a search for the main aspects and/or components of the phenomena. In the present study, the phenomena and cases are defined as the whole of consumers' expressed thoughts about nutrition and health claims. Contextual analysis is characterised by an exploratory discernment of the parts, and their internal relations within a whole by interpretation. This provides an excellent opportunity to grasp the meaning and/or quality of the unit as a whole. It is a description of the distinctive quality of the unit, in our case the expressed thoughts about nutrition and health claims.

The analysis was supported by means of a computer program (Atlas.ti) (19). A comprehensive description of how the interview data were processed step by step by means of Atlas.ti was previously published (8).

Results

Each of the 30 respondent's thoughts about nutrition and health claims on the two food packages, in relation to their different understanding of concepts and different trust in statements, formed the basis of 30 overall descriptions of the overall quality of their individual thoughts. These descriptions formed the basis for five categories of description (Table 2), representing five different ways to cognitively approach nutrition and health claims.

The five categories of description, describe the consumers' thoughts about nutrition and health claims

Table 2. Whole characteristics of how food-related experiences were expressed in the respondents' thoughts about nutrition claims and health claims

-
1. Thoughts were based on the consumer's own and their family's long-term health situation.
 2. Thoughts were based on the consumer's own and their family's present health situation.
 3. Thoughts were based on care for environmental issues locally and globally as well as care for the consumer's own health in relation to such issues.
 4. Thoughts were based on ambivalence between traditional eating habits and care for the consumer's health.
 5. Thoughts were based on a traditional view of eating habits where the taste of food the consumers are used to is emphasised.
-

on food packages and their distinctive points of difference. Included is a thorough description of each participant's thoughts, respectively, in the five categories of description. What is significant is that when confronted with such statements consumers' thoughts differ.

The thoughts expressed in the *first* category of description, implies that when confronted with nutrition and health claims on the food packages, attention was first directed at facts that are relevant in relation to the participant's general questions on how to eat and how to live a healthy and long life.

In the *second* category of description, current health problems or health problems in the family were the basis for the participant's thoughts about nutrition and health claims on the food packages. This means that, when confronted with nutrition and health claims as expressed on the two food packages, the attention was at first directed at relevant facts in relation to present health problems.

In the *third* category of description, conceptualised environmental issues and the participant's own health care were considered as a whole. This means that the choice of food products was based on environmental considerations and considerations concerning the individual's health. The thoughts about nutrition and health claims on the two food packages were based on attention first being placed at whether or not the food product was locally produced and on the list of ingredients.

The *fourth* category of description considered ambivalence in that there is an awareness by the participant as to his/her eating habits and how these are not the healthiest, in relation to the understanding of nutritious food as a basis for good health. The individual's thoughts here were directed to and based upon ambivalence (i.e. the impression of guilt) to the attention of nutrition and health claims on the two food packages.

The *fifth* category of description relates to issues of food and health in relation to traditional eating habits

that were never problematised. The direction of thoughts about nutrition and health claims in connection to the food products was based solely on the attitude that choosing this type of food product does not come into question, mainly because of the suspiciousness of the individual as to the palatability of the food product.

Below a comprehensive description is given of how the nutrition and health claims on the two food packages and how the two food products as such were viewed by respondents in the five categories of description, respectively. The quotations used to illustrate the results are translated from Swedish. As far as possible, spoken language is kept in the translation. The symbol [...] indicates that words or sentences were left out in order to focus on what the respondents expressed on the theme of the interview conversation.

Thoughts were based on the consumer's own and their family's long-term health situation

When confronted with nutrition and health claims on the food packages, the attention in the *first* category of description was initially directed to facts that were of relevance in relation to questions about how to eat for health promotion in the long run. In line with this, all of them aimed to find explanations of concepts they did not know or understand the meaning of.

In general terms, however, on first sight of the nutrition and health claims on the packages, respondents judged the table margarine and the loaf of bread in the study to be wholesome. One of them expressed her thoughts about the two food products in the following way:

To me, it [the health claim] is positive, because I don't have that problem today, but you never know. I mean everything that is wholesome, that is wholesome also for a healthy person of course. You don't need to be ill to start to eat wholesome products of course. I mean, I think it is positive if you are ill as well as healthy.

These respondent's thoughts about the two food products were shaped from a health perspective, where their view of what food products to choose for the promotion of health in the long run formed an entity.

The respondents in this category of description shared the opinion that it is generally difficult to understand many concepts and expressions used on food packages. The packages of table margarine and the loaf of bread in this study were no exceptions. The respondents' attention was most often caught by the concept of Omega 3. In order to understand the message of the claim, most of the respondents in this category of description searched for more information elsewhere on the packages, and they were disappointed when they did not find the explanation they were looking for. For example:

Omega 3 is totally unknown to me. But if I turn over the package I will of course find out. (Search) No, you can't get it. No. What I can see, I can't get any information on the package. [...] It is incredible really that you can't find it in an easy way.

Thoughts were based on the consumer's own and their family's present health situation

The respondents in the *second* category of description experienced food-related health problems of their own. The respondent's current health problems and, in some cases health problems in the respondent's family, formed the basis of their thoughts of nutrition and health claims on food packages. This meant that when confronted with statements on the health-conducive characteristics of foods as expressed on the two food packages, their attention was initially directed to facts of relevance to their own food-related health problems or food-related health problems of family members. In line with this, all of them judged the table margarine and the bread in this study in relation to those circumstances.

One of the female respondents, who was diagnosed as having elevated blood cholesterol, spontaneously demonstrated relevant knowledge in relation to her health problem when confronted with the texts on the package of the table margarine.

This would suit me! [...] Yes, it is Omega-3 of course and the fat content, and then the balance between different fatty acids.

Only respondents in this category of description stated that they knew the connection between Omega-3 and fish, even if one of them appeared to be a bit puzzled about the existence of fish oil in the table margarine.

The comprehensive picture of these respondent's judgements of the table margarine and the bread was that the conceptualised meaning of the nutrition and health claims related to their own health problems and needs. Suspicion was, however, frequent when concepts and expressions were not fully understood. One of the respondents in this category of description proclaimed that she would rather buy bread where she felt sure about the meaning of the expressions used. The undefined expression 'can contribute' lessened the credibility of the health claim and strengthened her decision not to buy the bread.

Mm, I have no idea what it is, 'gel-forming types of dietary fibres'. And then they are not sure either, as it is just written that it 'can contribute to lowering'. So, I don't know. It doesn't tell me anything, as I don't know what it means. No idea. I think I would choose bread where I understand what is written.

Another respondent, however, expressed confidence in the Swedish food control and food legislation:

I rely on the Swedish Food Administration. We have such a reliable control on what is sold in Sweden, so I don't think there is anything sold in this country,

with the exception of fat, which will harm us. I have confidence in the food legislation.

Thoughts were based on care for environmental issues locally and globally as well as care for health in relation to such issues

The respondents in the *third* category of description saw environmental issues and care for their own health as being interconnected. This meant that the choice of food products in general was based on environmental considerations, as well as on issues concerning their own and their family's health. Environmental issues were, for instance, the importance of choosing locally or regionally produced food products to minimise the distance of transportation as well as supporting natural production of primary products. They also emphasised freshness and the importance of ingredients being natural.

When thinking about the possibility of including the two food products with nutrition and health claims in their own eating habits, their attitudes were critical.

It sounds very healthy of course, but I always turn the packages and read on the back, I can say. It doesn't matter what they write on the front of the package, because I always look for the content.

The respondents were also suspicious about the table margarine, where they expressed concern about the E-numbers. Respondents whose thoughts were based on environmental issues also expressed doubts about adding specific nutrients at all to food products.

Due to the stress you accumulate while at work, it probably makes no difference how much Omega-3 fatty acids, and all there is to add to your body, because the pace in the society today is ruining human beings.

Thoughts were based on ambivalence between traditional eating habits and care for health

The ambivalence among respondents in the *fourth* category of description meant that they were aware that their eating habits were not the best possible in relation to their understanding of nutritious food as a basis for good health. Their thoughts about the table margarine and the loaf of bread in the study were based on this ambivalence, which was emphasised – giving the impression of guilt – when they were confronted with nutrition and health claims on the two food packages. They also had difficulties in understanding the claims.

When faced with nutrition and health claims on the two food packages, one of the male respondents, who did not report any food-related health problems in the questionnaire, told the interviewer that he was diagnosed as having elevated blood cholesterol, and that his father had died of coronary heart disease in his 50s. As he himself was getting on for 50, he tried to introduce changes in the family, but they were not accepted:

Yes, actually I should be a bit more observant because I have elevated cholesterol. One period I tried some oil and such, but it didn't work with the kids. [...] But at the same time fat is tasty, like cream. If you don't have cream in the sauce, it has no taste. I mean you live only once and then you have to allow yourself just a little. [...] It is obvious that I become thoughtful when I see coronary heart diseases in the text, so it is. [...] But I don't know. I feel all right. That is the main thing.

An element characterising respondents' thoughts in this category of description was the absence of subjective symptoms used as excuses. Returning to the concept of Omega-3, respondents in this category of description tended to express more associations to concepts in their own experienced world than the others or made a guess. One of the respondents stated that she felt ashamed when she could not understand concepts used on food packages and avoided reading such texts in order to avoid feeling ignorant. She also revealed that she was afraid to ask.

Yes, I am not that aware of things. Then I feel too foolish to ask many times. Maybe they think what a stupid person who calls to ask such a thing. Even if they don't know who I am, I feel like that.

Thoughts were based on a traditional view of eating habits where the taste of food the consumers are used to is emphasised

The thoughts of the respondents in the *fifth* category of description were characterised by issues on food and health never being made problematic. Instead they were characterised by a constraint on to their traditional eating habits, where the taste of food they were used to was emphasised.

Even though there was a limited understanding of the concepts used on the packages, the judgement of the table margarine and the loaf of bread was that, generally speaking, they were considered to be healthy. In comparison between the table margarine in the study and the margarine they normally bought, one of the respondents did not find any reason to consider the new table margarine for himself. He was satisfied with his present choice:

But I don't think I will buy it anyhow. I will buy our usual, which we always do. [...] Because we know that the taste is good of course.

The respondents were satisfied with their present food habits and had difficulties in mobilising interest in the texts on the packages of the two food products during the interviews. What characterised the respondents' thoughts was that well-known taste sensations are of crucial importance.

Summary of results

Ideally, when consumers notice nutrition and health claims on packaged food labels, the result is a reflective thinking as the basis for an informed choice. When attention was drawn to such texts on packaged food labels in the present study, the results showed that consumers' differing food-related experiences produced varying approaches and different interpretations of the nutrition and health claims as a basis for their judgement of the food products. This meant that texts on food package labels were approached and considered in different contexts, with different attitudes to the product as a result. Firstly, respondents' thoughts on nutrition and health claims were based partly on their *understanding* of concepts and expressions used and, partly, on their judgement of the *credibility* of these concepts and expressions. Secondly, the respondent's thoughts were based on earlier food-related experiences in a way summarised in five categories of description: these clearly showed five different attitudes towards nutrition and health claims and consequently towards the food product as such.

The use of concepts and expressions that consumers did not understand at all or only had a limited understanding of was found to be a barrier to understand the intended meaning of the nutrition and health claims and sometimes caused suspicion of the product. In some cases the approaches to the claims led the respondents' thoughts away from the food product and to a decision that the product was not for them. However, sometimes lack of understanding of concepts and expressions was counter-balanced by confidence in manufacturers, retailers, and/or the Swedish food legislation.

Discussion

Methodological aspects

In the present study, thoughts about nutrition and health claims in a heterogenic group of consumers was investigated by means of qualitative research interviews (16). The intention was not to compare subgroups but to – in an explorative and interpretative way – acquire an understanding of variations of the preconditions for communication of nutrition and health claims. A heterogenic group of consumers to collect data was therefore an asset.

The qualitative analysis of interview data was performed within the methodology of contextual analysis (14, 15). The exploratory character of the analysis made it possible to grasp the meaning and characteristics of the investigated phenomena in their different elements and parts, as compared to a use of predefined and/or generic categories, which is more common in more conventional methods of qualitative research.

In a qualitative study of this kind, the intention is not to generalise the results in the same way as in quantitative studies. The assumption in contextual analysis is that generalisation should be based on knowledge of similarities and differences between cases and contexts. To consider the context-dependency of the meaning of phenomena in generalisation is not a limitation but an asset that can prevent over-generalisation. The overall quality of thoughts found in the study is assumed to have counterparts in other cases of thinking about nutrition and health claims and, thus, have generality.

Aspects of the results

The findings showed that most of the respondents, to the extent that they understood the concepts used and regarded the expressions as being credible, were positive in their assessment of the nutrition claims and health claims and the products as such, which confirm results from other studies (20, 21).

The analysis indicated that respondents' thoughts about nutrition claims and health claims on the two food packages were based on two main parts: understanding and credibility. This means that participants' thoughts of the health-conducive properties were based partly on their understanding of concepts and expressions used and partly on their judgements of the credibility of these concepts and expressions.

All respondents shared the opinion that it was generally difficult to understand many of the concepts and expressions used in nutrition and health claims on packaged food labels. This is in line with Cheftel (22), who stated that many consumers do not have enough scientific background to interpret the condensed information given on labels. In order to avoid misunderstandings, it has been shown that consumers prefer simple messages on food labels and maybe an additional explanatory text (23, 24). However, it has to be taken into account that men generally prefer specific health claims whereas women generally prefer more general claims (25). From the concepts used on the package of the table margarine and the loaf of bread in this study, Omega-3 was most commonly questioned. Only a few respondents knew that Omega-3 was found in fish oil. These results support results from a focus group study in Great Britain (7) where it was also found that Omega-3 was not well known and consequently questioned. Concerning fibre content, it has been shown that additional information on fibre functionality increased the consumers' positive attitudes (26).

An important factor in the use of nutrition and health claims is consumers' perception of their credibility, which the results of the present study in some cases also showed to be of decisive importance for the perception of the food product in question. This result corresponds to results by Urala et al. (27) who found trustful respondents to perceive the claims as more advantageous than sceptical

respondents. A minimum of trust is needed to use the claim information (28). A health claim is significantly more trusted if it is combined with a nutrition label (29).

The respondents in the present study who expressed special concern for their own and their families' health situation, like results presented by Gracia et al. (30), van Kleef et al. (31), and Kozup et al. (32), were attracted by health claims personally relevant in relation to their experienced disease/health state. The same respondents were also found to be eager to learn the meaning of concepts and expressions used. Many of them searched for explanations elsewhere on the packages, which they often were unable to find. Other studies have also shown that consumers who were not satisfied with the information given on the front label looked for further information elsewhere on the package (6, 7, 33, 34). Improvements in labelling and claims are key factors and could make important changes in order to help the consumer to make a healthy choice (35, 36). Arguably, from a consumer perspective, such a discussion is urgently needed to facilitate the individual consumer's legitimate right to make informed choices. Studies by Wansink (37) and Wansink et al. (38) examined the effectiveness of various front-sided health claims when used in combination with a full health claim on the back of the package: this indicated a greater belief in the health claim as well as in the product, which points to the educational importance of carefully worked out food labelling. Additionally, visual communication in combination with claims have been shown to be more powerful than text only (24, 39).

In the present study, the respondents who judged nutrition and health claims from an environmental point of view scrutinised the food labels for ingredients they judged not to be natural and also considered transportation of the foods and ingredients. Dean et al. (25) found that simple and well-understood techniques were preferred for modification of food in order to improve their healthiness. Considering the present concern among consumers for sustainable development, including care for the environment and climate issues, there is a need to include such concerns in discussions on healthy food products and nutrition and health claims.

However, concepts and expressions alone cannot be the focus of attention for communicating nutrition and health claims to the consumers. With special reference to the participants in the present study, whose thinking about the claims was based on ambivalence between traditional eating habits and care for their health as well as the participants bound to their traditional eating habits and taste of food, a food cultural point of departure is needed. Several studies have shown that the choice of food depends on the perceived meaning of current foods within the individual's lifestyle and cultural identity (5, 11, 40–46). More health-oriented consumers have been shown to

be more likely to compromise on e.g. taste for an eventual health benefit (20). This means that the consumers are not passive, but decide for themselves the meaning of a food product or a message about a food product. The way in which information about health-promoting properties of foods is perceived by the individual consumer might therefore also be a question about the culture sensibility of the communication. This is in line with a study by van Trijp and van der Lans (10) who, in a cross-cultural study, showed that consumers from different countries perceived health claims differently.

It is here suggested that the varying cognitive approaches forming a basis for judgement of food products in the present study should be considered for identification of consumers to be recruited for trial of health claims approved by EFSA in accordance with Article 13 (1) in the Regulation (EC) No 1924/2006. One important reason is public health. Knowledge of consumers' cognitive approaches to nutrition and health claims is important, not least considering consumers who are less interested or not at all interested in nutrition and health arguments in their choices of food products. Therefore, the argument of cognitive variables in the recruitment of consumers in tests of nutrition and health claims is of importance. This is in disagreement with Leathwood et al. (47), who suggest a delimitation to target consumers 'reasonably well informed' defined by their health status, their lifestyle, or their socio-demographic status in their recommendations of development of such methods. However, it is unarguable that an understanding of what makes health claims successful provides useful nutrition education and product-labelling lessons for policy makers in all countries (2).

To sum up, the results of this study support the need for the promising consumer focus in the Regulation (EC) No 1924/2006. Future work with the regulation as well as future assessments of nutrition claims and health claims might keep the focus on consumers' understanding, and hopefully the need for healthy food culture sensibility in the communication will not be forgotten in the process.

Conclusions

Most consumers were positive to nutrition and health claims, even though many of them did not fully understand the message of the claims. Some of the consumers were searching for more information on the food package in order to be able to relate the message of the claim to earlier experiences and knowledge.

From an educational, as well as a consumer rights point of view, it is essential that consumers' possibilities to make conscious and informed choices are facilitated. There is a need for easily comprehensible information at different levels. These should be adapted to previous food- and nutrition-related experiences in consumer segments based on their approaches to nutrition and

health claims. As the space on food labels is limited, a discussion is needed on how this space could be best utilised, and where and in what way the eager-to-learn consumer can look for additional information. Reasons of consumer acceptance of food products with special health benefits justify pre-tests of consumers' conceptualisations of nutrition and health claims. Consumers' varying cognitive approaches are suggested as a basis for pre-tests of nutrition and health claims.

Conflict of interest and funding

The authors has not received any funding or benefits from industry or elsewhere to conduct this study.

References

- Schneeman B. FDA's review of scientific evidence for health claims. *J Nutr* 2007; 137: 493–94. (Presented as a part of the symposium 'Evidence-based public nutrition: an evolving concept', given April 2006, San Francisco, CA 2007).
- Wansink B, Cheney MM. Leveraging FDA health claims. *J Cons Aff* 2005; 39: 386–98.
- Verbeke W, Scholderer J, Lähteenmäki L. Consumer interest in different combinations of carrier product, functional ingredient and nutrition and health claims. Poster, 8th Pangborn Sensory Science Symposium, 26–30 July 2009, Florence, Italy.
- Scholderer J, Hyldig G, Green-Petersen D. Poster, 8th Pangborn Sensory Science Symposium, 26–30 July 2009, Florence, Italy.
- Vassallo M, Saba A. Role of claim and product information in perceived healthiness, appealingness and likelihood to buy. Poster, 8th Pangborn Sensory Science Symposium, 26–30 July 2009, Florence, Italy.
- Reid DJ, Hendricks SM. Consumer understanding and use of fat cholesterol information on food labels. *Can J Public Health* 1994; 85: 334–7.
- National Consumer Council. Messages on food. Consumers' use and understanding of health claims on food packs (PD 09/D1/97). London: National Consumer Council; 1997.
- Svederberg E. Consumers' views regarding health claims on food packages. Contextual analysis by means of computer support. *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research* 2001; 3. <http://www.qualitative-research.net/index.php/fqs/article/view/886/1933> [cited 28 February 2009].
- Williams P, Ghosh D. Health claims and functional foods. *Nutr Diet* 2008; 65: S89–93.
- Van Trijp HCM, van der Lans IOA. Consumer perceptions of nutrition and health claims. *Appetite* 2007; 48: 305–24.
- Sanchez S, Casilli AA. Status and use of food products with health claim (FPHC) in the USA, Japan and France: an anthropological perspective. *Food Qual Pref* 2008; 19: 682–91.
- Marton F, Booth S. Learning and awareness. Mahwah, NJ: Erlbaum; 1997.
- Kotler P, Keller KL. Marketing management. Upper Saddle River, NJ: Pearson Prentice Hall; 2009.
- Kvale S. Interviews. An introduction to qualitative research interviewing. Thousand Oaks, CA: Sage Publications; 1996.
- Marton F, Svensson L. Conceptions of research in student learning. *High Educ* 1979; 8: 471–86.
- Svensson L. Contextual analysis: the development of a research approach. Paper presented at the 2nd Conference on Qualitative Research in Psychology, Leuden, The Netherlands; 1985.
- Svensson L. Theoretical foundations of phenomenography. *High Educ Res Dev* 1997; 16: 159–71.
- Miles MB, Huberman AM. Qualitative data analysis. An expanded sourcebook. Thousand Oaks, CA: Sage Publications; 1994.
- Muhr T, Friese S. *Atlas.ti: the knowledge workbench: V 5.0 users' guide and reference*, 2004. <http://www.atlasti.com/uploads/media/atlman.pdf> [cited 28 January 2010].
- Sabbe S, Verbeke W, Deliza R, Matta V, van Damme P. Effect of health claim and personal characteristics on consumer acceptance of fruit juices with different concentrations of açai (*Euterpe oleracea* Mart.). *Appetite* 2009; 53: 84–92.
- Bech-Larsen T, Grunert K. The perceived healthfulness of functional foods. A conjoint study of Danish, Finnish and American consumers' perceptions of functional foods. *Appetite* 2003; 40: 9–14.
- Cheftel J. Food and nutrition labelling in the European Union. *Food Chem* 2005; 93: 531–50.
- Ares G, Giménez A, Gámbaro A. Consumer perceived healthiness and willingness to try functional milk desserts. Influence of ingredient, ingredient name and health claim. *Food Qual Pref* 2009; 20: 50–6.
- Kapsak WR, Schmidt D, Childs NM, Meunier J, White C. Consumer perception of graded, graphic text label presentations for qualified health claims. *Crit Rev Food Sci Nutr* 2008; 48: 248–56.
- Dean M, Sheperd R, Arvola A, Vassallo M, Winkelmann M, Claupein E, et al. Consumer perceptions of healthy cereal products and production methods. *J Cereal Sci* 2007; 46: 188–96.
- Bauxali R, Salvador A, Hough G, Fiszman SM. How information about fibre (traditional and resistant starch) influences consumer acceptance of muffins. *Food Qual Pref* 2008; 19: 628–35.
- Urala N, Arvola A, Lähteenmäki L. Strength of health-related claims and their perceived advantage. *Int J Food Sci Technol* 2003; 38: 815–26.
- Pieniak Z, Verbeke W, Scholderer J, Brunsø K, Olsen SO. European consumers' use of and trust in information sources about fish. *Food Qual Pref* 2007; 18: 1050–63.
- Gracia A, Loureriro ML, Nayga RM Jr. Consumers' valuation of nutritional information: a choice experiment study. *Food Qual Pref* 2009; 20: 463–71.
- Gracia A, Loureiro M, Nayga RM Jr. Do consumers perceive benefits from implementation of EU mandatory nutritional labelling program? *Food Policy* 2007; 32: 160–74.
- Van Kleef E, Van Trijp HCM, Luning P. Functional foods: health claim-food product compatibility and the impact of health claim framing on consumer evaluation. *Appetite* 2005; 44: 299–308.
- Kozup JC, Creyer EH, Burton S. Making healthful food choices: the influence of health claims and nutrition information on consumers' evaluations of packaged food products and restaurant menu items. *J Marketing* 2003; 67: 19–34.
- Hrovat KB, Harris KZ, Leach AD, Russell BS, Harris BV, Sprecher DL. The new label, type of fat, and consumer choice. *Arch Fam Med* 1994; 3: 690–5.
- McCullum C, Achterberg CL. Food shopping and label use behavior among high school-aged adolescents. *Adolescence* 1997; 32: 181–97.
- Bialkova S, van Trijp H. How do we search for health labels? Poster, 8th Pangborn Sensory Science Symposium, 26–30 July 2009, Florence, Italy.

36. Cowburn G, Stockley L. Consumer understanding and use of nutrition labelling: a systematic review. *Public Health Nutr* 2005; 8: 21–8.
37. Wansink B. How do front and back package labels influence beliefs about health claims? *J Cons Aff* 2003; 37: 305–16.
38. Wansink B, Sonka ST, Hasler CM. Front-label health claims: when less is more. *Food Pol* 2004; 29: 659–67.
39. Hooker NH, Teratanavat R. Dissecting qualified health claims: evidence from experimental studies. *Crit Rev Food Sci Nutr* 2008; 48: 160–76.
40. Barrios EX, Bayarri S, Carbonell I, Izquierdo L, Costell E. Consumer attitudes and opinions toward functional foods: a focus group study. *J Sens Stud* 2007; 23: 514–25.
41. Scholliers P, editor. *Food, drink and identity. Cooking, eating and drinking in Europe since the Middle Ages*. Oxford: Berg; 2001.
42. Caplan P, editor. *Food, health and identity*. London: Routledge; 1997.
43. Lupton D. *Food, the body and the self*. London: Sage; 1996.
44. Murcott A. Food as expression of identity. In: Gustavsson S, Lewin L, eds. *The future of the nation state*. Stockholm: Nerenius & Santérus; 1996.
45. Svederberg E. Conceptions behind choice and use of food. *Scand J Nutr/Näringsforskning* 1996; 40: S98–100.
46. Svederberg E. Tänkande bakom val och användning av livsmedel. Faktorer som medverkar till eller utgör hinder för förändring av matvanor i hälsofrämjande riktning. [Lund Studies in Education 1. Conceptualizations in relation to choice and use of food. Circumstances that contribute to compliance or lack of compliance with dietary guidelines conducive to health]. Lund: Lund University Press; 1997.
47. Leathwood PD, Richardson DP, Sträter P, Todd PM, Van Trijp CM. Consumer understanding of health claims: sources of evidence. Review article. *Br J Nutr* 2007; 98: 474–84.

*Eva Svederberg
 Kristianstad University
 SE-291 88 Kristianstad, Sweden
 Tel: +46 44203000
 Fax: +46 44203203
 Email: eva.svederberg@hkr.se